

# **Ethereal User's Guide**

**V1.1 for Ethereal 0.8.19**

**Richard Sharpe**  
NS Computer Software and Services P/L

**Ed Warnicke**

**Ethereal User's Guide: V1.1 for Ethereum 0.8.19**

by Richard Sharpe and Ed Warnicke

Copyright © 2001 by Richard SharpeEd Warnicke

Permission is granted to copy, distribute and/or modify this document under the terms of the GNU Free Documentation License, Version 1.1 or any later version published by the Free Software Foundation; with no Invariant Sections, with no Front-Cover Texts, and with no Back-Cover Texts. A copy of the license is included in Appendix C

## Table of Contents

|  |           |
|--|-----------|
| <b>FOREWORD .....</b>                                    | <b>I</b>  |
| <b>ACKNOWLEDGMENTS .....</b>                             | <b>II</b> |
| <b>CHAPTER 1. INTRODUCTION.....</b>                      | <b>1</b>  |
| ABOUT THIS MANUAL .....                                  | 1         |
| WHAT IS ETHEREAL? .....                                  | 1         |
| THE STATUS OF ETHEREAL.....                              | 11        |
| DEVELOPMENT AND MAINTENANCE OF ETHEREAL .....            | 11        |
| A ROSE BY ANY OTHER NAME .....                           | 11        |
| A BRIEF HISTORY OF ETHEREAL .....                        | 12        |
| PLATFORMS ETHEREAL RUNS ON .....                         | 12        |
| WHERE TO GET ETHEREAL.....                               | 12        |
| REPORTING PROBLEMS AND GETTING HELP .....                | 13        |
| WHERE TO GET THE LATEST COPY OF THIS DOCUMENT .....      | 14        |
| PROVIDING FEEDBACK .....                                 | 14        |
| <b>CHAPTER 2. BUILDING AND INSTALLING ETHEREAL .....</b> | <b>15</b> |
| INTRODUCTION.....  | 15        |
| OBTAINING THE SOURCE AND BINARY DISTRIBUTIONS.....       | 15        |
| BEFORE YOU BUILD ETHEREAL .....                          | 15        |
| BUILDING FROM SOURCE UNDER UNIX .....                    | 18        |
| INSTALLING THE BINARIES UNDER UNIX .....                 | 19        |
| INSTALLING FROM RPMS UNDER LINUX .....                   | 19        |
| INSTALLING FROM DEBS UNDER DEBIAN .....                  | 19        |
| BUILDING FROM SOURCE UNDER WINDOWS.....                  | 19        |
| INSTALLING ETHEREAL UNDER WINDOWS.....                   | 19        |
| TROUBLESHOOTING DURING THE INSTALL .....                 | 19        |
| <b>CHAPTER 3. USING ETHEREAL .....</b>                   | <b>21</b> |
| INTRODUCTION.....  | 21        |
| STARTING ETHEREAL.....                                   | 21        |
| THE ETHEREAL MENUS .....                                 | 25        |
| THE ETHEREAL FILE MENU.....                              | 26        |
| THE ETHEREAL EDIT MENU .....                             | 27        |
| THE ETHEREAL CAPTURE MENU .....                          | 29        |
| THE ETHEREAL DISPLAY MENU.....                           | 31        |
| THE ETHEREAL TOOLS MENU .....                            | 32        |
| THE ETHEREAL HELP MENU .....                             | 33        |
| CAPTURING PACKETS WITH ETHEREAL.....                     | 34        |
| THE CAPTURE PREFERENCES DIALOG BOX.....                  | 34        |
| FILTERING WHILE CAPTURING.....                           | 36        |
| VIEWING PACKETS YOU HAVE CAPTURED .....                  | 39        |
| DISPLAY OPTIONS.....                                     | 43        |
| SAVING CAPTURED PACKETS .....                            | 44        |
| THE SAVE CAPTURE FILE AS DIALOG BOX .....                | 45        |
| READING CAPTURE FILES .....                              | 46        |

|   |           |
|---|-----------|
| THE FILE OPEN DIALOG BOX .....  | 47        |
| FILTERING PACKETS WHILE VIEWING .....   | 48        |
| BUILDING FILTER EXPRESSIONS.....  | 49        |
| PACKET COLORIZATION.....  | 53        |
| FINDING FRAMES.....   | 55        |
| FOLLOWING TCP STREAMS .....   | 56        |
| DEFINING AND SAVING FILTERS .....   | 57        |
| THE ADD EXPRESSION DIALOG.....  | 58        |
| PRINTING PACKETS .....  | 60        |
| ETHERREAL PREFERENCES .....   | 62        |
| FILES USED BY ETHEREAL.....   | 63        |
| <b>CHAPTER 4. TROUBLESHOOTING WITH ETHEREAL .....</b>                           | <b>65</b> |
| AN APPROACH TO TROUBLESHOOTING WITH ETHEREAL .....                              | 65        |
| CAPTURING IN THE PRESENCE OF SWITCHES AND ROUTERS.....                          | 65        |
| EXAMPLES OF TROUBLESHOOTING .....   | 65        |
| <b>CHAPTER 5. RELATED TOOLS .....</b>   | <b>67</b> |
| CAPTURING WITH TCPDUMP FOR VIEWING WITH ETHEREAL .....                          | 67        |
| TETHERREAL, FOR TERMINAL-BASED CAPTURING .....                                  | 67        |
| USING EDITCAP .....   | 67        |
| MERGING MULTIPLE CAPTURE FILES INTO A SINGLE CAPTURE FILE WITH<br>MERGECAP..... | 69        |
| CONVERTING ASCII HEXDUMPS TO NETWORK CAPTURES WITH<br>TEXT2PCAP .....           | 71        |
| CREATING DISSECTORS FROM CORBA IDL FILES WITH IDL2ETH .....                     | 73        |
| WHAT IS IT?.....  | 73        |
| WHY DO THIS? .....  | 74        |
| HOW TO USE IDL2ETH.....   | 74        |
| TODO .....  | 75        |
| LIMITATIONS.....  | 75        |
| NOTES .....   | 75        |
| <b>APPENDIX A. ETHEREAL DISPLAY FILTER FIELDS .....</b>                         | <b>77</b> |
| 802.1Q VIRTUAL LAN (VLAN) .....   | 77        |
| 802.1X AUTHENTICATION (EAPOL) .....   | 77        |
| AFS (4.0) REPLICATION SERVER CALL DECLARATIONS (REP_PROC).....                  | 78        |
| AOL INSTANT MESSENGER (AIM).....  | 78        |
| ARCNET (ARCNET) .....   | 79        |
| ATM (ATM).....  | 79        |
| ATM AAL1 (AAL1).....  | 79        |
| ATM AAL3/4 (AAL3_4).....  | 79        |
| ATM LAN EMULATION (LANE) .....  | 80        |
| ATM OAM AAL (OAMAAL) .....  | 80        |
| AVS WLAN CAPTURE HEADER (WLANCAP) .....   | 80        |
| AD HOC ON-DEMAND DISTANCE VECTOR ROUTING PROTOCOL (AODV)<br>.....               | 81        |
| AD HOC ON-DEMAND DISTANCE VECTOR ROUTING PROTOCOL V6<br>(AODV6) .....           | 82        |

ADDRESS RESOLUTION PROTOCOL (ARP) ..... 83

AGGREGATE SERVER ACCESS PROTOCOL (ASAP) ..... 85

ANDREW FILE SYSTEM (AFS) (AFS)..... 86

APACHE JSERV PROTOCOL v1.3 (AJP13) ..... 97

APPLETALK FILING PROTOCOL (AFP) ..... 98

APPLETALK SESSION PROTOCOL (ASP)..... 108

APPLETALK TRANSACTION PROTOCOL PACKET (ATP)..... 110

APPLETALK ADDRESS RESOLUTION PROTOCOL (AARP)..... 111

ASYNCR DATA OVER ISDN (V.120) (v120)..... 112

AUTHENTICATION HEADER (AH)..... 112

BACNET VIRTUAL LINK CONTROL (BVLC)..... 112

BANYAN VINES (VINES) ..... 113

BANYAN VINES FRAGMENTATION PROTOCOL (VINES\_FRP) ..... 113

BANYAN VINES SPP (VINES\_SPP) ..... 113

BLOCKS EXTENSIBLE EXCHANGE PROTOCOL (BEEP)..... 113

BOARDWALK (BRDWLK)..... 114

BOOT PARAMETERS (BOOTPARAMS)..... 115

BOOTSTRAP PROTOCOL (BOOTP) ..... 115

BORDER GATEWAY PROTOCOL (BGP)..... 116

BUILDING AUTOMATION AND CONTROL NETWORK APDU (BACAPP)  
..... 116

BUILDING AUTOMATION AND CONTROL NETWORK NPDU (BACNET)  
..... 116

CDS CLERK SERVER CALLS (CDS\_CLERKSERVER)..... 118

CHECK POINT HIGH AVAILABILITY PROTOCOL (CPHA) ..... 118

CHECKPOINT FW-1 (FW1) ..... 119

CISCO AUTO-RP (AUTO\_RP)..... 120

CISCO DISCOVERY PROTOCOL (CDP)..... 120

CISCO GROUP MANAGEMENT PROTOCOL (CGMP)..... 121

CISCO HDLC (CHDLC) ..... 121

CISCO HOT STANDBY ROUTER PROTOCOL (HSRP) ..... 121

CISCO ISL (ISL)..... 122

CISCO INTERIOR GATEWAY ROUTING PROTOCOL (IGRP)..... 123

CISCO NETFLOW (CFLOW)..... 123

CISCO SLARP (SLARP)..... 126

CLEARCASE NFS (CLEARCASE) ..... 127

CoSINE IPNOS L2 DEBUG OUTPUT (COSINE)..... 127

COMMON OPEN POLICY SERVICE (COPS)..... 127

COMMON UNIX PRINTING SYSTEM (CUPS) BROWSING PROTOCOL  
(CUPS)..... 130

COSEVENTCOMM DISSECTOR USING GIOP API (GIOP-COSEVENTCOMM)  
..... 130

COSNAMING DISSECTOR USING GIOP API (GIOP-COSNAMING) ..... 130

DCE DFS CALLS (DCE\_DFS)..... 130

DCE DISTRIBUTED TIME SERVICE LOCAL SERVER (DTSSTIME\_REQ) .... 130

DCE DISTRIBUTED TIME SERVICE PROVIDER (DTS PROVIDER)..... 130

DCE NAME SERVICE (RS\_PGO) ..... 131

DCE RPC (DCERPC) ..... 132

Table of Contents

|   |     |
|---|-----|
| DCE SECURITY ID MAPPER (SECIDMAP) .....                                     | 138 |
| DCE/RPC BOS SERVER (BOSSVR) .....   | 138 |
| DCE/RPC CDS SOLICITATION (CDS_SOLICIT) .....                                | 138 |
| DCE/RPC CONVERSATION MANAGER (CONV) .....                                   | 138 |
| DCE/RPC ENDPOINT MAPPER (EPM).....  | 139 |
| DCE/RPC FLDB (FLDB).....  | 141 |
| DCE/RPC FLDB UBIK TRANSFER (UBIKDISK).....                                  | 141 |
| DCE/RPC FLDB UBIKVOTE (UBIKVOTE) .....                                      | 141 |
| DCE/RPC KERBEROS V (KRB5RPC).....   | 141 |
| DCE/RPC RS_ACCT (RS_ACCT).....  | 141 |
| DCE/RPC RS_MISC (RS_MISC).....  | 142 |
| DCE/RPC RS_UNIX (RS_UNIX) .....   | 142 |
| DCE/RPC REMOTE MANAGEMENT (MGMT).....                                       | 142 |
| DCE/RPC REPSERVER CALLS (RS_REPLIST).....                                   | 142 |
| DCE/RPC TOKENSERVER CALLS (TKN4INT).....                                    | 143 |
| DCE/RPC UPSEVER (DCE_UPDATE).....   | 143 |
| DCOM OXID RESOLVER (OXID).....  | 143 |
| DCOM REMOTE ACTIVATION (REMACT) .....                                       | 143 |
| DEC SPANNING TREE PROTOCOL (DEC_STP) .....                                  | 143 |
| DG GRYPHON PROTOCOL (GRYPHON) .....   | 144 |
| DHCPV6 (DHCPV6).....  | 144 |
| DNS CONTROL PROGRAM SERVER (CPRPC_SERVER) .....                             | 145 |
| DOCSIS 1.1 (DOCSIS).....  | 145 |
| DOCSIS APPENDIX C TLV's (DOCSIS_TLV).....                                   | 146 |
| DOCSIS BASELINE PRIVACY KEY MANAGEMENT ATTRIBUTES<br>(DOCSIS_BPKMATTR)..... | 154 |
| DOCSIS BASELINE PRIVACY KEY MANAGEMENT REQUEST<br>(DOCSIS_BPKMREQ).....     | 155 |
| DOCSIS BASELINE PRIVACY KEY MANAGEMENT RESPONSE<br>(DOCSIS_BPKMRSP).....    | 155 |
| DOCSIS DYNAMIC SERVICE ADDITION ACKNOWLEDGE<br>(DOCSIS_DSAACK).....         | 156 |
| DOCSIS DYNAMIC SERVICE ADDITION REQUEST (DOCSIS_DSAREQ) .                   | 156 |
| DOCSIS DYNAMIC SERVICE ADDITION RESPONSE (DOCSIS_DSARSP)                    | 156 |
| DOCSIS DYNAMIC SERVICE CHANGE ACKNOWLEDGEMENT<br>(DOCSIS_DSCACK) .....      | 156 |
| DOCSIS DYNAMIC SERVICE CHANGE REQUEST (DOCSIS_DSCREQ) ....                  | 157 |
| DOCSIS DYNAMIC SERVICE CHANGE RESPONSE (DOCSIS_DSCRSP) ...                  | 157 |
| DOCSIS DYNAMIC SERVICE DELETE REQUEST (DOCSIS_DSDREQ).....                  | 157 |
| DOCSIS DYNAMIC SERVICE DELETE RESPONSE (DOCSIS_DSDRSP).....                 | 157 |
| DOCSIS MAP MESSAGES (DOCSIS_RNGREQ) .....                                   | 158 |
| DOCSIS MAC MANAGEMENT (DOCSIS_MGMT).....                                    | 158 |
| DOCSIS RANGING RESPONSE (DOCSIS_RNGRSP).....                                | 159 |
| DOCSIS REGISTRATION ACKNOWLEDGE (DOCSIS_REGACK) .....                       | 159 |
| DOCSIS REGISTRATION REQUESTS (DOCSIS_REGREQ) .....                          | 160 |
| DOCSIS REGISTRATION RESPONSES (DOCSIS_REGRSP) .....                         | 160 |
| DOCSIS UPSTREAM BANDWIDTH ALLOCATION (DOCSIS_MAP).....                      | 160 |

DOCSIS UPSTREAM CHANNEL CHANGE REQUEST (DOCSIS\_UCCREQ) ..... 161

DOCSIS UPSTREAM CHANNEL CHANGE RESPONSE (DOCSIS\_UCCRSP) ..... 161

DOCSIS UPSTREAM CHANNEL DESCRIPTOR (DOCSIS\_UCD) ..... 161

DOCSIS VENDOR SPECIFIC ENDODINGS (DOCSIS\_VSIF) ..... 162

DATA (DATA) ..... 163

DATA LINK SWITCHING (DLSW) ..... 163

DATA STREAM INTERFACE (DSI) ..... 163

DATAGRAM DELIVERY PROTOCOL (DDP) ..... 165

DIAMETER PROTOCOL (DIAMETER) ..... 166

DISTANCE VECTOR MULTICAST ROUTING PROTOCOL (DVMRP) ..... 168

DISTRIBUTED CHECKSUM CLEARINGHOUSE PROTOTOCL (DCCP) ..... 169

DOMAIN NAME SERVICE (DNS) ..... 171

DYNAMIC DNS TOOLS PROTOCOL (DDTP) ..... 172

ENCAPSULATING SECURITY PAYLOAD (ESP) ..... 172

ENHANCED INTERIOR GATEWAY ROUTING PROTOCOL (EIGRP) ..... 172

ETHERNET (ETH) ..... 173

ETHERNET OVER IP (ETHERIP) ..... 173

EXTENSIBLE AUTHENTICATION PROTOCOL (EAP) ..... 173

FC EXTENDED LINK SVC (ELS) ..... 174

FC FABRIC CONFIGURATION SERVER (FCS) ..... 178

FCIP (FCIP) ..... 179

FTP DATA (FTP-DATA) ..... 181

FTSERVER OPERATIONS (FTSERVER) ..... 181

FIBER DISTRIBUTED DATA INTERFACE (FDDI) ..... 181

FIBRE CHANNEL (FC) ..... 181

FIBRE CHANNEL COMMON TRANSPORT (FCCT) ..... 183

FIBRE CHANNEL FABRIC ZONE SERVER (FZS) ..... 183

FIBRE CHANNEL NAME SERVER (FC-DNS) ..... 185

FIBRE CHANNEL PROTOCOL FOR SCSI (FCP) ..... 187

FIBRE CHANNEL SW\_ILS (SWILS) ..... 188

FILE TRANSFER PROTOCOL (FTP) (FTP) ..... 191

FINANCIAL INFORMATION EXCHANGE PROTOCOL (FIX) ..... 192

FRAME (FRAME) ..... 220

FRAME RELAY (FR) ..... 220

GARP MULTICAST REGISTRATION PROTOCOL (GMRP) ..... 221

GARP VLAN REGISTRATION PROTOCOL (GVRP) ..... 221

GPRS TUNNELING PROTOCOL (GTP) ..... 222

GPRS TUNNELLING PROTOCOL V0 (GTPV0) ..... 222

GPRS TUNNELLING PROTOCOL V1 (GTPV1) ..... 225

GENERAL INTER-ORB PROTOCOL (GIOP) ..... 230

GENERIC ROUTING ENCAPSULATION (GRE) ..... 232

GENERIC SECURITY SERVICE APPLICATION PROGRAM INTERFACE (GSS-API) ..... 232

GNUTELLA PROTOCOL (GNUTELLA) ..... 232

HP EXTENDED LOCAL-LINK CONTROL (HPEXT) ..... 234

HP REMOTE MAINTENANCE PROTOCOL (RMP) ..... 234

Table of Contents

|   |     |
|---|-----|
| HUMMINGBIRD NFS DAEMON (HCLNFSD).....   | 235 |
| HYPERSCSI (HYPERSCSI) .....   | 236 |
| HYPERTEXT TRANSFER PROTOCOL (HTTP).....   | 237 |
| ICQ PROTOCOL (ICQ) .....  | 237 |
| IEEE 802.11 WIRELESS LAN (WLAN) .....   | 237 |
| IEEE 802.11 WIRELESS LAN MANAGEMENT FRAME (WLAN_MGT) .....                        | 240 |
| ILMI (ILMI) .....   | 241 |
| IP OVER FC (IPFC).....  | 241 |
| IP PAYLOAD COMPRESSION (IPCOMP) .....   | 241 |
| IPX MESSAGE (IPXMSG) .....  | 242 |
| IPX ROUTING INFORMATION PROTOCOL (IPXRIP).....                                    | 242 |
| ISDN (ISDN).....  | 242 |
| ISDN Q.921-USER ADAPTATION LAYER (IUA) .....                                      | 242 |
| ISDN USER PART (ISUP) .....   | 244 |
| ISO 10589 ISIS INTRA DOMAIN ROUTEING INFORMATION EXCHANGE<br>PROTOCOL (ISIS)..... | 249 |
| ISO 8073 COTP CONNECTION-ORIENTED TRANSPORT PROTOCOL<br>(COTP).....               | 250 |
| ISO 8473 CLNP CONNECTIONLESS NETWORK PROTOCOL (CLNP) ...                          | 251 |
| ISO 8602 CLTP CONNECTIONLESS TRANSPORT PROTOCOL (CLTP) ...                        | 252 |
| ISO 9542 ESIS ROUTEING INFORMATION EXCHANGE PROTOCOL (ESIS)<br>.....              | 252 |
| ITU-T RECOMMENDATION H.261 (H261) .....   | 252 |
| INTER-ACCESS-POINT PROTOCOL (IAPP) .....  | 253 |
| INTERBASE (IB) .....  | 253 |
| INTERNET CACHE PROTOCOL (ICP).....  | 253 |
| INTERNET CONTENT ADAPTATION PROTOCOL (ICAP).....                                  | 253 |
| INTERNET CONTROL MESSAGE PROTOCOL (ICMP).....                                     | 254 |
| INTERNET CONTROL MESSAGE PROTOCOL V6 (ICMPV6) .....                               | 255 |
| INTERNET GROUP MANAGEMENT PROTOCOL (IGMP).....                                    | 255 |
| INTERNET MESSAGE ACCESS PROTOCOL (IMAP) .....                                     | 258 |
| INTERNET PRINTING PROTOCOL (IPP).....   | 258 |
| INTERNET PROTOCOL (IP).....   | 258 |
| INTERNET PROTOCOL VERSION 6 (IPV6) .....  | 260 |
| INTERNET RELAY CHAT (IRC).....  | 261 |
| INTERNET SECURITY ASSOCIATION AND KEY MANAGEMENT PROTOCOL<br>(ISAKMP).....        | 261 |
| INTERNETWORK PACKET EXCHANGE (IPX).....   | 261 |
| JAVA RMI (RMI) .....  | 262 |
| JAVA SERIALIZATION (SERIALIZATION).....   | 263 |
| KERBEROS (KERBEROS).....  | 263 |
| KERNEL LOCK MANAGER (KLM).....  | 263 |
| LABEL DISTRIBUTION PROTOCOL (LDP) .....   | 263 |
| LAYER 2 TUNNELING PROTOCOL (L2TP).....  | 270 |
| LIGHTWEIGHT DIRECTORY ACCESS PROTOCOL (LDAP) .....                                | 271 |
| LINE PRINTER DAEMON PROTOCOL (LPD).....   | 273 |
| LINK ACCESS PROCEDURE BALANCED (LAPB) (LAPB).....                                 | 273 |



LINK ACCESS PROCEDURE BALANCED ETHERNET (LAPBETHER)  
(LAPBETHER) ..... 273  
LINK ACCESS PROCEDURE, CHANNEL D (LAPD) (LAPD) ..... 273  
LINK AGGREGATION CONTROL PROTOCOL (LACP) ..... 274  
LINK MANAGEMENT PROTOCOL (LMP) (LMP) ..... 277  
LINUX COOKED-MODE CAPTURE (SLL) ..... 283  
LOCAL MANAGEMENT INTERFACE (LMI)..... 283  
LOCAL TALK LINK ACCESS PROTOCOL (LLAP)..... 284  
LOGICAL-LINK CONTROL (LLC) ..... 284  
LUCENT/ASCEND DEBUG OUTPUT (ASCEND) ..... 284  
MDS HEADER (MDSHDR) ..... 285  
MEGACO (MEGACO)..... 285  
MMS MESSAGE ENCAPSULATION (MMSE) ..... 285  
MS PROXY PROTOCOL (MSPROXY) ..... 288  
MSN MESSENGER SERVICE (MSNMS) ..... 288  
MSNIP: MULTICAST SOURCE NOTIFICATION OF INTEREST PROTOCOL  
(MSNIP)..... 288  
MTP 2 TRANSPARENT PROXY (M2TP) ..... 289  
MTP 2 USER ADAPTATION LAYER (M2UA) ..... 290  
MTP 3 USER ADAPTATION LAYER (M3UA) ..... 292  
MTP2 PEER ADAPTATION LAYER (M2PA) ..... 295  
MALFORMED PACKET (MALFORMED) ..... 296  
MEDIA GATEWAY CONTROL PROTOCOL (MGCP) ..... 296  
MESSAGE TRANSFER PART LEVEL 2 (MTP2) ..... 298  
MESSAGE TRANSFER PART LEVEL 3 (MTP3) ..... 298  
MESSAGE TRANSFER PART LEVEL 3 MANAGEMENT (MTP3MG) ..... 299  
MICROSOFT DISTRIBUTED FILE SYSTEM (DFS) ..... 300  
MICROSOFT EXCHANGE MAPI (MAPI) ..... 300  
MICROSOFT LOCAL SECURITY ARCHITECTURE (LSA) ..... 301  
MICROSOFT LOCAL SECURITY ARCHITECTURE (DIRECTORY SERVICES)  
(LSA\_DS) ..... 306  
MICROSOFT NETWORK LOGON (RPC\_NETLOGON)..... 307  
MICROSOFT REGISTRY (WINREG)..... 317  
MICROSOFT SECURITY ACCOUNT MANAGER (SAMR) ..... 318  
MICROSOFT SERVER SERVICE (SRVSVC)..... 325  
MICROSOFT SPOOL SUBSYSTEM (SPOOLSS)..... 334  
MICROSOFT TELEPHONY API SERVICE (TAPI) ..... 351  
MICROSOFT WINDOWS BROWSER PROTOCOL (BROWSER) ..... 351  
MICROSOFT WINDOWS LANMAN REMOTE API PROTOCOL (LANMAN)  
..... 354  
MICROSOFT WINDOWS LOGON PROTOCOL (NETLOGON)..... 359  
MICROSOFT WORKSTATION SERVICE (WKSSVC) ..... 361  
MOBILE IP (MIP)..... 362  
MOBILE IPV6 (MIPV6) ..... 363  
MODBUS/TCP (MBTCP)..... 364  
MOUNT SERVICE (MOUNT) ..... 365  
MULTIPROTOCOL LABEL SWITCHING HEADER (MPLS) ..... 368  
MULTICAST ROUTER DISCOVERY PROTOCOL (MRDISC) ..... 368

|  |     |
|--|-----|
| MULTICAST SOURCE DISCOVERY PROTOCOL (MSDP).....          | 369 |
| MYSQL PROTOCOL (MYSQL).....                              | 370 |
| NFSACL (NFSACL).....                                     | 372 |
| NFSAUTH (NFSAUTH) .....                                  | 372 |
| NIS+ (NISPLUS) .....                                     | 372 |
| NIS+ CALLBACK (NISPLUSCB) .....                          | 377 |
| NSPI (NSPI).....   | 378 |
| NTLM SECURE SERVICE PROVIDER (NTLMSSP).....              | 378 |
| NAME BINDING PROTOCOL (NBP).....                         | 382 |
| NAME MANAGEMENT PROTOCOL OVER IPX (NMPI) .....           | 382 |
| NETBIOS (NETBIOS).....                                   | 382 |
| NETBIOS DATAGRAM SERVICE (NBDGM).....                    | 384 |
| NETBIOS NAME SERVICE (NBNS) .....                        | 385 |
| NETBIOS SESSION SERVICE (NBSS) .....                     | 385 |
| NETBIOS OVER IPX (NBIPX).....                            | 386 |
| NETWARE CORE PROTOCOL (NCP).....                         | 386 |
| NETWORK DATA MANAGEMENT PROTOCOL (NDMP) .....            | 493 |
| NETWORK FILE SYSTEM (NFS).....                           | 499 |
| NETWORK LOCK MANAGER PROTOCOL (NLM).....                 | 511 |
| NETWORK NEWS TRANSFER PROTOCOL (NNTP) .....              | 512 |
| NETWORK STATUS MONITOR CALLBACK PROTOCOL (STATNOTIFY) .. | 512 |
| NETWORK STATUS MONITOR PROTOCOL (STAT) .....             | 512 |
| NETWORK TIME PROTOCOL (NTP) .....                        | 513 |
| NOVELL DISTRIBUTED PRINT SYSTEM (NDPS).....              | 514 |
| NULL/LOOPBACK (NULL) .....                               | 518 |
| OPEN SHORTEST PATH FIRST (OSPF) .....                    | 519 |
| OPENBSD ENCAPSULATING DEVICE (ENC) .....                 | 520 |
| OPENBSD PACKET FILTER LOG FILE (PFLOG) .....             | 520 |
| PC NFS (PCNFSD).....                                     | 521 |
| PPP BANDWIDTH ALLOCATION CONTROL PROTOCOL (BACP) .....   | 521 |
| PPP BANDWIDTH ALLOCATION PROTOCOL (BAP).....             | 522 |
| PPP CDP CONTROL PROTOCOL (CDPCP).....                    | 522 |
| PPP CALLBACK CONTROL PROTOCOL (CBCP).....                | 522 |
| PPP CHALLENGE HANDSHAKE AUTHENTICATION PROTOCOL (CHAP)   |     |
| .....  | 522 |
| PPP COMPRESSED DATAGRAM (COMP_DATA).....                 | 522 |
| PPP COMPRESSION CONTROL PROTOCOL (CCP).....              | 522 |
| PPP IP CONTROL PROTOCOL (IPCP) .....                     | 522 |
| PPP IPV6 CONTROL PROTOCOL (IPV6CP).....                  | 522 |
| PPP LINK CONTROL PROTOCOL (LCP).....                     | 523 |
| PPP MPLS CONTROL PROTOCOL (MPLSCP).....                  | 523 |
| PPP MULTILINK PROTOCOL (MP) .....                        | 523 |
| PPP MULTIPLEXING (PPMUX).....                            | 523 |
| PPP PASSWORD AUTHENTICATION PROTOCOL (PAP) .....         | 523 |
| PPP VJ COMPRESSION (VJ) .....                            | 523 |
| PPP-OVER-ETHERNET DISCOVERY (PPPOED).....                | 524 |
| PPP-OVER-ETHERNET SESSION (PPPOES).....                  | 524 |
| PPPMUX CONTROL PROTOCOL (PPMUXCP).....                   | 524 |

PACKET CABLE LAWFUL INTERCEPT (PCLI) ..... 524

POINT-TO-POINT PROTOCOL (PPP)..... 525

POINT-TO-POINT TUNNELLING PROTOCOL (PPTP)..... 525

PORTMAP (PORTMAP) ..... 525

POST OFFICE PROTOCOL (POP)..... 526

PRAGMATIC GENERAL MULTICAST (PGM)..... 526

PRISM (PRISM) ..... 528

PRIVILEGE SERVER OPERATIONS (RPRIV)..... 529

PROTOCOL INDEPENDENT MULTICAST (PIM) ..... 530

Q.2931 (Q2931)..... 530

Q.931 (Q931)..... 530

QUAKE II NETWORK PROTOCOL (QUAKE2)..... 531

QUAKE III ARENA NETWORK PROTOCOL (QUAKE3)..... 532

QUAKE NETWORK PROTOCOL (QUAKE) ..... 533

QUAKEWORLD NETWORK PROTOCOL (QUAKEWORLD) ..... 535

QUALIFIED LOGICAL LINK CONTROL (QLLC)..... 536

RFC 2250 MPEG1 (MPEG1) ..... 536

RIPNG (RIPNG)..... 537

RPC BROWSER (RPC\_BROWSER)..... 537

RSTAT (RSTAT)..... 538

RSYNC FILE SYNCHRONISER (RSYNC)..... 538

RX PROTOCOL (RX)..... 539

RADIO ACCESS NETWORK APPLICATION PART (RANAP)..... 541

RADIUS PROTOCOL (RADIUS) ..... 547

RAW PACKET DATA (RAW)..... 547

REAL TIME STREAMING PROTOCOL (RTSP)..... 547

REAL-TIME TRANSPORT PROTOCOL (RTP) ..... 548

REAL-TIME TRANSPORT CONTROL PROTOCOL (RTCP)..... 548

REGISTRY SERVER ATTRIBUTES MANIPULATION INTERFACE (RS\_ATTR)  
..... 550

REGISTRY SERVER ADMINISTRATION OPERATIONS. (RS\_REPADM) ..... 550

REMOTE OVERRIDE INTERFACE (ROVERRIDE) ..... 550

REMOTE PROCEDURE CALL (RPC) ..... 551

REMOTE PROGRAM LOAD (RPL) ..... 554

REMOTE QUOTA (RQUOTA) ..... 555

REMOTE SHELL (RSH)..... 556

REMOTE WALL PROTOCOL (RWALL) ..... 556

REMOTE SEC\_LOGIN PREAUTH INTERFACE. (RSEC\_LOGIN) ..... 556

RESOURCE RESERVATION PROTOCOL (RSVP) (RSVP) ..... 556

RLOGIN PROTOCOL (RLOGIN)..... 558

ROUTING INFORMATION PROTOCOL (RIP)..... 559

ROUTING TABLE MAINTENANCE PROTOCOL (RTMP)..... 559

SADMIND (SADMIND)..... 560

SCSI (SCSI) ..... 560

SGI MOUNT SERVICE (SGIMOUNT)..... 564

SMB (SERVER MESSAGE BLOCK PROTOCOL) (SMB)..... 564

SMB MAILSLLOT PROTOCOL (MAILSLOT) ..... 593

SMB PIPE PROTOCOL (PIPE) ..... 593

Table of Contents

|   |     |
|---|-----|
| SNA-OVER-ETHERNET (SNAETH).....                                 | 594 |
| SNMP MULTIPLEX PROTOCOL (SMUX).....                             | 595 |
| SPNEGO-KRB5 (SPNEGO-KRB5).....                                  | 595 |
| SPRAY (SPRAY).....  | 595 |
| SS7 SCCP-USER ADAPTATION LAYER (SUA).....                       | 595 |
| SSCOP (SSCOP).....  | 600 |
| SSH PROTOCOL (SSH).....   | 600 |
| SECURE SOCKET LAYER (SSL).....                                  | 602 |
| SEQUENCED PACKET EXCHANGE (SPX).....                            | 605 |
| SERVICE ADVERTISEMENT PROTOCOL (IPXSAP).....                    | 606 |
| SERVICE LOCATION PROTOCOL (SRVLOC).....                         | 606 |
| SESSION ANNOUNCEMENT PROTOCOL (SAP).....                        | 611 |
| SESSION DESCRIPTION PROTOCOL (SDP).....                         | 611 |
| SESSION INITIATION PROTOCOL (SIP).....                          | 614 |
| SHORT FRAME (SHORT).....  | 617 |
| SHORT MESSAGE PEER TO PEER (SMPP).....                          | 617 |
| SIGNALLING CONNECTION CONTROL PART (SCCP).....                  | 624 |
| SIGNALLING CONNECTION CONTROL PART MANAGEMENT (SCCPMG)<br>..... | 628 |
| SIMPLE MAIL TRANSFER PROTOCOL (SMTP).....                       | 628 |
| SIMPLE NETWORK MANAGEMENT PROTOCOL (SNMP).....                  | 629 |
| SINEC H1 PROTOCOL (H1).....                                     | 629 |
| SKINNY CLIENT CONTROL PROTOCOL (SKINNY).....                    | 630 |
| SLIMP3 COMMUNICATION PROTOCOL (SLIMP3).....                     | 638 |
| SOCKS PROTOCOL (SOCKS).....                                     | 638 |
| SPANNING TREE PROTOCOL (STP).....                               | 639 |
| SPNEGO (SPNEGO).....  | 641 |
| STREAM CONTROL TRANSMISSION PROTOCOL (SCTP).....                | 642 |
| SYNCHRONOUS DATA LINK CONTROL (SDLC) (SDLC).....                | 645 |
| SYSLOG MESSAGE (SYSLOG).....                                    | 645 |
| SYSTEMS NETWORK ARCHITECTURE (SNA).....                         | 645 |
| SYSTEMS NETWORK ARCHITECTURE XID (SNA_XID).....                 | 656 |
| TACACS (TACACS).....  | 656 |
| TACACS+ (TACPLUS).....  | 657 |
| TPKT (TPKT).....  | 657 |
| TABULAR DATA STREAM (TDS).....                                  | 658 |
| TAZMEN SNIFFER PROTOCOL (TZSP).....                             | 658 |
| TELNET (TELNET).....  | 659 |
| TIME PROTOCOL (TIME).....                                       | 659 |
| TIME SYNCHRONIZATION PROTOCOL (TSP).....                        | 660 |
| TOKEN-RING (TR).....  | 660 |
| TOKEN-RING MEDIA ACCESS CONTROL (TRMAC).....                    | 661 |
| TRANSMISSION CONTROL PROTOCOL (TCP).....                        | 662 |
| TRANSPARENT NETWORK SUBSTRATE PROTOCOL (TNS).....               | 665 |
| TRIVIAL FILE TRANSFER PROTOCOL (TFTP).....                      | 669 |
| UNIVERSAL COMPUTER PROTOCOL (UCP).....                          | 670 |
| UNREASSEMBLED FRAGMENTED PACKET (UNREASSEMBLED).....            | 675 |
| USER DATAGRAM PROTOCOL (UDP).....                               | 675 |

|   |            |
|---|------------|
| VIRTUAL ROUTER REDUNDANCY PROTOCOL (VRRP).....                | 676        |
| VIRTUAL TRUNKING PROTOCOL (VTP) .....                         | 677        |
| WAP BINARY XML (WBXML) .....                                  | 678        |
| WEB CACHE COORDINATION PROTOCOL (WCCP).....                   | 678        |
| WELLFLEET BREATH OF LIFE (BOFL).....                          | 679        |
| WELLFLEET COMPRESSION (WCP) .....                             | 679        |
| WELLFLEET HDLC (WHDLC) .....                                  | 680        |
| WHO (WHO).....  | 681        |
| WINDOWS 2000 DNS (DNSSERVER) .....                            | 681        |
| WIRELESS SESSION PROTOCOL (WAP-WSP).....                      | 682        |
| WIRELESS TRANSACTION PROTOCOL (WAP-WSP-WTP) .....             | 689        |
| WIRELESS TRANSPORT LAYER SECURITY (WAP-WTLS) .....            | 691        |
| X DISPLAY MANAGER CONTROL PROTOCOL (XDMCP) .....              | 696        |
| X.25 (x.25).....  | 696        |
| X.25 OVER TCP (XOT) .....                                     | 697        |
| X.29 (x.29).....  | 697        |
| X11 (x11).....  | 698        |
| XYPLEX (XYPLEX).....  | 718        |
| YAHOO MESSENGER PROTOCOL (YHOO) .....                         | 718        |
| YAHOO YMSG MESSENGER PROTOCOL (YMSG) .....                    | 719        |
| YELLOW PAGES BIND (YPBIND) .....                              | 719        |
| YELLOW PAGES PASSWD (YPPASSWD).....                           | 720        |
| YELLOW PAGES SERVICE (YPSERV) .....                           | 721        |
| YELLOW PAGES TRANSFER (YXFR).....                             | 721        |
| ZEBRA PROTOCOL (ZEBRA).....                                   | 722        |
| ZONE INFORMATION PROTOCOL (ZIP).....                          | 723        |
| iSCSI (ISCSI) .....   | 724        |
| <b>APPENDIX B. ETHEREAL ERROR MESSAGES .....</b>              | <b>730</b> |
| CAPTURE FILE FORMAT NOT UNDERSTOOD.....                       | 730        |
| SAVE FILE ERROR.....  | 730        |
| <b>APPENDIX C. THE GNU FREE DOCUMENT PUBLIC LICENCE .....</b> | <b>731</b> |
| COPYRIGHT .....   | 731        |
| PREAMBLE .....  | 731        |
| APPLICABILITY AND DEFINITIONS.....                            | 731        |
| VERBATIM COPYING .....  | 732        |
| COPYING IN QUANTITY .....                                     | 732        |
| MODIFICATIONS.....  | 733        |
| COMBINING DOCUMENTS .....                                     | 734        |
| COLLECTIONS OF DOCUMENTS .....                                | 735        |
| AGGREGATION WITH INDEPENDENT WORKS .....                      | 735        |
| TRANSLATION .....   | 735        |
| TERMINATION .....   | 735        |
| FUTURE REVISIONS OF THIS LICENSE .....                        | 735        |



## Foreword

Ethereal is one of those packages that many network managers would love to be able to use, but they are often prevented from getting what they would like from Ethereal because of the lack of documentation.

This document is part of an effort on the part of the Ethereal team to improve the accessibility of Ethereal.

We hope that you find it useful, and look forward to your comments.

## Acknowledgments

I would like to thank the whole Ethereal team for their assistance. In particular, I would like to thank:

- Gerald Combs, for initiating the Ethereal project and funding me to do this documentation.
- Guy Harris, for many helpful hints and a great deal of patience in reviewing this document.
- Gilbert Ramirez, for general encouragement and helpful hints along the way.

I would also like to thank the following people for their helpful feedback on this document:

- Pat Eyer, for his suggestions on improving the example on generating a **backtrace**.

I would like to acknowledge those man page and README authors for the ethereal project from who sections of this document borrow heavily:

- Scott Renfro from whose **mergecap** man page the Section called *Merging multiple capture files into a single capture file with **mergecap*** in Chapter 5 derived.
- Ashok Narayanan from whose **text2pcap** man page the Section called *Converting ASCII hexdumps to network captures with **text2pcap*** in Chapter 5 derived.
- Frank Singleton from whose `README.idl2eth` the Section called *Creating dissectors from Corba IDL files with **idl2eth*** in Chapter 5 derived.



## Chapter 1. Introduction

### About this manual

This manual was originally developed by Richard Sharpe<sup>1</sup> with funds provided from the Ethereum Fund. More recently, it was updated by Ed Warnicke<sup>2</sup>.

It is written in DocBook/SGML for the moment.

### What is **Ethereal**?

Every network manager at some time or other needs a tool that can capture packets off the network and analyze them. In the past, such tools were either very expensive, proprietary, or both. However, with the advent of **Ethereal**, all that has changed.

**Ethereal** is perhaps one the best open source packet sniffers available today. The following are some of the features **Ethereal** provides:

- Available for UNIX and Windows.
- Capture and display packets from any interface on a UNIX system.
- Display packets captured under a number of other capture programs:
  - tcpdump
  - Network Associates Sniffer and Sniffer Pro
  - NetXray
  - LANalyzer
  - Shomiti
  - AIX's iptrace
  - RADCOM's WAN/LAN Analyzer
  - Lucent/Ascend access products
  - HP-UX's nettl
  - Toshiba's ISDN routers
  - ISDN4BSD *i4btrace* utility
  - Microsoft Network Monitor
  - Sun snoop
- Save captures to a number of formats:
  - libpcap (tcpdump)
  - Sun snoop
  - Microsoft Network Monitor
  - Network Associates Sniffer
- Filter packets on many criteria.
- Search for packets using filters.
- Colorize packet display based on filters

However, to really appreciate its power, you have to start using it.

Figure 1-1 shows `Ethereal` having captured some packets and waiting for you to examine the packets.

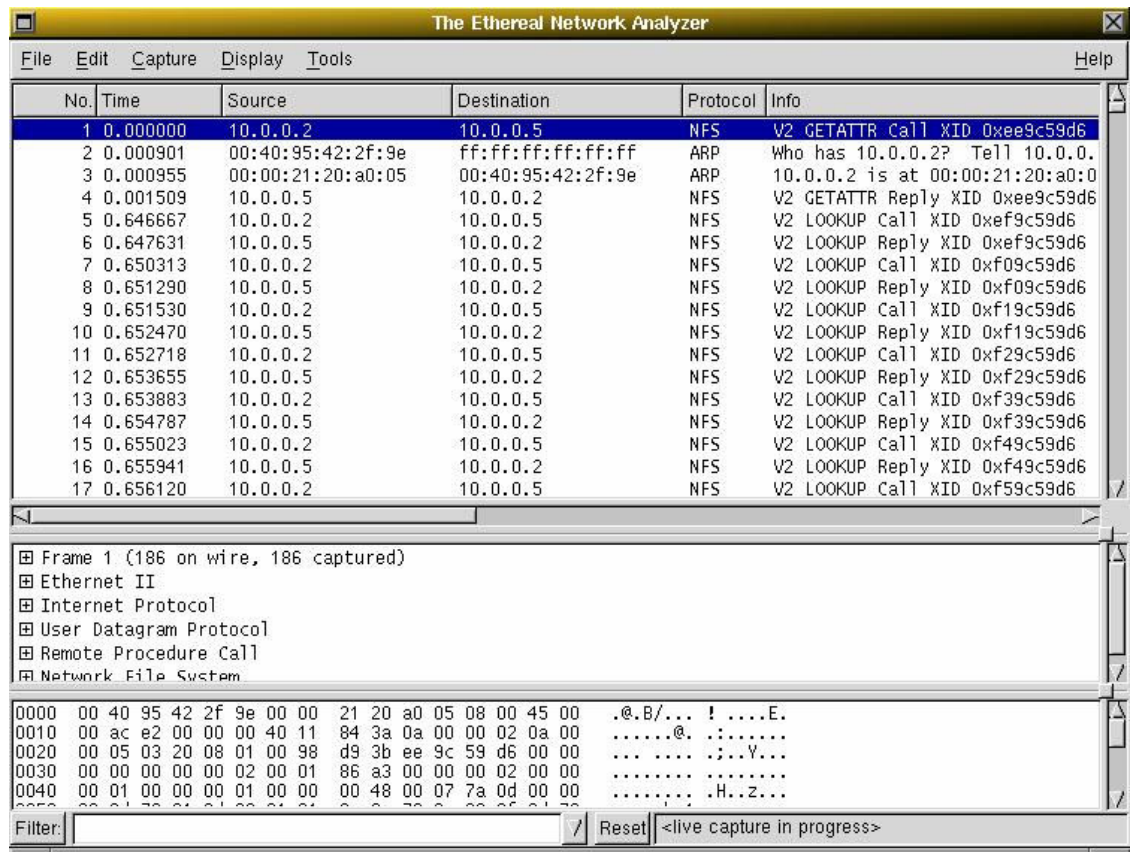


Figure 1-1. `Ethereal` captures packets and allows you to examine their content.

In addition, because all the source code for `Ethereal` is freely available, it is very easy for people to add new protocols to `Ethereal`, either as modules, or built into the source.

There are currently protocol decoders (or dissectors, as they are known in `Ethereal`), for a great many protocols, including:

- 802.1q Virtual LAN
- 802.1x Authentication
- AFS (4.0) Replication Server call declarations
- AOL Instant Messenger
- ATM
- ATM LAN Emulation
- Ad hoc On-demand Distance Vector Routing Protocol
- Ad hoc On-demand Distance Vector Routing Protocol v6
- Address Resolution Protocol

- Aggregate Server Access Protocol
- Andrew File System (AFS)
- Apache JServ Protocol v1.3
- AppleTalk Filing Protocol
- AppleTalk Session Protocol
- AppleTalk Transaction Protocol packet
- Appletalk Address Resolution Protocol
- Async data over ISDN (V.120)
- Authentication Header
- BACnet Virtual Link Control
- Banyan Vines
- Banyan Vines Fragmentation Protocol
- Banyan Vines SPP
- Blocks Extensible Exchange Protocol
- Boot Parameters
- Bootstrap Protocol
- Border Gateway Protocol
- Building Automation and Control Network APDU
- Building Automation and Control Network NPDU
- CDS Clerk Server Calls
- Check Point High Availability Protocol
- Checkpoint FW-1
- Cisco Auto-RP
- Cisco Discovery Protocol
- Cisco Group Management Protocol
- Cisco HDLC
- Cisco Hot Standby Router Protocol
- Cisco ISL
- Cisco Interior Gateway Routing Protocol
- Cisco NetFlow
- Cisco SLARP
- CoSine IPNOS L2 debug output
- Common Open Policy Service
- Common Unix Printing System (CUPS) Browsing Protocol
- DCE DFS Calls
- DCE Name Service
- DCE RPC
- DCE Security ID Mapper

- DCE/RPC BOS Server
- DCE/RPC CDS Solicitation
- DCE/RPC Conversation Manager
- DCE/RPC Endpoint Mapper
- DCE/RPC FLDB
- DCE/RPC FLDB UBIK TRANSFER
- DCE/RPC Kerberos V
- DCE/RPC RS\_ACCT
- DCE/RPC RS\_MISC
- DCE/RPC RS\_UNIX
- DCE/RPC Remote Management
- DCE/RPC Repserver Calls
- DCE/RPC TokenServer Calls
- DCOM OXID Resolver
- DCOM Remote Activation
- DEC Spanning Tree Protocol
- DHCPv6
- DNS Control Program Server
- Data
- Data Link SWitching
- Data Stream Interface
- Datagram Delivery Protocol
- Diameter Protocol
- Distance Vector Multicast Routing Protocol
- Distributed Checksum Clearinghouse Prototocl
- Domain Name Service
- Dummy Protocol
- Dynamic DNS Tools Protocol
- Encapsulating Security Payload
- Enhanced Interior Gateway Routing Protocol
- Ethernet
- Extensible Authentication Protocol
- FTP Data
- FTServer Operations
- Fiber Distributed Data Interface
- File Transfer Protocol (FTP)
- Financial Information eXchange Protocol
- Frame

- Frame Relay
- GARP Multicast Registration Protocol
- GARP VLAN Registration Protocol
- GPRS Tunneling Protocol
- GPRS Tunnelling Protocol v0
- GPRS Tunnelling Protocol v1
- General Inter-ORB Protocol
- Generic Routing Encapsulation
- Generic Security Service Application Program Interface
- Gnutella Protocol
- Hummingbird NFS Daemon
- Hypertext Transfer Protocol
- ICQ Protocol
- IEEE 802.11 wireless LAN
- IEEE 802.11 wireless LAN management frame
- ILMI
- IP Payload Compression
- IPX Message
- IPX Routing Information Protocol
- ISDN Q.921-User Adaptation Layer
- ISDN User Part
- ISO 10589 ISIS InTRA Domain Routeing Information Exchange Protocol
- ISO 8073 COTP Connection-Oriented Transport Protocol
- ISO 8473 CLNP ConnectionLess Network Protocol
- ISO 8602 CLTP ConnectionLess Transport Protocol
- ISO 9542 ESIS Routeing Information Exchange Protocol
- ITU-T Recommendation H.261
- Inter-Access-Point Protocol
- Interbase
- Internet Cache Protocol
- Internet Content Adaptation Protocol
- Internet Control Message Protocol
- Internet Control Message Protocol v6
- Internet Group Management Protocol
- Internet Message Access Protocol
- Internet Printing Protocol
- Internet Protocol
- Internet Protocol Version 6

- Internet Relay Chat
- Internet Security Association and Key Management Protocol
- Internetwork Packet eXchange
- Java RMI
- Java Serialization
- Kerberos
- Kernel Lock Manager
- Label Distribution Protocol
- Layer 2 Tunneling Protocol
- Lightweight Directory Access Protocol
- Line Printer Daemon Protocol
- Link Access Procedure Balanced (LAPB)
- Link Access Procedure Balanced Ethernet (LAPBETHER)
- Link Access Procedure, Channel D (LAPD)
- Link Aggregation Control Protocol
- Link Management Protocol (LMP)
- Linux cooked-mode capture
- Local Management Interface
- LocalTalk Link Access Protocol
- Logical-Link Control
- Lucent/Ascend debug output
- MMS Message Encapsulation
- MS Proxy Protocol
- MSNIP: Multicast Source Notification of Interest Protocol
- MTP 2 Transparent Proxy
- MTP 2 User Adaptation Layer
- MTP 3 User Adaptation Layer
- MTP2 Peer Adaptation Layer
- Malformed Packet
- Message Transfer Part Level 2
- Message Transfer Part Level 3
- Microsoft Distributed File System
- Microsoft Exchange MAPI
- Microsoft Local Security Architecture
- Microsoft Network Logon
- Microsoft Registry
- Microsoft Security Account Manager
- Microsoft Server Service

- Microsoft Spool Subsystem
- Microsoft Telephony API Service
- Microsoft Windows Browser Protocol
- Microsoft Windows Lanman Remote API Protocol
- Microsoft Windows Logon Protocol
- Microsoft Workstation Service
- Mobile IP
- Modbus/TCP
- Mount Service
- MultiProtocol Label Switching Header
- Multicast Router DIScovery protocol
- Multicast Source Discovery Protocol
- NFSACL
- NFSAUTH
- NIS+
- NIS+ Callback
- NSPI
- NTLM Secure Service Provider
- Name Binding Protocol
- Name Management Protocol over IPX
- NetBIOS
- NetBIOS Datagram Service
- NetBIOS Name Service
- NetBIOS Session Service
- NetBIOS over IPX
- NetWare Core Protocol
- Network Data Management Protocol
- Network File System
- Network Lock Manager Protocol
- Network News Transfer Protocol
- Network Status Monitor CallBack Protocol
- Network Status Monitor Protocol
- Network Time Protocol
- Novell Distributed Print System
- Null/Loopback
- Open Shortest Path First
- OpenBSD Packet Filter log file
- PC NFS

- PPP Bandwidth Allocation Control Protocol
- PPP Bandwidth Allocation Protocol
- PPP CDP Control Protocol
- PPP Callback Control Protocol
- PPP Challenge Handshake Authentication Protocol
- PPP Compressed Datagram
- PPP Compression Control Protocol
- PPP IP Control Protocol
- PPP Link Control Protocol
- PPP MPLS Control Protocol
- PPP Multilink Protocol
- PPP Multiplexing
- PPP Password Authentication Protocol
- PPP VJ Compression
- PPP-over-Ethernet Discovery
- PPP-over-Ethernet Session
- PPPMux Control Protocol
- Point-to-Point Protocol
- Point-to-Point Tunnelling Protocol
- Portmap
- Post Office Protocol
- Pragmatic General Multicast
- Prism
- Privilege Server operations
- Protocol Independent Multicast
- Q.2931
- Q.931
- Quake II Network Protocol
- Quake III Arena Network Protocol
- Quake Network Protocol
- QuakeWorld Network Protocol
- Qualified Logical Link Control
- RFC 2250 MPEG1
- RIPng
- RPC Browser
- RSTAT
- RX Protocol
- Radio Access Network Application Part



- Radius Protocol
- Raw packet data
- Real Time Streaming Protocol
- Real-Time Transport Protocol
- Real-time Transport Control Protocol
- Registry Server Attributes Manipulation Interface
- Registry server administration operations.
- Remote Override interface
- Remote Procedure Call
- Remote Quota
- Remote Shell
- Remote Wall protocol
- Remote sec\_login preauth interface.
- Resource ReserVation Protocol (RSVP)
- Rlogin Protocol
- Routing Information Protocol
- Routing Table Maintenance Protocol
- SADMIND
- SCSI
- SMB (Server Message Block Protocol)
- SMB MailSlot Protocol
- SMB Pipe Protocol
- SNA-over-Ethernet
- SNMP Multiplex Protocol
- SPNEGO-KRB5
- SPRAY
- SS7 SCCP-User Adaptation Layer
- SSCOP
- Secure Socket Layer
- Sequenced Packet eXchange
- Service Advertisement Protocol
- Service Location Protocol
- Session Announcement Protocol
- Session Description Protocol
- Session Initiation Protocol
- Short Frame
- Short Message Peer to Peer
- Signalling Connection Control Part

- Signalling Connection Control Part Management
- Simple Mail Transfer Protocol
- Simple Network Management Protocol
- Sinec H1 Protocol
- Skinny Client Control Protocol
- SliMP3 Communication Protocol
- Socks Protocol
- Spanning Tree Protocol
- Spnego
- Stream Control Transmission Protocol
- Syslog message
- Systems Network Architecture
- TACACS
- TACACS+
- TPKT
- Tabular Data Stream
- Telnet
- Time Protocol
- Time Service Provider Interfacer
- Time Synchronization Protocol
- Token-Ring
- Token-Ring Media Access Control
- Transmission Control Protocol
- Transparent Network Substrate Protocol
- Trivial File Transfer Protocol
- Universal Computer Protocol
- Unreassembled Fragmented Packet
- User Datagram Protocol
- Virtual Router Redundancy Protocol
- Virtual Trunking Protocol
- Web Cache Coordination Protocol
- Wellfleet Compression
- Who
- Windows 2000 DNS
- Wireless Session Protocol
- Wireless Transaction Protocol
- Wireless Transport Layer Security
- X Display Manager Control Protocol

- X.25
- X.25 over TCP
- X11
- Xyplex
- Yahoo Messenger Protocol
- Yellow Pages Bind
- Yellow Pages Passwd
- Yellow Pages Service
- Yellow Pages Transfer
- Zebra Protocol
- Zone Information Protocol
- iSCSI

## The status of Ethereal

Ethereal is an open source software project, and is released under the Gnu Public Licence<sup>3</sup> (GPL). All source code is freely available under the GPL. You are welcome to modify Ethereal to suit your own needs, and it would be appreciated if you contribute your improvements back to the Ethereal team.

You gain two benefits by contributing your improvements back to the community:

- Other people who find your contributions useful will appreciate them, and you will know that you have helped people in the same way that the developers of Ethereal have helped people
- The maintainers and developers of Ethereal will maintain your code as well, fixing it when API changes or other changes are made, and generally keeping it in tune with what is happening with Ethereal.

The Ethereal source code and binary kits for some platforms are all available on the Ethereal website: <http://www.ethereal.com>.

## Development and maintenance of Ethereal

Ethereal was initially developed by Gerald Combs. Ongoing development and maintenance of Ethereal is handled by the Ethereal team, a loose group of individuals who fix bugs and provide new functionality.

There have also been a large number of people who have contributed protocol dissectors to Ethereal, and it is expected that this will continue. You can find a list of the people who have contributed code to Ethereal at the authors<sup>5</sup> link on the web site.

## A rose by any other name

William Shakespeare wrote: "*A rose by any other name would smell as sweet.*" And so it is with Ethereal, as there appears to be two different ways that people pronounce the name.

Some people pronounce it ether-real, while others pronounce it e-the-real, as in ghostly, insubstantial, etc.

You are welcome to call it what you like, as long as you find it useful.

## A brief history of Ethereal

In late 1997, Gerald Combs needed a tool for tracking down networking problems and wanted to learn more about networking, so he started writing Ethereal as a way to solve both problems.

Ethereal was initially released, after several pauses in development, in July 1998 as version 0.2.0. Within days, patches, bug reports, and words of encouragement started arriving, so Ethereal was on its way to success.

Not long after that Gilbert Ramirez saw its potential and contributed a low-level dissector to it.

In October, 1998, Guy Harris, of NetApp was looking for something better than TCPview, so he started applying patches and contributing dissectors to Ethereal.

In late 1998, Richard Sharpe, who was giving TCP/IP courses, saw its potential on such courses, started looking at it to see if it supported the protocols he needed. While it didn't at that point, new protocols could be easily added. So he started contributing dissectors and contributing patches.

The list of people who have contributed to Ethereal is long, and almost all of them started with a protocol that they needed that Ethereal did not already handle, so they copied an existing dissector and contributed the code back to the team. You can get a list of the people who have contributed by checking the man pages for ethereal, or from the website (<http://www.ethereal.com>).

## Platforms Ethereal runs on

Ethereal currently runs on most UNIX platforms and the various Windows platforms. It requires GTK+, GLIB and libpcap in order to run.

Binary packages are available for at least the following platforms:

- AIX
- Tru64 UNIX (formerly Digital UNIX)
- Debian GNU/Linux
- Slackware Linux
- Red Hat Linux
- FreeBSD
- NetBSD
- OpenBSD
- HP/UX
- Sparc/Solaris
- Windows XP, Windows 2000, Windows NT and Windows Me/98/95

If a binary package is not available for your platform, you should download the source and try to build it.

## Where to get Ethereal

You can get the latest copy of the Ethereal from the Ethereal Website: <http://www.ethereal.com>. The website allows you to choose from among several mirrors for downloading.

## Reporting problems and getting help

If you have problems, or need help with Ethereum, there are several mailing lists that may be of interest to you:

### Ethereum Users

This list is for users of Ethereum. People post with questions about building and using Ethereum. Others provide answers.

### Ethereum Announce

This list is for people wanting to receive announcements about Ethereum.

### Ethereum Dev

This list is for Ethereum developers. If you want to start developing a protocol dissector, join this list.

You can subscribe to each of these from the Ethereum web site: <http://www.ethereum.com>. Simply select the **mailing lists** link on the left hand side of the site. The lists are archived at the Ethereum web site as well.

When reporting crashes with Ethereum, it is helpful if you supply the following information:

1. The version number of Ethereum you found the problem with, eg Ethereum 0.8.10.
2. The version number of the other software linked with Ethereum, eg GTK+, etc. You can obtain this with the command **ethereum -v**.
3. A traceback if Ethereum crashed. You can obtain this with the following commands:

```
$ gdb `whereis ethereum | cut -f2 -d: | cut -f' '
-d2` core >& backtrace.txt
backtrace
^D
$
```

**Note:** Type the characters in the first line verbatim! Those are back-tics there!

**Note:** backtrace is a **gdb** command. You should enter it verbatim after the first line shown above. The ^D (Control-D, that is, press the Control key and the D key together) will cause **gdb** to exit. This will leave you with a file called `backtrace.txt` in the current directory. Include the file with your bug report.

**Note:** If you do not have **gdb** available, you will have to check out your operating system's debugger. Windows users might not be able to get a traceback.

You should mail the traceback to the **ethereum-dev** mailing list.

## Where to get the latest copy of this document

The latest copy of this documentation can always be found at: <http://www.ethereal.com/docs/user-guide/><sup>9</sup>.

## Providing feedback

Should you have any feedback about this document, please send them to the author at [rsharpe@ns.aus.com](mailto:rsharpe@ns.aus.com)<sup>10</sup>.

## Notes

1. <mailto:rsharpe@ns.aus.com>
2. <mailto:hagbard@physics.rutgers.edu>
3. <http://www.gnu.org/copyleft/gpl.html>
4. <http://www.ethereal.com>
5. <http://www.ethereal.com/introduction.html#authors>
6. <http://www.ethereal.com>
7. <http://www.ethereal.com>
8. <http://www.ethereal.com>
9. <http://www.ethereal.com>
10. <mailto:rsharpe@ns.aus.com>

## Chapter 2. Building and Installing Ethereal

### Introduction

As with all things, there must be a beginning, and so it is with Ethereal. To use Ethereal, you must:

- Obtain a binary package for your operating system, or
- Obtain the source and build Ethereal for your operating system.

Currently, only two or three Linux Distributions ship ethereal, and they are commonly shipping an out-of-date version. No other versions of UNIX ship Ethereal so far, and Microsoft does not ship it with any version of Windows. For that reason, you will need to know where to get the latest version of Ethereal and how to install it. The current version of Ethereal is 0.8.19.

This chapter shows you how to obtain source and binary packages, and how to build Ethereal from source, should you choose to do so.

The following are the general steps you would use:

1. Download the relevant package for your needs, eg, source or binary distribution.
2. Build the source into a binary, if you have downloaded the source.  
This may involve building and/or installing any other necessary packages.
3. Install the binaries in their final destinations.

### Obtaining the source and binary distributions

You can obtain both source and binary distributions from the Ethereal web site: <http://www.ethereal.com>. Simply select the download link, and then select either the source package or binary package of your choice from the mirror site closest to you.

**Download all the needed files:** In general, unless you have already downloaded Ethereal before, you will most likely need to download several source packages if you are building Ethereal from source. This is covered in more detail below.

Once you have downloaded the relevant files, you can go on to the next step.

**Note:** While you will find a number of binary packages available on the Ethereal web site, you might not find one for your platform, and they often tend to be several versions behind the current released version, as they are contributed by people who have the platforms they are built for.

For this reason, you might want to pull down the source distribution and build it, as the process is relatively simple.

### Before you build Ethereal

Before you build Ethereal from sources, or install a binary package, you must ensure that you have the following other packages installed:

- GTK+, The GIMP Tool Kit.

You will also need Glib. Both can be obtained from [www.gtk.org](http://www.gtk.org)<sup>2</sup>

- libpcap, the packet capture software that Ethereal uses.

You can obtain libpcap from [www.tcpdump.org](http://www.tcpdump.org)<sup>3</sup>

Depending on your system, you may be able to install these from binaries, eg RPMs, or you may need to obtain them in source code form and build them.

If you have downloaded the source for GTK+, the instructions shown in Example 2-1 may provide some help in building it:

#### Example 2-1. Building GTK+ from source

```
gzip -dc gtk+-1.2.8.tar.gz | tar xvf -
<much output removed>
cd gtk+-1.2.8
./configure
<much output removed>
make
<much output removed>
make install
<much output removed>
```

**Note!** You may need to change the version number of gtk+ in Example 2-1 to match the version of GTK+ you have downloaded. The directory you change to will change if the version of GTK+ changes, and in all cases, **tar xvf -** will show you the name of the directory you should change to.

**Note!** If you use Linux, or have GNU **tar** installed, you can use **tar zxvf gtk+-1.2.8.tar.gz**. It is also possible to use **gunzip -c** or **gzcat** rather than **gzip -dc** on many UNIX systems.

**Note!** If you downloaded gtk+ or any other tar file using Windows, you may find your file called **gtk+-1\_2\_8\_tar.gz**.

You should consult the GTK+ web site if any errors occur in carrying out the instructions in Example 2-1.

If you have downloaded the source to libpcap, the general instructions shown in Example 2-2 will assist in building it. Also, if your operating system does not support **tcpdump**, you might also want to download it from the [tcpdump](http://tcpdump.org)<sup>4</sup> web site and install it.

#### Example 2-2. Building and installing libpcap

```
gzip -dc libpcap-0.5.tar.Z | tar xvf -
<much output removed>
cd libpcap_0_5rel2
./configure
<much output removed>
make
<much output removed>
make install
<much output removed>
make install-incl
<much output removed>
```



**Note:** The directory you should change to will depend on the version of libpcap you have downloaded. In all cases, **tar xvf -** will show you the name of the directory that has been unpacked.

When installing the include files, you might get the error shown in Example 2-3 when you submit the command **make install-incl**.

**Example 2-3. Errors while installing the libpcap include files**

```
/usr/local/include/pcap.h
/usr/bin/install -c -m 444 -o bin -g bin ./pcap-namedb.h \
/usr/local/include/pcap-namedb.h
/usr/bin/install -c -m 444 -o bin -g bin ./net/bpf.h \
/usr/local/include/net/bpf.h
/usr/bin/install: cannot create regular file \
`/usr/local/include/net/bpf.h': No such file or directory
make: *** [install-incl] Error 1
```

If you do, simply create the missing directory with the following command:

```
mkdir /usr/local/include/net
```

and rerun the command **make install-incl**.

Under RedHat 6.x and beyond (and distributions based on it, like Mandrake) you can simply install each of the packages you need from RPMs. Most Linux systems will install GTK+ and Glib in anycase, however, you will probably need to install the devel versions of each of these packages. The commands shown in Example 2-4 will install all the needed RPMs if they are not already installed.

**Example 2-4. Installing required RPMs under RedHat Linux 6.2 and beyond**

```
cd /mnt/cdrom/RedHat/RPMS
rpm -ivh glib-1.2.6-3.i386.rpm
rpm -ivh glib-devel-1.2.6-3.i386.rpm
rpm -ivh gtk+-1.2.6-7.i386.rpm
rpm -ivh gtk+-devel-1.2.6-7.i386.rpm
rpm -ivh libpcap-0.4-19.i386.rpm
```

**Note:** If you are using a version of RedHat later than 6.2, the required RPMs have most likely changed. Simply use the correct RPMs from your distribution.

Under Debian you can install ethereal using apt-get. apt-get will handle any dependency issues for you. Example 2-5 shows how to do this.

### Example 2-5. Installing debs under Debian

```
apt-get install ethereal
```

## Building from Source under UNIX

Use the following general steps if you are building Ethereal from source under a UNIX operating system:

1. Unpack the source from its **gzip'd tar** file. If you are using Linux, or your version of UNIX uses GNU **tar**, you can use the following command:

```
tar zxvf ethereal-0.8.19-tar.gz
```

For other versions of UNIX, You will want to use the following commands:

```
gzip -d ethereal-0.8.19-tar.gz  
tar xvf ethereal-0.8.19-tar
```

**Note!** The pipeline **gzip -dc ethereal-0.8.19-tar.gz | tar xvf -** will work here as well.

**Note!** If you have downloaded the Ethereal tarball under Windows, you may find that your browser has created a file with underscores rather than periods in its file name.

2. Change directory to the ethereal source directory.
3. Configure your source so it will build correctly for your version of UNIX. You can do this with the following command:

```
./configure
```

If this step fails, you will have to rectify the problems and rerun **configure**. Troubleshooting hints are provided in the Section called *Troubleshooting during the install*.

4. Build the sources into a binary, with the **make** command. For example:

```
make
```

5. Install the software in its final destination, using the command:

```
make install
```

Once you have installed Ethereal with **make install** above, you should be able to run it by entering **ethereal**.

## Installing the binaries under UNIX

In general, installing the binary under your version of UNIX will be specific to the installation methods used with your version of UNIX. For example, under AIX, you would use **smit** to install the Ethereal binary package, while under Tru64 UNIX (formerly Digital UNIX) you would use **setld**.

## Installing from RPMs under Linux

Use the following command to install the Ethereal RPM that you have downloaded from the Ethereal web site:

```
rpm -ivh ethereal-0.8.10-1.i386.rpm
```

If the above step fails because of missing dependencies, install the dependencies first, and then retry the step above. See Example 2-4 for information on what RPMs you will need to have installed.

## Installing from debs under Debian

Use the following command to install Ethereal under Debian:

```
apt-get install ethereal
```

apt-get should take care of all of the dependency issues for you.

## Building from source under Windows

Unfortunately the current revisor of this document has never built Ethereal under Windows and is thus not competent to write this section. Hopefully this will be remedied in the future.

## Installing Ethereal under Windows

In this section we explore installing Ethereal under Windows from the binary packages. You must follow two steps:

1. Install WinPcap. There are instructions at the WinPcap web site for installing it under Windows 9X, Windows NT and Windows 2000. These are located at: <http://netgroup-serv.polito.it/winpcap/install/Default.htm> <sup>5</sup>.
2. Install Ethereal. You may acquire a binary installable of Ethereal at <http://www.ethereal.com/download.html#binaries> <sup>6</sup>. Download the installer ( after installing WinPcap ) and execute it.

## Troubleshooting during the install

A number of errors can occur during the installation process. Some hints on solving these are provided here.

If the **configure** stage fails, you will need to find out why. You can check the file `config.log` in the source directory to find out what failed. The last few lines of this file should help in determining the problems.

The standard problems are that you do not have GTK+ on your system, or you do not have a recent enough version of GTK+. The **configure** will also fail if you do not have libpcap (at least the required include files) on your system.

Another common problem is for the final compile and link stage to terminate with a complaint of: Output too long. This is likely being caused by an antiquated **sed** (like that shipped with Solaris ). Since **sed** is used by the **libtool** script to construct the final link command, this leads to mysterious problems. This can be resolved by downloading sed from <http://www.gnu.org/directory/sed.html><sup>7</sup>.

If you cannot determine what the problems are, send mail to the **ethereal-dev** mailing list explaining your problem, and including the output from `config.log` and anything else you think is relevant, like a trace of the **make** stage.

## Notes

1. <http://www.ethereal.com>
2. <http://www.gtk.org>
3. <http://www.tcpdump.org>
4. <http://www.tcpdump.org>
5. <http://netgroup-serv.polito.it/winpcap/install/Default.htm>
6. <http://www.ethereal.com/download.html#binaries>
7. <http://www.gnu.org/directory/sed.html>

# Chapter 3. Using Ethereal

## Introduction

By now you have installed Ethereal and are most likely keen to get started capturing your first packets. In this chapter we explore:

- How to start Ethereal
- How to capture packets in Ethereal
- How to view packets in Ethereal
- How to filter packets in Ethereal

In fact, most of the functionality of Ethereal is explored in this chapter.

## Starting Ethereal

You can start Ethereal from the command line under UNIX, but it can also be started from most Window managers as well. In this section we will look at starting it from the command line.

Before looking at the command line parameters Ethereal understands, lets look at Ethereal itself. Figure 3-1 shows Ethereal as you would usually see it.

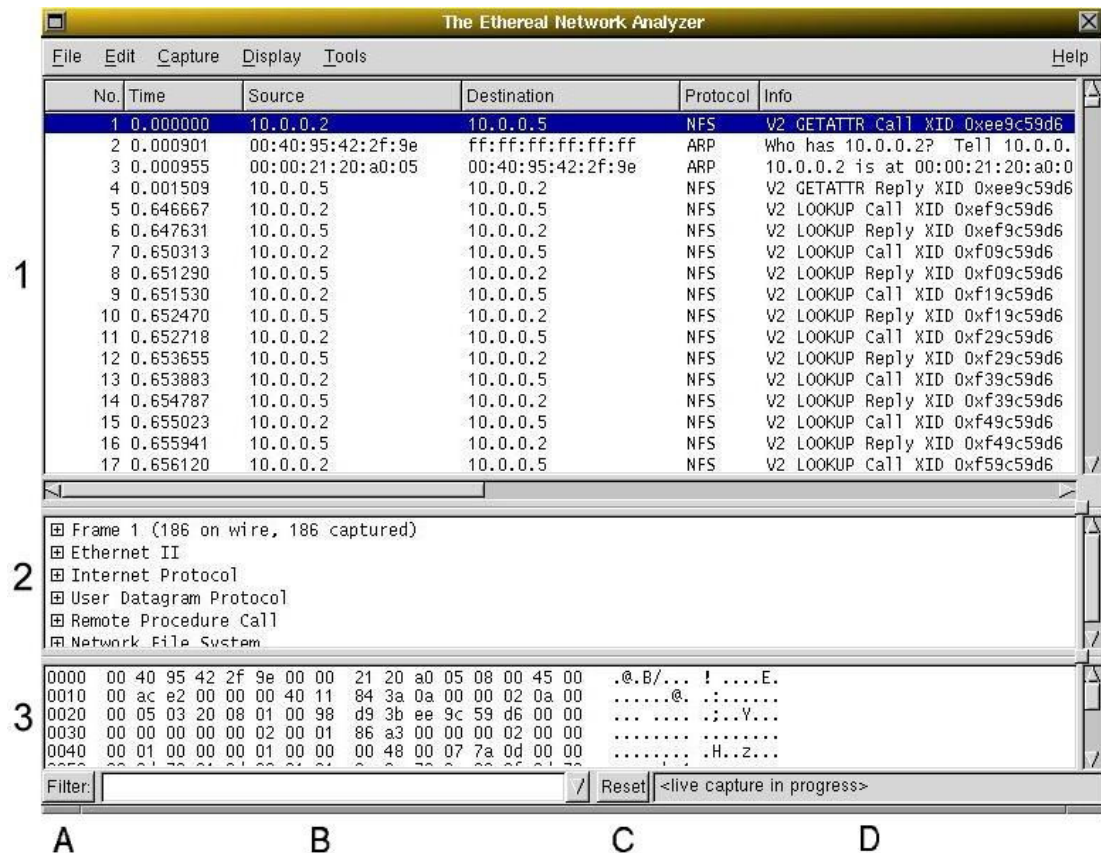


Figure 3-1. Ethereal is comprised of three main windows

Ethereal is comprised of three main windows, or panes.

1. The top pane is the packet list pane. It displays a summary of each packet captured. By clicking on packets in this pane you control what is displayed in the other two panes.
2. The middle pane is the tree view pane. It displays the packet selected in the top pane in more detail.
3. The bottom pane is the data view pane. It displays the data from the packet selected in the top pane, and highlights the field selected in the tree view pane.

In addition to the three main panes, there are four elements of interest on the bottom of the *Ethereal* main window.

- A. The lower leftmost button labeled "Filter:" can be clicked to bring up the filter construction dialog.
- B. The left middle text box provides an area to enter or edit filter strings. This is also where the current filter in effect is displayed. You can click on the pull down arrow to select a past filter string from a list. More information on displaying filter strings is available in the Section called *Filtering packets while viewing*.
- C. The right middle button labeled "Reset" clears the current filter.
- D. The right text box displays informational messages. These messages may indicate whether or not you are capturing, what file you have read into the packet list pane if you are not capturing. If you have selected a protocol field from the tree view pane and it is possible to filter on that field then the filter label for that protocol field will be displayed.

*Ethereal* supports a large number of command line parameters. To see what they are, simply enter the command **ethereal -h** and the help information shown in Example 3-1 should be printed.

### Example 3-1. Help information available from *Ethereal*

```
This is GNU ethereal 0.8.19, compiled with GTK+ 1.2.10, with
GLib 1.2.10, with libpcap 0.6, with libz 1.1.3, with UCD SNMP 4.2.1
ethereal [ -vh ] [ -klpQS ] [ -B <byte view height> ] [
-c <count> ]
  [ -f <capture filter> ] [ -i <interface> ] [ -m <medium
font> ]
  [ -n ] [ -N <resolving> ]
  [ -o <preference setting> ] ... [ -P <packet list height>
]
  [ -r <infile> ] [ -R <read filter> ] [ -s <snaplen> ]
  [ -t <time stamp format> ] [ -T <tree view height> ] [ -
w <savefile> ]
```

We will examine each of these possible command line options in turn.

The first thing to notice is that issuing the command **ethereal** by itself will bring up *Ethereal*. However, you can include as many of the command line parameters as you like. Their meanings are as follows ( in alphabetical order ):

**-B <byte view height>**

This option sets the initial height of the byte view pane. This pane is the bottom pane in the *Ethereal* display.

**-c <count>**

This option specifies the number of packets to capture when capturing live data. It would be used in conjunction with the **-k** option.

**-b <bold font>**

This option sets the name of the bold font that *Ethereal* uses for data in the byte view pane when it is highlighted (ie, selected in the protocol pane)

**-D**

This option changes the way *Ethereal* deals with the original IPv4 TOS field, so that rather than treating it as the Differentiated Services Field, it is treated as a Type of Service field.

**-f <capture filter>**

This option sets the initial capture filter expression to be used when capturing packets.

**-h**

The **-h** option requests *Ethereal* to print its version and usage instructions and exit.

**-i <interface>**

The **-i** option allows you to specify, from the command line, which interface packet capture should occur on if capturing packets.

An example would be: **ethereal -i eth0**.

To get a listing of all the interfaces you can capture on, use the command **ifconfig -a** or **netstat -i**. Unfortunately, some versions of UNIX do not support **ifconfig -a**, so you will have to use **netstat -i** in these cases.

**-k**

The **-k** option specifies that *Ethereal* should start capturing packets immediately. This option requires the use of the **-i** parameter to specify the interface that packet capture will occur from.

**-l**

This option turns on automatic scrolling if the packet list pane is being updated automatically as packets arrive during a capture ( as specified by the **-S** flag).

**-m <medium font>**

This option sets the name of the font used for most text displayed by *Ethereal*.

**-n**

This option specifies that *Ethereal* not perform address to name translation nor to translate TCP and UDP ports into names.

**-N <resolving>**

Turns on name resolving for particular types of addresses and port numbers; the argument is a string that may contain the letters **m** to enable MAC address resolution, **n** to enable network address resolution, and **t** to enable transport-layer port number resolution. This overrides **-n** if both **-N** and **-n** are present.

**-o <preference settings>**

Sets a preference value, overriding the default value and any value read from a preference file. The argument to the flag is a string of the form `prefname:value`, where `prefname` is the name of the preference (which is the same name that would appear in the preference file), and `value` is the value to which it should be set. Multiple instances of **-o <preference settings>** can be given on a single command line.

An example of setting a single preference would be:

```
ethereal -o mgcp.display_dissect_tree:TRUE
```

An example of setting multiple preferences would be:

```
ethereal -o mgcp.display_dissect_tree:TRUE -o  
mgcp.udp.callagent_port:2627
```

**-P**

Don't put the interface into promiscuous mode. Note that the interface might be in promiscuous mode for some other reason; hence, **-p** cannot be used to ensure that the only traffic that is captured is traffic sent to or from the machine on which *Ethereal* is running, broadcast traffic, and multicast traffic to addresses received by that machine.

**-P <packet list height>**

This option sets the initial height of the packet list pane, ie, the top pane.

**-Q**

This option forces *Ethereal* to exit when capturing is complete. It can be used with the **-c** option. It must be used in conjunction with the **-i** and **-w** options.

**-r <infile>**

This option provides the name of a capture file for *Ethereal* to read and display. This capture file can be in one of the formats *Ethereal* understands, including:

- libpcap
- Net Mon
- Snoop
- NetXray

For a complete list, see the *Ethereal* man pages (**man ethereal**).

**-R <read filter>**

This option specifies a capture filter to be applied when reading packets from a capture file. The syntax of this filter is that of the display filters discussed in the



Section called *Filtering packets while viewing*. Packets not matching the filter are discarded.

**-s <snaplen>**

This option specifies the snapshot length to use when capturing packets. Ethereal will only capture **<snaplen>** bytes of data for each packet.

**-S**

This option specifies that Ethereal will display packets as it captures them. This is done by capturing in one process and displaying them in a separate process.

**-t <time stamp format>**

This option sets the format of packet timestamps that are displayed in the packet list window. The format can be one of:

- **r**, which specifies timestamps are displayed relative to the first packet captured.
- **a**, which specifies that actual dates and times be displayed for all packets.
- **d**, which specifies that timestamps are relative to the previous packet.

**-T <tree view height>**

This option sets the initial height of the tree view pane.

**-v**

The **-v** option requests Ethereal to print out its version information and exit.

**-w <savefile>**

This option sets the name of the **savefile** to be used when saving a capture file.

## The Ethereal menus

The Ethereal menu sits across the top of the Ethereal window. An example is shown in Figure 3-2.



**Figure 3-2. The Ethereal Menu**

It contains the following items:

### File

This menu contains menu-items to open and reread capture files, save capture files, print capture files, print packets, and to quit from Ethereal.

**Edit**

This menu contains menu-items to find a frame and goto a frame,mark one or more frames, set your preferences, create filters, and enable or disable the dissection of protocols (cut, copy, and paste are not presently implemented).

**Capture**

This menu allows you to start and stop captures.

**Display**

This menu contains menu-items to modify display options, match selected frames, colorize frames, expand all frames, collapse all frames, show a packet in a separate window, and configure user specified decodes.

**Tools**

This menu contains menu-items to display loaded plugins, follow a TCP stream, obtain a summary of the packets that have been captured, and display protocol hierarchy statistics.

**Help**

This menu contains the About Ethereal... menu item and access to some basic Help.

Each of these are described in more detail in the sections that follow.

**The Ethereal File menu**

The Ethereal file menu contains the fields shown in Table 3-1.

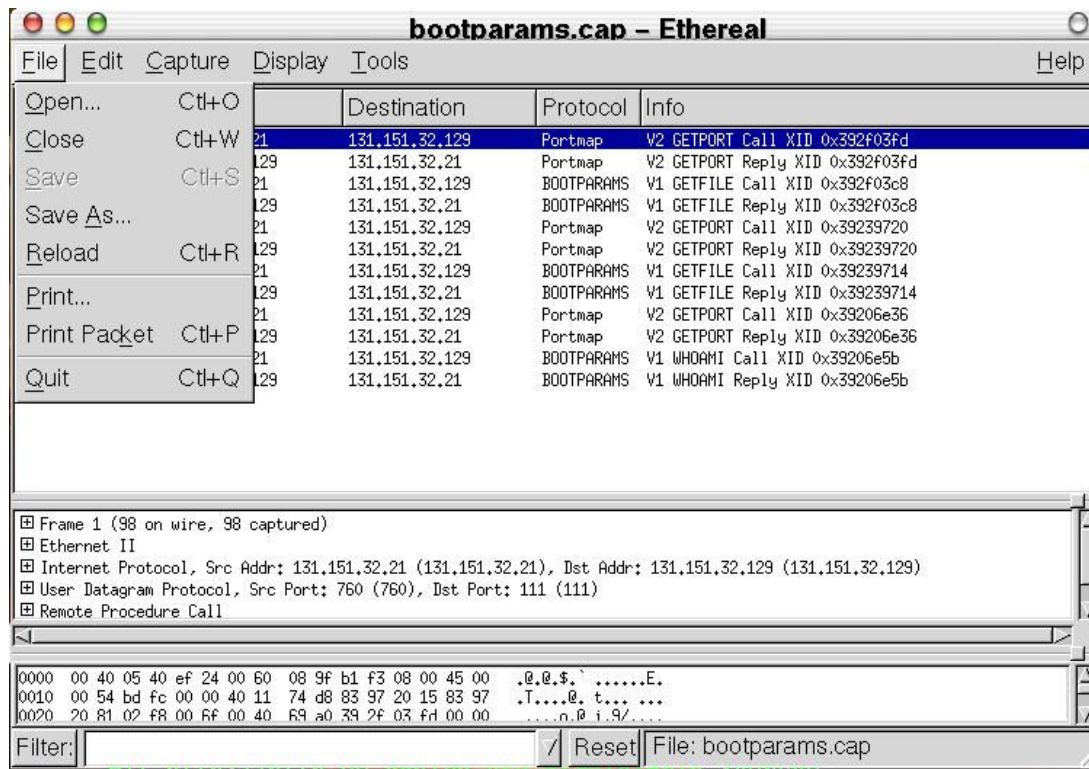


Figure 3-3. Ethereal File Menu

Table 3-1. File menu

| Menu Item    | Accelerator | Description  |
|--------------|-------------|--|
| Open...      | Ctrl-O      | This menu item brings up the file open dialog box that allows you to load a capture file for viewing. It is discussed in more detail in the Section called <i>The File Open dialog box</i> .   |
| Close        | Ctrl-W      | This menu item closes the current capture. If you have not saved the capture, it is lost.  |
| Save         | Ctrl-S      | This menu item saves the current capture. If you have not set a default capture file name (perhaps with the <code>-w &lt;capfile&gt;</code> option), Ethereal pops up the Save Capture File As dialog box (which is discussed further in the Section called <i>The Save Capture File As dialog box</i> ).<br><br><b>Note!</b> If you have already saved the current capture, this menu will be greyed out.<br><br><b>Note!</b> You cannot save a live capture while it is in progress. You must stop the capture in order to save. |
| Save As...   |             | This menu item allows you to save the current capture file to whatever file you would like. It pops up the Save Capture File As dialog box (which is discussed further in the Section called <i>The Save Capture File As dialog box</i> ).   |
| Reload       | Ctrl-R      | This menu item allows you to reload the current capture file. This menu item is no longer needed, and may be removed in future releases of Ethereal  |
| Print...     |             | This menu item allows you to print all the packets in the capture file. It pops up the Ethereal Print dialog box (which is discussed further in the Section called <i>Printing packets</i> ).  |
| Print Packet | Ctrl-P      | This menu item allows you to print the current packet.   |
| Quit         | Ctrl-Q      | This menu item allows you to quit from Ethereal. In the current release of Ethereal (0.8.19), Ethereal silently exits even if you have not saved the current capture file. This may be changed in a future release of Ethereal.  |

## The Ethereal Edit menu

The Ethereal Edit menu contains the fields shown in Table 3-2.

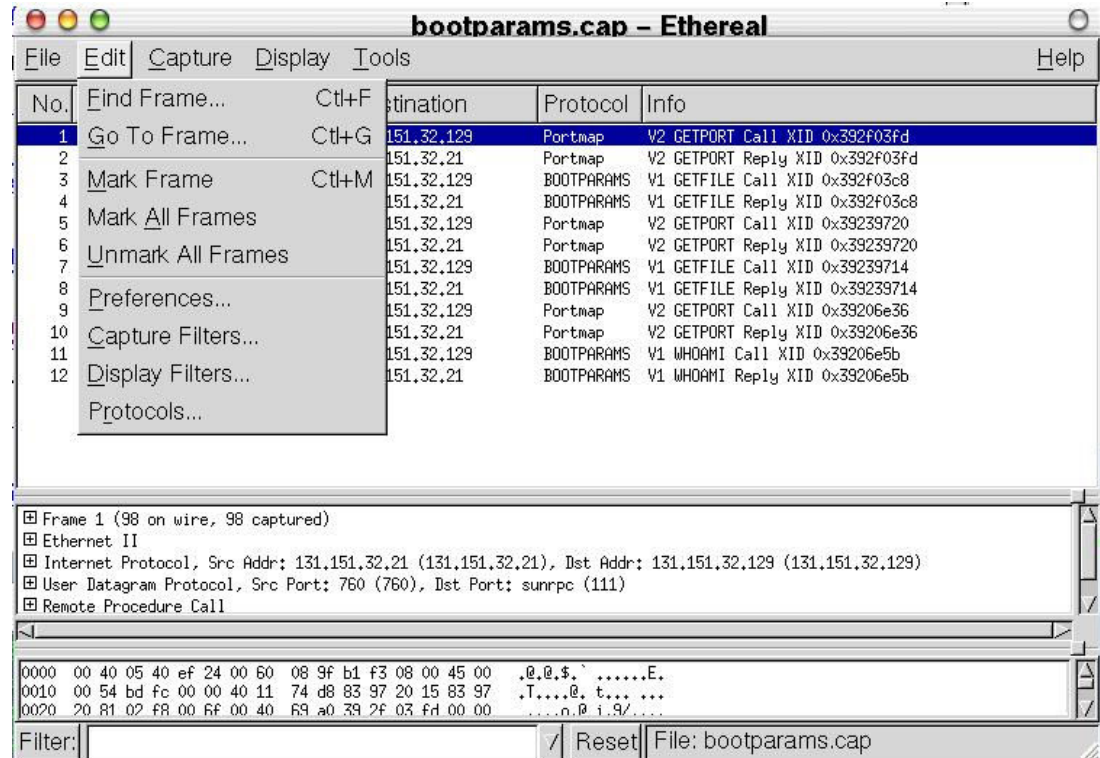


Figure 3-4. Ethereal Edit Menu

Table 3-2. Edit menu

| Menu Item         | Accelerator | Description  |
|-------------------|-------------|--|
| Find Frame...     | Ctrl-F      | This menu item brings up a dialog box that allows you to find a frame by entering an Ethereal display filter. There is further information on finding frames in the Section called <i>Finding frames</i> . |
| Go to Frame...    | Ctrl-G      | This menu item brings up a dialog box that allows you to specify a frame to goto by frame number.  |
| Mark Frame        | Ctrl-M      | This menu item "marks" the currently selected frame. See the Section called <i>The Save Capture File As dialog box</i> for more information about saving marked frames.                                    |
| Mark All Frames   |             | This menu item "marks" all frames. See the Section called <i>The Save Capture File As dialog box</i> for more information about saving marked frames.  |
| Unmark All Frames |             | This menu item "unmarks" all marked frames.  |
| Preferences...    |             | This menu item brings up a dialog box that allows you to set preferences for many parame-  |

| Menu Item                 | Accelerator | Description   |
|---------------------------|-------------|---|
|                           |             | ters that control <i>Ethereal</i> . You can also save your preferences so <i>Ethereal</i> will use them the next time you start it. More detail is provided in the Section called <i>Ethereal preferences</i>   |
| <b>Capture Filters...</b> |             | This menu item brings up a dialog box that allows you to create and edit capture filters. You can name filters, and you can save them for future use. More detail on this subject is provided in the Section called <i>Defining and saving filters</i>  |
| <b>Display Filters...</b> |             | This menu item brings up a dialog box that allows you to create and edit display filters. You can name filters, and you can save them for future use. More detail on this subject is provided in the Section called <i>Defining and saving filters</i>  |
| <b>Protocols...</b>       |             | <p>The Enabled Protocols dialog box lets you enable or disable specific protocols. When a protocol is disabled, <i>Ethereal</i> stops processing a packet whenever that protocol is encountered. Note that this will prevent information about higher-layer protocols from being displayed. For example, suppose you disabled the IP protocol and selected a packet containing Ethernet, IP, TCP, and HTTP information. The Ethernet information would be displayed, but the IP, TCP and HTTP information would not - disabling IP would prevent it and the other protocols from being displayed.</p> <p>To disable or enable a protocol, simply click on it using the mouse or press the space bar when the protocol is highlighted. The entire list can be enabled, disabled, or inverted using the buttons below the list.</p> |

## The *Ethereal* Capture menu

The *Ethereal* Capture menu contains the fields shown in Table 3-3.

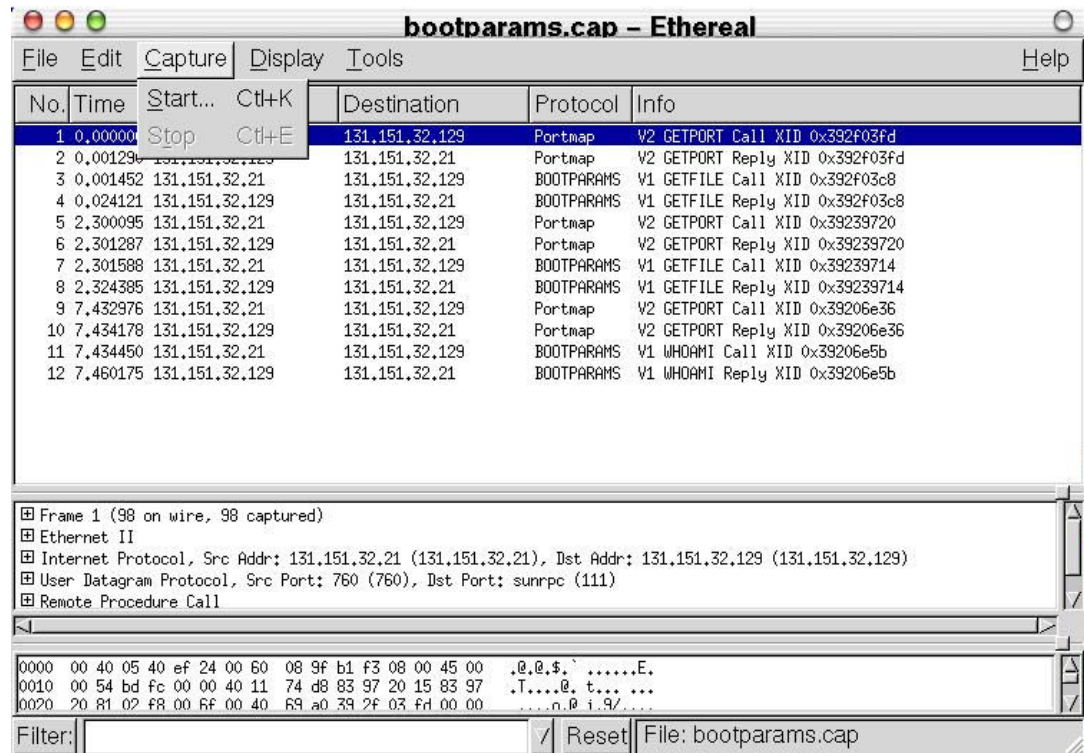


Figure 3-5. Ethereal Capture Menu

Table 3-3. Capture menu

| Menu Item | Accelerator | Description  |
|-----------|-------------|--|
| Start...  | Ctrl-K      | This menu item brings up the Capture Preferences dialog box (discussed further in the Section called <i>Capturing packets with Ethereal</i> ) and allows you to start capturing packets. |
| Stop      | Ctrl-E      | This menu item stops the currently running capture.  |

## The Ethereal Display menu

The Ethereal Display menu contains the fields shown in Table 3-4.

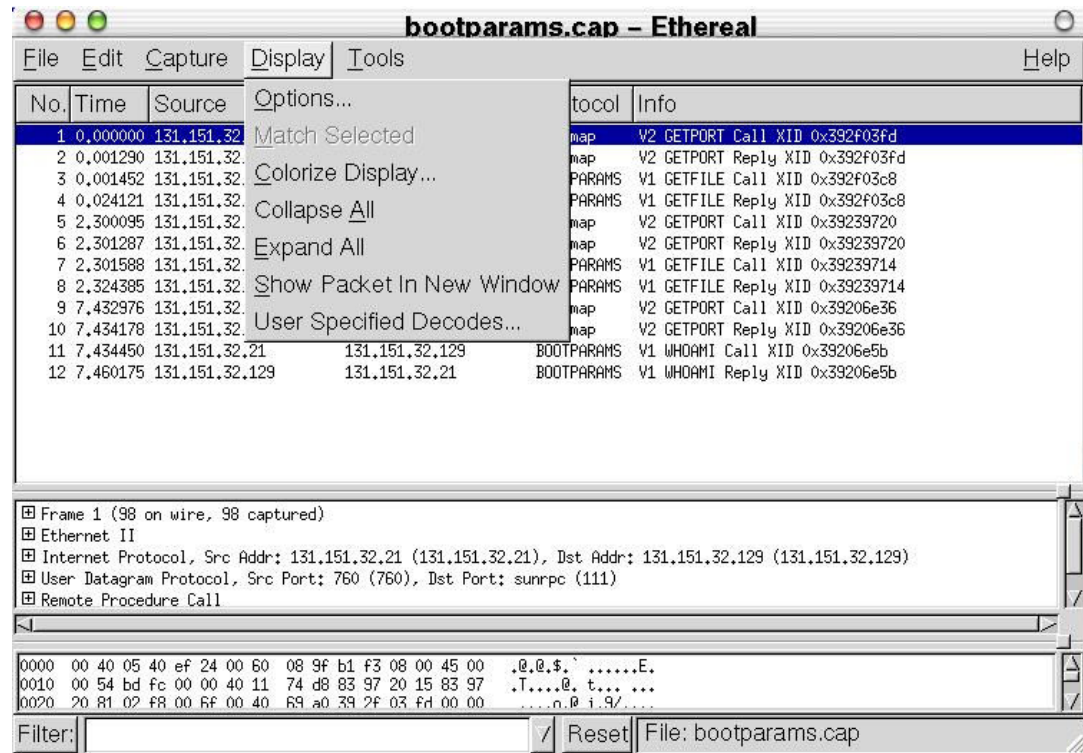


Figure 3-6. Ethereal Display Menu

Table 3-4. Display menu

| Menu Item        | Accelerator | Description  |
|------------------|-------------|--|
| Options...       |             | This menu item brings up a dialog box that controls the way that Ethereal displays some information about packets. Examples include the way timestamps are handled, whether addresses and other numbers are translated, and so forth. This is further discussed in the Section called <i>Display Options</i> . |
| Match Selected   |             | This menu item allows you to select all packets that have a matching value in the field selected in the tree view pane (middle pane).  |
| Colorize Display |             | This menu item brings up a dialog box that allows you color packets in the packet list pane according to filter expressions you choose. It can be very useful for spotting certain types of packets.   |
| Collapse All     |             | Ethereal keeps a list of all the protocol subtrees that are expanded, and uses it to ensure that the   |

| Menu Item                 | Accelerator | Description  |
|---------------------------|-------------|--|
|                           |             | correct subtrees are expanded when you display a packet. This menu item collapses the tree view of all packets in the capture list.  |
| Expand All                |             | This menu item expands all subtrees in all packets in the capture.   |
| Show Packet in New Window |             | This menu item brings up the selected packet in a separate window. The separate window shows only the tree view and byte view panes. |
| User Specified Decodes... |             | This menu item allows the user to force <i>ethereal</i> to decode certain packets as a particular protocol.                          |

### The *Ethereal* Tools menu

The *Ethereal* Tools menu contains the fields shown in Table 3-5.

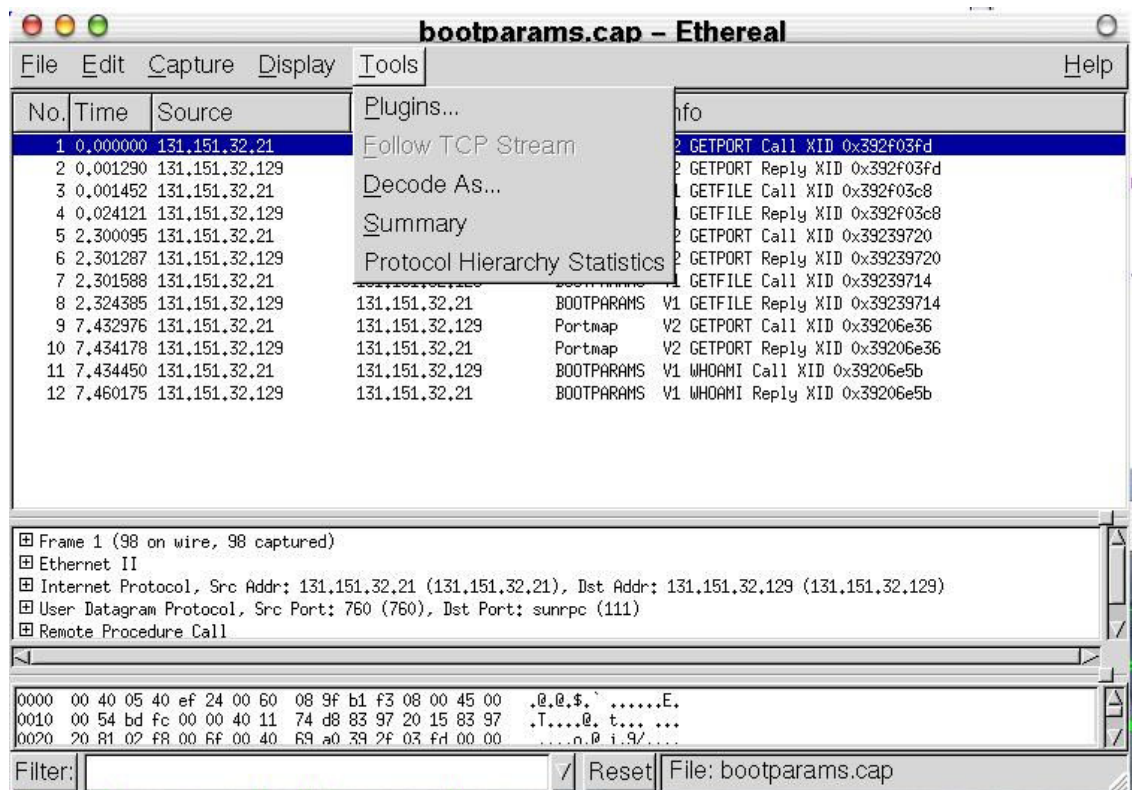


Figure 3-7. *Ethereal* Tools Menu

Table 3-5. Tools menu

| Menu Item  | Accelerator | Description  |
|------------|-------------|--|
| Plugins... |             | This menu item brings up a dialog box that allows you to manage <i>Ethereal</i> plugins. There are very few plugins today. |



| Menu Item                     | Accelerator | Description   |
|-------------------------------|-------------|---|
| Follow TCP Stream             |             | This menu item brings up a separate window and displays all the TCP segments captured that are on the same TCP connection as a selected packet. The data in the TCP stream is sorted into order, with duplicate segments removed, and it is then displayed in ascii. You can change the format is you desire. |
| Decode As...                  |             | This menu item allows the user to force ethereal to decode certain packets as a particular protocol.  |
| Summary                       |             | This menu item brings up a statistics window that shows information about the packets captured.   |
| Protocol Hierarchy Statistics |             | This menu item displays a hierarchical tree of packet statistics.   |

## The Ethereal Help menu

The Ethereal Help menu contains the fields shown in Table 3-6.

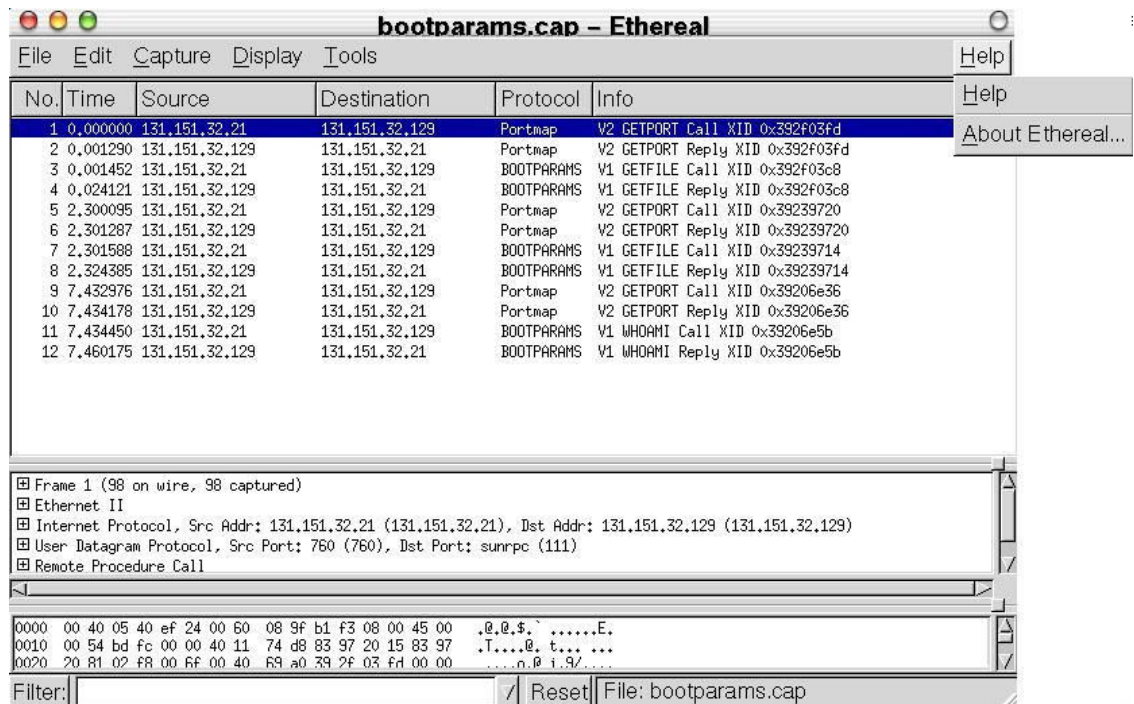


Figure 3-8. Ethereal Help Menu

Table 3-6. Help menu

| Menu Item            | Accelerator | Description   |
|----------------------|-------------|---|
| Help                 |             | This menu item brings up a basic help system.   |
| About<br>Ethereal... |             | This menu item brings up an information window that provides some simple information on Ethereal. |

## Capturing packets with **E**thereal

There are two methods you can use to capture packets with Ethereal:

1. From the command line using the following:

```
ethereal -i eth0 -k
```

2. By starting Ethereal and then selecting Start... from the Capture menu. This brings up the Capture Preferences dialog box and will be dealt with in more detail in the Section called *The Capture Preferences dialog box*.

### The Capture Preferences dialog box

When you select Start... from the Capture menu, Ethereal pops up the Capture Preferences dialog box as shown in Figure 3-9.

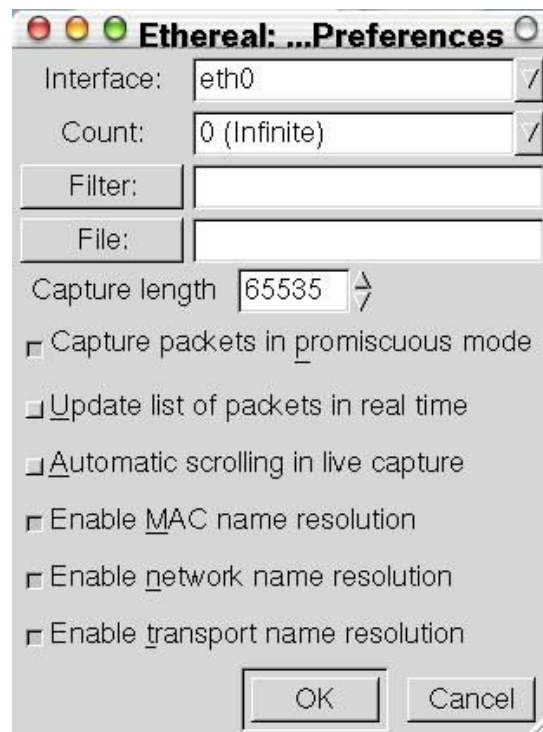


Figure 3-9. The Capture Preferences dialog box

You can set the following fields in this dialog box:

**Interface**

This field specifies the interface you want to capture on. You can only capture on one interface, and you can only capture on interfaces that the *Ethereal* has found on the system. It is a drop-down list, so simply click on the button on the right hand side and select the interface you want. It defaults to the first non-loopback interface that supports capturing, and if there are none, the first loopback interface. On some systems, loopback interfaces cannot be used for capturing.

This field performs the same function as the `-i <interface>` command line option.

**Count**

This field specifies the number of packets that you want to capture. It defaults to 0, which means do not stop capturing. Enter the value that you want in here, or leave it blank.

**Filter**

This field allows you to specify a capture filter. Capture filters are discussed in more details in the Section called *Filtering while capturing*. It defaults to empty, or no filter.

You can also click on the Filter button/label, and *Ethereal* will bring up the Filters dialog box and allow you to create and/or select a filter. Please see the Section called *Defining and saving filters*

**File**

This field allows you to specify the file name that will be used for the capture when you later choose Save... or Save As... from the *Ethereal* File menu. There is no default for this value.

**Capture length**

This field allows you to specify the maximum amount of data that will be captured for each packet, and is sometimes referred to as the **snaplen**. The default is 65535, which will be sufficient for most protocols. It should be at least the MTU for the interface you are capturing on.

**Capture packets in promiscuous mode**

This radio button allows you to specify that *Ethereal* should set the interface in promiscuous mode when capturing. If you do not specify this, *Ethereal* will only capture the packets going to or from your computer (not all packets going by your interface).

**Note:** If some other process has put the interface in promiscuous mode you may be capturing in promiscuous mode even if you turn off this option

**Update list of packets in real time**

This radio button allows you to specify that *Ethereal* should update the packet list pane in real time. If you do not specify this, *Ethereal* does not display any packets until you cancel the capture. When you click on this radio button, *Ethereal* captures in a separate process and feeds the captures to the display process. [Is this true for Windows?]

### Automatic scrolling in live capture

This radio button allows you to specify that *Ethereal* should scroll the packet list pane as new packets come in, so you are always looking at the last packet. If you do not specify this, *Ethereal* simply adds new packets onto the end of the list, but does not scroll the packet list pane.

### Enable MAC name resolution

This radio button allows you to control whether or not *Ethereal* translates the first three octets of a MAC addresses into the name of the manufacturer to whom that prefix has been assigned by the IETF.

### Enable network name resolution

This radio button allows you to control whether or not *Ethereal* translates IP addresses into DNS domain names. By clicking on this radio button, the packet list pane will have more useful information, but you will also cause name lookup requests to occur, which might disturb the capture.

**Note:** If you cannot reach the name server, you may find that *Ethereal* takes a long time in updating the packet list pane as it waits for name translation to time out.

### Enable transport name resolution

This radio button allows you to control whether or not *Ethereal* translates port numbers into protocols.

Once you have set the values you desire and have selected the radio buttons you need, simply click on OK to commence the capture, or Cancel to cancel the capture.

If you start a capture, *Ethereal* pops up a dialog box that shows you the progress of the capture and allows you to stop capturing when you have enough packets captured.

## Filtering while capturing

*Ethereal* uses the libpcap filter language for capture filters. This is explained in the tcpdump man page. If you can understand it, you are a better man than I am, Gunga Din!

You enter the capture filter into the Filter field of the *Ethereal* Capture Preferences dialog box, as shown in Figure 3-9. The following is an outline of the syntax of the **tcpdump** capture filter language.

A capture filter takes the form of a series of primitive expressions connected by conjunctions (**and/or**) and optionally preceded by **not**:

```
[not] primitive [and|or [not] primitive ...]
```

An example is shown in Example 3-2.

### Example 3-2. A capture filter for telnet that captures traffic to and from a particular host

```
tcp port 23 and host 10.0.0.5
```

This example captures telnet traffic to and from the host 10.0.0.5, and shows how to use two primitives and the **and** conjunction. Another example is shown in Example 3-3, and shows how to capture all telnet traffic except that from 10.0.0.5.

**Example 3-3. Capturing all telnet traffic not from 10.0.0.5**

```
tcp port 23 and not host 10.0.0.5
```

A primitive is simply one of the following:

**[src | dst] host <host>**

This primitive allows you to filter on a host IP address or name. You can optionally precede the primitive with the keyword **src | dst** to specify that you are only interested in source or destination addresses. If these are not present, packets where the specified address appears as either the source or the destination address will be selected.

**ether [src | dst] host <ehost>**

This primitive allows you to filter on Ethernet host addresses. You can optionally include the keyword **src | dst** between the keywords **ether** and **host** to specify that you are only interested in source or destination addresses. If these are not present, packets where the specified address appears in either the source or destination address will be selected.

**gateway host <host>**

This primitive allows you to filter on packets that used **host** as a gateway. That is, where the Ethernet source or destination was **host** but neither the source nor destination IP address was **host**.

**[src | dst] net <net> [[mask <mask>] | [len <len>]]**

This primitive allows you to filter on network numbers. You can optionally precede this primitive with the keyword **src | dst** to specify that you are only interested in a source or destination network. If neither of these are present, packets will be selected that have the specified network in either the source or destination address. In addition, you can specify either the netmask or the CIDR prefix for the network if they are different from your own.

**[tcp | udp] [src | dst] port <port>**

This primitive allows you to filter on TCP and UDP port numbers. You can optionally precede this primitive with the keywords **src | dst** and **tcp | udp** which allow you to specify that you are only interested in source or destination ports and TCP or UDP packets respectively. The keywords **tcp | udp** must appear before **src | dst**.

If these are not specified, packets will be selected for both the TCP and UDP protocols and when the specified address appears in either the source or destination port field.

**less | greater <length>**

This primitive allows you to filter on packets whose length was less than or equal to the specified length, or greater than or equal to the specified length, respectively.

**ip | ether proto <protocol>**

This primitive allows you to filter on the specified protocol at either the Ethernet layer or the IP layer.

**ether | ip broadcast | multicast**

This primitive allows you to filter on either Ethernet or IP broadcasts or multicasts.

**<expr> relop <expr>**

This primitive allows you to create complex filter expressions that select bytes or ranges of bytes in packets. Please see the `tcpdump` man pages for more details.

## Viewing packets you have captured

Once you have captured some packets, or you have opened a previously saved capture file, you can view the packets that are displayed in the packet list pane by simply clicking on that packet in the packet list pane, which will bring up the selected packet in the tree view and byte view panes.

You can then expand any part of the tree view by clicking on the **plus** sign to the left of that part of the payload, and you can select individual fields by clicking on them in the tree view pane. An example with a TCP segment selected is shown in Figure 3-10. It also has the Acknowledgment number in the TCP header selected, which shows up in the byte view as the selected bytes.

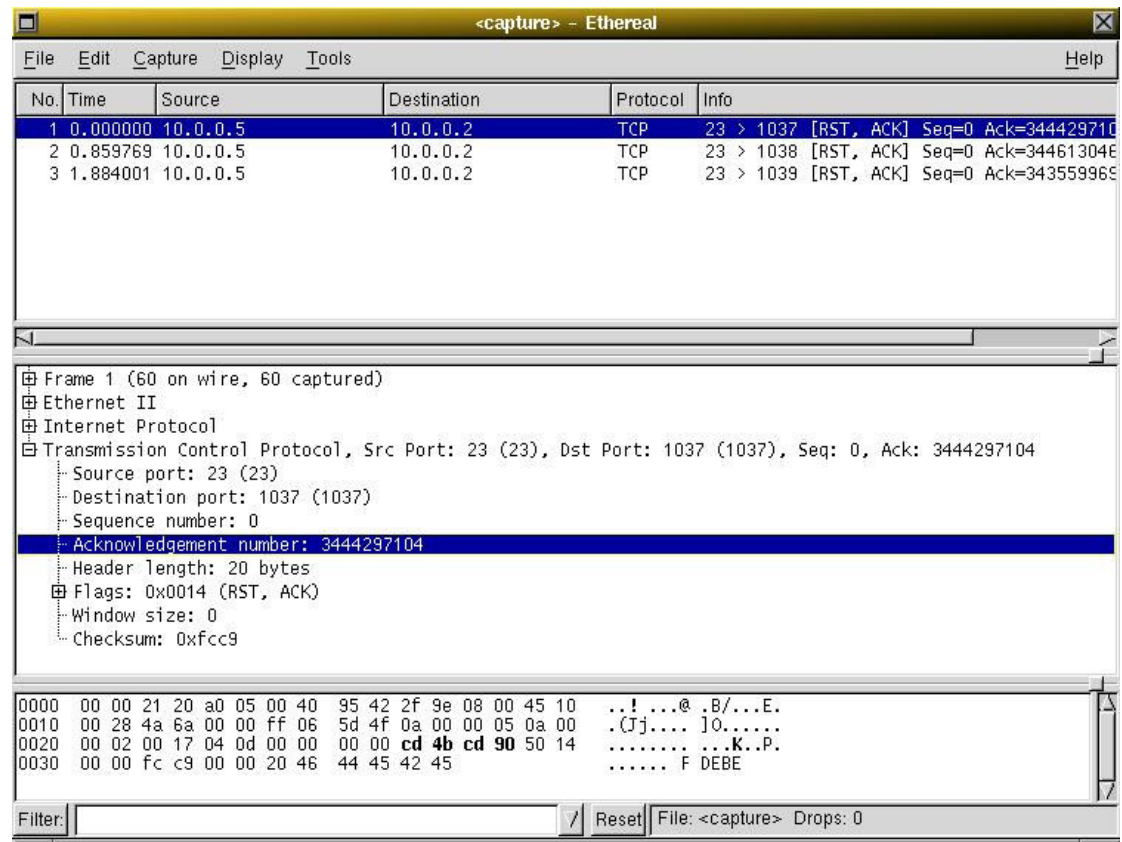


Figure 3-10. Ethereal with a TCP segment selected for viewing

You can also select and view packets when Ethereal is capturing if you selected "Update list of packets in real time" in the Ethereal Capture Preferences dialog box.

In addition, you can view individual packets in a separate window as shown in Figure 3-11. Do this by selecting the packet you are interested in in the packet list pane, and then select "Show Packet in New Windows" from the Display menu. This allows you to easily compare two or more packets.

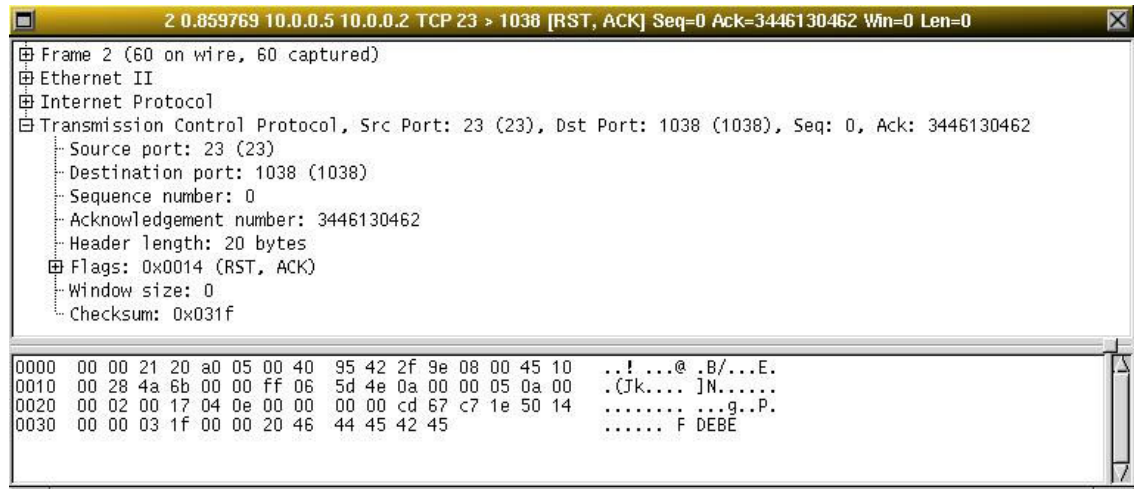


Figure 3-11. Viewing a packet in a separate window

Finally, you can bring up a pop-up menu over either the packet list pane or the tree view pane by clicking your right mouse button. The menus that is popped up contains the following items:

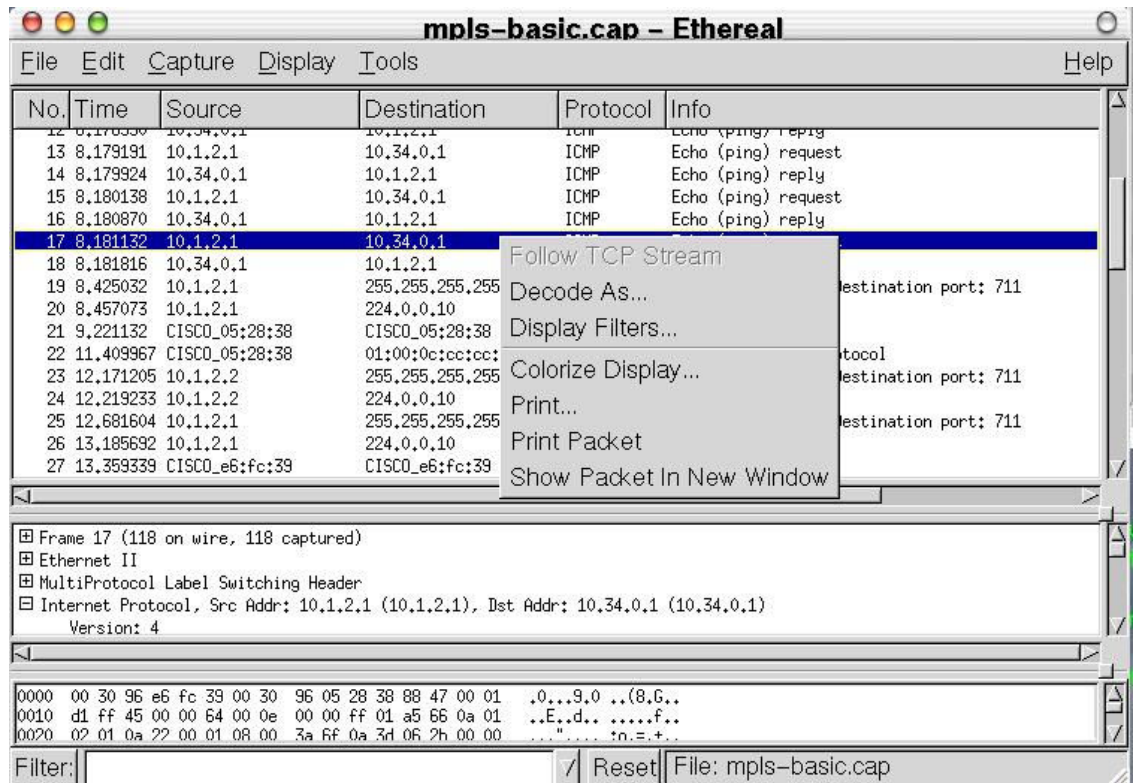


Figure 3-12. Packet Pane pop-up menu



**Follow TCP Stream**

This menu item is the same as the Display menu item of the same name. It allows you to view all the data on a TCP stream between a pair of nodes.

**Decode As...**

This menu item is the same as the Display menu item of the same name.

**Display Filters...**

This menu item is the same as the Edit menu item of the same name. It allows you to specify and manage filters.

**Colorize Display...**

This menu item is the same as the Display menu item of the same name. It allows you to colorize packets in the packet list pane.

**Print...**

This menu item is the same as the File menu item of the same name. It allows you to print packets.

**Print Packet**

This menu item is the same as the File menu item of the same name. It allows you to print the currently selected packet.

**Show Packet in New Window**

This menu item is the same as the Display menu item of the same name. It allows you to display the selected packet in another window.

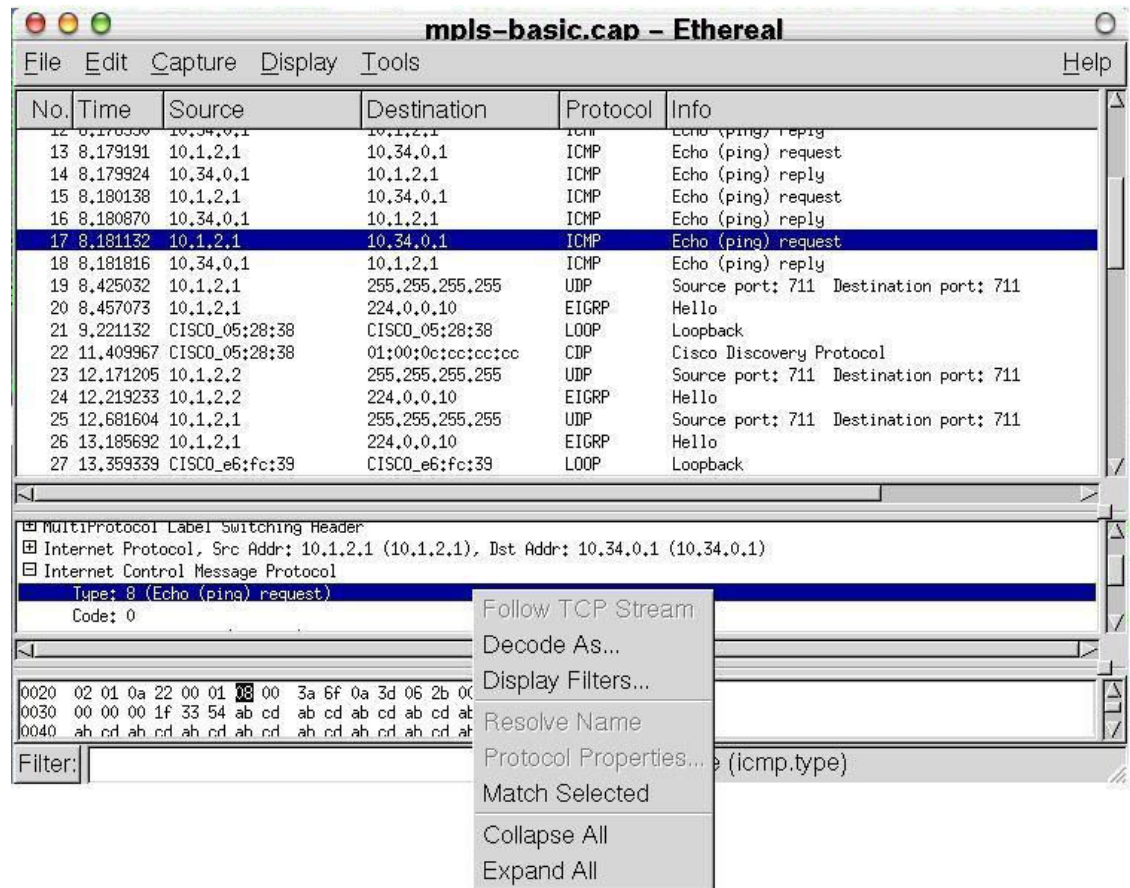


Figure 3-13. Treeview Pane pop-up menu

**Follow TCP Stream**

This menu item is the same as the Display menu item of the same name. It allows you to view all the data on a TCP stream between a pair of nodes.

**Decode As...**

This menu item is the same as the Display menu item of the same name.

**Display Filters...**

This menu item is the same as the Edit menu item of the same name. It allows you to specify and manage filters.

**Resolve Name**

This menu item causes name resolution to be performed for the selected packet, but NOT every packet in the capture.

**Protocol Properties...**

The menu item takes you to the protocol properties dialog if there are properties associated with the highlighted fields. More information on preferences can be found in Figure 3-29.

**Match Selected**

This menu item allows you to select all packets that have a matching value in the field selected in the tree view pane (middle pane).

**Collapse All**

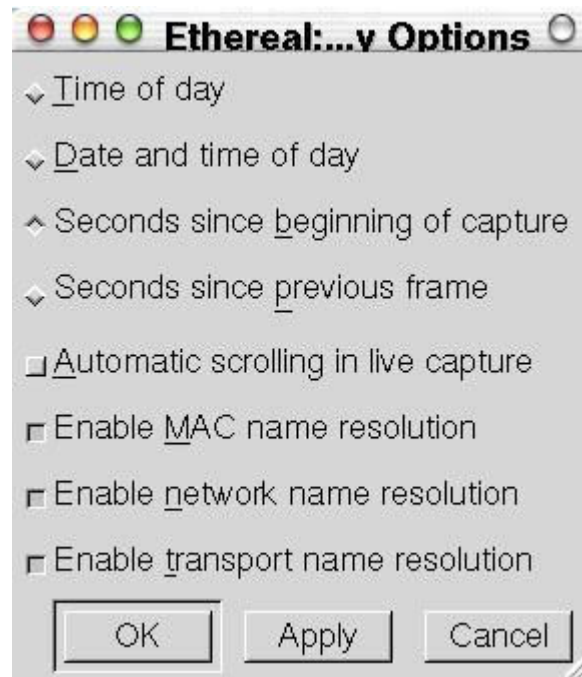
Ethereal keeps a list of all the protocol subtrees that are expanded, and uses it to ensure that the correct subtrees are expanded when you display a packet. This menu item collapses the tree view of all packets in the capture list.

**Expand All**

This menu item expands all subtrees in all packets in the capture.

**Display Options**

You can control the way that Ethereal displays a number of items. You manage these by selecting the **Options** menu item from the **Display** menu. When you do this, Ethereal pops up the **Display Options** dialog box, as shown in Figure 3-14.



**Figure 3-14. Ethereal Display Options dialog box**

The following are the items on this dialog box and their meanings:

**Time of day**

Selecting this radio button tells Ethereal to display time stamps in time of day format. This field, Date and time of day, Seconds since beginning of capture and Seconds since previous frame are mutually exclusive.

**Date and time of day**

Selecting this radiia button tells Ethereal to display the time stamps in date and time of day format. Time of day, this field, Seconds since beginning of capture and Seconds since previous frame are mutually exclusive.

### **Seconds since beginning of capture**

Selecting this radio button tells *Ethereal* to display time stamps in seconds since beginning of capture format. Time of day, Date and time of day, this field, and Seconds since previous frame are mutually exclusive.

### **Seconds since previous frame**

This radio button tells *Ethereal* to display time stamps in seconds since previous frame format. Time of day, Date and time of day, Seconds since beginning of capture and this field are mutually exclusive.

### **Automatic scrolling in live capture**

This field, when selected, tells *Ethereal* to scroll the packet list pane when new packets are captured.

### **Enable MAC name resolution**

This field, when selected, tells *Ethereal* to translate the first three octets of MAC addresses (the vendor identifier) into names (where it can) when displaying packets.

### **Enable network name resolution**

This field, when selected, tells *Ethereal* to translate ip addresses into domain names (where it can) when displaying packets.

**Note:** If you select this option and your DNS server is unavailable then *ethereal* will be very slow as it times out waiting for responses from your DNS server.

### **Enable transport name resolution**

This field, when selected, tells *Ethereal* to translate the transport layer addresses ( TCP/UDP port numbers) into well known service names (where it can) when displaying packets.

## **Saving captured packets**

You can save captured packets simply by using the Save As... menu item from the File menu under *Ethereal*. You can choose to save all packets that were captured or only the packets currently being displayed.

## The Save Capture File As dialog box

The Ethereal Save Capture File As dialog box allows you to save the current capture to a file. Figure 3-15 shows an example of this dialog box.

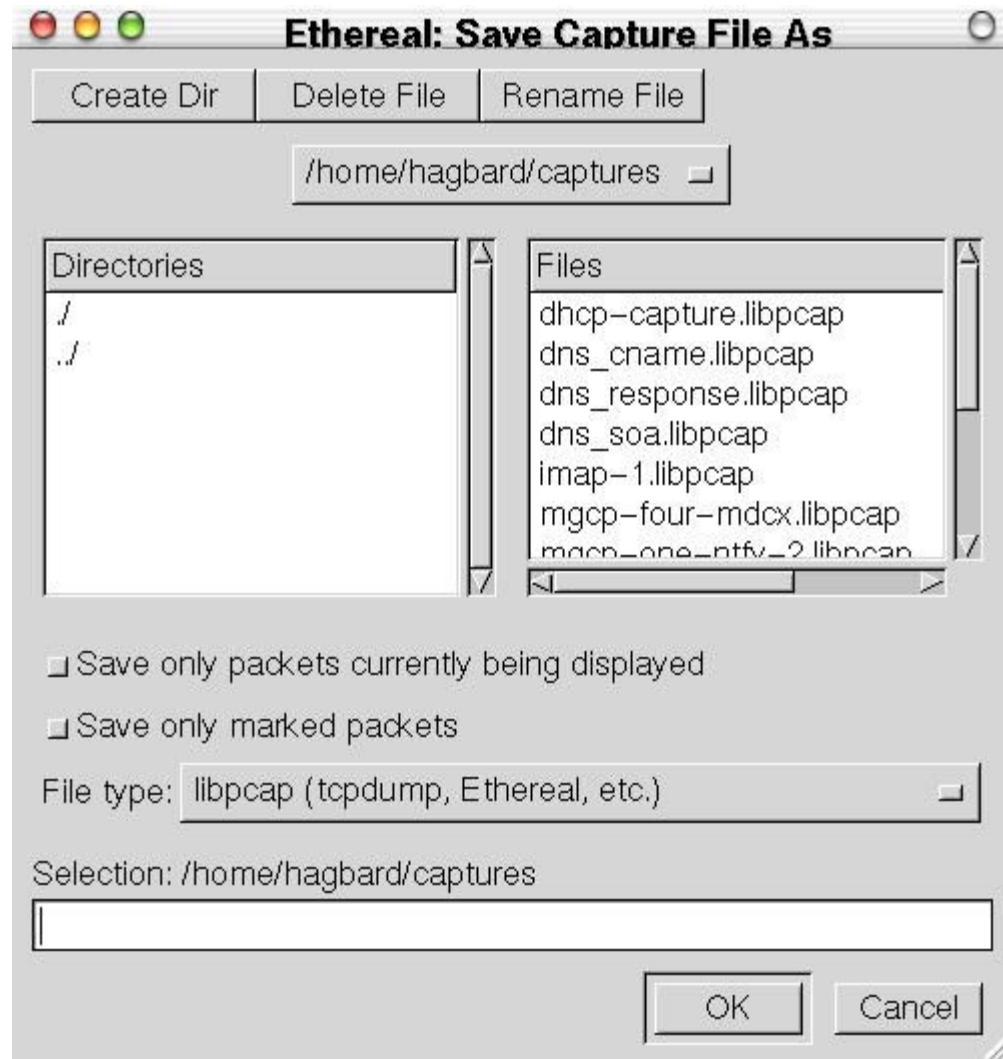


Figure 3-15. The Ethereal Save Capture File As dialog box

With this dialog box, you can perform the following actions:

1. Create directories with the **Create Dir** button.
2. Delete files with the **Delete File** button.
3. Rename files with the **Rename File** button.
4. Select files and directories with the directories and files list boxes and the file system heirarchy drop down box.
5. Save only the packets currently being displayed (as apposed to all the packets captured) by clicking on the "Save only packets currently being displayed" radio button.

6. Save only the marked packets (as apposed to all the packets captured) by clicking on the "Save only marked packets" radio button. More on Marking packets can be found in the Section called *The Ethereal Edit menu*.
7. Specify the format of the saved capture file by clicking on the File type drop down box. You can choose from among the following types:
  - a. libpcap (tcpdump, Ethereal, etc.)
  - b. modified libpcap (tcpdump)
  - c. RedHat Linux libpcap (tcpdump)
  - d. Network Associates Sniffer (DOS based)
  - e. Sun Snoop
  - f. Microsoft Network Monitor 1.x
  - g. Network Associates Sniffer (Windows based) 1.1

**Note!** Some capture formats may not be available, depending on the frame types captured.

**Note!** You can convert capture files from one format to another by reading in a capture file and writing it out using a different format.

8. Type in the name of the file you wish to save the captured packets in, as a standard file name in your file system.
9. Click on OK to accept your selected file and save to it. If Ethereal has a problem saving the captured packets to the file you specified, it will display an error dialog box. After clicking OK, you can try another file.
10. Click on Cancel to go back to Ethereal and not save the captured packets.

## Reading capture files

Ethereal can read in previously saved capture files, and in addition, because it is built with a subroutine library called **libwiretap**, it can read capture files from a number of other packet capture programs as well. The following is the list of capture formats it understands:

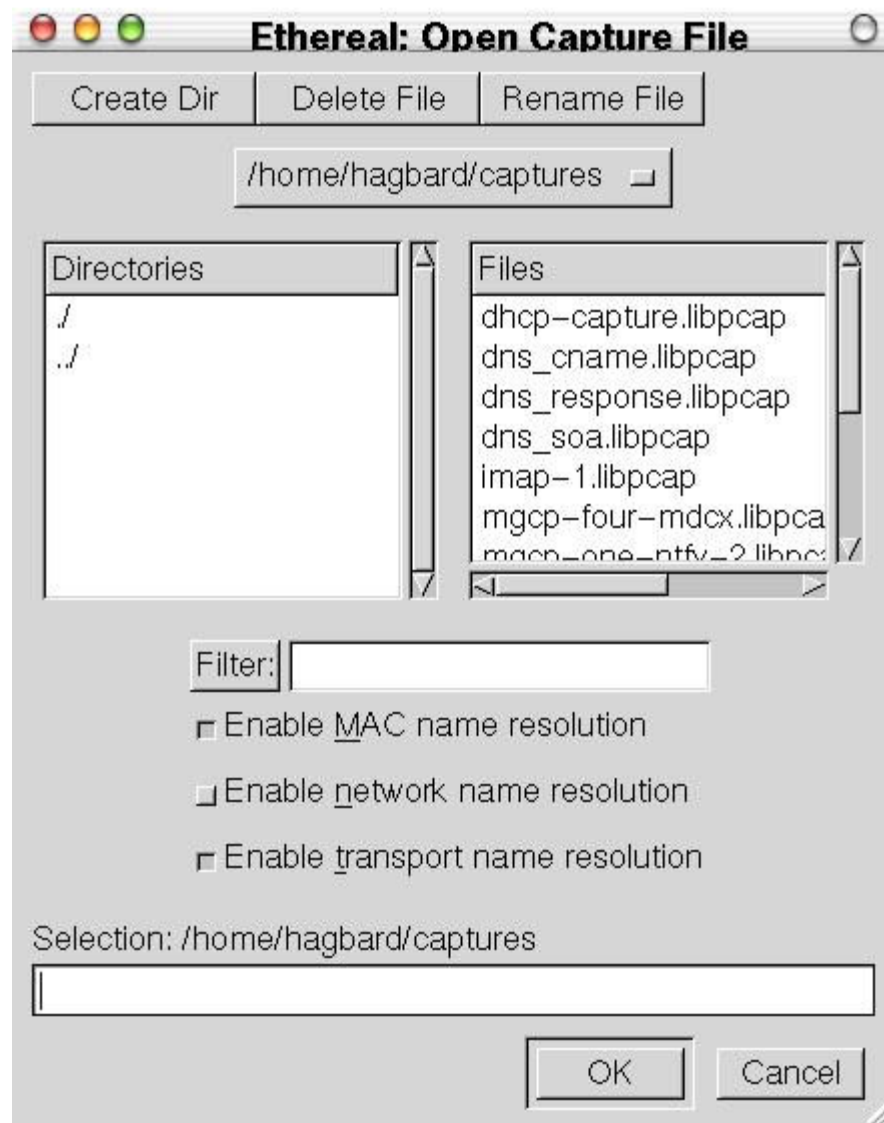
- tcpdump and Ethereal
- snoop (including Shomiti) and atmsnoop
- LanAlyzer
- Sniffer (compressed or uncompressed)
- Microsoft Network Monitor
- AIX's iptrace
- NetXray
- Sniffer Pro
- RADCOM's WAN/LAN analyzer
- Lucent/Ascend router debug output
- HP-UX's nettl

- the dump output from Toshiba's ISDN routers
- i4btrace from the ISDN4BSD project

You only need to get these files onto your system and Ethereal can read them. To read them, simply select the **Open** menu item from the **File** menu. Ethereal will then pop up the File Open dialog box, which is discussed in more detail in the Section called *The File Open dialog box*

### The File Open dialog box

The Ethereal File Open dialog box allows you to search for a capture file containing previously captured packets for display in Ethereal. Figure 3-16 shows an example of the Ethereal Open File Dialog box.



**Figure 3-16. The Ethereal Open File Dialog box**

With this dialog box, you can perform the following actions:

1. Create directories with the **Create Dir** button.

2. Delete files with the **Delete File** button.
3. Rename files with the **Rename File** button.
4. Select files and directories with the directories and files list boxes and the file system heirarchy drop down box.
5. Specify a display filter with the Filter button and filter field. Clicking on the Filter button causes *Ethereal* to pop up the Filters dialog box (while is discussed further in the Section called *Filtering packets while viewing*).
6. Specify that MAC name resolution is to be performed for all MAC addresses in packets by clicking on the "Enable MAC name resolution" check button.
7. Specify that DNS name resolution is to be performed for all ip addresses in packets by clicking on the "Enable network name resolution" check button.

**Note:** Enabling network name resolution when your DNS server is unavailable may significantly slow *ethereal* while it waits for all of the DNS requests to time out

8. Specify that transport name resolution is to be performed for all transport (TCP/UDP port) addresses in packets by clicking on the "Enable transport name resolution" check button.
9. Type in the name of the capture file you wish to open, as a standard file name in your file system.
10. Click on OK to accept your selected file and open it. If *Ethereal* recognizes the capture format, it will display the packets read from the capture file in the packet list pane. If it does not recognize the capture format, it will display an error dialog box. After clicking OK, you can try another file.
11. Click on Cancel to go back to *Ethereal* and not load a capture file.

## Filtering packets while viewing

*Ethereal* has two filtering languages: One used when capturing packets, and one used when displaying packets. In this section we explore that second type of filters: Display filters. The first one has already been dealt with in the Section called *Filtering while capturing*.

Display filters allow you to concentrate on the packets you are interested in. They allow you to select packets by:

- Protocol
- The presence of a field
- The values of fields
- A comparison between fields

To select packets based on protocol type, simply type the protocol you are interested in in the **Filter:** field on the bottom left hand corner of the *Ethereal* window and press enter to initiate the filter. Figure 3-17 shown an example of what happens when you type **smb** in the filter field.

**Note!** All filter expressions are entered in lowercase. Also, don't forget to press enter after entering the filter expression.



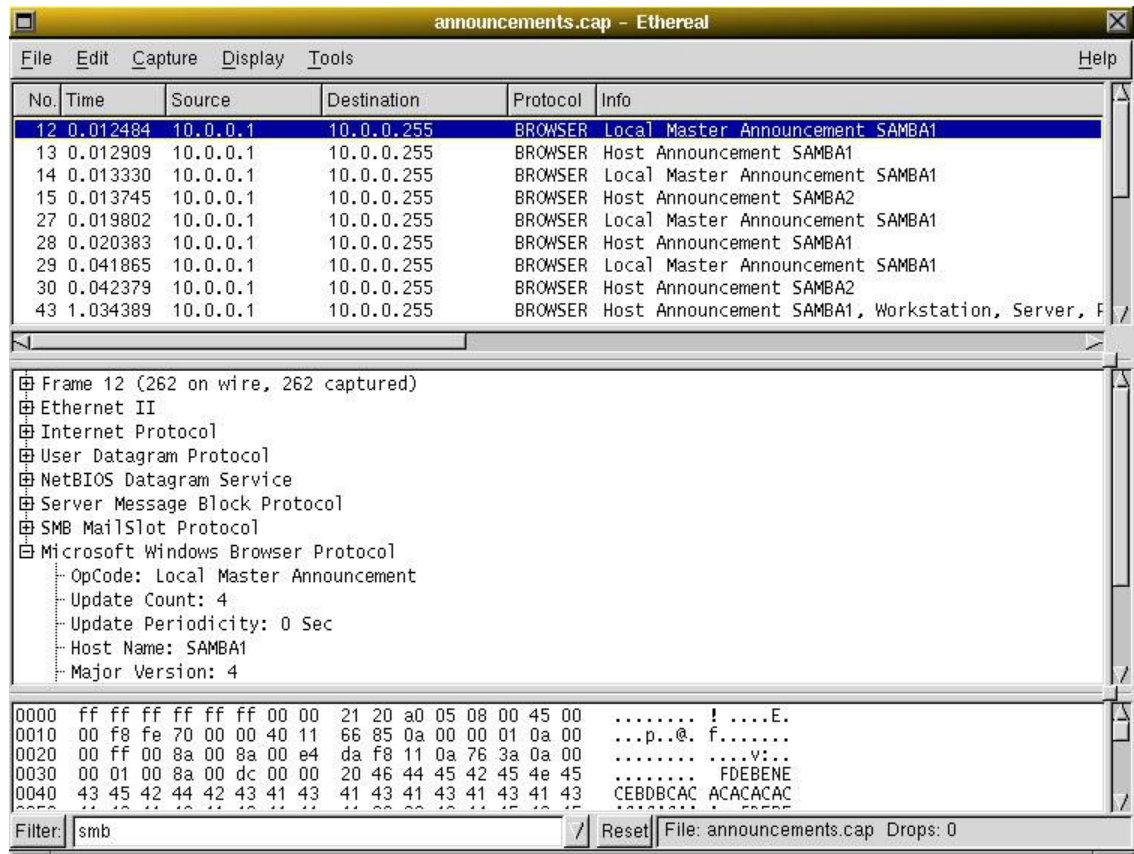


Figure 3-17. Filtering on the SMB protocol

**Note!** The packets selected in Figure 3-17 all show up as **BROWSER** packets but they are carried in SMB packets.

You can filter on any protocol that Ethereal understands. However, you can also filter on any field that a dissector adds to the tree view, but only if the dissector has added an abbreviation for the field. A list of such fields is available in the Ethereal in the **Add Expression...** dialog box. You can find more information on the **Add Expression...** dialog box in the Section called *The Add Expression Dialog*. You may also find a list of the fields in Appendix A

For example, to narrow the packet list pane down to only those packets to or from 10.0.0.5, use **ip.addr==10.0.0.5**.

**Note!** To remove the filter, click on the **Reset** button to the right of the filter field.

## Building filter expressions

Ethereal provides a simple display filter language that you can build quite complex filter expressions with. You can compare values in packets as well as combine expressions into more specific expressions. The following sections provide more information on doing this.

### Comparing values

You can build display filters that compare values using a number of different comparison operators. They are shown in Table 3-7.

**Table 3-7. Display filter comparison operators**

| English | C-like | Description and example  |
|---------|--------|--|
| eq      | ==     | <b>Equal</b><br><code>ip.addr==10.0.0.5</code>                         |
| ne      | !=     | <b>Not equal</b><br><code>ip.addr!=10.0.0.5</code>                     |
| gt      | >      | <b>Greater than</b><br><code>frame.pkt_len &gt; 10</code>              |
| lt      | <      | <b>Less than</b><br><code>frame.pkt_len &lt; 128</code>                |
| ge      | >=     | <b>Greater than or equal to</b><br><code>frame.pkt_len ge 0x100</code> |
| le      | <=     | <b>Less than or equal to</b><br><code>frame.pkt_len &lt;= 0x20</code>  |

In addition, all protocol fields are typed. Table 3-8 provides a list of the types and example of how to express them.

**Table 3-8. Field Types**

| Type   | Example  |
|--|--|
| Unsigned integer (8-bit, 16-bit, 24-bit, 32-bit) | You can express integers in decimal, octal, or hexadecimal. The following display filters are equivalent:<br><br><code>ip.len le 1500</code><br><code>ip.len le 02734</code><br><code>ip.len le 0x436</code>   |
| Signed integer (8-bit, 16-bit, 24-bit, 32-bit)   |  |
| Boolean  | A boolean field is present in the protocol decode only if its value is true. For example, <b>tcp.flags.syn</b> is present, and thus true, only if the SYN flag is present in a TCP segment header.<br><br>Thus the filter expression <b>tcp.flags.syn</b> will select only those packets for which |

| Type                                   | Example  |
|--|--|
|  | this flag exists, that is, TCP segments where the segment header contains the SYN flag. Similarly, to find source-routed token ring packets, use a filter expression of <b>tr.sr</b> . |
| Ethernet address (6 bytes)             |  |
| IPv4 address                           |  |
| IPv6 address                           |  |
| IPX network number                     |  |
| String (text)                          |  |
| Double-precision floating point number |  |

### Combining expressions

You can combine filter expressions in Ethereal using the logical operators shown in Table 3-9

**Table 3-9. Display Filter Logical Operations**

| English | C-like | Description and example   |
|---------|--------|---|
| and     | &&     | <b>Logical AND</b><br><br>ip.addr==10.0.0.5 and tcp.flags.fin   |
| or      |        | <b>Logical OR</b><br><br>ip.addr==10.0.0.5 or ip.addr==192.1.1.1  |
| xor     | ^^     | <b>Logical XOR</b><br><br>tr.dst[0:3] == 0.6.29<br>xor tr.src[0:3] == 0.6.29  |
| not     | !      | <b>Logical NOT</b><br><br>not llc   |
| [...]   |        | <b>Substring Operator</b><br><br>Ethereal will allow you to select subsequences of a sequence in rather elaborate ways. After a |

| English | C-like | Description and example   |
|---------|--------|---|
|         |        | <p>label you can place a pair of brackets [] containing a comma separated list of range specifiers.</p> <pre>eth.src[0:3] == 00:00:83</pre> <p>The example above uses the n:m format to specify a single range. In this case n is the beginning offset and m is the length of the range being specified.</p> <pre>eth.src[1-2] == 00:83</pre> <p>The example above uses the n-m format to specify a single range. In this case n is the beginning offset and m is the ending offset.</p> <pre>eth.src[:4] == 00:00:83:00</pre> <p>The example above uses the :m format, which takes everything from the beginning of a sequence to offset m. It is equivalent to 0:m</p> <pre>eth.src[4:] == 20:20</pre> <p>The example above uses the n: format, which takes everything from offset n to the end of the sequence.</p> <pre>eth.src[2] == 83</pre> <p>The example above uses the n format to specify a single range. In this case the element in the sequence at offset n is selected. This is equivalent to n:1.</p> |

| English | C-like | Description and example  |
|---------|--------|--|
|         |        | <pre>eth.src[0:3,1-2, :4,4:,2] == 00:00:83:00:83:00:00: 83:00:20:20:83</pre> <p>Ethereal will allow you to string together single ranges in a comma separated list to form compound ranges as shown above.</p> |

## Packet colorization

A very useful mechanism available in *Ethereal* is packet colorization. You can set *Ethereal* up so that it colorizes packets according to a filter. This allows you to emphasize the packets you are interested in.

To colorize packets, select the Colorize Display... menu item from the Display menu, and *Ethereal* will pop up the Add Color to Protocols dialog box as shown in Figure 3-18.

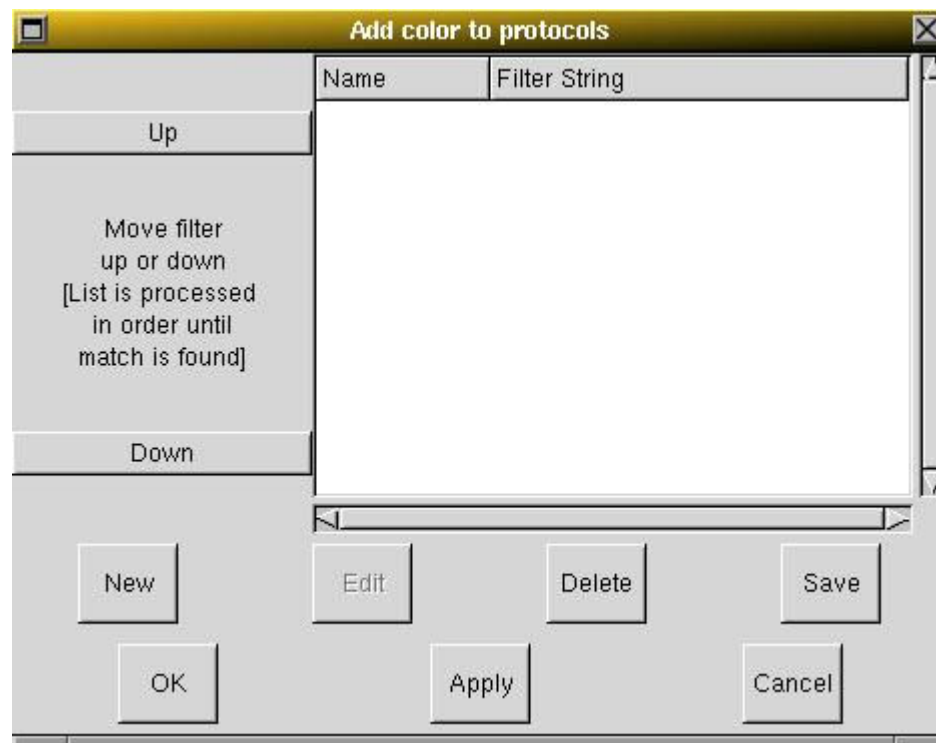
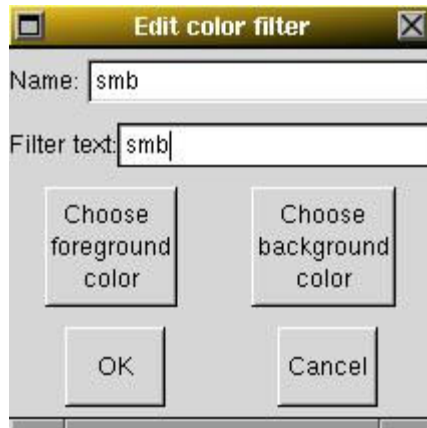


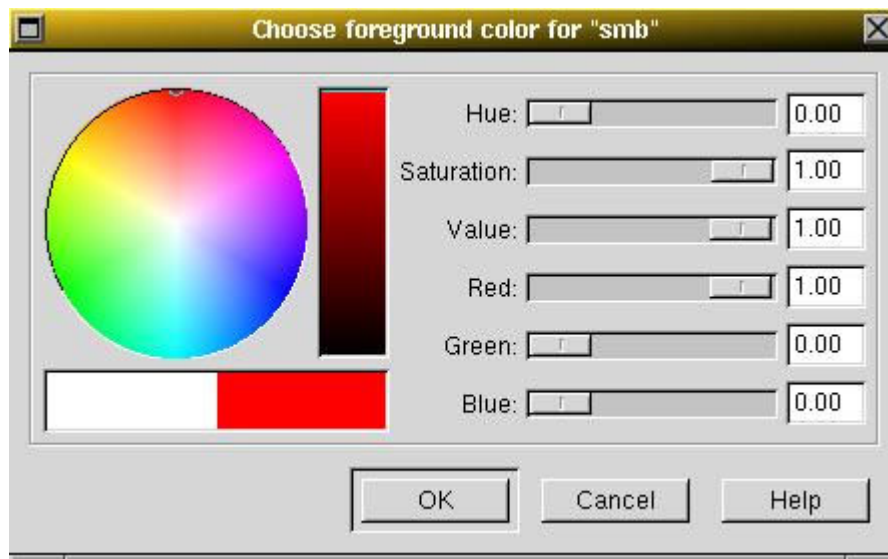
Figure 3-18. The *Ethereal* Add Color to Protocols dialog box

Once the Add Color to Protocol dialog box is up, there are a number of buttons you can use, depending on whether or not you have any color filters installed already. If this is the first time you have used Add Color to Protocol, click on New which will bring up the Edit color filter dialog box as shown in Figure 3-19.



**Figure 3-19.** The *Ethereal* Edit color filter dialog box

In the Edit Color dialog box, simply enter a name for the color filter, and enter a filter sting in the Filter text field. Figure 3-19 shows the values **smb** and **smb|** which means that the name of the color filter is **smb** and the filter will select protocols of type **smb**. Once you have entered these values, you can choose a background and foreground color for packets that match the filter expression. Click on **Choose background color** or **Choose foreground color** to do achieve this and *Ethereal* will pop up the Choose foreground/background color for protocol dialog box as shown in Figure 3-20.



**Figure 3-20.** *Ethereal* Choose color dialog box

Select the color you desire for the selected packets and click on OK.

**Note!** You must select a color in the colorbar next to the colorwheel to load values into the RGB sliders. Alternatively, you can use the sliders to select the color you want.

You will need to carefully select the order that filters are listed (and thus applied) as they are applied in order. So, more specific filters need to be listed before more general filters. For example, if you have a color filter for UDP before the one for DNS, the color filter for DNS will never be applied.

Figure 3-21 shows an example of several color filters being used in Ethereal. You may not like the color choices, however, so feel free to choose your own.

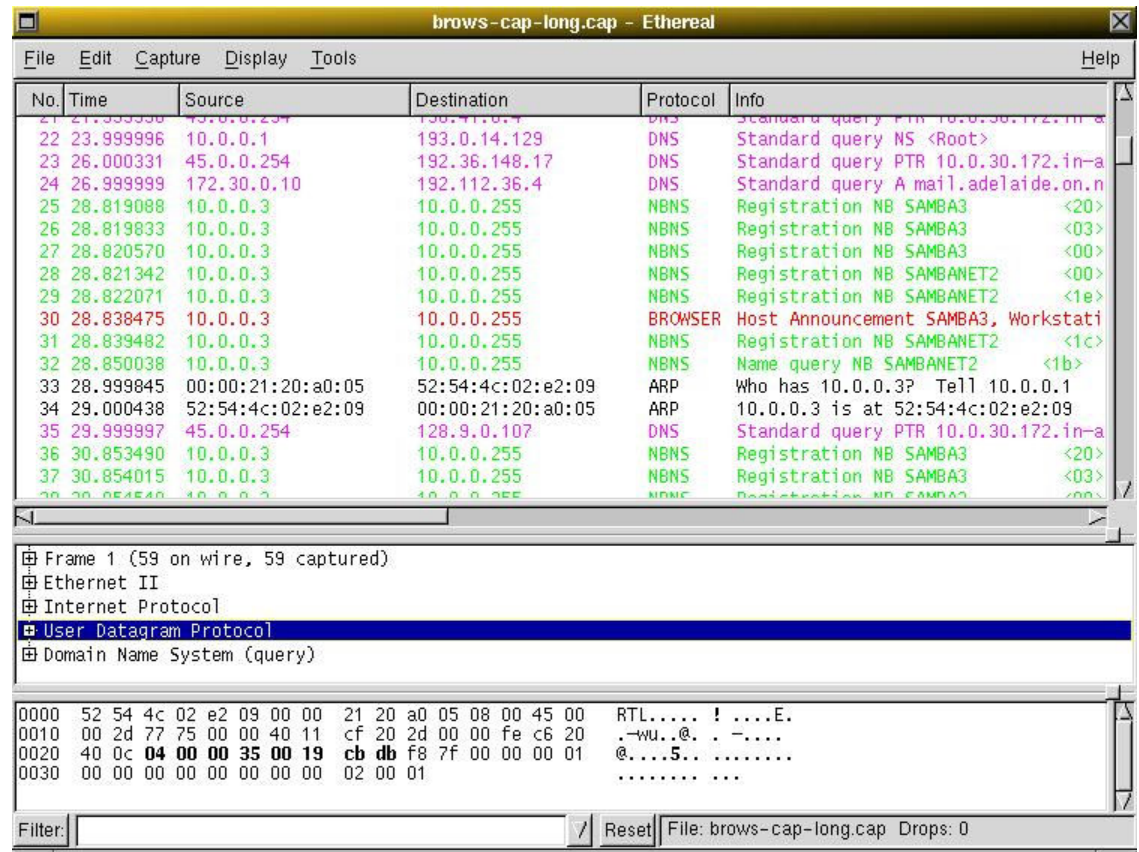


Figure 3-21. Using color filters with Ethereal

## Finding frames

You can easily find frames once you have captured some packets or have read in a previously saved capture file. Simply select the **Find Frame...** menu item from the **Edit** menu. Ethereal will pop up the dialog box shown in Figure 3-22.

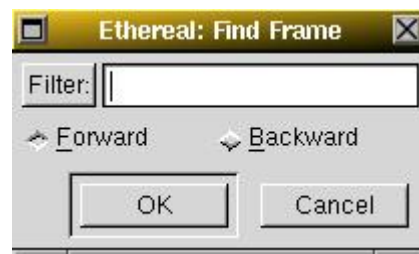


Figure 3-22. The Ethereal Find Frame dialog box

Simply enter a display filter string into the **Filter:** field, select a direction, and click on OK.

For example, to find the three way handshake for a connection from host 10.0.0.5, use the following filter string:

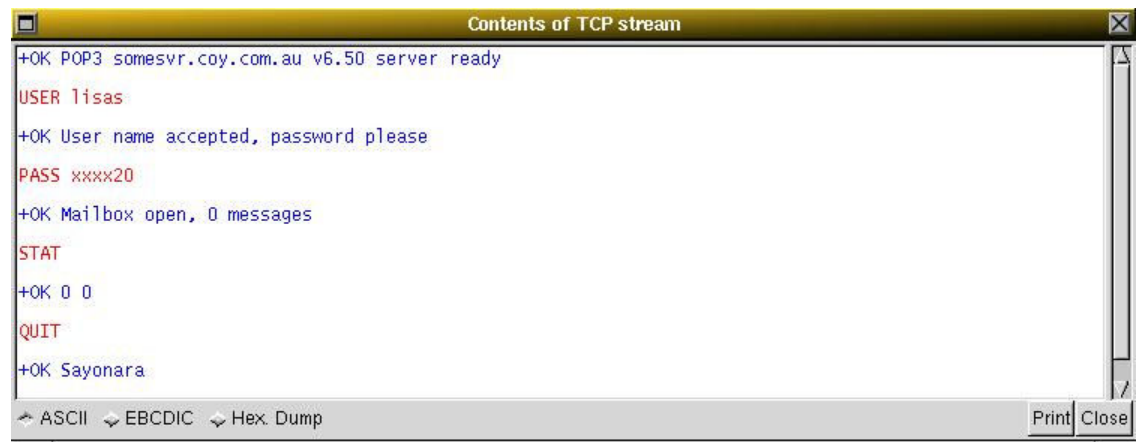
```
ip.addr==10.0.0.5 and tcp.flags.syn
```

For more details on display filters, see the Section called *Filtering packets while viewing*

## Following TCP streams

There will be occasions when you would like to see the data on a TCP session in the order that the application layer would see it. Perhaps you are looking for passwords in a Telnet stream, or perhaps you are trying to make sense of a data stream. If so, *Ethereal*'s ability to follow a TCP stream will be useful to you.

Simply select a TCP segment on the stream/connection you are interested in and then select the Follow TCP Stream menu item from the *Ethereal* Tools menu. *Ethereal* will pop up a separate window with all the data from the TCP stream layed out in order, as shown in Figure 3-23.



**Figure 3-23. Following a TCP Stream**

You can then select to view the data in one of three formats:

1. **ASCII**. In this view you see the data from each end in ASCII, but alternating according to when each end sent data. Unfortunately, non-printing characters do not print.
2. **EBCDIC**. For the big-iron freaks out there.
3. **HEX Dump**. This allows you to see all the data, but you lose the ability to read it in ASCII.

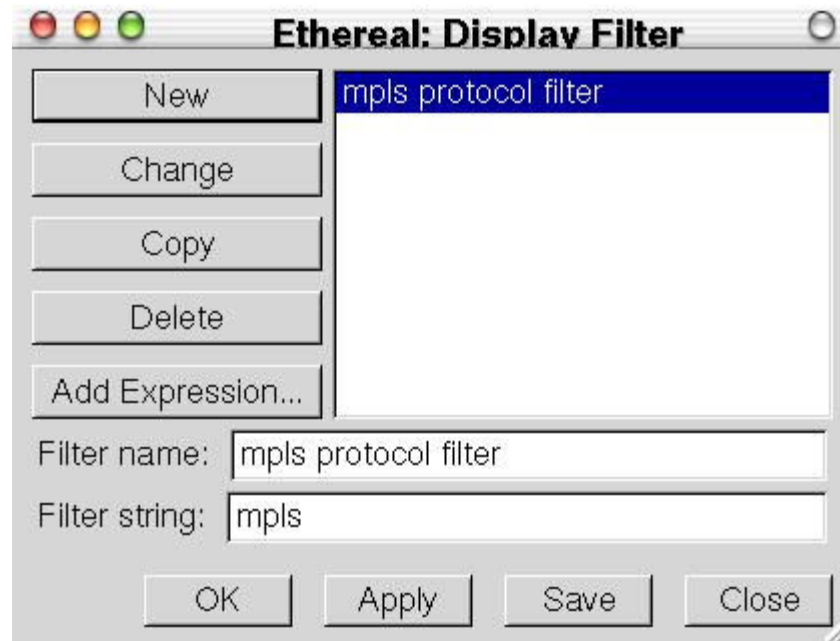
**Note!** It is worthwhile noting that Follow TCP Stream installs a filter to select all the packets on the TCP stream you have selected.



## Defining and saving filters

You can define filters with *Ethereal* and give them labels for later use. This can save time in remembering and retyping some of the more complex filters you use.

To define a new filter or edit an existing filter, select the Filters... menu item from the Edit menu. *Ethereal* will then pop up the Filters dialog as shown in Figure 3-24.



**Figure 3-24.** The *Ethereal* Filters dialog box

You would enter a filter name in the Filter name field, and a filter string in the Filter string field. However, for most other actions, you would select a filter from the list box (which will fill in the name and sting in the fields down the bottom of the dialog box), and make what ever changes you want to. Then you should choose one of the buttons down the left hand side of the dialog box. The buttons have the following meanings:

### New

This button adds the filter string entered in the Filter string field with the name supplied in the Filter name field.

**Note!** You can add multiple filters with the same name. This is not very useful.

### Change

This button changes the filter named in the Filter name string by replacing its filter string with the string in the Filter string field.

### Copy

This button copies the selected filter and calls it "Copy of <orig>", where <orig> is the name of the original filter.

### Delete

This button deletes the selected filter.

### Apply

This button applies the selected filter to the current display.

### Add Expression...

This button brings up the Add Expression dialog box which assists in building filter strings. You can find more information about the Add Expression dialog in the Section called *The Add Expression Dialog*

## The Add Expression Dialog

When you are accustomed to *Ethereal*'s filtering system and know what labels you wish to use in your filters it can be very quick to simply type a filter string. However if you are new to *Ethereal* or are working with a slightly unfamiliar protocol it can be very confusing to try to figure out what to type. The Add Expression dialog box helps with this.

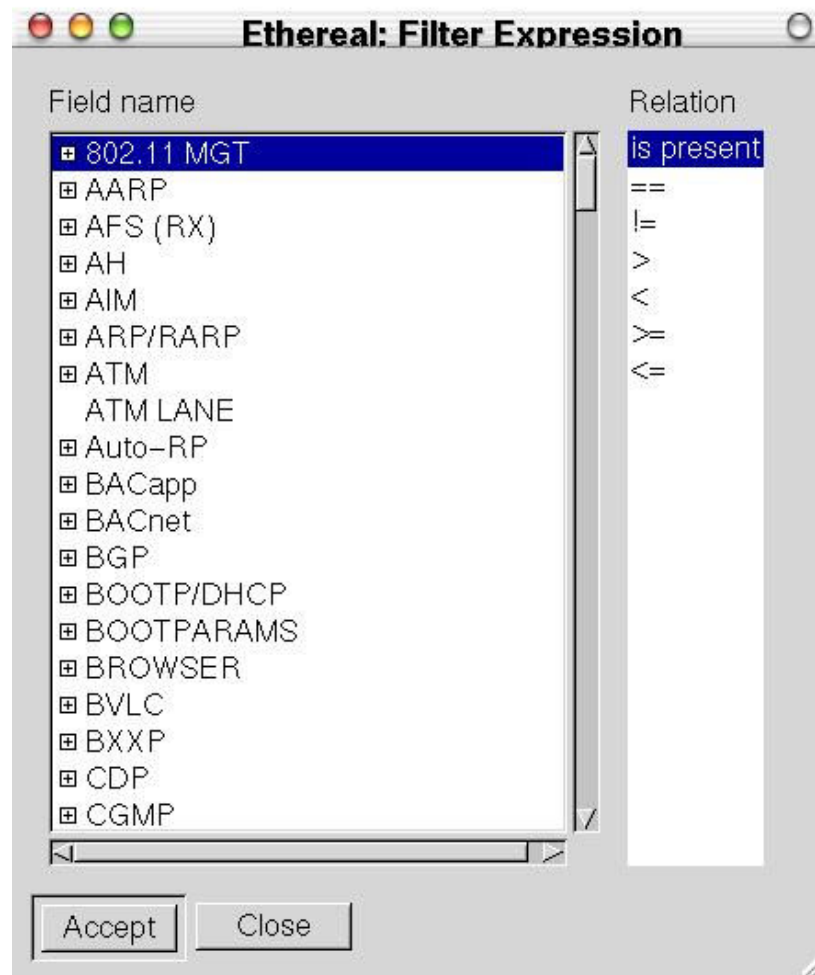


Figure 3-25. The *Ethereal* Add Expression dialog box, view 1

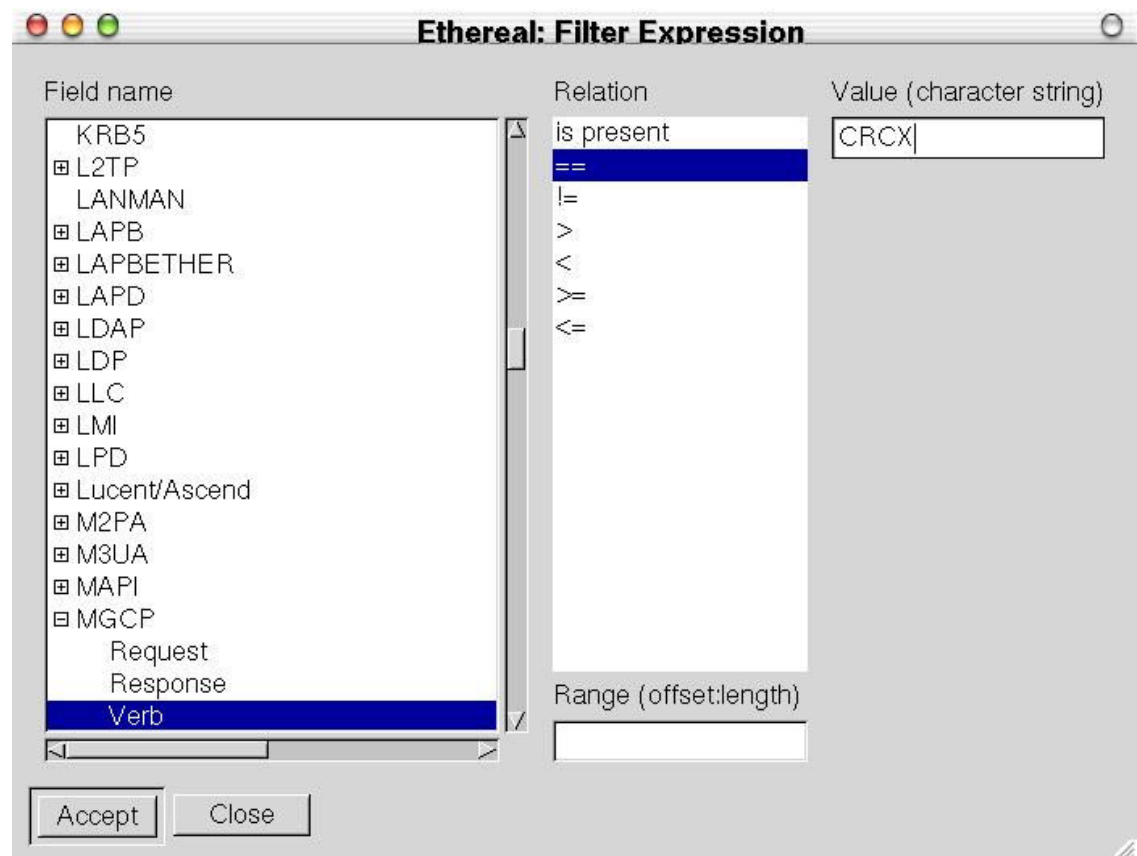
When you first bring up the Add Expression dialog box you are shown a tree list of field names, organized by protocol, and a box for selecting a relation.

### Field Name

Select a protocols field from the protocol field tree. Every protocol with filterable fields is listed at the top level. By clicking on the "+" next to a protocol name you can get a list of the field names available for filtering for that protocol.

### Relation

Select a relation from the list of available relation. The **is present** is a unary relation which is true if the selected field is present in a packet. All other listed relations are binary relations require additional data ( ie a **Value** to match ) to complete.



**Figure 3-26. The Ethereal Add Expression dialog box, view 2**

When you select a field from the field name list and select a binary relation ( like the equality relation == ) you will be given the opportunity to enter a value, and possible some range information.

### Value

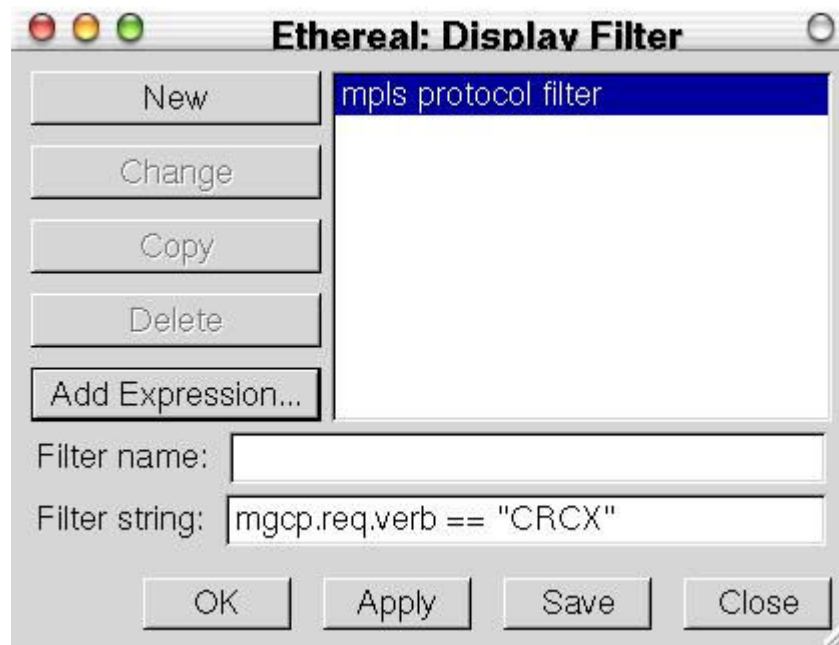
You may enter an appropriate value in the **Value** text box. The **Value** will also indicate the type of value for the **field name** you have selected ( like character string ).

### Accept

When you have built a satisfactory expression click **Accept** and a filter string will be built for you.

### Close

You can leave the **Add Expression...** dialog box without any effect by clicking the **Close**



**Figure 3-27. The result of building a filter string using the Add Expression dialog box.**

The Add Expression dialog box is an excellent way to learn to write Ethereal display filter strings.

## Printing packets

Ethereal provides two methods for printing packets:

1. Select the Print... menu item from the File menu. When you do this, Ethereal pops up the Print dialog box as shown in Figure 3-28.
2. Select the Print Packet menu item from the File menu (or type Ctrl-P) and Ethereal will print the currently selected packet.

We present more detail on the Print dialog box below.

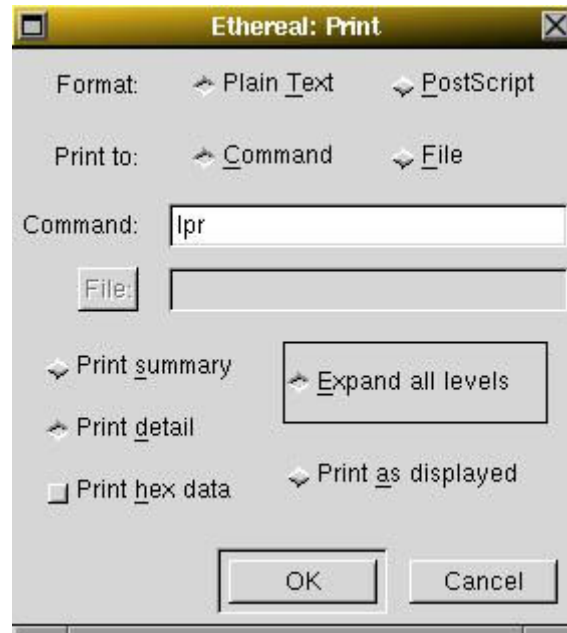


Figure 3-28. The *Ethereal* Print dialog box

**Note:** Currently, there is no simple way with the Print dialog box to print only a range of packets, or to print a single packet. To do this, first select a range of packets with a display filter, then select Print... from the File menu. You could even select a single packet with something like `frame.number == 10` or a range by frame number with something like `frame.number >= 10 && frame.number <= 20`.

The following fields are available in the Print dialog box:

#### Format

This field contains a pair of mutually exclusive radio buttons:

- **Plain Text**, which specifies that the packet print should be in plain text.
- **PostScript**, which specifies that the packet print process should use Postscript to generate a better print.

#### Print to

This field contains another pair of mutually exclusive radio buttons:

- **Command**, which specifies that a command be used for printing.
- **File**, which specifies that printing be done to a file.

### Command

This field specifies the command to use for printing. It is typically **lpr**. You would change it to specify a particular queue if you need to print to a queue other than the default. An example might be:

```
lpr -Pmypostscript
```

This field is greyed out if **Command** is not specified above.

### File

This field is where you enter the **file** to print to if you have selected Print to a file. It is greyed out if Print to a file is not selected.

### Print summary and Print detail

This pair of mutually exclusive radio boxes select whether or not Ethereal prints a summary or the detail for each packet printed.

### Expand all details and Print as displayed

This pair of mutually exclusive radio boxes select whether or not Ethereal expands all details for all packets printed, or prints them as displayed (ie, with only the currently expanded protocol trees expanded).

### Print hex data

This radio box controls whether or not Ethereal prints the hex data for each packet selected.

## Ethereal preferences

There are a number of preferences you can set from one place. Simply select the Preferences... menu item from the Edit menu, and Ethereal will pop up the Preferences dialog box as shown in Figure 3-29.

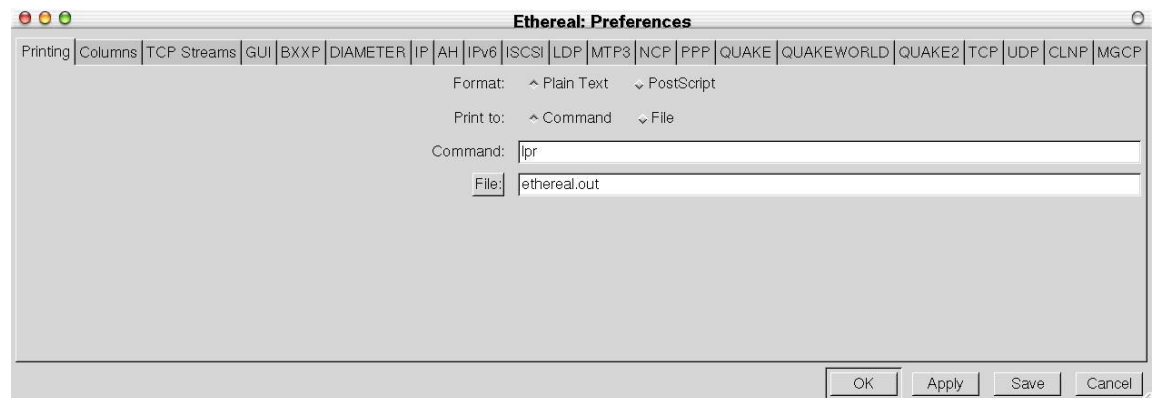


Figure 3-29. The Ethereal Preferences dialog box

The Ethereal Preferences dialog box is a tabbed dialog box that allows you to set preferences for each of the following elements:

**Printing**

This tab allows you to define the default printing command that *Ethereal* will use as well as the default output file name when you print to a file. These are discussed in more detail in the Section called *Printing packets*

**Columns**

This tab allows you to select which columns appear in the Packet List Pane.

**TCP Streams**

This tab allows you to change the foreground and background colors used by the **Follow TCP Stream** described in the Section called *The *Ethereal* Tools menu*.

**GUI**

This tab allows you to configure various characteristics of the GUI.

**Other tabs**

The remaining tabs allow you to configure various preferences for the dissection of various network protocols.

**Files used by *Ethereal***

*Ethereal* uses a number of files while it is running. Some of these reside in `$HOME/.ethereal` and are used to maintain information between runs of *Ethereal*, while some of them are maintained in system areas.

The following are some of the files accessed by *Ethereal*:

**`$HOME/.ethereal/preferences`**

This file contains all your *Ethereal* preferences, including defaults for capturing and displaying packets. It is a simple text file containing statements of the form **variable: value**.

**`$HOME/.ethereal/filters`**

This file contains all the filters that you have defined and saved. It consists of one or more lines, where each line has the following format:

```
"<filter name>" <filter string>
```

**`$HOME/.ethereal/colorfilters`**

This file contains all the color filters that you have defined and saved. It consists of one or more lines, where each line has the following format:

```
@<filter name>@<filter string>@[<bg RGB(16-bit)>][<fg RGB(16-bit)>]
```

**`/usr/share/ethereal/plugins, /usr/local/share/ethereals/plugins, $HOME/.ethereal/plugins`**

*Ethereal* searches for plugins in the directories listed above. They are searched in the order listed.

**/etc/ethers, \$HOME/.ethereal/ethers**

When *Ethereal* is trying to translate Ethernet hardware addresses to names, it consults the files listed above in the order listed. If an address is not found in `/etc/ethers`, *Ethereal* looks in `$HOME/.ethereal/ethers`

Each line in these files consists of one hardware address and name separated by whitespace. The digits of hardware addresses are separated by colons (:), dashes (-) or periods(.). The following are some examples:

```
ff-ff-ff-ff-ff-ff      Broadcast
c0-00-ff-ff-ff-ff      TR_broadcast
00.2b.08.93.4b.a1     Frèds_machine
```

**/usr/local/etc/manuf**

*Ethereal* uses the file listed above to translate the first three bytes of an Ethernet address into a manufacturers name. This file has the same format as the `ethers` file, except addresses are three bytes long.

**\$HOME/.ethereal/ipxnets**

*Ethereal* uses the above file to translate IPX network numbers into names.

An example is:

```
C0.A8.2C.00           HR
c0-a8-1c-00           CEO
00:00:BE:EF           IT_Server1
110f                  FileServer3
```



## Chapter 4. Troubleshooting with **Ethereal**

### An approach to troubleshooting with **Ethereal**

Ethereal is a very useful tool for network troubleshooting, since it contains a number of features that allow you to quickly focus on problems in your network for several reasons:

- It allows you to focus in on specific packets and protocols, as you can see a large amount of detail associated with various protocols.
- It supports a large number of protocols, and the list of protocols supported is growing as more people contribute dissectors
- By giving you a visual view of traffic in parts of your network, and providing tools to filter and colorize that information, you can get a better feel for your network traffic, and can understand your network better.

The following general approach is suggested:

- Determine that the problem looks like a networking problem. There is no point in capturing packets if the problem is not networking related.
- Figure out where to capture packets. You will have to capture packets from a part of the network where you can actually get network traffic related to the problem. This is especially important in the presence of switches and routers. See the Section called *Capturing in the presence of switches and routers* for more details.

Because Ethereal can read many capture file formats, you can capture using any convenient tool. One useful approach is to use **tcpdump** to capture on remote systems and then copy the capture file to your system for later analysis. For more details on capturing with **tcpdump**, see the Section called *Capturing with tcpdump for viewing with Ethereal* in Chapter 5.

- Once you have captured packets that you think relate to the problem, load them into Ethereal and look for your problem. Using Ethereal's filtering and colorization capabilities, you can quickly narrow down the capture to the area of interest.
- Examine the appropriate fields within the packets where the problem appears to be. These can often help to reveal the problem.

### Capturing in the presence of switches and routers

Many vendor's switches support a feature known as "port spanning" or "port mirroring" in which all of the traffic to and from port A are also sent out port B. An excellent reference on the "port spanning" feature of Cisco switches can be found at [Configuring the Catalyst Switched Port Analyzer \(SPAN\) Feature](#) <sup>1</sup>

### Examples of troubleshooting

Troubleshooting often requires a reasonable knowledge of the protocols in question, however, you can often get a good idea of what might be going wrong simply by looking in the packets being exchanged.

## **Notes**

1. <http://www.cisco.com/warp/public/473/41.html>

## Chapter 5. Related tools

### Capturing with `tcpdump` for viewing with `Ethereal`

There are occasions when you want to capture packets using `tcpdump` rather than `ethereal`, especially when you want to do a remote capture and do not want the network load associated with running `Ethereal` remotely (not to mention all the X traffic polluting your capture).

However, the default `tcpdump` parameters result in a capture file where each packet is truncated, because `tcpdump`, by default, does not capture full packets.

To ensure that you capture complete packets, use the following command:

```
tcpdump -i <interface> -s 1500 -w <some-file>
```

You will have to specify the correct **interface** and the name of a **file** to save into. In addition, you will have to terminate the capture with `^C` when you believe you have captured enough packets.

### `Tethereal`, for terminal-based capturing

`Tethereal` is a terminal oriented version of `ethereal` designed for capturing and displaying packets when you do not have a graphical environment available. It supports the same option set that `ethereal` does. For more information on `tethereal`, see the manual pages (`man tethereal`).

### Using `editcap`

Included with `Ethereal` is a small utility called `editcap`, which is a command-line utility for working with capture files. Its main function is to remove packets from capture file, but it can also be used to convert capture files from one format to another, as well as print information about capture files.

`editcap` has the following format:

```
editcap [-r] [-h] [-v] [-T {encap type}] [-F {capture type}] {infile} {outfile} [record# [-] [record#] ... ]
```

Where each option has the following meaning:

**-r**

This option specifies that the frames listed should be kept, not deleted. The default is to delete the listed frames.

**-h**

This option provides help.

**-v**

This option specifies verbose operation. The default is silent operation.

**-T {encap type}**

This option specifies the frame encapsulation type to use. It can take one of the following values:

- ether - Ethernet
- tr - Token Ring
- slip - SLIP
- ppp - PPP
- fddi - FDDI
- fddi-swapped - FDDI with bit-swapped MAC addresses
- rawip - Raw IP
- arcnet - ARCNET
- atm-rfc1483 - RFC 1483 ATM
- linux-atm-clip - Linux ATM CLIP
- lapb - LAPB
- atm-sniffer - ATM Sniffer
- null - NULL
- ascend - Lucent/Ascend access equipment
- lapd - LAPD
- v120 - V.120

It is mainly for converting funny captures to something that Ethereal can deal with. The default frame encapsulation type is the same as the input encapsulation.

**-F {capture type}**

This option specifies the capture file format to write the output file in. You can choose from the following values:

- libpcap - libpcap (tcpdump, Ethereal, etc.)
- modlibpcap - modified libpcap (tcpdump)
- rh6\_1libpcap - Red Hat Linux 6.1 libpcap (tcpdump)
- ngsniffer - Network Associates Sniffer (DOS-based)
- snoop - Sun snoop
- netmon1 - Microsoft Network Monitor 1.x
- ngwsniffer\_1\_1 - Network Associates Sniffer (Windows-based) 1.1

The default is libpcap format.

**{infile}**

This parameter specifies the input file to use. It must be present.

**{outfile}**

This parameter specifies the output file to use. It must be present.

**[record#[-][record# ...]]**

This optional parameter specifies the records to include or exclude (depending on the **-r** option. You can specify individual records or a range of records.

## Merging multiple capture files into a single capture file with **mergcap**

Mergcap is a program that combines multiple saved capture files into a single output file specified by the **-w** argument. Mergcap knows how to read libpcap capture files, including those of tcpdump. In addition, Mergcap can read capture files from snoop (including Shomiti) and atmsnoop, Lanalyzer, Sniffer (compressed or uncompressed), Microsoft Network Monitor, AIX's iptrace, NetXray, Sniffer Pro, RADCOM's WAN/LAN analyzer, Lucent/Ascend router debug output, HP-UX's nettl, and the dump output from Toshiba's ISDN routers. There is no need to tell Mergcap what type of file you are reading; it will determine the file type by itself. Mergcap is also capable of reading any of these file formats if they are compressed using gzip. Mergcap recognizes this directly from the file; the **.gz** extension is not required for this purpose.

By default, it writes the capture file in libpcap format, and writes all of the packets in both input capture files to the output file. The **-F** flag can be used to specify the format in which to write the capture file; it can write the file in libpcap format (standard libpcap format, a modified format used by some patched versions of libpcap, the format used by Red Hat Linux 6.1, or the format used by SuSE Linux 6.3), snoop format, uncompressed Sniffer format, Microsoft Network Monitor 1.x format, and the format used by Windows-based versions of the Sniffer software.

Packets from the input files are merged in chronological order based on each frame's timestamp, unless the **-a** flag is specified. Mergcap assumes that frames within a single capture file are already stored in chronological order. When the **-a** flag is specified, packets are copied directly from each input file to the output file, independent of each frame's timestamp.

If the **-s** flag is used to specify a snapshot length, frames in the input file with more captured data than the specified snapshot length will have only the amount of data specified by the snapshot length written to the output file. This may be useful if the program that is to read the output file cannot handle packets larger than a certain size (for example, the versions of snoop in Solaris 2.5.1 and Solaris 2.6 appear to reject Ethernet frames larger than the standard Ethernet MTU, making them incapable of handling gigabit Ethernet captures if jumbo frames were used).

If the **-T** flag is used to specify an encapsulation type, the encapsulation type of the output capture file will be forced to the specified type, rather than being the type appropriate to the encapsulation type of the input capture file. Note that this merely forces the encapsulation type of the output file to be the specified type; the packet headers of the packets will not be translated from the encapsulation type of the input capture file to the specified encapsulation type (for example, it will not translate an Ethernet capture to an FDDI capture if an Ethernet capture is read and **-T fddi** is specified).

### Example 5-1. Help information available from **mergcap**

```
hagbard@hagbard:~/build/src/ethereal/doc$ mergcap -h
mergcap version 0.8.19
Usage: mergcap [-h] [-v] [-a] [-s <snaplen>] [-T <encap
type>]
```

```
[-F <capture type>] -w <outfile> <infile> [...]
```

```
where -h produces this help listing.
-v verbose operation, default is silent
-a files should be concatenated, not merged
Default merges based on frame timestamps
-s <snaplen>: truncate packets to <snaplen> bytes of data
-w <outfile>: sets output filename to <outfile>
-T <encap type> encapsulation type to use:
ether - Ethernet
tr - Token Ring
slip - SLIP
ppp - PPP
fddi - FDDI
fddi-swapped - FDDI with bit-swapped MAC addresses
rawip - Raw IP
arcnet - ARCNET
atm-rfc1483 - RFC 1483 ATM
linux-atm-clip - Linux ATM CLIP
lapb - LAPB
atm-sniffer - ATM Sniffer
null - NULL
ascend - Lucent/Ascend access equipment
lapd - LAPD
v120 - V.120
ppp-with-direction - PPP with Directional Info
ieee-802-11 - IEEE 802.11 Wireless LAN
linux-sll - Linux cooked-mode capture
frelay - Frame Relay
chdlc - Cisco HDLC
default is the same as the first input file
-F <capture type> capture file type to write:
libpcap - libpcap (tcpdump, Ethereal, etc.)
rh6_1libpcap - Red Hat Linux 6.1 libpcap (tcpdump)
suse6_3libpcap - SuSE Linux 6.3 libpcap (tcpdump)
modlibpcap - modified libpcap (tcpdump)
nokialibpcap - Nokia libpcap (tcpdump)
ngsniffer - Network Associates Sniffer (DOS-based)
snoop - Sun snoop
netmon1 - Microsoft Network Monitor 1.x
netmon2 - Microsoft Network Monitor 2.x
ngwsniffer_1_1 - Network Associates Sniffer (Windows-based)
1.1 default is libpcap
```

**-h**

Prints the version and options and exits.

**-v**

Causes **mergcap** to print a number of messages while it's working.

**-a**

Causes the frame timestamps to be ignored, writing all packets from the first input file followed by all packets from the second input file. By default, when **-a** is not specified, the contents of the input files are merged in chronological order based on each frame's timestamp. Note: when merging, **mergcap** assumes that packets within a capture file are already in chronological order.

**-s**

Sets the snapshot length to use when writing the data.

**-w**

Sets the output filename.

**-T**

Sets the packet encapsulation type of the output capture file.

**-F**

Sets the file format of the output capture file.

A simple example merging `dhcp-capture.libpcap` and `imap-1.libpcap` into `outfile.libpcap` is shown below.

**Example 5-2. Simple example of using merg pcap**

```
hagbard@hagbard:~/captures$ merg pcap -w outfile.libpcap dhcp-
capture.libpcap imap-1.libpcap
```

**Converting ASCII hexdumps to network captures with text2pcap**

There may be some occasions when you wish to convert a hex dump of some network traffic into a libpcap file.

**Text2pcap** is a program that reads in an ASCII hex dump and writes the data described into a libpcap-style capture file. `text2pcap` can read hexdumps with multiple packets in them, and build a capture file of multiple packets. `text2pcap` is also capable of generating dummy Ethernet, IP and UDP headers, in order to build fully processable packet dumps from hexdumps of application-level data only.

`Text2pcap` understands a hexdump of the form generated by `od -t x1`. In other words, each byte is individually displayed and surrounded with a space. Each line begins with an offset describing the position in the file. The offset is a hex number (can also be octal - see `-o`), of more than two hex digits. Here is a sample dump that `text2pcap` can recognize:

```
000000 00 e0 1e a7 05 6f 00 10 .....
000008 5a a0 b9 12 08 00 46 00 .....
000010 03 68 00 00 00 00 0a 2e .....
000018 ee 33 0f 19 08 7f 0f 19 .....
000020 03 80 94 04 00 00 10 01 .....
000028 16 a2 0a 00 03 50 00 0c .....
000030 01 01 0f 19 03 80 11 01 .....
```

There is no limit on the width or number of bytes per line. Also the text dump at the end of the line is ignored. Bytes/hex numbers can be uppercase or lowercase. Any text before the offset is ignored, including email forwarding characters '>'. Any lines of text between the bytestring lines is ignored. The offsets are used to track the bytes, so offsets must be correct. Any line which has only bytes without a leading offset is ignored. An offset is recognized as being a hex number longer than two characters. Any text after the bytes is ignored (e.g. the character dump). Any hex numbers in this text are also ignored. An offset of zero is indicative of starting a new packet, so a single text file with a series of hexdumps can be converted into a packet capture with multiple packets. Multiple packets are read in with timestamps

differing by one second each. In general, short of these restrictions, `text2pcap` is pretty liberal about reading in hexdumps and has been tested with a variety of mangled outputs (including being forwarded through email multiple times, with limited line wrap etc.)

There are a couple of other special features to note. Any line where the first non-whitespace character is '#' will be ignored as a comment. Any line beginning with #TEXT2PCAP is a directive and options can be inserted after this command to be processed by `text2pcap`. Currently there are no directives implemented; in the future, these may be used to give more fine grained control on the dump and the way it should be processed e.g. timestamps, encapsulation type etc.

`Text2pcap` also allows the user to read in dumps of application-level data, by inserting dummy L2, L3 and L4 headers before each packet. The user can elect to insert Ethernet headers, Ethernet and IP, or Ethernet, IP and UDP headers before each packet. This allows Ethereal or any other full-packet decoder to handle these dumps.

### Example 5-3. Help information available for `text2pcap`

```
hagbard@hagbard:~/build/src/ethereal/doc$ text2pcap -h
text2pcap: invalid option -- h

Usage: text2pcap [-d] [-q] [-o h|o] [-l typenum] [-e l3pid]
[-i proto]
[-u srcp destp] <input-filename> <output-filename>

where <input-filename> specifies input filename (use - for
standard input)
<output-filename> specifies output filename (use - for
standard output)

[options] are one or more of the following

-w filename      : Write capfile to <filename>. Default is
standard output
-h               : Display this help message
-d              : Generate detailed debug of parser states
-o hex|oct      : Parse offsets as (h)ex or (o)ctal. Default is
hex
-l typenum       : Specify link-layer type number. Default is 1
(Ethernet).
See net/bpf.h for list of numbers.
-q              : Generate no output at all (automatically
turns off -d)
-e l3pid        : Prepend dummy Ethernet II header with
specified L3PID (in HEX)
Example: -e 0x800
-i proto        : Prepend dummy IP header with specified IP
protocol (in DECIMAL).
Automatically prepends Ethernet header as well. Example: -i
46
-u srcp destp: Prepend dummy UDP header with specified dest
and source ports (in DECIMAL).
Automatically prepends Ethernet and IP headers as well
Example: -u 30 40
```

#### **-w <filename>**

Write the capture file generated by `text2pcap` to <filename>. The default is to write to standard output.



- h**  
Display the help message
- d**  
Displays debugging information during the process. Can be used multiple times to generate more debugging information.
- q**  
Be completely quiet during the process.
- o hex|oct**  
Specify the radix for the offsets (hex or octal). Defaults to hex. This corresponds to the **-A** option for od.
- l**  
Specify the link-layer type of this packet. Default is Ethernet(1). See net/bpf.h for the complete list of possible encapsulations. Note that this option should be used if your dump is a complete hex dump of an encapsulated packet and you wish to specify the exact type of encapsulation. Example: **-l 7** for ARCNet packets.
- e l3pid**  
Include a dummy Ethernet header before each packet. Specify the L3PID for the Ethernet header in hex. Use this option if your dump has Layer 3 header and payload (e.g. IP header), but no Layer 2 encapsulation. Example: **-e 0x806** to specify an ARP packet.  
  
For IP packets, instead of generating a fake Ethernet header you can also use **-l 12** to indicate a raw IP packet to Ethereal. Note that **-l 12** does not work for any non-IP Layer 3 packet (e.g. ARP), whereas generating a dummy Ethernet header with **-e** works for any sort of L3 packet.
- u srcport destport**  
Include dummy UDP headers before each packet. Specify the source and destination UDP ports for the packet in decimal. Use this option if your dump is the UDP payload of a packet but does not include any UDP, IP or Ethernet headers. Note that this automatically includes appropriate Ethernet and IP headers with each packet. Example: **-u 1000 69** to make the packets look like TFTP/UDP packets.

## Creating dissectors from Corba IDL files with idl2eth

In an ideal world idl2eth would be mentioned in the users guide in passing and documented in the developers guide. As the developers guide has not yet been completed it will be documented here.

### What is it?

As you have probably guessed from the name, **idl2eth** takes a user specified IDL file and attempts to build a dissector that can decode the IDL traffic over GIOP. The resulting file is "C" code, that should compile okay as an ethereal dissector.

**idl2eth** basically parses the data struct given to it by the omniidl compiler, and using the GIOP API available in packet-giop.[ch], generates get\_CDR\_xxx calls to decode the CORBA traffic on the wire.

It consists of 4 main files.

README.idl2eth

This document

ethereal\_be.py

The main compiler backend

ethereal\_gen.py

A helper class, that generates the C code.

idl2eth

A simple shell script wrapper that the end user should use to generate the dissector from the IDL file(s).

## Why do this?

It is important to understand how CORBA traffic looks like over GIOP/IIOP, and to help build a tool that can assist in troubleshooting CORBA interworking. This was especially the case after seeing a lot of discussions about how particular IDL types are represented inside an octet stream.

I have also had comments/feedback that this tool would be good for say a CORBA class when teaching students how CORBA traffic looks like "on the wire".

It is also COOL to work on a great Open Source project such as the case with "Ethereal" (<http://www.ethereal.com><sup>1</sup>)

## How to use idl2eth

To use the idl2eth to generate ethereal dissectors, you need the following:

### Prerequisites to using idl2eth

1. Python must be installed. See <http://python.org/><sup>2</sup>
2. omniidl from the the omniORB package must be available. <http://www.uk.research.att.com/omniORB/omniORB.html><sup>3</sup>
3. Of course you need ethereal installed to compile the code and tweak it if required. idl2eth is part of the standard Ethereal distribution

To use idl2eth to generate an ethereal dissector from an idl file use the following procedure:

### Procedure for converting a Corba idl file into an ethereal dissector

1. To write the C code to stdout.

```
idl2eth <your file.idl>
```

eg:

```
idl2eth echo.idl
```

2. To write to a file, just redirect the output.

```
idl2eth echo.idl > packet-test-idl.c
```

You may wish to comment out the `register_giop_user_module()` code and that will leave you with heuristic dissection.

If you dont want to use the shell script wrapper, then try steps 3 or 4 instead.

3. To write the C code to stdout.

```
Usage: omniidl -p ./ -b ethereal_be <your file.idl>
```

eg:

```
omniidl -p ./ -b ethereal_be echo.idl
```

4. To write to a file, just redirect the output.

```
omniidl -p ./ -b ethereal_be echo.idl > packet-test-idl.c
```

You may wish to comment out the `register_giop_user_module()` code and that will leave you with heuristic dissection.

5. Copy the resulting C code to your ethereal src directory, edit the 2 make files to include the `packet-test-idl.c`

```
cp packet-test-idl.c /dir/where/ethereal/lives/
edit Makefile.am
edit Makefile.nmake
```

6. Run configure

```
./configure (or ./autogen.sh)
```

7. Compile the code

```
make
```

8. Good Luck !!

## TODO

1. Exception code not generated (yet), but can be added manually.
2. Enums not converted to symbolic values (yet), but can be added manually.
3. Add command line options etc
4. More I am sure :-)

## Limitations

See the TODO list inside `packet-giop.c`

## Notes

1. The "-p ./" option passed to `omniidl` indicates that the `ethereal_be.py` and `ethereal_gen.py` are residing in the current directory. This may need tweaking if you place these files somewhere else.
2. If it complains about being unable to find some modules (eg `tempfile.py`), you may want to check if `PYTHONPATH` is set correctly. On my Linux box, it is `PYTHONPATH=/usr/lib/python1.5/`

## **Notes**

1. <http://www.ethereal.com>
2. <http://python.org/>
3. <http://www.uk.research.att.com/omniORB/omniORB.html>

## Appendix A. Ethernet Display Filter Fields

### 802.1q Virtual LAN (vlan)

Table A-1. 802.1q Virtual LAN (vlan)

| Field         | Field Name | Type                    | Description  |
|---------------|------------|-------------------------|--------------|
| vlan.cfi      | CFI        | Unsigned 16-bit integer | CFI          |
| vlan.etype    | Type       | Unsigned 16-bit integer | Type         |
| vlan.id       | ID         | Unsigned 16-bit integer | ID           |
| vlan.len      | Length     | Unsigned 16-bit integer | Length       |
| vlan.priority | Priority   | Unsigned 16-bit integer | Priority     |
| vlan.trailer  | Trailer    | Byte array              | VLAN Trailer |

### 802.1x Authentication (eapol)

Table A-2. 802.1x Authentication (eapol)

| Field                       | Field Name      | Type                    | Description                  |
|-----------------------------|-----------------|-------------------------|------------------------------|
| eapol.keydes.index.indexnum | Index Number    | Unsigned 8-bit integer  | Key Index number             |
| eapol.keydes.index.keytype  | Key Type        | Boolean                 | Key Type (unicast/broadcast) |
| eapol.keydes.key            | Key             | Byte array              | Key                          |
| eapol.keydes.key_iv         | Key IV          | Byte array              | Key Initialization Vector    |
| eapol.keydes.key_signature  | Key Signature   | Byte array              | Key Signature                |
| eapol.keydes.key_length     | Key Length      | Unsigned 16-bit integer | Key Length                   |
| eapol.keydes.replay_counter | Replay Counter  | Unsigned 64-bit integer | Replay Counter               |
| eapol.keydes.type           | Descriptor Type | Unsigned 8-bit integer  | Key Descriptor Type          |
| eapol.len                   | Length          | Unsigned 16-bit integer | Length                       |
| eapol.type                  | Type            | Unsigned 8-bit          |                              |

| Field         | Field Name | Type                   | Description |
|---------------|------------|------------------------|-------------|
|               |            | integer                |             |
| eapol.version | Version    | Unsigned 8-bit integer |             |

### AFS (4.0) Replication Server call declarations (rep\_proc)

Table A-3. AFS (4.0) Replication Server call declarations (rep\_proc)

| Field          | Field Name | Type                    | Description |
|----------------|------------|-------------------------|-------------|
| rep_proc.opnum | Operation  | Unsigned 16-bit integer | Operation   |

### AOL Instant Messenger (aim)

Table A-4. AOL Instant Messenger (aim)

| Field                    | Field Name              | Type                    | Description |
|--------------------------|-------------------------|-------------------------|-------------|
| aim.buddyname            | Buddy Name              | String                  |             |
| aim.buddynamelen         | Buddynamelen            | Unsigned 8-bit integer  |             |
| aim.channel              | Channel ID              | Unsigned 8-bit integer  |             |
| aim.cmd_start            | Command Start           | Unsigned 8-bit integer  |             |
| aim.data                 | Data                    | Byte array              |             |
| aim.dataalen             | Data Field Length       | Unsigned 16-bit integer |             |
| aim.fnac.family          | FNAC Family ID          | Unsigned 16-bit integer |             |
| aim.fnac.flags           | FNAC Flags              | Unsigned 16-bit integer |             |
| aim.fnac.id              | FNAC ID                 | Unsigned 32-bit integer |             |
| aim.fnac.subtype         | FNAC Subtype ID         | Unsigned 16-bit integer |             |
| aim.infotype             | Infotype                | Unsigned 16-bit integer |             |
| aim.seqno                | Sequence Number         | Unsigned 16-bit integer |             |
| aim.signon.challenge     | Signon challenge        | String                  |             |
| aim.signon.challengealen | Signon challenge length | Unsigned 16-bit integer |             |

| Field  | Field Name    | Type                    | Description |
|--|---------------|-------------------------|-------------|
| aim.snac.location.request_user_info.infotype | Infotype      | Unsigned 16-bit integer |             |
| aim.userinfo.tlvcount                        | TLV Count     | Unsigned 16-bit integer |             |
| aim.userinfo.warninglevel                    | Warning Level | Unsigned 16-bit integer |             |

**ARCNET (arcnet)**

Table A-5. ARCNET (arcnet)

| Field                 | Field Name     | Type                    | Description     |
|-----------------------|----------------|-------------------------|-----------------|
| arcnet.dst            | Dest           | Unsigned 8-bit integer  | Dest ID         |
| arcnet.exception_flag | Exception Flag | Unsigned 8-bit integer  | Exception flag  |
| arcnet.offset         | Offset         | Byte array              | Offset          |
| arcnet.protID         | Protocol ID    | Unsigned 8-bit integer  | Proto type      |
| arcnet.sequence       | Sequence       | Unsigned 16-bit integer | Sequence number |
| arcnet.split_flag     | Split Flag     | Unsigned 8-bit integer  | Split flag      |
| arcnet.src            | Source         | Unsigned 8-bit integer  | Source ID       |

**ATM (atm)**

Table A-6. ATM (atm)

| Field   | Field Name | Type                    | Description |
|---------|------------|-------------------------|-------------|
| atm.aal | AAL        | Unsigned 8-bit integer  |             |
| atm.vci | VCI        | Unsigned 16-bit integer |             |
| atm.vpi | VPI        | Unsigned 8-bit integer  |             |

**ATM AAL1 (aal1)**

Table A-7. ATM AAL1 (aal1)

| Field | Field Name | Type | Description |
|-------|------------|------|-------------|
|       |            |      |             |

**ATM AAL3/4 (aal3\_4)**

Table A-8. ATM AAL3/4 (aal3\_4)

| Field | Field Name | Type | Description |
|-------|------------|------|-------------|
|       |            |      |             |

### ATM LAN Emulation (lane)

Table A-9. ATM LAN Emulation (lane)

| Field | Field Name | Type | Description |
|-------|------------|------|-------------|
|       |            |      |             |

### ATM OAM AAL (oamaal)

Table A-10. ATM OAM AAL (oamaal)

| Field | Field Name | Type | Description |
|-------|------------|------|-------------|
|       |            |      |             |

### AVS WLAN Capture header (wlanacap)

Table A-11. AVS WLAN Capture header (wlanacap)

| Field               | Field Name     | Type                    | Description |
|---------------------|----------------|-------------------------|-------------|
| wlanacap.antenna    | Antenna        | Unsigned 32-bit integer |             |
| wlanacap.channel    | Channel        | Unsigned 32-bit integer |             |
| wlanacap.datarate   | Data rate      | Unsigned 32-bit integer |             |
| wlanacap.encoding   | Encoding Type  | Unsigned 32-bit integer |             |
| wlanacap.hosttime   | Host timestamp | Unsigned 64-bit integer |             |
| wlanacap.length     | Header length  | Unsigned 32-bit integer |             |
| wlanacap.mactime    | MAC timestamp  | Unsigned 64-bit integer |             |
| wlanacap.phytype    | PHY type       | Unsigned 32-bit integer |             |
| wlanacap.preamble   | Preamble       | Unsigned 32-bit integer |             |
| wlanacap.priority   | Priority       | Unsigned 32-bit integer |             |
| wlanacap.ssi_noise  | SSI Noise      | Signed 32-bit integer   |             |
| wlanacap.ssi_signal | SSI Signal     | Unsigned 32-bit integer |             |



| Field            | Field Name      | Type                    | Description |
|------------------|-----------------|-------------------------|-------------|
| wlancap.ssi_type | SSI Type        | Unsigned 32-bit integer |             |
| wlancap.version  | Header revision | Unsigned 32-bit integer |             |

### Ad hoc On-demand Distance Vector Routing Protocol (aodv)

Table A-12. Ad hoc On-demand Distance Vector Routing Protocol (aodv)

| Field                      | Field Name                  | Type                    | Description                    |
|----------------------------|-----------------------------|-------------------------|--------------------------------|
| aodv.dest_ip               | Destination IP              | IPv4 address            | Destination IP Address         |
| aodv.dest_seqno            | Destination Sequence Number | Unsigned 32-bit integer | Destination Sequence Number    |
| aodv.destcount             | Destination Count           | Unsigned 8-bit integer  | Unreachable Destinations Count |
| aodv.flags                 | Flags                       | Unsigned 16-bit integer | Flags                          |
| aodv.flags.rerr_no_delete  | RERR No Delete              | Boolean                 |                                |
| aodv.flags.rrep_ack        | RREP Acknowledgement        | Boolean                 |                                |
| aodv.flags.rrep_repair     | RREP Repair                 | Boolean                 |                                |
| aodv.flags.rreq_gratuitous | RREQ Gratuitous             | Boolean                 |                                |
| aodv.flags.rreq_join       | RREQ Join                   | Boolean                 |                                |
| aodv.flags.rreq_repair     | RREQ Repair                 | Boolean                 |                                |
| aodv.hopcount              | Hop Count                   | Unsigned 8-bit integer  | Hop Count                      |
| aodv.lifetime              | Lifetime                    | Unsigned 32-bit integer | Lifetime                       |
| aodv.orig_ip               | Originator IP               | IPv4 address            | Originator IP Address          |
| aodv.orig_seqno            | Originator Sequence Number  | Unsigned 32-bit integer | Originator Sequence Number     |
| aodv.prefix_sz             | Prefix Size                 | Unsigned 8-bit integer  | Prefix_size                    |
| aodv.rreq_id               | RREQ Id                     | Unsigned 32-bit         | RREQ Id                        |

| Field                   | Field Name                              | Type                    | Description                             |
|-------------------------|---|-------------------------|---|
|                         |   | integer                 |   |
| aodv.type               | Type                                    | Unsigned 8-bit integer  | AODV packet type                        |
| aodv.unreach_dest_ip    | Unreachable Destination IP              | IPv4 address            | Unreachable Destination IP Address      |
| aodv.unreach_dest_seqno | Unreachable Destination Sequence Number | Unsigned 32-bit integer | Unreachable Destination Sequence Number |

### Ad hoc On-demand Distance Vector Routing Protocol v6 (aodv6)

Table A-13. Ad hoc On-demand Distance Vector Routing Protocol v6 (aodv6)

| Field                       | Field Name                  | Type                    | Description                    |
|-----------------------------|-----------------------------|-------------------------|--------------------------------|
| aodv6.dest_ip               | Destination IP              | IPv6 address            | Destination IP Address         |
| aodv6.dest_seqno            | Destination Sequence Number | Unsigned 32-bit integer | Destination Sequence Number    |
| aodv6.destcount             | Destination Count           | Unsigned 8-bit integer  | Unreachable Destinations Count |
| aodv6.ext_length            | Extension Length            | Unsigned 8-bit integer  | Extension Data Length          |
| aodv6.ext_type              | Extension Type              | Unsigned 8-bit integer  | Extension Format Type          |
| aodv6.flags                 | Flags                       | Unsigned 16-bit integer | Flags                          |
| aodv6.flags.rerr_nodelete   | RERR No Delete              | Boolean                 |                                |
| aodv6.flags.rrep_ack        | RREP Acknowledgment         | Boolean                 |                                |
| aodv6.flags.rrep_repair     | RREP Repair                 | Boolean                 |                                |
| aodv6.flags.rreq_gratuitous | RREQ Gratuitous             | Boolean                 |                                |
| aodv6.flags.rreq_join       | RREQ Join                   | Boolean                 |                                |
| aodv6.flags.rreq_repair     | RREQ Repair                 | Boolean                 |                                |
| aodv6.hello_interval        | Hello Interval              | Unsigned 32-bit integer | Hello Interval Extension       |

| Field                    | Field Name                              | Type                    | Description                             |
|--------------------------|---|-------------------------|---|
| aodv6.hopcount           | Hop Count                               | Unsigned 8-bit integer  | Hop Count                               |
| aodv6.lifetime           | Lifetime                                | Unsigned 32-bit integer | Lifetime                                |
| aodv6.orig_ip            | Originator IP                           | IPv6 address            | Originator IP Address                   |
| aodv6.orig_seqno         | Originator Sequence Number              | Unsigned 32-bit integer | Originator Sequence Number              |
| aodv6.prefix_sz          | Prefix Size                             | Unsigned 8-bit integer  | Prefix Size                             |
| aodv6.rreq_id            | RREQ ID                                 | Unsigned 32-bit integer | RREQ ID                                 |
| aodv6.timestamp          | Timestamp                               | Unsigned 64-bit integer | Timestamp Extension                     |
| aodv6.type               | Type                                    | Unsigned 8-bit integer  | AODV6 packet type                       |
| aodv6.unreach_dest_ip    | Unreachable Destination IP              | IPv6 address            | Unreachable Destination IP Address      |
| aodv6.unreach_dest_seqno | Unreachable Destination Sequence Number | Unsigned 32-bit integer | Unreachable Destination Sequence Number |

### Address Resolution Protocol (arp)

Table A-14. Address Resolution Protocol (arp)

| Field                | Field Name                | Type                          | Description |
|----------------------|---------------------------|-------------------------------|-------------|
| arp.dst.atm_num_e164 | Target ATM number (E.164) | String                        |             |
| arp.dst.atm_num_nsap | Target ATM number (NSAP)  | Byte array                    |             |
| arp.dst.atm_subaddr  | Target ATM subaddress     | Byte array                    |             |
| arp.dst.hlen         | Target ATM number length  | Unsigned 8-bit integer        |             |
| arp.dst.htype        | Target ATM number type    | Boolean                       |             |
| arp.dst.hw           | Target hardware address   | Byte array                    |             |
| arp.dst.hw_mac       | Target MAC address        | 6-byte Hardware (MAC) Address |             |

Appendix A. Ethereal Display Filter Fields

| Field                | Field Name                   | Type                          | Description |
|----------------------|------------------------------|-------------------------------|-------------|
| arp.dst.pln          | Target protocol size         | Unsigned 8-bit integer        |             |
| arp.dst.proto        | Target protocol address      | Byte array                    |             |
| arp.dst.proto_ipv4   | Target IP address            | IPv4 address                  |             |
| arp.dst.slen         | Target ATM subaddress length | Unsigned 8-bit integer        |             |
| arp.dst.stype        | Target ATM subaddress type   | Boolean                       |             |
| arp.hw.size          | Hardware size                | Unsigned 8-bit integer        |             |
| arp.hw.type          | Hardware type                | Unsigned 16-bit integer       |             |
| arp.opcode           | Opcode                       | Unsigned 16-bit integer       |             |
| arp.proto.size       | Protocol size                | Unsigned 8-bit integer        |             |
| arp.proto.type       | Protocol type                | Unsigned 16-bit integer       |             |
| arp.src.atm_num_e164 | Sender ATM number (E.164)    | String                        |             |
| arp.src.atm_num_nsap | Sender ATM number (NSAP)     | Byte array                    |             |
| arp.src.atm_subaddr  | Sender ATM subaddress        | Byte array                    |             |
| arp.src.hlen         | Sender ATM number length     | Unsigned 8-bit integer        |             |
| arp.src.htype        | Sender ATM number type       | Boolean                       |             |
| arp.src.hw           | Sender hardware address      | Byte array                    |             |
| arp.src.hw_mac       | Sender MAC address           | 6-byte Hardware (MAC) Address |             |
| arp.src.pln          | Sender protocol size         | Unsigned 8-bit integer        |             |
| arp.src.proto        | Sender protocol address      | Byte array                    |             |
| arp.src.proto_ipv4   | Sender IP address            | IPv4 address                  |             |
| arp.src.slen         | Sender ATM                   | Unsigned 8-bit                |             |

| Field         | Field Name                 | Type    | Description |
|---------------|----------------------------|---------|-------------|
|               | subaddress length          | integer |             |
| arp.src.stype | Sender ATM subaddress type | Boolean |             |

## Aggregate Server Access Protocol (asap)

Table A-15. Aggregate Server Access Protocol (asap)

| Field   | Field Name                  | Type                    | Description |
|---|-----------------------------|-------------------------|-------------|
| asap.cause.code   | Cause code                  | Unsigned 16-bit integer |             |
| asap.cause.info   | Cause info                  | Byte array              |             |
| asap.cause.length   | Cause length                | Unsigned 16-bit integer |             |
| asap.cause.paddin<br>g                                    | Padding                     | Byte array              |             |
| asap.cookie.cookie  | Cookie                      | Byte array              |             |
| asap.ipv4_address.<br>ipv4_address                        | IP Version 4 address        | IPv4 address            |             |
| asap.ipv6_address.<br>ipv6_address                        | IP Version 6 address        | IPv6 address            |             |
| asap.message_flag<br>s                                    | Flags                       | Unsigned 8-bit integer  |             |
| asap.message_leng<br>th                                   | Length                      | Unsigned 16-bit integer |             |
| asap.message_type   | Type                        | Unsigned 8-bit integer  |             |
| asap.parameter.len<br>gth                                 | Parameter length            | Unsigned 16-bit integer |             |
| asap.parameter.pa<br>dding                                | Padding                     | Byte array              |             |
| asap.parameter.ty<br>pe                                   | Parameter Type              | Unsigned 16-bit integer |             |
| asap.parameter.val<br>ue                                  | Parameter value             | Byte array              |             |
| asap.pe_identifie<br>r.pe_identifie<br>r                  | PE identifier               | Unsigned 32-bit integer |             |
| asap.pool_element<br>.home_enrp_serve<br>r_identifie<br>r | Home ENRP server identifier | Unsigned 32-bit integer |             |
| asap.pool_element<br>.pe_identifie<br>r                   | PE identifier               | Unsigned 32-bit integer |             |

| Field                                     | Field Name        | Type                    | Description |
|---|-------------------|-------------------------|-------------|
| asap.pool_element.registration_life       | Registration life | Signed 32-bit integer   |             |
| asap.pool_handle.pool_handle              | Pool handle       | Byte array              |             |
| asap.pool_member_slection_policy.type     | Policy type       | Unsigned 8-bit integer  |             |
| asap.pool_member_slection_policy.value    | Policy value      | Signed 24-bit integer   |             |
| asap.sctp_transport.port                  | Port              | Unsigned 16-bit integer |             |
| asap.sctp_transport.reserved              | Reserved          | Unsigned 16-bit integer |             |
| asap.server_information.m_bit             | M-Bit             | Boolean                 |             |
| asap.server_information.reserved          | Reserved          | Unsigned 32-bit integer |             |
| asap.server_information.server_identifier | Server identifier | Unsigned 32-bit integer |             |
| asap.tcp_transport.port                   | Port              | Unsigned 16-bit integer |             |
| asap.tcp_transport.reserved               | Reserved          | Unsigned 16-bit integer |             |
| asap.udp_transport.port                   | Port              | Unsigned 16-bit integer |             |
| asap.udp_transport.reserved               | Reserved          | Unsigned 16-bit integer |             |

### Andrew File System (AFS) (afs)

Table A-16. Andrew File System (AFS) (afs)

| Field              | Field Name | Type                    | Description          |
|--------------------|------------|-------------------------|----------------------|
| afs.backup         | Backup     | Boolean                 | Backup Server        |
| afs.backup.errcode | Error Code | Unsigned 32-bit integer | Error Code           |
| afs.backup.opcode  | Operation  | Unsigned 32-bit integer | Operation            |
| afs.bos            | BOS        | Boolean                 | Basic Oversee Server |

| Field               | Field Name            | Type                    | Description           |
|---------------------|-----------------------|-------------------------|-----------------------|
| afs.bos.baktime     | Backup Time           | Date/Time stamp         | Backup Time           |
| afs.bos.cell        | Cell                  | String                  | Cell                  |
| afs.bos.cmd         | Command               | String                  | Command               |
| afs.bos.content     | Content               | String                  | Content               |
| afs.bos.data        | Data                  | Byte array              | Data                  |
| afs.bos.date        | Date                  | Unsigned 32-bit integer | Date                  |
| afs.bos.errcode     | Error Code            | Unsigned 32-bit integer | Error Code            |
| afs.bos.error       | Error                 | String                  | Error                 |
| afs.bos.file        | File                  | String                  | File                  |
| afs.bos.flags       | Flags                 | Unsigned 32-bit integer | Flags                 |
| afs.bos.host        | Host                  | String                  | Host                  |
| afs.bos.instance    | Instance              | String                  | Instance              |
| afs.bos.key         | Key                   | Byte array              | key                   |
| afs.bos.keychecksum | Key Checksum          | Unsigned 32-bit integer | Key Checksum          |
| afs.bos.keymodtime  | Key Modification Time | Date/Time stamp         | Key Modification Time |
| afs.bos.keyspare2   | Key Spare 2           | Unsigned 32-bit integer | Key Spare 2           |
| afs.bos.kvno        | Key Version Number    | Unsigned 32-bit integer | Key Version Number    |
| afs.bos.newtime     | New Time              | Date/Time stamp         | New Time              |
| afs.bos.number      | Number                | Unsigned 32-bit integer | Number                |
| afs.bos.oldtime     | Old Time              | Date/Time stamp         | Old Time              |
| afs.bos.opcode      | Operation             | Unsigned 32-bit integer | Operation             |
| afs.bos.parm        | Parm                  | String                  | Parm                  |
| afs.bos.path        | Path                  | String                  | Path                  |
| afs.bos.size        | Size                  | Unsigned 32-bit integer | Size                  |
| afs.bos.spare1      | Spare1                | String                  | Spare1                |
| afs.bos.spare2      | Spare2                | String                  | Spare2                |

Appendix A. Ethereal Display Filter Fields

| Field                     | Field Name           | Type                    | Description             |
|---------------------------|----------------------|-------------------------|-------------------------|
| afs.bos.spare3            | Spare3               | String                  | Spare3                  |
| afs.bos.status            | Status               | Signed 32-bit integer   | Status                  |
| afs.bos.statusdesc        | Status Description   | String                  | Status Description      |
| afs.bos.type              | Type                 | String                  | Type                    |
| afs.bos.user              | User                 | String                  | User                    |
| afs.cb                    | Callback             | Boolean                 | Callback                |
| afs.cb.callback.expires   | Expires              | Date/Time stamp         | Expires                 |
| afs.cb.callback.type      | Type                 | Unsigned 32-bit integer | Type                    |
| afs.cb.callback.version   | Version              | Unsigned 32-bit integer | Version                 |
| afs.cb.errcode            | Error Code           | Unsigned 32-bit integer | Error Code              |
| afs.cb.fid.uniq           | FileID (Uniqifier)   | Unsigned 32-bit integer | File ID (Uniqifier)     |
| afs.cb.fid.vnode          | FileID (VNode)       | Unsigned 32-bit integer | File ID (VNode)         |
| afs.cb.fid.volume         | FileID (Volume)      | Unsigned 32-bit integer | File ID (Volume)        |
| afs.cb.opcode             | Operation            | Unsigned 32-bit integer | Operation               |
| afs.error                 | Error                | Boolean                 | Error                   |
| afs.error.opcode          | Operation            | Unsigned 32-bit integer | Operation               |
| afs.fs                    | File Server          | Boolean                 | File Server             |
| afs.fs.acl.a              | _A_dminister         | Boolean                 | Administer              |
| afs.fs.acl.count.negative | ACL Count (Negative) | Unsigned 32-bit integer | Number of Negative ACLs |
| afs.fs.acl.count.positive | ACL Count (Positive) | Unsigned 32-bit integer | Number of Positive ACLs |
| afs.fs.acl.d              | _D_etele             | Boolean                 | Delete                  |
| afs.fs.acl.datasize       | ACL Size             | Unsigned 32-bit integer | ACL Data Size           |
| afs.fs.acl.entity         | Entity (User/Group)  | String                  | ACL Entity (User/Group) |
| afs.fs.acl.i              | _I_nsert             | Boolean                 | Insert                  |



| Field                   | Field Name         | Type                    | Description         |
|-------------------------|--------------------|-------------------------|---------------------|
| afs.fs.acl.k            | _L_ock             | Boolean                 | Lock                |
| afs.fs.acl.l            | _L_ookup           | Boolean                 | Lookup              |
| afs.fs.acl.r            | _R_ead             | Boolean                 | Read                |
| afs.fs.acl.w            | _W_rite            | Boolean                 | Write               |
| afs.fs.callback.expires | Expires            | Time duration           | Expires             |
| afs.fs.callback.type    | Type               | Unsigned 32-bit integer | Type                |
| afs.fs.callback.version | Version            | Unsigned 32-bit integer | Version             |
| afs.fs.cps.spare1       | CPS Spare1         | Unsigned 32-bit integer | CPS Spare1          |
| afs.fs.cps.spare2       | CPS Spare2         | Unsigned 32-bit integer | CPS Spare2          |
| afs.fs.cps.spare3       | CPS Spare3         | Unsigned 32-bit integer | CPS Spare3          |
| afs.fs.data             | Data               | Byte array              | Data                |
| afs.fs.errcode          | Error Code         | Unsigned 32-bit integer | Error Code          |
| afs.fs.fid.uniq         | FileID (Uniqifier) | Unsigned 32-bit integer | File ID (Uniqifier) |
| afs.fs.fid.vnode        | FileID (VNode)     | Unsigned 32-bit integer | File ID (VNode)     |
| afs.fs.fid.volume       | FileID (Volume)    | Unsigned 32-bit integer | File ID (Volume)    |
| afs.fs.flength          | FLength            | Unsigned 32-bit integer | FLength             |
| afs.fs.ipaddr           | IP Address         | IPv4 address            | IP Address          |
| afs.fs.length           | Length             | Unsigned 32-bit integer | Length              |
| afs.fs.motd             | Message of the Day | String                  | Message of the Day  |
| afs.fs.name             | Name               | String                  | Name                |
| afs.fs.newname          | New Name           | String                  | New Name            |
| afs.fs.offlinemsg       | Offline Message    | String                  | Volume Name         |
| afs.fs.offset           | Offset             | Unsigned 32-bit integer | Offset              |
| afs.fs.oldname          | Old Name           | String                  | Old Name            |

Appendix A. Ethereal Display Filter Fields

| Field                             | Field Name               | Type                    | Description              |
|-----------------------------------|--------------------------|-------------------------|--------------------------|
| afs.fs.opcode                     | Operation                | Unsigned 32-bit integer | Operation                |
| afs.fs.status.anonymousexcess     | Anonymous Access         | Unsigned 32-bit integer | Anonymous Access         |
| afs.fs.status.author              | Author                   | Unsigned 32-bit integer | Author                   |
| afs.fs.status.calleraccess        | Caller Access            | Unsigned 32-bit integer | Caller Access            |
| afs.fs.status.clientmodtime       | Client Modification Time | Date/Time stamp         | Client Modification Time |
| afs.fs.status.dataversion         | Data Version             | Unsigned 32-bit integer | Data Version             |
| afs.fs.status.dataversionhigh     | Data Version (High)      | Unsigned 32-bit integer | Data Version (High)      |
| afs.fs.status.filetype            | File Type                | Unsigned 32-bit integer | File Type                |
| afs.fs.status.group               | Group                    | Unsigned 32-bit integer | Group                    |
| afs.fs.status.interfaceversion    | Interface Version        | Unsigned 32-bit integer | Interface Version        |
| afs.fs.status.length              | Length                   | Unsigned 32-bit integer | Length                   |
| afs.fs.status.linkcount           | Link Count               | Unsigned 32-bit integer | Link Count               |
| afs.fs.status.mask                | Mask                     | Unsigned 32-bit integer | Mask                     |
| afs.fs.status.mask.fsync          | FSync                    | Boolean                 | FSync                    |
| afs.fs.status.mask.setgroup       | Set Group                | Boolean                 | Set Group                |
| afs.fs.status.mask.setmode        | Set Mode                 | Boolean                 | Set Mode                 |
| afs.fs.status.mask.setmodtime     | Set Modification Time    | Boolean                 | Set Modification Time    |
| afs.fs.status.mask.setowner       | Set Owner                | Boolean                 | Set Owner                |
| afs.fs.status.mask.setsegmentsize | Set Segment Size         | Boolean                 | Set Segment Size         |
| afs.fs.status.mode                | Unix Mode                | Unsigned 32-bit integer | Unix Mode                |

| Field                        | Field Name                | Type                    | Description               |
|------------------------------|---------------------------|-------------------------|---------------------------|
| afs.fs.status.owner          | Owner                     | Unsigned 32-bit integer | Owner                     |
| afs.fs.status.parent unique  | Parent Unique             | Unsigned 32-bit integer | Parent Unique             |
| afs.fs.status.parent vnode   | Parent VNode              | Unsigned 32-bit integer | Parent VNode              |
| afs.fs.status.segsiz e       | Segment Size              | Unsigned 32-bit integer | Segment Size              |
| afs.fs.status.server modtime | Server Modification Time  | Date/Time stamp         | Server Modification Time  |
| afs.fs.status.spare2         | Spare 2                   | Unsigned 32-bit integer | Spare 2                   |
| afs.fs.status.spare3         | Spare 3                   | Unsigned 32-bit integer | Spare 3                   |
| afs.fs.status.spare4         | Spare 4                   | Unsigned 32-bit integer | Spare 4                   |
| afs.fs.status.synccounter    | Sync Counter              | Unsigned 32-bit integer | Sync Counter              |
| afs.fs.symlink.content       | Symlink Content           | String                  | Symlink Content           |
| afs.fs.symlink.name          | Symlink Name              | String                  | Symlink Name              |
| afs.fs.timestamp             | Timestamp                 | Date/Time stamp         | Timestamp                 |
| afs.fs.token                 | Token                     | Byte array              | Token                     |
| afs.fs.viceid                | Vice ID                   | Unsigned 32-bit integer | Vice ID                   |
| afs.fs.vicelocktype          | Vice Lock Type            | Unsigned 32-bit integer | Vice Lock Type            |
| afs.fs.volid                 | Volume ID                 | Unsigned 32-bit integer | Volume ID                 |
| afs.fs.volname               | Volume Name               | String                  | Volume Name               |
| afs.fs.volsync.spare1        | Volume Creation Timestamp | Date/Time stamp         | Volume Creation Timestamp |
| afs.fs.volsync.spare2        | Spare 2                   | Unsigned 32-bit integer | Spare 2                   |
| afs.fs.volsync.spare3        | Spare 3                   | Unsigned 32-bit integer | Spare 3                   |
| afs.fs.volsync.spare4        | Spare 4                   | Unsigned 32-bit integer | Spare 4                   |

Appendix A. Ethereal Display Filter Fields

| Field                          | Field Name         | Type                    | Description          |
|--------------------------------|--------------------|-------------------------|----------------------|
| afs.fs.volsync.spare5          | Spare 5            | Unsigned 32-bit integer | Spare 5              |
| afs.fs.volsync.spare6          | Spare 6            | Unsigned 32-bit integer | Spare 6              |
| afs.fs.xstats.clientversion    | Client Version     | Unsigned 32-bit integer | Client Version       |
| afs.fs.xstats.collectionnumber | Collection Number  | Unsigned 32-bit integer | Collection Number    |
| afs.fs.xstats.timestamp        | XStats Timestamp   | Unsigned 32-bit integer | XStats Timestamp     |
| afs.fs.xstats.version          | XStats Version     | Unsigned 32-bit integer | XStats Version       |
| afs.kauth                      | KAuth              | Boolean                 | Kerberos Auth Server |
| afs.kauth.data                 | Data               | Byte array              | Data                 |
| afs.kauth.domain               | Domain             | String                  | Domain               |
| afs.kauth.errcode              | Error Code         | Unsigned 32-bit integer | Error Code           |
| afs.kauth.kvno                 | Key Version Number | Unsigned 32-bit integer | Key Version Number   |
| afs.kauth.name                 | Name               | String                  | Name                 |
| afs.kauth.opcode               | Operation          | Unsigned 32-bit integer | Operation            |
| afs.kauth.princ                | Principal          | String                  | Principal            |
| afs.kauth.realm                | Realm              | String                  | Realm                |
| afs.prot                       | Protection         | Boolean                 | Protection Server    |
| afs.prot.count                 | Count              | Unsigned 32-bit integer | Count                |
| afs.prot.errcode               | Error Code         | Unsigned 32-bit integer | Error Code           |
| afs.prot.flag                  | Flag               | Unsigned 32-bit integer | Flag                 |
| afs.prot.gid                   | Group ID           | Unsigned 32-bit integer | Group ID             |
| afs.prot.id                    | ID                 | Unsigned 32-bit integer | ID                   |
| afs.prot.maxgid                | Maximum Group ID   | Unsigned 32-bit integer | Maximum Group ID     |

| Field                       | Field Name          | Type                    | Description                                  |
|-----------------------------|---------------------|-------------------------|--|
| afs.prot.maxuid             | Maximum User ID     | Unsigned 32-bit integer | Maximum User ID                              |
| afs.prot.name               | Name                | String                  | Name   |
| afs.prot.newid              | New ID              | Unsigned 32-bit integer | New ID                                       |
| afs.prot.oidid              | Old ID              | Unsigned 32-bit integer | Old ID                                       |
| afs.prot.opcode             | Operation           | Unsigned 32-bit integer | Operation                                    |
| afs.prot.pos                | Position            | Unsigned 32-bit integer | Position                                     |
| afs.prot.uid                | User ID             | Unsigned 32-bit integer | User ID                                      |
| afs.repframe                | Reply Frame         |                         | Reply Frame                                  |
| afs.reqframe                | Request Frame       |                         | Request Frame                                |
| afs.rmtsys                  | Rmtsys              | Boolean                 | Rmtsys                                       |
| afs.rmtsys.opcode           | Operation           | Unsigned 32-bit integer | Operation                                    |
| afs.time                    | Time from request   | Time duration           | Time between Request and Reply for AFS calls |
| afs.ubik                    | Ubik                | Boolean                 | Ubik   |
| afs.ubik.activewrite        | Active Write        | Unsigned 32-bit integer | Active Write                                 |
| afs.ubik.addr               | Address             | IPv4 address            | Address                                      |
| afs.ubik.amsyncsite         | Am Sync Site        | Unsigned 32-bit integer | Am Sync Site                                 |
| afs.ubik.anyreadlocks       | Any Read Locks      | Unsigned 32-bit integer | Any Read Locks                               |
| afs.ubik.anywritelocks      | Any Write Locks     | Unsigned 32-bit integer | Any Write Locks                              |
| afs.ubik.beaconsincelocked  | Beacon Since Down   | Unsigned 32-bit integer | Beacon Since Down                            |
| afs.ubik.currentdb          | Current DB          | Unsigned 32-bit integer | Current DB                                   |
| afs.ubik.currenttransaction | Current Transaction | Unsigned 32-bit integer | Current Transaction                          |
| afs.ubik.epochtime          | Epoch Time          | Date/Time stamp         | Epoch Time                                   |

Appendix A. Ethereal Display Filter Fields

| Field                    | Field Name        | Type                    | Description       |
|--------------------------|-------------------|-------------------------|-------------------|
| afs.ubik.errcode         | Error Code        | Unsigned 32-bit integer | Error Code        |
| afs.ubik.file            | File              | Unsigned 32-bit integer | File              |
| afs.ubik.interface       | Interface Address | IPv4 address            | Interface Address |
| afs.ubik.isclone         | Is Clone          | Unsigned 32-bit integer | Is Clone          |
| afs.ubik.lastbeacon sent | Last Beacon Sent  | Date/Time stamp         | Last Beacon Sent  |
| afs.ubik.lastvote        | Last Vote         | Unsigned 32-bit integer | Last Vote         |
| afs.ubik.lastvotetime    | Last Vote Time    | Date/Time stamp         | Last Vote Time    |
| afs.ubik.lastyesclaim    | Last Yes Claim    | Date/Time stamp         | Last Yes Claim    |
| afs.ubik.lastyeshost     | Last Yes Host     | IPv4 address            | Last Yes Host     |
| afs.ubik.lastyesstate    | Last Yes State    | Unsigned 32-bit integer | Last Yes State    |
| afs.ubik.lastyestime     | Last Yes Time     | Date/Time stamp         | Last Yes Time     |
| afs.ubik.length          | Length            | Unsigned 32-bit integer | Length            |
| afs.ubik.lockedpages     | Locked Pages      | Unsigned 32-bit integer | Locked Pages      |
| afs.ubik.locktype        | Lock Type         | Unsigned 32-bit integer | Lock Type         |
| afs.ubik.lowesthost      | Lowest Host       | IPv4 address            | Lowest Host       |
| afs.ubik.lowesttime      | Lowest Time       | Date/Time stamp         | Lowest Time       |
| afs.ubik.now             | Now               | Date/Time stamp         | Now               |
| afs.ubik.nservers        | Number of Servers | Unsigned 32-bit integer | Number of Servers |
| afs.ubik.opcode          | Operation         | Unsigned 32-bit integer | Operation         |
| afs.ubik.position        | Position          | Unsigned 32-bit integer | Position          |
| afs.ubik.recoveryst      | Recovery State    | Unsigned 32-bit         | Recovery State    |

| Field                     | Field Name         | Type                    | Description                     |
|---------------------------|--------------------|-------------------------|---------------------------------|
| ate                       |                    | integer                 |                                 |
| afs.ubik.site             | Site               | IPv4 address            | Site                            |
| afs.ubik.state            | State              | Unsigned 32-bit integer | State                           |
| afs.ubik.synchost         | Sync Host          | IPv4 address            | Sync Host                       |
| afs.ubik.syncsiteuntil    | Sync Site Until    | Date/Time stamp         | Sync Site Until                 |
| afs.ubik.synctime         | Sync Time          | Date/Time stamp         | Sync Time                       |
| afs.ubik.tidcounter       | TID Counter        | Unsigned 32-bit integer | TID Counter                     |
| afs.ubik.up               | Up                 | Unsigned 32-bit integer | Up                              |
| afs.ubik.version.counter  | Counter            | Unsigned 32-bit integer | Counter                         |
| afs.ubik.version.epoch    | Epoch              | Date/Time stamp         | Epoch                           |
| afs.ubik.voteend          | Vote Ends          | Date/Time stamp         | Vote Ends                       |
| afs.ubik.votestart        | Vote Started       | Date/Time stamp         | Vote Started                    |
| afs.ubik.votetype         | Vote Type          | Unsigned 32-bit integer | Vote Type                       |
| afs.ubik.writelockedpages | Write Locked Pages | Unsigned 32-bit integer | Write Locked Pages              |
| afs.ubik.writetran        | Write Transaction  | Unsigned 32-bit integer | Write Transaction               |
| afs.update                | Update             | Boolean                 | Update Server                   |
| afs.update.opcode         | Operation          | Unsigned 32-bit integer | Operation                       |
| afs.vldb                  | VLDB               | Boolean                 | Volume Location Database Server |
| afs.vldb.bkvol            | Backup Volume ID   | Unsigned 32-bit integer | Read-Only Volume ID             |
| afs.vldb.bump             | Bumped Volume ID   | Unsigned 32-bit integer | Bumped Volume ID                |
| afs.vldb.clonevol         | Clone Volume ID    | Unsigned 32-bit integer | Clone Volume ID                 |
| afs.vldb.count            | Volume Count       | Unsigned 32-bit integer | Volume Count                    |
| afs.vldb.errcode          | Error Code         | Unsigned 32-bit         | Error Code                      |

| Field                     | Field Name            | Type                    | Description           |
|---------------------------|-----------------------|-------------------------|-----------------------|
|                           |                       | integer                 |                       |
| afs.vldb.flags            | Flags                 | Unsigned 32-bit integer | Flags                 |
| afs.vldb.flags.bkexists   | Backup Exists         | Boolean                 | Backup Exists         |
| afs.vldb.flags.dfsfileset | DFS Fileset           | Boolean                 | DFS Fileset           |
| afs.vldb.flags.roexists   | Read-Only Exists      | Boolean                 | Read-Only Exists      |
| afs.vldb.flags.rwexists   | Read/Write Exists     | Boolean                 | Read/Write Exists     |
| afs.vldb.id               | Volume ID             | Unsigned 32-bit integer | Volume ID             |
| afs.vldb.index            | Volume Index          | Unsigned 32-bit integer | Volume Index          |
| afs.vldb.name             | Volume Name           | String                  | Volume Name           |
| afs.vldb.nextindex        | Next Volume Index     | Unsigned 32-bit integer | Next Volume Index     |
| afs.vldb.numservers       | Number of Servers     | Unsigned 32-bit integer | Number of Servers     |
| afs.vldb.opcode           | Operation             | Unsigned 32-bit integer | Operation             |
| afs.vldb.partition        | Partition             | String                  | Partition             |
| afs.vldb.rovol            | Read-Only Volume ID   | Unsigned 32-bit integer | Read-Only Volume ID   |
| afs.vldb.rwvol            | Read-Write Volume ID  | Unsigned 32-bit integer | Read-Only Volume ID   |
| afs.vldb.server           | Server                | IPv4 address            | Server                |
| afs.vldb.serverflags      | Server Flags          | Unsigned 32-bit integer | Server Flags          |
| afs.vldb.serverip         | Server IP             | IPv4 address            | Server IP             |
| afs.vldb.serverunique     | Server Unique Address | Unsigned 32-bit integer | Server Unique Address |
| afs.vldb.serveruuid       | Server UUID           | Byte array              | Server UUID           |
| afs.vldb.spare1           | Spare 1               | Unsigned 32-bit integer | Spare 1               |
| afs.vldb.spare2           | Spare 2               | Unsigned 32-bit integer | Spare 2               |



| Field           | Field Name    | Type                    | Description   |
|-----------------|---------------|-------------------------|---------------|
| afs.vldb.spare3 | Spare 3       | Unsigned 32-bit integer | Spare 3       |
| afs.vldb.spare4 | Spare 4       | Unsigned 32-bit integer | Spare 4       |
| afs.vldb.spare5 | Spare 5       | Unsigned 32-bit integer | Spare 5       |
| afs.vldb.spare6 | Spare 6       | Unsigned 32-bit integer | Spare 6       |
| afs.vldb.spare7 | Spare 7       | Unsigned 32-bit integer | Spare 7       |
| afs.vldb.spare8 | Spare 8       | Unsigned 32-bit integer | Spare 8       |
| afs.vldb.spare9 | Spare 9       | Unsigned 32-bit integer | Spare 9       |
| afs.vldb.type   | Volume Type   | Unsigned 32-bit integer | Volume Type   |
| afs.vol         | Volume Server | Boolean                 | Volume Server |
| afs.vol.count   | Volume Count  | Unsigned 32-bit integer | Volume Count  |
| afs.vol.errcode | Error Code    | Unsigned 32-bit integer | Error Code    |
| afs.vol.id      | Volume ID     | Unsigned 32-bit integer | Volume ID     |
| afs.vol.name    | Volume Name   | String                  | Volume Name   |
| afs.vol.opcode  | Operation     | Unsigned 32-bit integer | Operation     |

### Apache JServ Protocol v1.3 (ajp13)

Table A-17. Apache JServ Protocol v1.3 (ajp13)

| Field        | Field Name | Type                    | Description  |
|--------------|------------|-------------------------|--------------|
| ajp13.code   | Code       | String                  | Type Code    |
| ajp13.data   | Data       | String                  | Data         |
| ajp13.hname  | HNAME      | String                  | Header Name  |
| ajp13.hval   | HVAL       | String                  | Header Value |
| ajp13.len    | Length     | Unsigned 16-bit integer | Data Length  |
| ajp13.magic  | Magic      | Byte array              | Magic Number |
| ajp13.method | Method     | String                  | HTTP Method  |

| Field         | Field Name | Type                    | Description         |
|---------------|------------|-------------------------|---------------------|
| ajp13.nhdr    | NHDR       | Unsigned 16-bit integer | Num Headers         |
| ajp13.port    | PORT       | Unsigned 16-bit integer | Port                |
| ajp13.raddr   | RADDR      | String                  | Remote Address      |
| ajp13.reusep  | REUSEP     | Unsigned 8-bit integer  | Reuse Connection?   |
| ajp13.rhost   | RHOST      | String                  | Remote Host         |
| ajp13.rlen    | RLEN       | Unsigned 16-bit integer | Requested Length    |
| ajp13.rmsg    | RMSG       | String                  | HTTP Status Message |
| ajp13.rstatus | RSTATUS    | Unsigned 16-bit integer | HTTP Status Code    |
| ajp13.srv     | SRV        | String                  | Server              |
| ajp13.sslp    | SSLP       | Unsigned 8-bit integer  | Is SSL?             |
| ajp13.uri     | URI        | String                  | HTTP URI            |
| ajp13.ver     | Version    | String                  | HTTP Version        |

## AppleTalk Filing Protocol (afp)

Table A-18. AppleTalk Filing Protocol (afp)

| Field                 | Field Name  | Type                   | Description                            |
|-----------------------|-------------|------------------------|--|
| afp.AFPVersion        | AFP Version | String                 | Client AFP version                     |
| afp.UAM               | UAM         | String                 | User Authentication Method             |
| afp.access            | Access mode | Unsigned 8-bit integer | Fork access mode                       |
| afp.access.deny_read  | Deny read   | Boolean                | Deny read                              |
| afp.access.deny_write | Deny write  | Boolean                | Deny write                             |
| afp.access.read       | Read        | Boolean                | Open for reading                       |
| afp.access.write      | Write       | Boolean                | Open for writing                       |
| afp.actual_count      | Count       | Signed 32-bit integer  | Number of bytes returned by read/write |

| <b>Field</b>        | <b>Field Name</b>          | <b>Type</b>             | <b>Description</b>                   |
|---------------------|----------------------------|-------------------------|--------------------------------------|
| afp.afp_login_flags | Flags                      | Unsigned 16-bit integer | Login flags                          |
| afp.appl_index      | Index                      | Unsigned 16-bit integer | Application index                    |
| afp.appl_tag        | Tag                        | Unsigned 32-bit integer | Application tag                      |
| afp.backup_date     | Backup date                | Date/Time stamp         | Backup date                          |
| afp.cat_count       | Cat count                  | Unsigned 32-bit integer | Number of structures returned        |
| afp.cat_position    | Position                   | Byte array              | Reserved                             |
| afp.cat_req_matches | Max answers                | Signed 32-bit integer   | Maximum number of matches to return. |
| afp.command         | Command                    | Unsigned 8-bit integer  | AFP function                         |
| afp.comment         | Comment                    | String                  | File/folder comment                  |
| afp.create_flag     | Hard create                | Boolean                 | Soft/hard create file                |
| afp.creation_date   | Creation date              | Date/Time stamp         | Creation date                        |
| afp.data_fork_len   | Data fork size             | Unsigned 32-bit integer | Data fork size                       |
| afp.did             | DID                        | Unsigned 32-bit integer | Parent directory ID                  |
| afp.dir_ar          | Access rights              | Unsigned 32-bit integer | Directory access rights              |
| afp.dir_ar.blank    | Blank access right         | Boolean                 | Blank access right                   |
| afp.dir_ar.e_read   | Everyone has read access   | Boolean                 | Everyone has read access             |
| afp.dir_ar.e_search | Everyone has search access | Boolean                 | Everyone has search access           |
| afp.dir_ar.e_write  | Everyone has write access  | Boolean                 | Everyone has write access            |
| afp.dir_ar.g_read   | Group has read access      | Boolean                 | Group has read access                |
| afp.dir_ar.g_search | Group has search access    | Boolean                 | Group has search access              |
| afp.dir_ar.g_write  | Group has write            | Boolean                 | Group has write                      |

Appendix A. Ethereal Display Filter Fields

| Field                                | Field Name              | Type                    | Description                         |
|--------------------------------------|-------------------------|-------------------------|-------------------------------------|
|                                      | access                  |                         | access                              |
| afp.dir_ar.o_read                    | Owner has read access   | Boolean                 | Owner has read access               |
| afp.dir_ar.o_search                  | Owner has search access | Boolean                 | Owner has search access             |
| afp.dir_ar.o_write                   | Owner has write access  | Boolean                 | Gwner has write access              |
| afp.dir_ar.u_owner                   | User is the owner       | Boolean                 | Current user is the directory owner |
| afp.dir_ar.u_read                    | User has read access    | Boolean                 | User has read access                |
| afp.dir_ar.u_search                  | User has search access  | Boolean                 | User has search access              |
| afp.dir_ar.u_write                   | User has write access   | Boolean                 | User has write access               |
| afp.dir_attribute.backup_needed      | Backup needed           | Boolean                 | Directory needs to be backed up     |
| afp.dir_attribute.delete_inhibit     | Delete inhibit          | Boolean                 | Delete inhibit                      |
| afp.dir_attribute.in_exported_folder | Shared area             | Boolean                 | Directory is in a shared area       |
| afp.dir_attribute.invisible          | Invisible               | Boolean                 | Directory is not visible            |
| afp.dir_attribute.mounted            | Mounted                 | Boolean                 | Directory is mounted                |
| afp.dir_attribute.rename_inhibit     | Rename inhibit          | Boolean                 | Rename inhibit                      |
| afp.dir_attribute.set_clear          | Set                     | Boolean                 | Clear/set attribute                 |
| afp.dir_attribute.share              | Share point             | Boolean                 | Directory is a share point          |
| afp.dir_attribute.system             | System                  | Boolean                 | Directory is a system directory     |
| afp.dir_bitmap                       | Directory bitmap        | Unsigned 16-bit integer | Directory bitmap                    |
| afp.dir_bitmap.UTF8_name             | UTF-8 name              | Boolean                 | Return UTF-8 name if diectory       |
| afp.dir_bitmap.access_rights         | Access rights           | Boolean                 | Return access rights if directory   |

| <b>Field</b>                   | <b>Field Name</b>       | <b>Type</b>             | <b>Description</b>                      |
|--------------------------------|-------------------------|-------------------------|---|
| afp.dir_bitmap.attributes      | Attributes              | Boolean                 | Return attributes if directory          |
| afp.dir_bitmap.backup_date     | Backup date             | Boolean                 | Return backup date if directory         |
| afp.dir_bitmap.create_date     | Creation date           | Boolean                 | Return creation date if directory       |
| afp.dir_bitmap.did             | DID                     | Boolean                 | Return parent directory ID if directory |
| afp.dir_bitmap.fid             | File ID                 | Boolean                 | Return file ID if directory             |
| afp.dir_bitmap.finder_info     | Finder info             | Boolean                 | Return finder info if directory         |
| afp.dir_bitmap.group_id        | Group id                | Boolean                 | Return group id if directory            |
| afp.dir_bitmap.long_name       | Long name               | Boolean                 | Return long name if directory           |
| afp.dir_bitmap.mod_date        | Modification date       | Boolean                 | Return modification date if directory   |
| afp.dir_bitmap.offspring_count | Offspring count         | Boolean                 | Return offspring count if directory     |
| afp.dir_bitmap.owner_id        | Owner id                | Boolean                 | Return owner id if directory            |
| afp.dir_bitmap.short_name      | Short name              | Boolean                 | Return short name if directory          |
| afp.dir_bitmap.unix_privs      | UNIX privileges         | Boolean                 | Return UNIX privileges if directory     |
| afp.dir_group_id               | Group ID                | Signed 32-bit integer   | Directory group ID                      |
| afp.dir_offspring              | Offspring               | Unsigned 16-bit integer | Directory offspring                     |
| afp.dir_owner_id               | Owner ID                | Signed 32-bit integer   | Directory owner ID                      |
| afp.dt_ref                     | DT ref                  | Unsigned 16-bit integer | Desktop database reference num          |
| afp.ext_data_fork_len          | Extended data fork size | Unsigned 64-bit integer | Extended (>2GB) data fork length        |
| afp.ext_resource_f             | Extended resource       | Unsigned 64-bit         | Extended (>2GB) resource fork           |

Appendix A. Ethereal Display Filter Fields

| Field                                  | Field Name              | Type                    | Description                                   |
|--|-------------------------|-------------------------|---|
| ork_len                                | fork size               | integer                 | length  |
| afp.file_attribute.backup_needed       | Backup needed           | Boolean                 | File needs to be backed up                    |
| afp.file_attribute.copy_protect        | Copy protect            | Boolean                 | copy protect                                  |
| afp.file_attribute.delete_inhibit      | Delete inhibit          | Boolean                 | delete inhibit                                |
| afp.file_attribute.data_fork_open      | Data fork open          | Boolean                 | Data fork already open                        |
| afp.file_attribute.invisible           | Invisible               | Boolean                 | File is not visible                           |
| afp.file_attribute.multi_user          | Multi user              | Boolean                 | multi user                                    |
| afp.file_attribute.rename_inhibit      | Rename inhibit          | Boolean                 | rename inhibit                                |
| afp.file_attribute.resource_fork_open  | Resource fork open      | Boolean                 | Resource fork already open                    |
| afp.file_attribute.set_clear           | Set                     | Boolean                 | Clear/set attribute                           |
| afp.file_attribute.system              | System                  | Boolean                 | File is a system file                         |
| afp.file_attribute.write_inhibit       | Write inhibit           | Boolean                 | Write inhibit                                 |
| afp.file_bitmap                        | File bitmap             | Unsigned 16-bit integer | File bitmap                                   |
| afp.file_bitmap.UTF8_name              | UTF-8 name              | Boolean                 | Return UTF-8 name if file                     |
| afp.file_bitmap.attributes             | Attributes              | Boolean                 | Return attributes if file                     |
| afp.file_bitmap.backup_date            | Backup date             | Boolean                 | Return backup date if file                    |
| afp.file_bitmap.create_date            | Creation date           | Boolean                 | Return creation date if file                  |
| afp.file_bitmap.data_fork_len          | Data fork size          | Boolean                 | Return data fork size if file                 |
| afp.file_bitmap.did                    | DID                     | Boolean                 | Return parent directory ID if file            |
| afp.file_bitmap.extended_data_fork_len | Extended data fork size | Boolean                 | Return extended (>2GB) data fork size if file |

| Field                                | Field Name                  | Type                    | Description                                       |
|--------------------------------------|-----------------------------|-------------------------|---|
| afp.file_bitmap.ex_resource_fork_len | Extended resource fork size | Boolean                 | Return extended (>2GB) resource fork size if file |
| afp.file_bitmap.fid                  | File ID                     | Boolean                 | Return file ID if file                            |
| afp.file_bitmap.finder_info          | Finder info                 | Boolean                 | Return finder info if file                        |
| afp.file_bitmap.launch_limit         | Launch limit                | Boolean                 | Return launch limit if file                       |
| afp.file_bitmap.long_name            | Long name                   | Boolean                 | Return long name if file                          |
| afp.file_bitmap.mod_date             | Modification date           | Boolean                 | Return modification date if file                  |
| afp.file_bitmap.resource_fork_len    | Resource fork size          | Boolean                 | Return resource fork size if file                 |
| afp.file_bitmap.short_name           | Short name                  | Boolean                 | Return short name if file                         |
| afp.file_bitmap.unix_privs           | UNIX privileges             | Boolean                 | Return UNIX privileges if file                    |
| afp.file_creator                     | File creator                | String                  | File creator                                      |
| afp.file_flag                        | Dir                         | Boolean                 | Is a dir  |
| afp.file_id                          | File ID                     | Unsigned 32-bit integer | File/directory ID                                 |
| afp.file_type                        | File type                   | String                  | File type   |
| afp.finder_info                      | Finder info                 | Byte array              | Finder info                                       |
| afp.flag                             | From                        | Unsigned 8-bit integer  | Offset is relative to start/end of the fork       |
| afp.fork_type                        | Resource fork               | Boolean                 | Data/resource fork                                |
| afp.group_ID                         | Group ID                    | Unsigned 32-bit integer | Group ID  |
| afp.icon_index                       | Index                       | Unsigned 16-bit integer | Icon index in desktop database                    |
| afp.icon_length                      | Size                        | Unsigned 16-bit integer | Size for icon bitmap                              |
| afp.icon_tag                         | Tag                         | Unsigned 32-bit integer | Icon tag  |

| Field                  | Field Name        | Type                    | Description  |
|------------------------|-------------------|-------------------------|--|
| afp.icon_type          | Icon type         | Unsigned 8-bit integer  | Icon type  |
| afp.last_written       | Last written      | Unsigned 32-bit integer | Offset of the last byte written                            |
| afp.last_written64     | Last written      | Unsigned 64-bit integer | Offset of the last byte written (64 bits)                  |
| afp.lock_from          | End               | Boolean                 | Offset is relative to the end of the fork                  |
| afp.lock_len           | Length            | Signed 32-bit integer   | Number of bytes to be locked/unlocked                      |
| afp.lock_len64         | Length            | Signed 64-bit integer   | Number of bytes to be locked/unlocked (64 bits)            |
| afp.lock_offset        | Offset            | Signed 32-bit integer   | First byte to be locked                                    |
| afp.lock_offset64      | Offset            | Signed 64-bit integer   | First byte to be locked (64 bits)                          |
| afp.lock_op            | unlock            | Boolean                 | Lock/unlock op   |
| afp.lock_range_start   | Start             | Signed 32-bit integer   | First byte locked/unlocked                                 |
| afp.lock_range_start64 | Start             | Signed 64-bit integer   | First byte locked/unlocked (64 bits)                       |
| afp.long_name_offset   | Long name offset  | Unsigned 16-bit integer | Long name offset in packet                                 |
| afp.map_id             | ID                | Unsigned 32-bit integer | User/Group ID  |
| afp.map_id_type        | Type              | Unsigned 8-bit integer  | Map ID type  |
| afp.map_name           | Name              | String                  | User/Group name  |
| afp.map_name_type      | Type              | Unsigned 8-bit integer  | Map name type  |
| afp.modification_date  | Modification date | Date/Time stamp         | Modification date  |
| afp.newline_char       | Newline char      | Unsigned 8-bit integer  | Value to compare ANDed bytes with when looking for newline |



| Field                 | Field Name         | Type                    | Description                                      |
|-----------------------|--------------------|-------------------------|--|
| afp.newline_mask      | Newline mask       | Unsigned 8-bit integer  | Value to AND bytes with when looking for newline |
| afp.offset            | Offset             | Signed 32-bit integer   | Offset   |
| afp.offset64          | Offset             | Signed 64-bit integer   | Offset (64 bits)                                 |
| afp.ofork             | Fork               | Unsigned 16-bit integer | Open fork reference number                       |
| afp.ofork_len         | New length         | Signed 32-bit integer   | New length                                       |
| afp.ofork_len64       | New length         | Signed 64-bit integer   | New length (64 bits)                             |
| afp.pad               | Pad                | No value                | Pad Byte   |
| afp.passwd            | Password           | String                  | Password   |
| afp.path_len          | Len                | Unsigned 8-bit integer  | Path length                                      |
| afp.path_name         | Name               | String                  | Path name  |
| afp.path_type         | Type               | Unsigned 8-bit integer  | Type of names                                    |
| afp.path_unicode_hint | Unicode hint       | Unsigned 32-bit integer | Unicode hint                                     |
| afp.path_unicode_len  | Len                | Unsigned 16-bit integer | Path length (unicode)                            |
| afp.random            | Random number      | Byte array              | UAM random number                                |
| afp.reply_size        | Reply size         | Unsigned 16-bit integer | Reply size                                       |
| afp.reply_size32      | Reply size         | Unsigned 32-bit integer | Reply size                                       |
| afp.req_count         | Req count          | Unsigned 16-bit integer | Maximum number of structures returned            |
| afp.reserved          | Reserved           | Byte array              | Reserved   |
| afp.resource_fork_len | Resource fork size | Unsigned 32-bit integer | Resource fork size                               |
| afp.rw_count          | Count              | Signed 32-bit integer   | Number of bytes to be read/written               |

| Field                         | Field Name           | Type                    | Description                                  |
|-------------------------------|----------------------|-------------------------|--|
| afp.rw_count64                | Count                | Signed 64-bit integer   | Number of bytes to be read/written (64 bits) |
| afp.server_time               | Server time          | Date/Time stamp         | Server time                                  |
| afp.session_token             | Token                | Byte array              | Session token                                |
| afp.session_token_len         | Len                  | Unsigned 16-bit integer | Session token length                         |
| afp.session_token_type        | Type                 | Unsigned 16-bit integer | Session token type                           |
| afp.short_name_offset         | Short name offset    | Unsigned 16-bit integer | Short name offset in packet                  |
| afp.start_index               | Start index          | Unsigned 16-bit integer | First structure returned                     |
| afp.start_index32             | Start index          | Unsigned 32-bit integer | First structure returned                     |
| afp.struct_size               | Struct size          | Unsigned 8-bit integer  | Sizeof of struct                             |
| afp.struct_size16             | Struct size          | Unsigned 16-bit integer | Sizeof of struct                             |
| afp.unicode_name_offset       | Unicode name offset  | Unsigned 16-bit integer | Unicode name offset in packet                |
| afp.unix_privs.gid            | GID                  | Unsigned 32-bit integer | Group ID                                     |
| afp.unix_privs.permissions    | Permissions          | Unsigned 32-bit integer | Permissions                                  |
| afp.unix_privs.ua_permissions | User's access rights | Unsigned 32-bit integer | User's access rights                         |
| afp.unix_privs.uid            | UID                  | Unsigned 32-bit integer | User ID                                      |
| afp.user                      | User                 | String                  | User   |
| afp.user_ID                   | User ID              | Unsigned 32-bit integer | User ID                                      |
| afp.user_bitmap               | Bitmap               | Unsigned 16-bit integer | User Info bitmap                             |
| afp.user_bitmap.GID           | Primary group ID     | Boolean                 | Primary group ID                             |
| afp.user_bitmap.UID           | User ID              | Boolean                 | User ID                                      |
| afp.user_flag                 | Flag                 | Unsigned 8-bit          | User Info flag                               |

| Field                                | Field Name              | Type                    | Description                        |
|--------------------------------------|-------------------------|-------------------------|------------------------------------|
|                                      |                         | integer                 |                                    |
| afp.user_len                         | Len                     | Unsigned 16-bit integer | User name length (unicode)         |
| afp.user_name                        | User                    | String                  | User name (unicode)                |
| afp.user_type                        | Type                    | Unsigned 8-bit integer  | Type of user name                  |
| afp.vol_attribute.blank_access_privs | Blank access privileges | Boolean                 | Supports blank access privileges   |
| afp.vol_attribute.catalog_search     | Catalog search          | Boolean                 | Supports catalog search operations |
| afp.vol_attribute.fileIDs            | File IDs                | Boolean                 | Supports file IDs                  |
| afp.vol_attribute.password           | Volume password         | Boolean                 | Has a volume password              |
| afp.vol_attribute.read_only          | Read only               | Boolean                 | Read only volume                   |
| afp.vol_attribute.unix_privs         | UNIX access privileges  | Boolean                 | Supports UNIX access privileges    |
| afp.vol_attribute.utf8_names         | UTF-8 names             | Boolean                 | Supports UTF-8 names               |
| afp.vol_attributes                   | Attributes              | Unsigned 16-bit integer | Volume attributes                  |
| afp.vol_backup_date                  | Backup date             | Date/Time stamp         | Volume backup date                 |
| afp.vol_bitmap                       | Bitmap                  | Unsigned 16-bit integer | Volume bitmap                      |
| afp.vol_bitmap.attributes            | Attributes              | Boolean                 | Volume attributes                  |
| afp.vol_bitmap.backup_date           | Backup date             | Boolean                 | Volume backup date                 |
| afp.vol_bitmap.block_size            | Block size              | Boolean                 | Volume block size                  |
| afp.vol_bitmap.bytes_free            | Bytes free              | Boolean                 | Volume free bytes                  |
| afp.vol_bitmap.bytes_total           | Bytes total             | Boolean                 | Volume total bytes                 |
| afp.vol_bitmap.creation_date         | Creation date           | Boolean                 | Volume creation date               |

| Field                         | Field Name           | Type                    | Description                        |
|-------------------------------|----------------------|-------------------------|------------------------------------|
| afp.vol_bitmap.ex_bytes_free  | Extended bytes free  | Boolean                 | Volume extended (>2GB) free bytes  |
| afp.vol_bitmap.ex_bytes_total | Extended bytes total | Boolean                 | Volume extended (>2GB) total bytes |
| afp.vol_bitmap.id             | ID                   | Boolean                 | Volume ID                          |
| afp.vol_bitmap.mod_date       | Modification date    | Boolean                 | Volume modification date           |
| afp.vol_bitmap.name           | Name                 | Boolean                 | Volume name                        |
| afp.vol_bitmap.signature      | Signature            | Boolean                 | Volume signature                   |
| afp.vol_block_size            | Block size           | Unsigned 32-bit integer | Volume block size                  |
| afp.vol_bytes_free            | Bytes free           | Unsigned 32-bit integer | Free space                         |
| afp.vol_bytes_total           | Bytes total          | Unsigned 32-bit integer | Volume size                        |
| afp.vol_creation_date         | Creation date        | Date/Time stamp         | Volume creation date               |
| afp.vol_ex_bytes_free         | Extended bytes free  | Unsigned 64-bit integer | Extended (>2GB) free space         |
| afp.vol_ex_bytes_total        | Extended bytes total | Unsigned 64-bit integer | Extended (>2GB) volume size        |
| afp.vol_flag_password         | Password             | Boolean                 | Volume is password-protected       |
| afp.vol_flag_unix_priv        | Unix privs           | Boolean                 | Volume has unix privileges         |
| afp.vol_id                    | Volume id            | Unsigned 16-bit integer | Volume id                          |
| afp.vol_modification_date     | Modification date    | Date/Time stamp         | Volume modification date           |
| afp.vol_name                  | Volume               | String                  | Volume name                        |
| afp.vol_name_offset           | Volume name offset   | Unsigned 16-bit integer | Volume name offset in packet       |
| afp.vol_signature             | Signature            | Unsigned 16-bit integer | Volume signature                   |

**AppleTalk Session Protocol (asp)**

Table A-19. AppleTalk Session Protocol (asp)

| Field                          | Field Name                   | Type                    | Description                       |
|--------------------------------|------------------------------|-------------------------|-----------------------------------|
| asp.attn_code                  | Attn code                    | Unsigned 16-bit integer | asp attention code                |
| asp.error                      | asp error                    | Signed 32-bit integer   | return error code                 |
| asp.function                   | asp function                 | Unsigned 8-bit integer  | asp function                      |
| asp.init_error                 | Error                        | Unsigned 16-bit integer | asp init error                    |
| asp.seq                        | Sequence                     | Unsigned 16-bit integer | asp sequence number               |
| asp.server_addr.length         | Length                       | Unsigned 8-bit integer  | Address length.                   |
| asp.server_addr.type           | Type                         | Unsigned 8-bit integer  | Address type.                     |
| asp.server_addr.value          | Value                        | Byte array              | Address value                     |
| asp.server_directory           | Directory service            | String                  | Server directory service          |
| asp.server_flag                | Flag                         | Unsigned 16-bit integer | Server capabilities flag          |
| asp.server_flag.copyfile       | Support copyfile             | Boolean                 | Server support copyfile           |
| asp.server_flag.directory      | Support directory services   | Boolean                 | Server support directory services |
| asp.server_flag.fast_copy      | Support fast copy            | Boolean                 | Server support fast copy          |
| asp.server_flag.no_save_passwd | Don't allow save password    | Boolean                 | Don't allow save password         |
| asp.server_flag.notify         | Support server notifications | Boolean                 | Server support notifications      |
| asp.server_flag.password       | Support change password      | Boolean                 | Server support change password    |
| asp.server_flag.reconnect      | Support server reconnect     | Boolean                 | Server support reconnect          |
| asp.server_flag.srv_msg        | Support server message       | Boolean                 | Support server message            |
| asp.server_flag.srv_sig        | Support server signature     | Boolean                 | Support server signature          |

| Field                         | Field Name                  | Type                       | Description                        |
|-------------------------------|-----------------------------|----------------------------|------------------------------------|
| asp.server_flag.tcp<br>ip     | Support TCP/IP              | Boolean                    | Server support<br>TCP/IP           |
| asp.server_flag.utf<br>8_name | Support UTF8<br>server name | Boolean                    | Server support<br>UTF8 server name |
| asp.server_icon               | Icon bitmap                 | Byte array                 | Server icon bitmap                 |
| asp.server_name               | Server name                 | String                     | Server name                        |
| asp.server_signatu<br>re      | Server signature            | Byte array                 | Server signature                   |
| asp.server_type               | Server type                 | String                     | Server type                        |
| asp.server_uams               | UAM                         | String                     | UAM                                |
| asp.server_utf8_na<br>me      | Server name<br>(UTF8)       | String                     | Server name<br>(UTF8)              |
| asp.server_utf8_na<br>me_len  | Server name<br>length       | Unsigned 16-bit<br>integer | UTF8 server name<br>length         |
| asp.server_vers               | AFP version                 | String                     | AFP version                        |
| asp.session_id                | Session ID                  | Unsigned 8-bit<br>integer  | asp session id                     |
| asp.size                      | size                        | Unsigned 16-bit<br>integer | asp available size<br>for reply    |
| asp.socket                    | Socket                      | Unsigned 8-bit<br>integer  | asp socket                         |
| asp.version                   | Version                     | Unsigned 16-bit<br>integer | asp version                        |
| asp.zero_value                | Pad (0)                     | Byte array                 | Pad                                |

### AppleTalk Transaction Protocol packet (atp)

Table A-20. AppleTalk Transaction Protocol packet (atp)

| Field             | Field Name     | Type                      | Description                  |
|-------------------|----------------|---------------------------|------------------------------|
| atp.bitmap        | Bitmap         | Unsigned 8-bit<br>integer | Bitmap or<br>sequence number |
| atp.ctrlinfo      | Control info   | Unsigned 8-bit<br>integer | control info                 |
| atp.eom           | EOM            | Boolean                   | End-of-message               |
| atp.fragment      | ATP Fragment   |                           | ATP Fragment                 |
| atp.fragments     | ATP Fragments  | No value                  | ATP Fragments                |
| atp.function      | Function       | Unsigned 8-bit<br>integer | function code                |
| atp.segment.error | Desegmentation |                           | Desegmentation               |

| Field                        | Field Name                          | Type                    | Description   |
|------------------------------|-------------------------------------|-------------------------|---|
|                              | error                               |                         | error due to illegal segments                         |
| atp.segment.multipetails     | Multiple tail segments found        | Boolean                 | Several tails were found when desegmenting the packet |
| atp.segment.overlap          | Segment overlap                     | Boolean                 | Segment overlaps with other segments                  |
| atp.segment.overlap.conflict | Conflicting data in segment overlap | Boolean                 | Overlapping segments contained conflicting data       |
| atp.segment.toolongsegment   | Segment too long                    | Boolean                 | Segment contained data past end of packet             |
| atp.sts                      | STS                                 | Boolean                 | Send transaction status                               |
| atp.tid                      | TID                                 | Unsigned 16-bit integer | Transaction id  |
| atp.treltimer                | TRel timer                          | Unsigned 8-bit integer  | TRel timer  |
| atp.user_bytes               | User bytes                          | Unsigned 32-bit integer | User bytes  |
| atp.xo                       | XO                                  | Boolean                 | Exactly-once flag                                     |

### Appletalk Address Resolution Protocol (arp)

Table A-21. Appletalk Address Resolution Protocol (arp)

| Field            | Field Name              | Type                          | Description |
|------------------|-------------------------|-------------------------------|-------------|
| arp.dst.hw       | Target hardware address | Byte array                    |             |
| arp.dst.hw_mac   | Target MAC address      | 6-byte Hardware (MAC) Address |             |
| arp.dst.proto    | Target protocol address | Byte array                    |             |
| arp.dst.proto_id | Target ID               | Byte array                    |             |
| arp.hard.size    | Hardware size           | Unsigned 8-bit integer        |             |
| arp.hard.type    | Hardware type           | Unsigned 16-bit integer       |             |
| arp.opcode       | Opcode                  | Unsigned 16-bit               |             |

| Field             | Field Name              | Type                          | Description |
|-------------------|-------------------------|-------------------------------|-------------|
|                   |                         | integer                       |             |
| aarp.proto.size   | Protocol size           | Unsigned 8-bit integer        |             |
| aarp.proto.type   | Protocol type           | Unsigned 16-bit integer       |             |
| aarp.src.hw       | Sender hardware address | Byte array                    |             |
| aarp.src.hw_mac   | Sender MAC address      | 6-byte Hardware (MAC) Address |             |
| aarp.src.proto    | Sender protocol address | Byte array                    |             |
| aarp.src.proto_id | Sender ID               | Byte array                    |             |

### Async data over ISDN (V.120) (v120)

Table A-22. Async data over ISDN (V.120) (v120)

| Field        | Field Name    | Type                    | Description |
|--------------|---------------|-------------------------|-------------|
| v120.address | Link Address  | Unsigned 16-bit integer |             |
| v120.control | Control Field | Unsigned 16-bit integer |             |
| v120.header  | Header Field  | String                  |             |

### Authentication Header (ah)

Table A-23. Authentication Header (ah)

| Field       | Field Name | Type                    | Description |
|-------------|------------|-------------------------|-------------|
| ah.sequence | Sequence   | Unsigned 32-bit integer |             |
| ah.spi      | SPI        | Unsigned 32-bit integer |             |

### BACnet Virtual Link Control (bvlc)

Table A-24. BACnet Virtual Link Control (bvlc)

| Field         | Field Name | Type                    | Description                     |
|---------------|------------|-------------------------|---------------------------------|
| bvlc.bdt_ip   | IP         | IPv4 address            | BDT IP                          |
| bvlc.bdt_mask | Mask       | Byte array              | BDT Broadcast Distribution Mask |
| bvlc.bdt_port | Port       | Unsigned 16-bit integer | BDT Port                        |
| bvlc.fdt_ip   | IP         | IPv4 address            | FDT IP                          |



| Field            | Field Name | Type                    | Description                      |
|------------------|------------|-------------------------|----------------------------------|
| bvlc.fdt_port    | Port       | Unsigned 16-bit integer | FDT Port                         |
| bvlc.fdt_timeout | Timeout    | Unsigned 16-bit integer | Foreign Device Timeout (seconds) |
| bvlc.fdt_ttl     | TTL        | Unsigned 16-bit integer | Foreign Device Time To Live      |
| bvlc.function    | Function   | Unsigned 8-bit integer  | BLVC Function                    |
| bvlc.fwd_ip      | IP         | IPv4 address            | FWD IP                           |
| bvlc.fwd_port    | Port       | Unsigned 16-bit integer | FWD Port                         |
| bvlc.length      | Length     | Unsigned 16-bit integer | Length of BVLC                   |
| bvlc.reg_ttl     | TTL        | Unsigned 16-bit integer | Foreign Device Time To Live      |
| bvlc.result      | Result     | Unsigned 16-bit integer | Result Code                      |
| bvlc.type        | Type       | Unsigned 8-bit integer  | Type                             |

### Banyan Vines (vines)

Table A-25. Banyan Vines (vines)

| Field          | Field Name | Type                   | Description    |
|----------------|------------|------------------------|----------------|
| vines.protocol | Protocol   | Unsigned 8-bit integer | Vines protocol |

### Banyan Vines Fragmentation Protocol (vines\_frp)

Table A-26. Banyan Vines Fragmentation Protocol (vines\_frp)

| Field | Field Name | Type | Description |
|-------|------------|------|-------------|
|       |            |      |             |

### Banyan Vines SPP (vines\_spp)

Table A-27. Banyan Vines SPP (vines\_spp)

| Field | Field Name | Type | Description |
|-------|------------|------|-------------|
|       |            |      |             |

### Blocks Extensible Exchange Protocol (beep)

Table A-28. Blocks Extensible Exchange Protocol (beep)

| Field      | Field Name | Type            | Description |
|------------|------------|-----------------|-------------|
| beep.ansno | Ansno      | Unsigned 32-bit |             |

| Field                  | Field Name              | Type                    | Description |
|------------------------|-------------------------|-------------------------|-------------|
|                        |                         | integer                 |             |
| beep.channel           | Channel                 | Unsigned 32-bit integer |             |
| beep.end               | End                     | Boolean                 |             |
| beep.more.complete     | Complete                | Boolean                 |             |
| beep.more.intermediate | Intermediate            | Boolean                 |             |
| beep.msgno             | Msgno                   | Unsigned 32-bit integer |             |
| beep.req               | Request                 | Boolean                 |             |
| beep.req.channel       | Request Channel Number  | Unsigned 32-bit integer |             |
| beep.rsp               | Response                | Boolean                 |             |
| beep.rsp.channel       | Response Channel Number | Unsigned 32-bit integer |             |
| beep.seq               | Sequence                | Boolean                 |             |
| beep.seq.ackno         | Ackno                   | Unsigned 32-bit integer |             |
| beep.seq.channel       | Sequence Channel Number | Unsigned 32-bit integer |             |
| beep.seq.window        | Window                  | Unsigned 32-bit integer |             |
| beep.seqno             | Seqno                   | Unsigned 32-bit integer |             |
| beep.size              | Size                    | Unsigned 32-bit integer |             |
| beep.status.negative   | Negative                | Boolean                 |             |
| beep.status.positive   | Positive                | Boolean                 |             |
| beep.violation         | Protocol Violation      | Boolean                 |             |

### Boardwalk (brdwlk)

Table A-29. Boardwalk (brdwlk)

| Field       | Field Name     | Type                   | Description |
|-------------|----------------|------------------------|-------------|
| brdwlk.drop | Packet Dropped | Boolean                |             |
| brdwlk.eof  | EOF            | Unsigned 8-bit integer | EOF         |

| Field         | Field Name   | Type                    | Description |
|---------------|--------------|-------------------------|-------------|
| brdwlk.error  | Error        | Unsigned 8-bit integer  | Error       |
| brdwlk.pktcnt | Packet Count | Unsigned 16-bit integer |             |
| brdwlk.sof    | SOF          | Unsigned 8-bit integer  | SOF         |
| brdwlk.vsan   | VSAN         | Unsigned 16-bit integer |             |

### Boot Parameters (bootparams)

Table A-30. Boot Parameters (bootparams)

| Field                   | Field Name     | Type                    | Description    |
|-------------------------|----------------|-------------------------|----------------|
| bootparams.domain       | Client Domain  | String                  | Client Domain  |
| bootparams.fileid       | File ID        | String                  | File ID        |
| bootparams.filepath     | File Path      | String                  | File Path      |
| bootparams.host         | Client Host    | String                  | Client Host    |
| bootparams.hostaddr     | Client Address | IPv4 address            | Address        |
| bootparams.procedure_v1 | V1 Procedure   | Unsigned 32-bit integer | V1 Procedure   |
| bootparams.routeraddr   | Router Address | IPv4 address            | Router Address |
| bootparams.type         | Address Type   | Unsigned 32-bit integer | Address Type   |

### Bootstrap Protocol (bootp)

Table A-31. Bootstrap Protocol (bootp)

| Field                | Field Name     | Type                    | Description |
|----------------------|----------------|-------------------------|-------------|
| bootp.cookie         | Magic cookie   | IPv4 address            |             |
| bootp.dhcp           | Frame is DHCP  | Boolean                 |             |
| bootp.file           | Boot file name | String                  |             |
| bootp.flags          | Bootp flags    | Unsigned 16-bit integer |             |
| bootp.flags.bc       | Broadcast flag | Boolean                 |             |
| bootp.flags.reserved | Reserved flags | Unsigned 16-bit integer |             |

| Field           | Field Name               | Type                    | Description |
|-----------------|--------------------------|-------------------------|-------------|
| bootp.hops      | Hops                     | Unsigned 8-bit integer  |             |
| bootp.hw.addr   | Client hardware address  | Byte array              |             |
| bootp.hw.len    | Hardware address length  | Unsigned 8-bit integer  |             |
| bootp.hw.type   | Hardware type            | Unsigned 8-bit integer  |             |
| bootp.id        | Transaction ID           | Unsigned 32-bit integer |             |
| bootp.ip.client | Client IP address        | IPv4 address            |             |
| bootp.ip.relay  | Relay agent IP address   | IPv4 address            |             |
| bootp.ip.server | Next server IP address   | IPv4 address            |             |
| bootp.ip.your   | Your (client) IP address | IPv4 address            |             |
| bootp.secs      | Seconds elapsed          | Unsigned 16-bit integer |             |
| bootp.server    | Server host name         | String                  |             |
| bootp.type      | Message type             | Unsigned 8-bit integer  |             |
| bootp.vendor    | Bootp Vendor Options     | Byte array              |             |

### Border Gateway Protocol (bgp)

Table A-32. Border Gateway Protocol (bgp)

| Field    | Field Name       | Type                   | Description      |
|----------|------------------|------------------------|------------------|
| bgp.type | BGP message type | Unsigned 8-bit integer | BGP message type |

### Building Automation and Control Network APDU (bacapp)

Table A-33. Building Automation and Control Network APDU (bacapp)

| Field              | Field Name | Type                   | Description |
|--------------------|------------|------------------------|-------------|
| bacapp.bacapp_type | APDU Type  | Unsigned 8-bit integer | APDU Type   |

### Building Automation and Control Network NPDU (bacnet)

Table A-34. Building Automation and Control Network NPDU (bacnet)

| Field | Field Name | Type | Description |
|-------|------------|------|-------------|
|-------|------------|------|-------------|

| Field                        | Field Name                           | Type                          | Description                          |
|------------------------------|--------------------------------------|-------------------------------|--------------------------------------|
| bacnet.control               | Control                              | Unsigned 8-bit integer        | BACnet Control                       |
| bacnet.control_dest          | Destination Specifier                | Boolean                       | BACnet Control                       |
| bacnet.control_expect        | Expecting Reply                      | Boolean                       | BACnet Control                       |
| bacnet.control_net           | NSDU contains                        | Boolean                       | BACnet Control                       |
| bacnet.control_priority_high | Priority                             | Boolean                       | BACnet Control                       |
| bacnet.control_priority_low  | Priority                             | Boolean                       | BACnet Control                       |
| bacnet.control_reserved1     | Reserved                             | Boolean                       | BACnet Control                       |
| bacnet.control_reserved2     | Reserved                             | Boolean                       | BACnet Control                       |
| bacnet.control_src           | Source specifier                     | Boolean                       | BACnet Control                       |
| bacnet.dadr_eth              | Destination ISO 8802-3 MAC Address   | 6-byte Hardware (MAC) Address | Destination ISO 8802-3 MAC Address   |
| bacnet.dadr_tmp              | Unknown Destination MAC              | Byte array                    | Unknown Destination MAC              |
| bacnet.dlen                  | Destination MAC Layer Address Length | Unsigned 8-bit integer        | Destination MAC Layer Address Length |
| bacnet.dnet                  | Destination Network Address          | Unsigned 16-bit integer       | Destination Network Address          |
| bacnet.hopc                  | Hop Count                            | Unsigned 8-bit integer        | Hop Count                            |
| bacnet.mesgtyp               | Message Type                         | Unsigned 8-bit integer        | Message Type                         |
| bacnet.perf                  | Performance Index                    | Unsigned 8-bit integer        | Performance Index                    |
| bacnet.pinfo                 | Port Info                            | Unsigned 8-bit integer        | Port Info                            |
| bacnet.pinfoflen             | Port Info Length                     | Unsigned 8-bit integer        | Port Info Length                     |
| bacnet.portid                | Port ID                              | Unsigned 8-bit integer        | Port ID                              |
| bacnet.rejectreason          | Reject Reason                        | Unsigned 8-bit integer        | Reject Reason                        |

| Field           | Field Name                      | Type                          | Description                     |
|-----------------|---------------------------------|-------------------------------|---------------------------------|
| bacnet.rportnum | Number of Port Mappings         | Unsigned 8-bit integer        | Number of Port Mappings         |
| bacnet.sadr_eth | SADR                            | 6-byte Hardware (MAC) Address | Source ISO 8802-3 MAC Address   |
| bacnet.sadr_tmp | Unknown Source MAC              | Byte array                    | Unknown Source MAC              |
| bacnet.slen     | Source MAC Layer Address Length | Unsigned 8-bit integer        | Source MAC Layer Address Length |
| bacnet.snet     | Source Network Address          | Unsigned 16-bit integer       | Source Network Address          |
| bacnet.vendor   | Vendor ID                       | Unsigned 16-bit integer       | Vendor ID                       |
| bacnet.version  | Version                         | Unsigned 8-bit integer        | BACnet Version                  |

### CDS Clerk Server Calls (cds\_clerkserver)

Table A-35. CDS Clerk Server Calls (cds\_clerkserver)

| Field                     | Field Name | Type                    | Description |
|---------------------------|------------|-------------------------|-------------|
| cds_clerkserver.operation | Operation  | Unsigned 16-bit integer | Operation   |

### Check Point High Availability Protocol (cpha)

Table A-36. Check Point High Availability Protocol (cpha)

| Field                  | Field Name             | Type                          | Description            |
|------------------------|------------------------|-------------------------------|------------------------|
| cpha.ifn               | Interface Number       | Unsigned 32-bit integer       |                        |
| cphap.cluster_number   | Cluster Number         | Unsigned 16-bit integer       | Cluster Number         |
| cphap.dst_id           | Destination Machine ID | Unsigned 16-bit integer       | Destination Machine ID |
| cphap.ethernet_address | Ethernet Address       | 6-byte Hardware (MAC) Address | Ethernet Address       |
| cphap.filler           | Filler                 | Unsigned 16-bit integer       |                        |
| cphap.ha_mode          | HA mode                | Unsigned 16-bit integer       | HA Mode                |
| cphap.ha_time_unit     | HA Time unit (ms)      | Unsigned 16-bit integer       | HA Time unit           |
| cphap.hash_len         | Hash list length       | Signed 32-bit integer         | Hash list length       |

| Field               | Field Name                            | Type                    | Description                  |
|---------------------|---------------------------------------|-------------------------|------------------------------|
| cphap.id_num        | Number of IDs reported                | Unsigned 16-bit integer | Number of IDs reported       |
| cphap.if_trusted    | Interface Trusted                     | Boolean                 | Interface Trusted            |
| cphap.in_assume_up  | Interfaces assumed up in the Inbound  | Signed 8-bit integer    |                              |
| cphap.in_up         | Interfaces up in the Inbound          | Signed 8-bit integer    | Interfaces up in the Inbound |
| cphap.ip            | IP Address                            | IPv4 address            | IP Address                   |
| cphap.machine_num   | Machine Number                        | Signed 16-bit integer   | Machine Number               |
| cphap.magic_number  | CPHAP Magic Number                    | Unsigned 16-bit integer | CPHAP Magic Number           |
| cphap.opcode        | OpCode                                | Unsigned 16-bit integer | OpCode                       |
| cphap.out_assume_up | Interfaces assumed up in the Outbound | Signed 8-bit integer    |                              |
| cphap.out_up        | Interfaces up in the Outbound         | Signed 8-bit integer    |                              |
| cphap.policy_id     | Policy ID                             | Unsigned 16-bit integer | Policy ID                    |
| cphap.random_id     | Random ID                             | Unsigned 16-bit integer | Random ID                    |
| cphap.reported_ifs  | Reported Interfaces                   | Unsigned 32-bit integer | Reported Interfaces          |
| cphap.seed          | Seed                                  | Unsigned 32-bit integer | Seed                         |
| cphap.slot_num      | Slot Number                           | Signed 16-bit integer   | Slot Number                  |
| cphap.src_id        | Source Machine ID                     | Unsigned 16-bit integer | Source Machine ID            |
| cphap.src_if        | Source Interface                      | Unsigned 16-bit integer | Source Interface             |
| cphap.status        | Status                                | Unsigned 32-bit integer |                              |
| cphap.version       | Protocol Version                      | Unsigned 16-bit integer | CPHAP Version                |

**Checkpoint FW-1 (fw1)**

Table A-37. Checkpoint FW-1 (fw1)

| Field         | Field Name | Type                    | Description |
|---------------|------------|-------------------------|-------------|
| fw1.direction | Direction  | String                  | Direction   |
| fw1.interface | Interface  | String                  | Interface   |
| fw1.type      | Type       | Unsigned 16-bit integer |             |

**Cisco Auto-RP (auto\_rp)**

Table A-38. Cisco Auto-RP (auto\_rp)

| Field                | Field Name       | Type                    | Description  |
|----------------------|------------------|-------------------------|--|
| auto_rp.group_prefix | Prefix           | IPv4 address            | Group prefix   |
| auto_rp.holdtime     | Holdtime         | Unsigned 16-bit integer | The amount of time in seconds this announcement is valid |
| auto_rp.mask_len     | Mask length      | Unsigned 8-bit integer  | Length of group prefix                                   |
| auto_rp.pim_ver      | Version          | Unsigned 8-bit integer  | RP's highest PIM version                                 |
| auto_rp.prefix_sign  | Sign             | Unsigned 8-bit integer  | Group prefix sign  |
| auto_rp.rp_addr      | RP address       | IPv4 address            | The unicast IP address of the RP                         |
| auto_rp.rp_count     | RP count         | Unsigned 8-bit integer  | The number of RP addresses contained in this message     |
| auto_rp.type         | Packet type      | Unsigned 8-bit integer  | Auto-RP packet type                                      |
| auto_rp.version      | Protocol version | Unsigned 8-bit integer  | Auto-RP protocol version                                 |

**Cisco Discovery Protocol (cdp)**

Table A-39. Cisco Discovery Protocol (cdp)

| Field        | Field Name | Type                    | Description |
|--------------|------------|-------------------------|-------------|
| cdp.checksum | Checksum   | Unsigned 16-bit integer |             |
| cdp.tlv.len  | Length     | Unsigned 16-bit integer |             |
| cdp.tlv.type | Type       | Unsigned 16-bit         |             |



| Field       | Field Name | Type                    | Description |
|-------------|------------|-------------------------|-------------|
|             |            | integer                 |             |
| cdp.ttl     | TTL        | Unsigned 16-bit integer |             |
| cdp.version | Version    | Unsigned 8-bit integer  |             |

### Cisco Group Management Protocol (cgmp)

Table A-40. Cisco Group Management Protocol (cgmp)

| Field        | Field Name                | Type                          | Description               |
|--------------|---------------------------|-------------------------------|---------------------------|
| cgmp.count   | Count                     | Unsigned 8-bit integer        |                           |
| cgmp.gda     | Group Destination Address | 6-byte Hardware (MAC) Address | Group Destination Address |
| cgmp.type    | Type                      | Unsigned 8-bit integer        |                           |
| cgmp.usa     | Unicast Source Address    | 6-byte Hardware (MAC) Address | Unicast Source Address    |
| cgmp.version | Version                   | Unsigned 8-bit integer        |                           |

### Cisco HDLC (chdlc)

Table A-41. Cisco HDLC (chdlc)

| Field          | Field Name | Type                    | Description |
|----------------|------------|-------------------------|-------------|
| chdlc.address  | Address    | Unsigned 8-bit integer  |             |
| chdlc.protocol | Protocol   | Unsigned 16-bit integer |             |

### Cisco Hot Standby Router Protocol (hsrp)

Table A-42. Cisco Hot Standby Router Protocol (hsrp)

| Field          | Field Name          | Type                   | Description   |
|----------------|---------------------|------------------------|---|
| hsrp.auth_data | Authentication Data | String                 | Contains a clear-text 8 character reused password                 |
| hsrp.group     | Group               | Unsigned 8-bit integer | This field identifies the standby group                           |
| hsrp.hellotime | Hellotime           | Unsigned 8-bit integer | The approximate period between the Hello messages that the router |

| Field         | Field Name         | Type                   | Description   |
|---------------|--------------------|------------------------|---|
|               |                    |                        | sends   |
| hsrp.holdtime | Holdtime           | Unsigned 8-bit integer | Time that the current Hello message should be considered valid                      |
| hsrp.opcode   | Op Code            | Unsigned 8-bit integer | The type of message contained in this packet  |
| hsrp.priority | Priority           | Unsigned 8-bit integer | Used to elect the active and standby routers. Numerically higher priority wins vote |
| hsrp.reserved | Reserved           | Unsigned 8-bit integer | Reserved  |
| hsrp.state    | State              | Unsigned 8-bit integer | The current state of the router sending the message                                 |
| hsrp.version  | Version            | Unsigned 8-bit integer | The version of the HSRP messages  |
| hsrp.virt_ip  | Virtual IP Address | IPv4 address           | The virtual IP address used by this group   |

### Cisco ISL (isl)

Table A-43. Cisco ISL (isl)

| Field              | Field Name                    | Type                          | Description                                |
|--------------------|-------------------------------|-------------------------------|--|
| isl.addr           | Source or Destination Address | 6-byte Hardware (MAC) Address | Source or Destination Hardware Address     |
| isl.bpdu           | BPDU                          | Boolean                       | BPDU indicator                             |
| isl.crc            | CRC                           | Unsigned 32-bit integer       | CRC field of encapsulated frame            |
| isl.dst            | Destination                   | 6-byte Hardware (MAC) Address | Destination Address                        |
| isl.dst_route_desc | Destination route descriptor  | Unsigned 16-bit integer       | Route descriptor to be used for forwarding |

| Field              | Field Name              | Type                          | Description                                     |
|--------------------|-------------------------|-------------------------------|---|
| isl.esize          | Esize                   | Unsigned 8-bit integer        | Frame size for frames less than 64 bytes        |
| isl.explorer       | Explorer                | Boolean                       | Explorer  |
| isl.fcs_not_incl   | FCS Not Included        | Boolean                       | FCS not included                                |
| isl.hsa            | HSA                     | Unsigned 24-bit integer       | High bits of source address                     |
| isl.index          | Index                   | Unsigned 16-bit integer       | Port index of packet source                     |
| isl.len            | Length                  | Unsigned 16-bit integer       |   |
| isl.src            | Source                  | 6-byte Hardware (MAC) Address | Source Hardware Address                         |
| isl.src_route_desc | Source-route descriptor | Unsigned 16-bit integer       | Route descriptor to be used for source learning |
| isl.src_vlan_id    | Source VLAN ID          | Unsigned 16-bit integer       | Source Virtual LAN ID                           |
| isl.type           | Type                    | Unsigned 8-bit integer        | Type  |
| isl.user           | User                    | Unsigned 8-bit integer        | User-defined bits                               |
| isl.user_eth       | User                    | Unsigned 8-bit integer        | Priority (for Ethernet)                         |
| isl.vlan_id        | VLAN ID                 | Unsigned 16-bit integer       | Virtual LAN ID                                  |

### Cisco Interior Gateway Routing Protocol (igrp)

Table A-44. Cisco Interior Gateway Routing Protocol (igrp)

| Field       | Field Name        | Type                    | Description              |
|-------------|-------------------|-------------------------|--------------------------|
| igrp.as     | Autonomous System | Unsigned 16-bit integer | Autonomous System number |
| igrp.update | Update Release    | Unsigned 8-bit integer  | Update Release number    |

### Cisco NetFlow (cflow)

Table A-45. Cisco NetFlow (cflow)

| Field           | Field Name | Type                   | Description          |
|-----------------|------------|------------------------|----------------------|
| cflow.aggmethod | AggMethod  | Unsigned 8-bit integer | CFlow V8 Aggregation |

| Field                 | Field Name                 | Type                    | Description                                      |
|-----------------------|----------------------------|-------------------------|--|
|                       |                            |                         | Method   |
| cflow.aggversion      | AggVersion                 | Unsigned 8-bit integer  | CFlow V8 Aggregation Version                     |
| cflow.bgpnexthop      | BGPNextHop                 | IPv4 address            | BGP Router Nexthop                               |
| cflow.bgpnexthopv6    | BGPNextHop                 | IPv6 address            | BGP Router Nexthop                               |
| cflow.count           | Count                      | Unsigned 16-bit integer | Count of PDUs                                    |
| cflow.data_flowset_id | Data FlowSet (Template Id) | Unsigned 16-bit integer | Data FlowSet with corresponding to a template Id |
| cflow.dstaddr         | DstAddr                    | IPv4 address            | Flow Destination Address                         |
| cflow.dstaddrv6       | DstAddr                    | IPv6 address            | Flow Destination Address                         |
| cflow.dstas           | DstAS                      | Unsigned 16-bit integer | Destination AS                                   |
| cflow.dstmask         | DstMask                    | Unsigned 8-bit integer  | Destination Prefix Mask                          |
| cflow.dstport         | DstPort                    | Unsigned 16-bit integer | Flow Destination Port                            |
| cflow.engine_id       | EngineId                   | Unsigned 8-bit integer  | Slot number of switching engine                  |
| cflow.engine_type     | EngineType                 | Unsigned 8-bit integer  | Flow switching engine type                       |
| cflow.flags           | Export Flags               | Unsigned 8-bit integer  | CFlow Flags                                      |
| cflow.flows           | Flows                      | Unsigned 32-bit integer | Flows Aggregated in PDU                          |
| cflow.flowset_id      | FlowSet Id                 | Unsigned 16-bit integer | FlowSet Id                                       |
| cflow.flowset_length  | FlowSet Length             | Unsigned 16-bit integer | FlowSet length                                   |
| cflow.flowsexp        | FlowsExp                   | Unsigned 32-bit integer | Flows exported                                   |
| cflow.inputint        | InputInt                   | Unsigned 16-bit integer | Flow Input Interface                             |
| cflow.muloctets       | MulticastOctets            | Unsigned 32-bit         | Count of multicast                               |

| Field                    | Field Name       | Type                    | Description                   |
|--------------------------|------------------|-------------------------|-------------------------------|
|                          |                  | integer                 | octets                        |
| cflow.mulpackets         | MulticastPackets | Unsigned 32-bit integer | Count of multicast packets    |
| cflow.nexthop            | NextHop          | IPv4 address            | Router nexthop                |
| cflow.nexthopv6          | NextHop          | IPv6 address            | Router nexthop                |
| cflow.octets             | Octets           | Unsigned 32-bit integer | Count of bytes                |
| cflow.octets64           | Octets           | Unsigned 64-bit integer | Count of bytes                |
| cflow.octetsexp          | OctetsExp        | Unsigned 32-bit integer | Octets exported               |
| cflow.options_flowset_id | Options FlowSet  | Unsigned 16-bit integer | Options FlowSet               |
| cflow.outputint          | OutputInt        | Unsigned 16-bit integer | Flow Output Interface         |
| cflow.packets            | Packets          | Unsigned 32-bit integer | Count of packets              |
| cflow.packets64          | Packets          | Unsigned 64-bit integer | Count of packets              |
| cflow.packetsexp         | PacketsExp       | Unsigned 32-bit integer | Packets exported              |
| cflow.packetsout         | PacketsOut       | Unsigned 64-bit integer | Count of packets going out    |
| cflow.protocol           | Protocol         | Unsigned 8-bit integer  | IP Protocol                   |
| cflow.routeresc          | Router Shortcut  | IPv4 address            | Router shortcut by switch     |
| cflow.samplerate         | SampleRate       | Unsigned 16-bit integer | Sample Frequency of exporter  |
| cflow.sequence           | FlowSequence     | Unsigned 32-bit integer | Sequence number of flows seen |
| cflow.source_id          | SourceId         | Unsigned 32-bit integer | Identifier for export device  |
| cflow.srcaddr            | SrcAddr          | IPv4 address            | Flow Source Address           |
| cflow.srcaddrv6          | SrcAddr          | IPv6 address            | Flow Source Address           |
| cflow.srcas              | SrcAS            | Unsigned 16-bit integer | Source AS                     |

| Field                       | Field Name       | Type                    | Description                                |
|-----------------------------|------------------|-------------------------|--|
| cflow.srcmask               | SrcMask          | Unsigned 8-bit integer  | Source Prefix Mask                         |
| cflow.srcnet                | SrcNet           | IPv4 address            | Flow Source Network                        |
| cflow.srcport               | SrcPort          | Unsigned 16-bit integer | Flow Source Port                           |
| cflow.sysuptime             | SysUptime        | Unsigned 32-bit integer | Time since router booted (in milliseconds) |
| cflow.tcpflags              | TCP Flags        | Unsigned 8-bit integer  | TCP Flags                                  |
| cflow.template_field_count  | Field Count      | Unsigned 16-bit integer | Template field count                       |
| cflow.template_field_length | Length           | Unsigned 16-bit integer | Template field length                      |
| cflow.template_field_type   | Type             | Unsigned 16-bit integer | Template field type                        |
| cflow.template_flowset_id   | Template FlowSet | Unsigned 16-bit integer | Template FlowSet                           |
| cflow.template_id           | Template Id      | Unsigned 16-bit integer | Template Id                                |
| cflow.timeend               | EndTime          | Time duration           | Uptime at end of flow                      |
| cflow.timestamp             | Timestamp        | Date/Time stamp         | Current seconds since epoch                |
| cflow.timestart             | StartTime        | Time duration           | Uptime at start of flow                    |
| cflow.tos                   | IP ToS           | Unsigned 8-bit integer  | IP Type of Service                         |
| cflow.unix_nsecs            | CurrentNSecs     | Unsigned 32-bit integer | Residual nanoseconds since epoch           |
| cflow.unix_secs             | CurrentSecs      | Unsigned 32-bit integer | Current seconds since epoch                |
| cflow.version               | Version          | Unsigned 16-bit integer | NetFlow Version                            |

### Cisco SLARP (slarp)

Table A-46. Cisco SLARP (slarp)

| Field | Field Name | Type | Description |
|-------|------------|------|-------------|
|-------|------------|------|-------------|

| Field              | Field Name               | Type                    | Description |
|--------------------|--------------------------|-------------------------|-------------|
| slarp.address      | Address                  | IPv4 address            |             |
| slarp.mysequence   | Outgoing sequence number | Unsigned 32-bit integer |             |
| slarp.ptype        | Packet type              | Unsigned 32-bit integer |             |
| slarp.yoursequence | Returned sequence number | Unsigned 32-bit integer |             |

### Clearcase NFS (clearcase)

Table A-47. Clearcase NFS (clearcase)

| Field                  | Field Name   | Type                    | Description  |
|------------------------|--------------|-------------------------|--------------|
| clearcase.procedure_v3 | V3 Procedure | Unsigned 32-bit integer | V3 Procedure |

### CoSine IPNOS L2 debug output (cosine)

Table A-48. CoSine IPNOS L2 debug output (cosine)

| Field      | Field Name   | Type                   | Description |
|------------|--------------|------------------------|-------------|
| cosine.err | Error Code   | Unsigned 8-bit integer |             |
| cosine.off | Offset       | Unsigned 8-bit integer |             |
| cosine.pri | Priority     | Unsigned 8-bit integer |             |
| cosine.pro | Protocol     | Unsigned 8-bit integer |             |
| cosine.rm  | Rate Marking | Unsigned 8-bit integer |             |

### Common Open Policy Service (cops)

Table A-49. Common Open Policy Service (cops)

| Field                | Field Name                 | Type                    | Description                                |
|----------------------|----------------------------|-------------------------|--|
| cops.accttimer.value | Contents: ACCT Timer Value | Unsigned 16-bit integer | Accounting Timer Value in AcctTimer object |
| cops.c_num           | C-Num                      | Unsigned 8-bit integer  | C-Num in COPS Object Header                |
| cops.c_type          | C-Type                     | Unsigned 8-bit integer  | C-Type in COPS Object Header               |
| cops.client_type     | Client Type                | Unsigned 16-bit integer | Client Type in COPS Common                 |

| Field                   | Field Name                | Type                    | Description   |
|-------------------------|---------------------------|-------------------------|---|
|                         |                           |                         | Header  |
| cops.context.m_type     | M-Type                    | Unsigned 16-bit integer | M-Type in COPS Context Object                       |
| cops.context.r_type     | R-Type                    | Unsigned 16-bit integer | R-Type in COPS Context Object                       |
| cops.cperror            | Error                     | Unsigned 16-bit integer | Error in Error object                               |
| cops.cperror_sub        | Error Sub-code            | Unsigned 16-bit integer | Error Sub-code in Error object                      |
| cops.decision.cmd       | Command-Code              | Unsigned 16-bit integer | Command-Code in Decision/LPDP Decision object       |
| cops.decision.flags     | Flags                     | Unsigned 16-bit integer | Flags in Decision/LPDP Decision object              |
| cops.error              | Error                     | Unsigned 16-bit integer | Error in Error object                               |
| cops.error_sub          | Error Sub-code            | Unsigned 16-bit integer | Error Sub-code in Error object                      |
| cops.flags              | Flags                     | Unsigned 8-bit integer  | Flags in COPS Common Header                         |
| cops.gperror            | Error                     | Unsigned 16-bit integer | Error in Error object                               |
| cops.gperror_sub        | Error Sub-code            | Unsigned 16-bit integer | Error Sub-code in Error object                      |
| cops.in-int.ipv4        | IPv4 address              | IPv4 address            | IPv4 address in COPS IN-Int object                  |
| cops.in-int.ipv6        | IPv6 address              | IPv6 address            | IPv6 address in COPS IN-Int object                  |
| cops.in-out-int.ifindex | ifIndex                   | Unsigned 32-bit integer | If SNMP is supported, corresponds to MIB-II ifIndex |
| cops.integrity.key_id   | Contents: Key ID          | Unsigned 32-bit integer | Key ID in Integrity object                          |
| cops.integrity.seq_num  | Contents: Sequence Number | Unsigned 32-bit integer | Sequence Number in Integrity object                 |
| cops.katimer.value      | Contents: KA Timer Value  | Unsigned 16-bit integer | Keep-Alive Timer Value in KATimer object            |
| cops.lastpdpaddr.i      | IPv4 address              | IPv4 address            | IPv4 address in                                     |



| Field                  | Field Name            | Type                       | Description   |
|------------------------|-----------------------|----------------------------|---|
| pv4                    |                       |                            | COPS<br>LastPDPAddr<br>object                                       |
| cops.lastpdpaddr.ipv6  | IPv6 address          | IPv6 address               | IPv6 address in<br>COPS<br>LastPDPAddr<br>object                    |
| cops.msg_len           | Message Length        | Unsigned 32-bit<br>integer | Message Length in<br>COPS Common<br>Header                          |
| cops.obj.len           | Object Length         | Unsigned 32-bit<br>integer | Object Length in<br>COPS Object<br>Header                           |
| cops.op_code           | Op Code               | Unsigned 8-bit<br>integer  | Op Code in COPS<br>Common Header                                    |
| cops.out-int.ipv4      | IPv4 address          | IPv4 address               | IPv4 address in<br>COPS OUT-Int<br>object                           |
| cops.out-int.ipv6      | IPv6 address          | IPv6 address               | IPv6 address in<br>COPS OUT-Int                                     |
| cops.pdp.tcp_port      | TCP Port Number       | Unsigned 32-bit<br>integer | TCP Port Number<br>of PDP in<br>PDPRedirAddr/<br>LastPDPAddr object |
| cops.pdprediraddr.ipv4 | IPv4 address          | IPv4 address               | IPv4 address in<br>COPS<br>PDPRedirAddr<br>object                   |
| cops.pdprediraddr.ipv6 | IPv6 address          | IPv6 address               | IPv6 address in<br>COPS<br>PDPRedirAddr<br>object                   |
| cops.pepid.id          | Contents: PEP Id      | String                     | PEP Id in PEPID<br>object   |
| cops.reason            | Reason                | Unsigned 16-bit<br>integer | Reason in Reason<br>object  |
| cops.reason_sub        | Reason Sub-code       | Unsigned 16-bit<br>integer | Reason Sub-code<br>in Reason object                                 |
| cops.report_type       | Contents: Report-Type | Unsigned 16-bit<br>integer | Report-Type in<br>Report-Type object                                |
| cops.s_num             | S-Num                 | Unsigned 8-bit<br>integer  | S-Num in COPS-<br>PR Object Header                                  |

| Field          | Field Name        | Type                   | Description                             |
|----------------|-------------------|------------------------|---|
| cops.s_type    | S-Type            | Unsigned 8-bit integer | S-Type in COPS-PR Object Header         |
| cops.ver_flags | Version and Flags | Unsigned 8-bit integer | Version and Flags in COPS Common Header |
| cops.version   | Version           | Unsigned 8-bit integer | Version in COPS Common Header           |

### Common Unix Printing System (CUPS) Browsing Protocol (cups)

Table A-50. Common Unix Printing System (CUPS) Browsing Protocol (cups)

| Field      | Field Name | Type                    | Description |
|------------|------------|-------------------------|-------------|
| cups.ptype | Type       | Unsigned 32-bit integer |             |
| cups.state | State      | Unsigned 8-bit integer  |             |

### Coseventcomm Dissector Using GIOP API (giop-coseventcomm)

Table A-51. Coseventcomm Dissector Using GIOP API (giop-coseventcomm)

| Field | Field Name | Type | Description |
|-------|------------|------|-------------|
|       |            |      |             |

### Cosnaming Dissector Using GIOP API (giop-cosnaming)

Table A-52. Cosnaming Dissector Using GIOP API (giop-cosnaming)

| Field | Field Name | Type | Description |
|-------|------------|------|-------------|
|       |            |      |             |

### DCE DFS Calls (dce\_dfs)

Table A-53. DCE DFS Calls (dce\_dfs)

| Field         | Field Name | Type                    | Description |
|---------------|------------|-------------------------|-------------|
| afs4int.opnum | Operation  | Unsigned 16-bit integer | Operation   |

### DCE Distributed Time Service Local Server (dtsstime\_req)

Table A-54. DCE Distributed Time Service Local Server (dtsstime\_req)

| Field              | Field Name | Type                    | Description |
|--------------------|------------|-------------------------|-------------|
| dtsstime_req.opnum | Operation  | Unsigned 16-bit integer | Operation   |

### DCE Distributed Time Service Provider (dtsprovider)

Table A-55. DCE Distributed Time Service Provider (dtsprovider)

| Field | Field Name | Type | Description |
|-------|------------|------|-------------|
|       |            |      |             |

| Field              | Field Name | Type                    | Description                             |
|--------------------|------------|-------------------------|---|
| dtsprovider.opnum  | Operation  | Unsigned 16-bit integer | Operation                               |
| dtsprovider.status | Status     | Unsigned 32-bit integer | Return code, status of executed command |

## DCE Name Service (rs\_pgo)

Table A-56. DCE Name Service (rs\_pgo)

| Field                                  | Field Name           | Type                    | Description |
|--|----------------------|-------------------------|-------------|
| rs_pgo.get_member_name_domain          | Name Domain          | Unsigned 32-bit integer |             |
| rs_pgo.get_member_sec_rgy_name_max_len | Sec_rgy_name_max_len | Unsigned 32-bit integer |             |
| rs_pgo.get_member_sec_rgy_name_t       | Sec_rgy_name_t       | String                  |             |
| rs_pgo.get_member_sec_rgy_name_t_size  | Sec_rgy_name_t_size  | Unsigned 32-bit integer |             |
| rs_pgo.get_rqst_key_size               | Key Size             | Unsigned 32-bit integer |             |
| rs_pgo.get_rqst_key_t                  | Key                  | String                  |             |
| rs_pgo.get_rqst_name_domain            | Name Domain          | Unsigned 32-bit integer |             |
| rs_pgo.get_rqst_var                    | Var1                 | Unsigned 32-bit integer |             |
| rs_pgo.get_rqst_var2                   | Var2                 | Unsigned 32-bit integer |             |
| rs_pgo.is_member_rqst_key1             | Key2                 | String                  |             |
| rs_pgo.is_member_rqst_key1_size        | Key1 Size            | Unsigned 32-bit integer |             |
| rs_pgo.is_member_rqst_key2             | Key2                 | String                  |             |
| rs_pgo.is_member_rqst_key2_size        | Key2 Size            | Unsigned 32-bit integer |             |
| rs_pgo.is_member_rqst_var1             | Var1                 | Unsigned 32-bit integer |             |
| rs_pgo.is_member_rqst_var2             | Var2                 | Unsigned 32-bit integer |             |

| Field                          | Field Name | Type                    | Description |
|--------------------------------|------------|-------------------------|-------------|
| rs_pgo.is_member_rqst_var3     | Var3       | Unsigned 32-bit integer |             |
| rs_pgo.is_member_rqst_var4     | Var4       | Unsigned 16-bit integer |             |
| rs_pgo.key_transfe_r_rqst_var1 | Var1       | Unsigned 32-bit integer |             |
| rs_pgo.key_transfe_r_rqst_var2 | Var2       | Unsigned 32-bit integer |             |
| rs_pgo.key_transfe_r_rqst_var3 | Var3       | Unsigned 32-bit integer |             |
| rs_pgo.opnum                   | Operation  | Unsigned 16-bit integer | Operation   |

### DCE RPC (dcerpc)

Table A-57. DCE RPC (dcerpc)

| Field                     | Field Name      | Type                    | Description  |
|---------------------------|-----------------|-------------------------|--|
| dcerpc.array.actual_count | Actual Count    | Unsigned 32-bit integer | Actual Count: Actual number of elements in the array |
| dcerpc.array.buffer       | Buffer          | Byte array              | Buffer: Buffer containing elements of the array      |
| dcerpc.array.max_count    | Max Count       | Unsigned 32-bit integer | Maximum Count: Number of elements in the array       |
| dcerpc.array.offset       | Offset          | Unsigned 32-bit integer | Offset for first element in array                    |
| dcerpc.auth_ctx_id        | Auth Context ID | Unsigned 32-bit integer |  |
| dcerpc.auth_level         | Auth level      | Unsigned 8-bit integer  |  |
| dcerpc.auth_pad_len       | Auth pad len    | Unsigned 8-bit integer  |  |
| dcerpc.auth_rsrvd         | Auth Rsrvd      | Unsigned 8-bit integer  |  |
| dcerpc.auth_type          | Auth type       | Unsigned 8-bit integer  |  |
| dcerpc.cn_ack_rea         | Ack reason      | Unsigned 16-bit         |  |

| Field                              | Field Name          | Type                    | Description |
|------------------------------------|---------------------|-------------------------|-------------|
| son                                |                     | integer                 |             |
| dcerpc.cn_ack_result               | Ack result          | Unsigned 16-bit integer |             |
| dcerpc.cn_ack_trans_id             | Transfer Syntax     | String                  |             |
| dcerpc.cn_ack_trans_ver            | Syntax ver          | Unsigned 32-bit integer |             |
| dcerpc.cn_alloc_hint               | Alloc hint          | Unsigned 32-bit integer |             |
| dcerpc.cn_assoc_group              | Assoc Group         | Unsigned 32-bit integer |             |
| dcerpc.cn_auth_len                 | Auth Length         | Unsigned 16-bit integer |             |
| dcerpc.cn_bind_interface_ver       | Interface Ver       | Unsigned 16-bit integer |             |
| dcerpc.cn_bind_interface_ver_minor | Interface Ver Minor | Unsigned 16-bit integer |             |
| dcerpc.cn_bind_to_uuid             | Interface UUID      | String                  |             |
| dcerpc.cn_bind_transfer_id         | Transfer Syntax     | String                  |             |
| dcerpc.cn_bind_transfer_ver        | Syntax ver          | Unsigned 32-bit integer |             |
| dcerpc.cn_call_id                  | Call ID             | Unsigned 32-bit integer |             |
| dcerpc.cn_cancel_count             | Cancel count        | Unsigned 8-bit integer  |             |
| dcerpc.cn_ctx_id                   | Context ID          | Unsigned 16-bit integer |             |
| dcerpc.cn_flags                    | Packet Flags        | Unsigned 8-bit integer  |             |
| dcerpc.cn_flags.cancel_pending     | Cancel Pending      | Boolean                 |             |
| dcerpc.cn_flags.dne                | Did Not Execute     | Boolean                 |             |
| dcerpc.cn_flags.first_frag         | First Frag          | Boolean                 |             |
| dcerpc.cn_flags.last_frag          | Last Frag           | Boolean                 |             |

Appendix A. Ethereal Display Filter Fields

| Field                        | Field Name             | Type                    | Description |
|------------------------------|------------------------|-------------------------|-------------|
| dcerpc.cn_flags.maybe        | Maybe                  | Boolean                 |             |
| dcerpc.cn_flags.multiplex    | Multiplex              | Boolean                 |             |
| dcerpc.cn_flags.object       | Object                 | Boolean                 |             |
| dcerpc.cn_flags.reserved     | Reserved               | Boolean                 |             |
| dcerpc.cn_frag_len           | Frag Length            | Unsigned 16-bit integer |             |
| dcerpc.cn_max_recv           | Max Recv Frag          | Unsigned 16-bit integer |             |
| dcerpc.cn_max_xmit           | Max Xmit Frag          | Unsigned 16-bit integer |             |
| dcerpc.cn_num_ctx_items      | Num Ctx Items          | Unsigned 8-bit integer  |             |
| dcerpc.cn_num_protocols      | Number of protocols    | Unsigned 8-bit integer  |             |
| dcerpc.cn_num_results        | Num results            | Unsigned 8-bit integer  |             |
| dcerpc.cn_num_trans_items    | Num Trans Items        | Unsigned 16-bit integer |             |
| dcerpc.cn_protocol_ver_major | Protocol major version | Unsigned 8-bit integer  |             |
| dcerpc.cn_protocol_ver_minor | Protocol minor version | Unsigned 8-bit integer  |             |
| dcerpc.cn_reject_reason      | Reject reason          | Unsigned 16-bit integer |             |
| dcerpc.cn_sec_addr           | Scndry Addr            | String                  |             |
| dcerpc.cn_sec_addr_len       | Scndry Addr len        | Unsigned 16-bit integer |             |
| dcerpc.cn_status             | Status                 | Unsigned 32-bit integer |             |
| dcerpc.dg_act_id             | Activity               | String                  |             |
| dcerpc.dg_ahint              | Activity Hint          | Unsigned 16-bit integer |             |
| dcerpc.dg_auth_protocol      | Auth proto             | Unsigned 8-bit integer  |             |

| Field                           | Field Name     | Type                    | Description |
|---------------------------------|----------------|-------------------------|-------------|
| dcerpc.dg_cancel_id             | Cancel ID      | Unsigned 32-bit integer |             |
| dcerpc.dg_cancel_vers           | Cancel Version | Unsigned 32-bit integer |             |
| dcerpc.dg_flags1                | Flags1         | Unsigned 8-bit integer  |             |
| dcerpc.dg_flags1_broadcast      | Broadcast      | Boolean                 |             |
| dcerpc.dg_flags1_fragment       | Fragment       | Boolean                 |             |
| dcerpc.dg_flags1_idempotent     | Idempotent     | Boolean                 |             |
| dcerpc.dg_flags1_last_fragment  | Last Fragment  | Boolean                 |             |
| dcerpc.dg_flags1_maybe          | Maybe          | Boolean                 |             |
| dcerpc.dg_flags1_nofack         | No Fack        | Boolean                 |             |
| dcerpc.dg_flags1_reserved_01    | Reserved       | Boolean                 |             |
| dcerpc.dg_flags1_reserved_80    | Reserved       | Boolean                 |             |
| dcerpc.dg_flags2                | Flags2         | Unsigned 8-bit integer  |             |
| dcerpc.dg_flags2_cancel_pending | Cancel Pending | Boolean                 |             |
| dcerpc.dg_flags2_reserved_01    | Reserved       | Boolean                 |             |
| dcerpc.dg_flags2_reserved_04    | Reserved       | Boolean                 |             |
| dcerpc.dg_flags2_reserved_08    | Reserved       | Boolean                 |             |
| dcerpc.dg_flags2_reserved_10    | Reserved       | Boolean                 |             |
| dcerpc.dg_flags2_reserved_20    | Reserved       | Boolean                 |             |
| dcerpc.dg_flags2_reserved_40    | Reserved       | Boolean                 |             |
| dcerpc.dg_flags2_reserved_80    | Reserved       | Boolean                 |             |

Appendix A. Ethereal Display Filter Fields

| Field                     | Field Name          | Type                    | Description |
|---------------------------|---------------------|-------------------------|-------------|
| dcerpc.dg_frag_len        | Fragment len        | Unsigned 16-bit integer |             |
| dcerpc.dg_frag_num        | Fragment num        | Unsigned 16-bit integer |             |
| dcerpc.dg_if_id           | Interface           | String                  |             |
| dcerpc.dg_if_ver          | Interface Ver       | Unsigned 32-bit integer |             |
| dcerpc.dg_ihint           | Interface Hint      | Unsigned 16-bit integer |             |
| dcerpc.dg_seqnum          | Sequence num        | Unsigned 32-bit integer |             |
| dcerpc.dg_serial_high     | Serial High         | Unsigned 8-bit integer  |             |
| dcerpc.dg_serial_low      | Serial Low          | Unsigned 8-bit integer  |             |
| dcerpc.dg_server_boot     | Server boot time    | Unsigned 32-bit integer |             |
| dcerpc.dg_status          | Status              | Unsigned 32-bit integer |             |
| dcerpc.drep               | Data Representation | Byte array              |             |
| dcerpc.drep.byteorder     | Byte order          | Unsigned 8-bit integer  |             |
| dcerpc.drep.character     | Character           | Unsigned 8-bit integer  |             |
| dcerpc.drep.fp            | Floating-point      | Unsigned 8-bit integer  |             |
| dcerpc.fack_max_frag_size | Max Frag Size       | Unsigned 32-bit integer |             |
| dcerpc.fack_max_tsdu      | Max TSU             | Unsigned 32-bit integer |             |
| dcerpc.fack_selack        | Selective ACK       | Unsigned 32-bit integer |             |
| dcerpc.fack_selack_len    | Selective ACK Len   | Unsigned 16-bit integer |             |
| dcerpc.fack_serial_num    | Serial Num          | Unsigned 16-bit integer |             |
| dcerpc.fack_vers          | FAK Version         | Unsigned 8-bit integer  |             |



| Field                             | Field Name                           | Type                    | Description  |
|-----------------------------------|--------------------------------------|-------------------------|--|
| dcerpc.fack_window_size           | Window Size                          | Unsigned 16-bit integer |  |
| dcerpc.fragment                   | DCE/RPC Fragment                     |                         | DCE/RPC Fragment                                       |
| dcerpc.fragment.error             | Defragmentation error                |                         | Defragmentation error due to illegal fragments         |
| dcerpc.fragment.multiple_tails    | Multiple tail fragments found        | Boolean                 | Several tails were found when defragmenting the packet |
| dcerpc.fragment.overlap           | Fragment overlap                     | Boolean                 | Fragment overlaps with other fragments                 |
| dcerpc.fragment.overlap.conflict  | Conflicting data in fragment overlap | Boolean                 | Overlapping fragments contained conflicting data       |
| dcerpc.fragment.too_long_fragment | Fragment too long                    | Boolean                 | Fragment contained data past end of packet             |
| dcerpc.fragments                  | DCE/RPC Fragments                    | No value                | DCE/RPC Fragments                                      |
| dcerpc.krb5_av_auth_verifier      | Authentication Verifier              | Byte array              |  |
| dcerpc.krb5_av_key_version_num    | Key Version Number                   | Unsigned 8-bit integer  |  |
| dcerpc.krb5_av_prot_level         | Protection Level                     | Unsigned 8-bit integer  |  |
| dcerpc.nt.close_frame             | Frame handle close                   |                         | Frame handle closed                                    |
| dcerpc.nt.open_frame              | Frame handle opened                  |                         | Frame handle opened                                    |
| dcerpc.obj_id                     | Object                               | String                  |  |
| dcerpc.op                         | Operation                            | Unsigned 16-bit integer |  |
| dcerpc.opnum                      | Opnum                                | Unsigned 16-bit integer |  |
| dcerpc.pkt_type                   | Packet type                          | Unsigned 8-bit integer  |  |
| dcerpc.referent_id                | Referent ID                          | Unsigned 32-bit         | Referent ID for this                                   |

| Field                           | Field Name               | Type                    | Description   |
|---------------------------------|--------------------------|-------------------------|---|
|                                 |                          | integer                 | NDR encoded pointer                                   |
| dcerpc.request_in               | Request in               |                         | This packet is a response to the packet in this frame |
| dcerpc.response_in              | Response in              |                         | The response to this packet is in this packet         |
| dcerpc.server_accepting_cancels | Server accepting cancels | Boolean                 |   |
| dcerpc.time                     | Time from request        | Time duration           | Time between Request and Reply for DCE-RPC calls      |
| dcerpc.ver                      | Version                  | Unsigned 8-bit integer  |   |
| dcerpc.ver_minor                | Version (minor)          | Unsigned 8-bit integer  |   |
| nt.str.len                      | Length                   | Unsigned 16-bit integer | Length of string in short integers                    |
| nt.str.size                     | Size                     | Unsigned 16-bit integer | Size of string in short integers                      |

### DCE Security ID Mapper (secidmap)

Table A-58. DCE Security ID Mapper (secidmap)

| Field          | Field Name | Type                    | Description |
|----------------|------------|-------------------------|-------------|
| secidmap.opnum | Operation  | Unsigned 16-bit integer | Operation   |

### DCE/RPC BOS Server (bossvr)

Table A-59. DCE/RPC BOS Server (bossvr)

| Field        | Field Name | Type                    | Description |
|--------------|------------|-------------------------|-------------|
| bossvr.opnum | Operation  | Unsigned 16-bit integer | Operation   |

### DCE/RPC CDS Solicitation (cds\_solicit)

Table A-60. DCE/RPC CDS Solicitation (cds\_solicit)

| Field             | Field Name | Type                    | Description |
|-------------------|------------|-------------------------|-------------|
| cds_solicit.opnum | Operation  | Unsigned 16-bit integer | Operation   |

### DCE/RPC Conversation Manager (conv)

**Table A-61. DCE/RPC Conversation Manager (conv)**

| Field                            | Field Name                          | Type                    | Description |
|----------------------------------|-------------------------------------|-------------------------|-------------|
| conv.opnum                       | Operation                           | Unsigned 16-bit integer | Operation   |
| conv.status                      | Status                              | Unsigned 32-bit integer |             |
| conv.who_are_you2_resp_casuuid   | hf_conv_who_are_you2_resp_casuid    | String                  | UUID        |
| conv.who_are_you2_resp_seq       | hf_conv_who_are_you2_resp_seq       | Unsigned 32-bit integer |             |
| conv.who_are_you2_rqst_actuid    | hf_conv_who_are_you2_rqst_actuid    | String                  | UUID        |
| conv.who_are_you2_rqst_boot_time | hf_conv_who_are_you2_rqst_boot_time | Date/Time stamp         |             |
| conv.who_are_you_resp_seq        | hf_conv_who_are_you_resp_seq        | Unsigned 32-bit integer |             |
| conv.who_are_you_rqst_actuid     | hf_conv_who_are_you_rqst_actuid     | String                  | UUID        |
| conv.who_are_you_rqst_boot_time  | hf_conv_who_are_you_rqst_boot_time  | Date/Time stamp         |             |

**DCE/RPC Endpoint Mapper (epm)****Table A-62. DCE/RPC Endpoint Mapper (epm)**

| Field          | Field Name        | Type                    | Description                        |
|----------------|-------------------|-------------------------|------------------------------------|
| epm.ann_len    | Annotation length | Unsigned 32-bit integer |                                    |
| epm.ann_offset | Annotation offset | Unsigned 32-bit integer |                                    |
| epm.annotation | Annotation        | String                  | Annotation                         |
| epm.hnd        | Handle            | Byte array              | Context handle                     |
| epm.if_id      | Interface         | String                  |                                    |
| epm.inq_type   | Inquiry type      | Unsigned 32-bit integer |                                    |
| epm.max_ents   | Max entries       | Unsigned 32-bit integer |                                    |
| epm.max_towers | Max Towers        | Unsigned 32-bit integer | Maximum number of towers to return |
| epm.num_ents   | Num entries       | Unsigned 32-bit         |                                    |

| Field                  | Field Name       | Type                    | Description                                  |
|------------------------|------------------|-------------------------|--|
|                        |                  | integer                 |  |
| epm.num_towers         | Num Towers       | Unsigned 32-bit integer | Number number of towers to return            |
| epm.object             | Object           | String                  |  |
| epm.opnum              | Operation        | Unsigned 16-bit integer | Operation                                    |
| epm.proto.ip           | IP               | IPv4 address            | IP address where service is located          |
| epm.proto.named_pipe   | Named Pipe       | String                  | Name of the named pipe for this service      |
| epm.proto.netbios_name | NetBIOS Name     | String                  | NetBIOS name where this service can be found |
| epm.proto.tcp_port     | TCP Port         | Unsigned 16-bit integer | TCP Port where this service can be found     |
| epm.proto.udp_port     | UDP Port         | Unsigned 16-bit integer | UDP Port where this service can be found     |
| epm.rc                 | Return code      | Unsigned 32-bit integer | EPM return value                             |
| epm.replace            | Replace          | Unsigned 8-bit integer  | Replace existing objects?                    |
| epm.tower              | Tower            | Byte array              | Tower data                                   |
| epm.tower.len          | Length           | Unsigned 32-bit integer | Length of tower data                         |
| epm.tower.lhs.len      | LHS Length       | Unsigned 16-bit integer | Length of LHS data                           |
| epm.tower.num_floors   | Number of floors | Unsigned 16-bit integer | Number of floors in tower                    |
| epm.tower.proto_id     | Protocol         | Unsigned 8-bit integer  | Protocol identifier                          |
| epm.tower.rhs.len      | RHS Length       | Unsigned 16-bit integer | Length of RHS data                           |
| epm.uuid               | UUID             | String                  | UUID   |
| epm.ver_maj            | Version Major    | Unsigned 16-bit integer |  |
| epm.ver_min            | Version Minor    | Unsigned 16-bit integer |  |

| Field       | Field Name     | Type                    | Description |
|-------------|----------------|-------------------------|-------------|
| epm.ver_opt | Version Option | Unsigned 32-bit integer |             |

**DCE/RPC FLDB (fldb)**

Table A-63. DCE/RPC FLDB (fldb)

| Field      | Field Name | Type                    | Description |
|------------|------------|-------------------------|-------------|
| fldb.opnum | Operation  | Unsigned 16-bit integer | Operation   |

**DCE/RPC FLDB UBIK TRANSFER (ubikdisk)**

Table A-64. DCE/RPC FLDB UBIK TRANSFER (ubikdisk)

| Field          | Field Name | Type                    | Description |
|----------------|------------|-------------------------|-------------|
| ubikdisk.opnum | Operation  | Unsigned 16-bit integer | Operation   |

**DCE/RPC FLDB UBIKVOTE (ubikvote)**

Table A-65. DCE/RPC FLDB UBIKVOTE (ubikvote)

| Field          | Field Name | Type                    | Description |
|----------------|------------|-------------------------|-------------|
| ubikvote.opnum | Operation  | Unsigned 16-bit integer | Operation   |

**DCE/RPC Kerberos V (krb5rpc)**

Table A-66. DCE/RPC Kerberos V (krb5rpc)

| Field                              | Field Name                         | Type                    | Description |
|------------------------------------|------------------------------------|-------------------------|-------------|
| hf_krb5rpc_krb5                    | hf_krb5rpc_krb5                    | Byte array              | krb5_blob   |
| hf_krb5rpc_sendto_kdc_resp_keysize | hf_krb5rpc_sendto_kdc_resp_keysize | Unsigned 32-bit integer |             |
| hf_krb5rpc_sendto_kdc_resp_len     | hf_krb5rpc_sendto_kdc_resp_len     | Unsigned 32-bit integer |             |
| hf_krb5rpc_sendto_kdc_resp_max     | hf_krb5rpc_sendto_kdc_resp_max     | Unsigned 32-bit integer |             |
| hf_krb5rpc_sendto_kdc_resp_spare1  | hf_krb5rpc_sendto_kdc_resp_spare1  | Unsigned 32-bit integer |             |
| hf_krb5rpc_sendto_kdc_resp_st      | hf_krb5rpc_sendto_kdc_resp_st      | Unsigned 32-bit integer |             |
| hf_krb5rpc_sendto_kdc_rqst_keysize | hf_krb5rpc_sendto_kdc_rqst_keysize | Unsigned 32-bit integer |             |
| hf_krb5rpc_sendto_kdc_rqst_spare1  | hf_krb5rpc_sendto_kdc_rqst_spare1  | Unsigned 32-bit integer |             |

**DCE/RPC RS\_ACCT (rs\_acct)**

**Table A-67. DCE/RPC RS\_ACCT (rs\_acct)**

| Field                              | Field Name | Type                    | Description |
|------------------------------------|------------|-------------------------|-------------|
| rs_acct.get_projlist_rqst_key_size | Var1       | Unsigned 32-bit integer |             |
| rs_acct.get_projlist_rqst_key_t    | Var1       | String                  |             |
| rs_acct.get_projlist_rqst_var1     | Var1       | Unsigned 32-bit integer |             |
| rs_acct.lookup_rqs_t_key_size      | Key Size   | Unsigned 32-bit integer |             |
| rs_acct.lookup_rqs_t_var           | Var        | Unsigned 32-bit integer |             |
| rs_acct.opnum                      | Operation  | Unsigned 16-bit integer | Operation   |
| rs_lookup.get_rqst_key_t           | Key        | String                  |             |

**DCE/RPC RS\_MISC (rs\_misc)**

**Table A-68. DCE/RPC RS\_MISC (rs\_misc)**

| Field                                | Field Name | Type                    | Description |
|--------------------------------------|------------|-------------------------|-------------|
| rs_misc.login_get_info_rqst_key_t    | Key        | String                  |             |
| rs_misc.login_get_info_rqst_key_size | Key Size   | Unsigned 32-bit integer |             |
| rs_misc.login_get_info_rqst_var      | Var        | Unsigned 32-bit integer |             |
| rs_misc.opnum                        | Operation  | Unsigned 16-bit integer | Operation   |

**DCE/RPC RS\_UNIX (rs\_unix)**

**Table A-69. DCE/RPC RS\_UNIX (rs\_unix)**

| Field         | Field Name | Type                    | Description |
|---------------|------------|-------------------------|-------------|
| rs_unix.opnum | Operation  | Unsigned 16-bit integer | Operation   |

**DCE/RPC Remote Management (mgmt)**

**Table A-70. DCE/RPC Remote Management (mgmt)**

| Field | Field Name | Type | Description |
|-------|------------|------|-------------|
|       |            |      |             |

**DCE/RPC Repserver Calls (rs\_replist)**

Table A-71. DCE/RPC Repserver Calls (rs\_replist)

| Field            | Field Name | Type                    | Description |
|------------------|------------|-------------------------|-------------|
| rs_replist.opnum | Operation  | Unsigned 16-bit integer | Operation   |

**DCE/RPC TokenServer Calls (tkn4int)**

Table A-72. DCE/RPC TokenServer Calls (tkn4int)

| Field         | Field Name | Type                    | Description |
|---------------|------------|-------------------------|-------------|
| tkn4int.opnum | Operation  | Unsigned 16-bit integer | Operation   |

**DCE/RPC UpServer (dce\_update)**

Table A-73. DCE/RPC UpServer (dce\_update)

| Field            | Field Name | Type                    | Description |
|------------------|------------|-------------------------|-------------|
| dce_update.opnum | Operation  | Unsigned 16-bit integer | Operation   |

**DCOM OXID Resolver (oxid)**

Table A-74. DCOM OXID Resolver (oxid)

| Field | Field Name | Type | Description |
|-------|------------|------|-------------|
|       |            |      |             |

**DCOM Remote Activation (remact)**

Table A-75. DCOM Remote Activation (remact)

| Field | Field Name | Type | Description |
|-------|------------|------|-------------|
|       |            |      |             |

**DEC Spanning Tree Protocol (dec\_stp)**

Table A-76. DEC Spanning Tree Protocol (dec\_stp)

| Field                      | Field Name                     | Type                          | Description |
|----------------------------|--------------------------------|-------------------------------|-------------|
| dec_stp.bridge.mac         | Bridge MAC                     | 6-byte Hardware (MAC) Address |             |
| dec_stp.bridge.pri         | Bridge Priority                | Unsigned 16-bit integer       |             |
| dec_stp.flags              | BPDU flags                     | Unsigned 8-bit integer        |             |
| dec_stp.flags.short_timers | Use short timers               | Boolean                       |             |
| dec_stp.flags.tc           | Topology Change                | Boolean                       |             |
| dec_stp.flags.tcack        | Topology Change Acknowledgment | Boolean                       |             |

| Field             | Field Name          | Type                          | Description |
|-------------------|---------------------|-------------------------------|-------------|
| dec_stp.forward   | Forward Delay       | Unsigned 8-bit integer        |             |
| dec_stp.hello     | Hello Time          | Unsigned 8-bit integer        |             |
| dec_stp.max_age   | Max Age             | Unsigned 8-bit integer        |             |
| dec_stp.msg_age   | Message Age         | Unsigned 8-bit integer        |             |
| dec_stp.port      | Port identifier     | Unsigned 8-bit integer        |             |
| dec_stp.protocol  | Protocol Identifier | Unsigned 8-bit integer        |             |
| dec_stp.root.cost | Root Path Cost      | Unsigned 16-bit integer       |             |
| dec_stp.root.mac  | Root MAC            | 6-byte Hardware (MAC) Address |             |
| dec_stp.root.pri  | Root Priority       | Unsigned 16-bit integer       |             |
| dec_stp.type      | BPDU Type           | Unsigned 8-bit integer        |             |
| dec_stp.version   | BPDU Version        | Unsigned 8-bit integer        |             |

## DG Gryphon Protocol (gryphon)

Table A-77. DG Gryphon Protocol (gryphon)

| Field         | Field Name          | Type                   | Description |
|---------------|---------------------|------------------------|-------------|
| gryph.cmd.cmd | Command             | Unsigned 8-bit integer |             |
| gryph.dest    | Destination         | Unsigned 8-bit integer |             |
| gryph.dstchan | Destination channel | Unsigned 8-bit integer |             |
| gryph.src     | Source              | Unsigned 8-bit integer |             |
| gryph.srcchan | Source channel      | Unsigned 8-bit integer |             |
| gryph.type    | Frame type          | Unsigned 8-bit integer |             |

## DHCPv6 (dhcpv6)



Table A-78. DHCPv6 (dhcpv6)

| Field          | Field Name   | Type                   | Description |
|----------------|--------------|------------------------|-------------|
| dhcpv6.msgtype | Message type | Unsigned 8-bit integer |             |

**DNS Control Program Server (cprpc\_server)**

Table A-79. DNS Control Program Server (cprpc\_server)

| Field              | Field Name | Type                    | Description |
|--------------------|------------|-------------------------|-------------|
| cprpc_server.opnum | Operation  | Unsigned 16-bit integer | Operation   |

**DOCSIS 1.1 (docsis)**

Table A-80. DOCSIS 1.1 (docsis)

| Field                  | Field Name                       | Type                    | Description                      |
|------------------------|----------------------------------|-------------------------|----------------------------------|
| docsis.bpi_en          | Encryption                       | Unsigned 8-bit integer  | BPI Enable                       |
| docsis.ehdr.act_grants | Active Grants                    | Unsigned 8-bit integer  | Active Grants                    |
| docsis.ehdr.keyseq     | Key Sequence                     | Unsigned 8-bit integer  | Key Sequence                     |
| docsis.ehdr.len        | Length                           | Unsigned 8-bit integer  | TLV Len                          |
| docsis.ehdr.minislots  | MiniSlots                        | Unsigned 8-bit integer  | Mini Slots Requested             |
| docsis.ehdr.phsi       | Payload Header Suppression Index | Unsigned 8-bit integer  | Payload Header Suppression Index |
| docsis.ehdr.qind       | Queue Indicator                  | Unsigned 8-bit integer  | Queue Indicator                  |
| docsis.ehdr.rsvd       | Reserved                         | Unsigned 8-bit integer  | Reserved Byte                    |
| docsis.ehdr.said       | SAID                             | Unsigned 16-bit integer | Security Association Identifier  |
| docsis.ehdr.sid        | SID                              | Unsigned 16-bit integer | Service Identifier               |
| docsis.ehdr.type       | Type                             | Unsigned 8-bit integer  | TLV Type                         |
| docsis.ehdr.value      | Value                            | Byte array              | TLV Value                        |
| docsis.ehdr.ver        | Version                          | Unsigned 8-bit integer  | Version                          |
| docsis.ehdron          | EHDROn                           | Unsigned 8-bit          | Extended Header                  |

| Field             | Field Name               | Type                    | Description                   |
|-------------------|--------------------------|-------------------------|-------------------------------|
|                   |                          | integer                 | Presence                      |
| docsis.fcparm     | FCParm                   | Unsigned 8-bit integer  | Parameter Field               |
| docsis.fctype     | FCType                   | Unsigned 8-bit integer  | Frame Control Type            |
| docsis.frag_first | First Frame              | Unsigned 8-bit integer  | First Frame                   |
| docsis.frag_last  | Last Frame               | Unsigned 8-bit integer  | Last Frame                    |
| docsis.frag_rsvd  | Reserved                 | Unsigned 8-bit integer  | Reserved                      |
| docsis.frag_seq   | Fragmentation Sequence # | Unsigned 8-bit integer  | Fragmentation Sequence Number |
| docsis.hcs        | Header check sequence    | Unsigned 16-bit integer | Header check sequence         |
| docsis.lensid     | Length after HCS (bytes) | Unsigned 16-bit integer | Length or SID                 |
| docsis.macparm    | MacParm                  | Unsigned 8-bit integer  | Mac Parameter Field           |
| docsis.toggle_bit | Toggle                   | Unsigned 8-bit integer  | Toggle                        |

**DOCSIS Appendix C TLV's (docsis\_tlv)**

Table A-81. DOCSIS Appendix C TLV's (docsis\_tlv)

| Field                            | Field Name                      | Type                    | Description                 |
|----------------------------------|---------------------------------|-------------------------|-----------------------------|
| docsis.cos.sid                   | .2 Service ID                   | Unsigned 16-bit integer | Service ID                  |
| docsis.tlv                       | TLV Data                        | Byte array              | TLV Data                    |
| docsis.tlv.auth_block            | 30 Auth Block                   | Byte array              | Auth Block                  |
| docsis.tlv.bpi                   | 17 Baseline Privacy Encoding    | Byte array              | Baseline Privacy Encoding   |
| docsis.tlv.bpi_en                | 29 Privacy Enable               | Boolean                 | Privacy Enable              |
| docsis.tlv.clsfr.actsate         | .6 Activation State             | Boolean                 | Classifier Activation State |
| docsis.tlv.clsfr.dot1q           | .11 802.1Q Classifier Encodings | Byte array              | 802.1Q Classifier Encodings |
| docsis.tlv.clsfr.dot1q.ethertype | ..2 VLAN id                     | Unsigned 16-bit integer | VLAN Id                     |

| Field                             | Field Name                         | Type                          | Description                    |
|-----------------------------------|------------------------------------|-------------------------------|--------------------------------|
| docsis.tlv.clsfr.dot1q.userpri    | ..1 User Priority                  | Unsigned 16-bit integer       | User Priority                  |
| docsis.tlv.clsfr.dot1q.vendorspec | ..43 Vendor Specific Encodings     | Byte array                    | Vendor Specific Encodings      |
| docsis.tlv.clsfr.dscact           | ..7 DSC Action                     | Unsigned 8-bit integer        | Dynamic Service Change Action  |
| docsis.tlv.clsfr.err              | ..8 Error Encodings                | Byte array                    | Error Encodings                |
| docsis.tlv.clsfr.err.code         | ..2 Error Code                     | Unsigned 8-bit integer        | TCP/UDP Destination Port End   |
| docsis.tlv.clsfr.err.msg          | ..3 Error Message                  | String                        | Error Message                  |
| docsis.tlv.clsfr.err.param        | ..1 Param Subtype                  | Unsigned 8-bit integer        | Parameter Subtype              |
| docsis.tlv.clsfr.eth              | ..10 Ethernet Classifier Encodings | Byte array                    | Ethernet Classifier Encodings  |
| docsis.tlv.clsfr.eth.dmac         | ..1 Dest Mac Address               | 6-byte Hardware (MAC) Address | Destination Mac Address        |
| docsis.tlv.clsfr.eth.ethertype    | ..3 Ethertype                      | Unsigned 24-bit integer       | Ethertype                      |
| docsis.tlv.clsfr.eth.smac         | ..2 Source Mac Address             | 6-byte Hardware (MAC) Address | Source Mac Address             |
| docsis.tlv.clsfr.id               | ..2 Classifier ID                  | Unsigned 16-bit integer       | Classifier ID                  |
| docsis.tlv.clsfr.ip               | ..9 IP Classifier Encodings        | Byte array                    | IP Classifier Encodings        |
| docsis.tlv.clsfr.ip.dmask         | ..6 Destination Mask               | IPv4 address                  | Destination Mask               |
| docsis.tlv.clsfr.ip.dportend      | ..10 Dest Port End                 | Unsigned 16-bit integer       | TCP/UDP Destination Port End   |
| docsis.tlv.clsfr.ip.dportstart    | ..9 Dest Port Start                | Unsigned 16-bit integer       | TCP/UDP Destination Port Start |
| docsis.tlv.clsfr.ip.dst           | ..4 Destination Address            | IPv4 address                  | Destination Address            |
| docsis.tlv.clsfr.ip.ipproto       | ..2 IP Protocol                    | Unsigned 16-bit integer       | IP Protocol                    |
| docsis.tlv.clsfr.ip.s             | ..5 Source Mask                    | IPv4 address                  | Source Mask                    |

| Field                          | Field Name                    | Type                    | Description                           |
|--------------------------------|-------------------------------|-------------------------|---------------------------------------|
| mask                           |                               |                         |                                       |
| docsis.tlv.clsfr.ip.sportend   | ..8 Source Port End           | Unsigned 16-bit integer | TCP/UDP Source Port End               |
| docsis.tlv.clsfr.ip.sportstart | ..7 Source Port Start         | Unsigned 16-bit integer | TCP/UDP Source Port Start             |
| docsis.tlv.clsfr.ip.src        | ..3 Source Address            | IPv4 address            | Source Address                        |
| docsis.tlv.clsfr.ip.tosmask    | ..1 Type Of Service Mask      | Byte array              | Type Of Service Mask                  |
| docsis.tlv.clsfr.ref           | .1 Classifier Ref             | Unsigned 8-bit integer  | Classifier Reference                  |
| docsis.tlv.clsfr.rulepri       | .5 Rule Priority              | Unsigned 8-bit integer  | Rule Priority                         |
| docsis.tlv.clsfr.sflowid       | .4 Service Flow ID            | Unsigned 16-bit integer | Service Flow ID                       |
| docsis.tlv.clsfr.sflowref      | .3 Service Flow Ref           | Unsigned 16-bit integer | Service Flow Reference                |
| docsis.tlv.clsfr.vendor        | .43 Vendor Specific Encodings | Byte array              | Vendor Specific Encodings             |
| docsis.tlv.cmmic               | 6 CM MIC                      | Byte array              | Cable Modem Message Integrity Check   |
| docsis.tlv.cmtsmic             | 7 CMTS MIC                    | Byte array              | CMTS Message Integrity Check          |
| docsis.tlv.cos                 | 4 COS Encodings               | Byte array              | 4 COS Encodings                       |
| docsis.tlv.cos.id              | .1 Class ID                   | Unsigned 8-bit integer  | Class ID                              |
| docsis.tlv.cos.maxdown         | .2 Max Downstream Rate (bps)  | Unsigned 32-bit integer | Max Downstream Rate                   |
| docsis.tlv.cos.maxup           | .3 Max Upstream Rate (bps)    | Unsigned 32-bit integer | Max Upstream Rate                     |
| docsis.tlv.cos.maxupburst      | .6 Maximum Upstream Burst     | Unsigned 16-bit integer | Maximum Upstream Burst                |
| docsis.tlv.cos.mingrntdup      | .5 Guaranteed Upstream Rate   | Unsigned 32-bit integer | Guaranteed Minimum Upstream Data Rate |
| docsis.tlv.cos.privacy_enable  | .7 COS Privacy Enable         | Boolean                 | Class of Service Privacy Enable       |

| Field                         | Field Name                      | Type                          | Description                  |
|-------------------------------|---------------------------------|-------------------------------|------------------------------|
| docsis.tlv.cos.upchnlpri      | .4 Upstream Channel Priority    | Unsigned 8-bit integer        | Upstream Channel Priority    |
| docsis.tlv.cosign_cvc         | 33 Co-Signer CVC                | Byte array                    | Co-Signer CVC                |
| docsis.tlv.cpe_ether          | 14 CPE Ethernet Addr            | 6-byte Hardware (MAC) Address | CPE Ethernet Addr            |
| docsis.tlv.downclsfr          | 23 Downstream Classifier        | Byte array                    | 23 Downstream Classifier     |
| docsis.tlv.downfreq           | 1 Downstream Frequency          | Unsigned 32-bit integer       | Downstream Frequency         |
| docsis.tlv.downsflow          | 25 Downstream Service Flow      | Byte array                    | 25 Downstream Service Flow   |
| docsis.tlv.hmac_digest        | 27 HMAC Digest                  | Byte array                    | HMAC Digest                  |
| docsis.tlv.key_seq            | 31 Key Sequence Number          | Byte array                    | Key Sequence Number          |
| docsis.tlv.map.docsvr         | .2 Docsis Version               | Unsigned 8-bit integer        | DOCSIS Version               |
| docsis.tlv.maxclass           | 28 Max # of Classifiers         | Unsigned 16-bit integer       | Max # of Classifiers         |
| docsis.tlv.maxcpe             | 18 Max # of CPE's               | Unsigned 8-bit integer        | Max Number of CPE's          |
| docsis.tlv.mcap               | 5 Modem Capabilities            | Byte array                    | Modem Capabilities           |
| docsis.tlv.mcap.concat        | .1 Concatenation Support        | Boolean                       | Concatenation Support        |
| docsis.tlv.mcap.dcc           | .12 DCC Support                 | Boolean                       | DCC Support                  |
| docsis.tlv.mcap.do1pfiltering | .9 802.1P Filtering Support     | Unsigned 8-bit integer        | 802.1P Filtering Support     |
| docsis.tlv.mcap.do1qfilt      | .9 802.1Q Filtering Support     | Unsigned 8-bit integer        | 802.1Q Filtering Support     |
| docsis.tlv.mcap.downsaid      | .7 # Downstream SAIDs Supported | Unsigned 8-bit integer        | Downstream Said Support      |
| docsis.tlv.mcap.frag          | .3 Fragmentation Support        | Boolean                       | Fragmentation Support        |
| docsis.tlv.mcap.igmp          | .5 IGMP Support                 | Boolean                       | IGMP Support                 |
| docsis.tlv.mcap.nuomtaps      | .11 # Xmit Equalizer Taps       | Unsigned 8-bit integer        | Number of Transmit Equalizer |

| Field                      | Field Name                    | Type                    | Description                        |
|----------------------------|-------------------------------|-------------------------|------------------------------------|
|                            |                               |                         | Taps                               |
| docsis.tlv.mcap.phs        | .4 PHS Support                | Boolean                 | PHS Support                        |
| docsis.tlv.mcap.privacy    | .6 Privacy Support            | Boolean                 | Privacy Support                    |
| docsis.tlv.mcap.tapspersym | .10 Xmit Equalizer Taps/Sym   | Unsigned 8-bit integer  | Transmit Equalizer Taps per Symbol |
| docsis.tlv.mcap.upsid      | .8 # Upstream SAIDs Supported | Unsigned 8-bit integer  | Upstream SID Support               |
| docsis.tlv.mfgr_cvc        | 32 Manufacturer CVC           | Byte array              | Manufacturer CVC                   |
| docsis.tlv.modemaddr       | 12 Modem IP Address           | IPv4 address            | Modem IP Address                   |
| docsis.tlv.netaccess       | 3 Network Access              | Boolean                 | Network Access TLV                 |
| docsis.tlv.phs             | 26 PHS Rules                  | Byte array              | PHS Rules                          |
| docsis.tlv.phs.classid     | .2 Classifier Id              | Unsigned 16-bit integer | Classifier Id                      |
| docsis.tlv.phs.classref    | .1 Classifier Reference       | Unsigned 8-bit integer  | Classifier Reference               |
| docsis.tlv.phs.dscaction   | .5 DSC Action                 | Unsigned 8-bit integer  | Dynamic Service Change Action      |
| docsis.tlv.phs.err         | .6 Error Encodings            | Byte array              | Error Encodings                    |
| docsis.tlv.phs.err.code    | ..2 Error Code                | Unsigned 8-bit integer  | Error Code                         |
| docsis.tlv.phs.err.msg     | ..3 Error Message             | String                  | Error Message                      |
| docsis.tlv.phs.err.param   | ..1 Param Subtype             | Unsigned 8-bit integer  | Parameter Subtype                  |
| docsis.tlv.phs.phsf        | .7 PHS Field                  | Byte array              | PHS Field                          |
| docsis.tlv.phs.phsi        | .8 PHS Index                  | Unsigned 8-bit integer  | PHS Index                          |
| docsis.tlv.phs.phsm        | .9 PHS Mask                   | Byte array              | PHS Mask                           |
| docsis.tlv.phs.phss        | .10 PHS Size                  | Unsigned 8-bit integer  | PHS Size                           |
| docsis.tlv.phs.phsv        | .11 PHS Verify                | Boolean                 | PHS Verify                         |
| docsis.tlv.phs.sflowid     | .4 Service flow Id            | Unsigned 16-bit integer | Service Flow Id                    |

| Field                                 | Field Name                              | Type                    | Description                          |
|---------------------------------------|---|-------------------------|--------------------------------------|
| docsis.tlv.phs.sflowref               | .3 Service flow reference               | Unsigned 16-bit integer | Service Flow Reference               |
| docsis.tlv.phs.vendorspec             | .43 PHS Vendor Specific                 | Byte array              | PHS Vendor Specific                  |
| docsis.tlv.rng_tech                   | Ranging Technique                       | Unsigned 8-bit integer  | Ranging Technique                    |
| docsis.tlv.sflow.act_timeout          | .12 Timeout for Active Params (secs)    | Unsigned 16-bit integer | Timeout for Active Params (secs)     |
| docsis.tlv.sflow.adm_timeout          | .13 Timeout for Admitted Params (secs)  | Unsigned 16-bit integer | Timeout for Admitted Params (secs)   |
| docsis.tlv.sflow.assumed_min_pkt_size | .11 Assumed Min Reserved Packet Size    | Unsigned 16-bit integer | Assumed Minimum Reserved Packet Size |
| docsis.tlv.sflow.cname                | .4 Service Class Name                   | String                  | Service Class Name                   |
| docsis.tlv.sflow.err                  | .5 Error Encodings                      | Byte array              | Error Encodings                      |
| docsis.tlv.sflow.err.code             | ..2 Error Code                          | Unsigned 8-bit integer  | Error Code                           |
| docsis.tlv.sflow.err.msg              | ..3 Error Message                       | String                  | Error Message                        |
| docsis.tlv.sflow.err.param            | ..1 Param Subtype                       | Unsigned 8-bit integer  | Parameter Subtype                    |
| docsis.tlv.sflow.grnts_per_intvl      | .22 Grants Per Interval                 | Unsigned 8-bit integer  | Grants Per Interval                  |
| docsis.tlv.sflow.id                   | .2 Service Flow Id                      | Unsigned 32-bit integer | Service Flow Id                      |
| docsis.tlv.sflow.ip_tos_overwrite     | .23 IP TOS Overwrite                    | Unsigned 16-bit integer | IP TOS Overwrite                     |
| docsis.tlv.sflow.max_down_lat         | .14 Maximum Downstream Latency (usec)   | Unsigned 32-bit integer | Maximum Downstream Latency (usec)    |
| docsis.tlv.sflow.maxburst             | .9 Maximum Burst (bps)                  | Unsigned 32-bit integer | Maximum Burst (bps)                  |
| docsis.tlv.sflow.maxconcat            | .14 Max Concat Burst                    | Unsigned 16-bit integer | Max Concatenated Burst               |
| docsis.tlv.sflow.maxtrafrate          | .8 Maximum Sustained Traffic Rate (bps) | Unsigned 32-bit integer | Maximum Sustained Traffic Rate (bps) |

| Field                             | Field Name                                | Type                    | Description                                  |
|-----------------------------------|---|-------------------------|--|
| docsis.tlv.sflow.mntrafrate       | .10 Minimum Traffic Rate (bps)            | Unsigned 32-bit integer | Minimum Traffic Rate (bps)                   |
| docsis.tlv.sflow.nom_grant_intvl  | .20 Nominal Grant Interval (usec)         | Unsigned 32-bit integer | Nominal Grant Interval (usec)                |
| docsis.tlv.sflow.nominal_polling  | .17 Nominal Polling Interval(usec)        | Unsigned 32-bit integer | Nominal Polling Interval(usec)               |
| docsis.tlv.sflow.qos              | .6 QOS Parameter Set                      | Unsigned 8-bit integer  | QOS Parameter Set                            |
| docsis.tlv.sflow.ref              | .1 Service Flow Ref                       | Unsigned 16-bit integer | Service Flow Reference                       |
| docsis.tlv.sflow.reqxmitpol       | .16 Request/Transmission Policy           | Unsigned 32-bit integer | Request/Transmission Policy                  |
| docsis.tlv.sflow.schedtype        | .15 Scheduling Type                       | Unsigned 32-bit integer | Scheduling Type                              |
| docsis.tlv.sflow.sid              | .3 Service Identifier                     | Unsigned 16-bit integer | Service Identifier                           |
| docsis.tlv.sflow.tol_grant_jitter | .21 Tolerated Grant Jitter (usec)         | Unsigned 32-bit integer | Tolerated Grant Jitter (usec)                |
| docsis.tlv.sflow.toler_jitter     | .18 Tolerated Poll Jitter (usec)          | Unsigned 32-bit integer | Tolerated Poll Jitter (usec)                 |
| docsis.tlv.sflow.trafpri          | .7 Traffic Priority                       | Unsigned 8-bit integer  | Traffic Priority                             |
| docsis.tlv.sflow.ug_size          | .19 Unsolicited Grant Size (bytes)        | Unsigned 16-bit integer | Unsolicited Grant Size (bytes)               |
| docsis.tlv.sflow.ug_s_timeref     | .24 UGS Time Reference                    | Unsigned 32-bit integer | UGS Time Reference                           |
| docsis.tlv.sflow.vendorspec       | .43 Vendor Specific Encodings             | Byte array              | Vendor Specific Encodings                    |
| docsis.tlv.snmp_access            | 10 SNMP Write Access                      | Byte array              | SNMP Write Access                            |
| docsis.tlv.snmp_obj               | 11 SNMP Object                            | Byte array              | SNMP Object                                  |
| docsis.tlv.snmpv3                 | 34 SNMPv3 Kickstart Value                 | Byte array              | SNMPv3 Kickstart Value                       |
| docsis.tlv.snmpv3_publicnum       | .2 SNMPv3 Kickstart Manager Public Number | Byte array              | SNMPv3 Kickstart Value Manager Public Number |
| docsis.tlv.snmpv3.                | .1 SNMPv3 Kickstart Security              | String                  | SNMPv3 Kickstart                             |



| Field                         | Field Name                             | Type                    | Description                         |
|-------------------------------|--|-------------------------|-------------------------------------|
| secname                       | Name                                   |                         | Security Name                       |
| docsis.tlv.subsfltrgrps       | 37 Subscriber Management Filter Groups | Byte array              | Subscriber Management Filter Groups |
| docsis.tlv.subsipentry        | Subscriber Management CPE IP Entry     | IPv4 address            | Subscriber Management CPE IP Entry  |
| docsis.tlv.subs iptable       | 36 Subscriber Management CPE IP Table  | Byte array              | Subscriber Management CPE IP Table  |
| docsis.tlv.subsmgmtctrl       | 35 Subscriber Management Control       | Byte array              | Subscriber Management Control       |
| docsis.tlv.svcunavail         | 13 Service Not Available Response      | Byte array              | Service Not Available Response      |
| docsis.tlv.svcunavail.classid | Service Not Available: (Class ID)      | Unsigned 8-bit integer  | Service Not Available (Class ID)    |
| docsis.tlv.svcunavail.code    | Service Not Available (Code)           | Unsigned 8-bit integer  | Service Not Available (Code)        |
| docsis.tlv.svcunavail.type    | Service Not Available (Type)           | Unsigned 8-bit integer  | Service Not Available (Type)        |
| docsis.tlv.sw_upg_file        | 9 Software Upgrade File                | String                  | Software Upgrade File               |
| docsis.tlv.sw_upg_srvr        | 21 Software Upgrade Server             | IPv4 address            | Software Upgrade Server             |
| docsis.tlv.tftp_time          | 19 TFTP Server Timestamp               | Unsigned 32-bit integer | TFTP Server TimeStamp               |
| docsis.tlv.tftpmodemaddr      | 20 TFTP Server Provisioned Modem Addr  | IPv4 address            | TFTP Server Provisioned Modem Addr  |
| docsis.tlv.upchid             | 2 Upstream Channel ID                  | Unsigned 8-bit integer  | Service Identifier                  |
| docsis.tlv.upclsfr            | 22 Upstream Classifier                 | Byte array              | 22 Upstream Classifier              |
| docsis.tlv.upsflow            | 24 Upstream Service Flow               | Byte array              | 24 Upstream Service Flow            |
| docsis.tlv.vendorid           | 8 Vendor ID                            | Byte array              | Vendor Identifier                   |
| docsis.tlv.vendors            | 43 Vendor Specific                     | Byte array              | Vendor Specific                     |

| Field | Field Name | Type | Description |
|-------|------------|------|-------------|
| pec   | Encodings  |      | Encodings   |

### DOCSIS Baseline Privacy Key Management Attributes (docsis\_bpkmatr)

Table A-82. DOCSIS Baseline Privacy Key Management Attributes (docsis\_bpkmatr)

| Field                           | Field Name                  | Type                          | Description           |
|---------------------------------|-----------------------------|-------------------------------|-----------------------|
| docsis.bpkmatr                  | BPKM Attributes             | Byte array                    | BPKM Attributes       |
| docsis.bpkmatr.auth_key         | 7 Auth Key                  | Byte array                    | Auth Key              |
| docsis.bpkmatr.bpiver           | 22 BPI Version              | Unsigned 8-bit integer        | BPKM Attributes       |
| docsis.bpkmatr.cert             | 17 CA Certificate           | Byte array                    | CA Certificate        |
| docsis.bpkmatr.cbiv             | 14 CBC IV                   | Byte array                    | Cypher Block Chaining |
| docsis.bpkmatr.cmcert           | 18 CM Certificate           | Byte array                    | CM Certificate        |
| docsis.bpkmatr.cmid             | 5 CM Identification         | Byte array                    | CM Identification     |
| docsis.bpkmatr.crypto_suite_lst | 21 Cryptographic Suite List | Byte array                    | Cryptographic Suite   |
| docsis.bpkmatr.cryptosuite      | 20 Cryptographic Suite      | Unsigned 16-bit integer       | Cryptographic Suite   |
| docsis.bpkmatr.displaystr       | 6 Display String            | String                        | Display String        |
| docsis.bpkmatr.dnld_params      | 28 Download Parameters      | Byte array                    | Download Parameters   |
| docsis.bpkmatr.errorcode        | 16 Error Code               | Unsigned 8-bit integer        | Error Code            |
| docsis.bpkmatr.hmacdigest       | 11 HMAC Digest              | Byte array                    | HMAC Digest           |
| docsis.bpkmatr.ipaddr           | 27 IP Address               | IPv4 address                  | IP Address            |
| docsis.bpkmatr.keylife          | 9 Key Lifetime (s)          | Unsigned 32-bit integer       | Key Lifetime (s)      |
| docsis.bpkmatr.keyseq           | 10 Key Sequence Number      | Unsigned 8-bit integer        | Key Sequence Number   |
| docsis.bpkmatr.macaddr          | 3 Mac Address               | 6-byte Hardware (MAC) Address | Mac Address           |

| Field                        | Field Name               | Type                    | Description             |
|------------------------------|--------------------------|-------------------------|-------------------------|
| docsis.bpkmatr.manfid        | 2 Manufacturer Id        | Byte array              | Manufacturer Id         |
| docsis.bpkmatr.rs_a_pub_key  | 4 RSA Public Key         | Byte array              | RSA Public Key          |
| docsis.bpkmatr.sadescr       | 23 SA Descriptor         | Byte array              | SA Descriptor           |
| docsis.bpkmatr.said          | 12 SAID                  | Unsigned 16-bit integer | Security Association ID |
| docsis.bpkmatr.saqquery      | 25 SA Query              | Byte array              | SA Query                |
| docsis.bpkmatr.saqquery_type | 26 SA Query Type         | Unsigned 8-bit integer  | SA Query Type           |
| docsis.bpkmatr.satype        | 24 SA Type               | Unsigned 8-bit integer  | SA Type                 |
| docsis.bpkmatr.seccap        | 19 Security Capabilities | Byte array              | Security Capabilities   |
| docsis.bpkmatr.serialnum     | 1 Serial Number          | String                  | Serial Number           |
| docsis.bpkmatr.tek           | 8 Traffic Encryption Key | Byte array              | Traffic Encryption Key  |
| docsis.bpkmatr.tekparams     | 13 TEK Parameters        | Byte array              | TEK Parameters          |
| docsis.bpkmatr.vendordef     | 127 Vendor Defined       | Byte array              | Vendor Defined          |

### DOCSIS Baseline Privacy Key Management Request (docsis\_bpkmreq)

Table A-83. DOCSIS Baseline Privacy Key Management Request (docsis\_bpkmreq)

| Field                     | Field Name           | Type                    | Description          |
|---------------------------|----------------------|-------------------------|----------------------|
| docsis.bpkmreq            | BPKM Request Message | Byte array              | BPKM Request Message |
| docsis.bpkmreq.code       | BPKM Code            | Unsigned 8-bit integer  | BPKM Request Message |
| docsis.bpkmreq.identifier | BPKM Identifier      | Unsigned 8-bit integer  | BPKM Identifier      |
| docsis.bpkmreq.length     | BPKM Length          | Unsigned 16-bit integer | BPKM Length          |

### DOCSIS Baseline Privacy Key Management Response (docsis\_bpkmrsp)

**Table A-84. DOCSIS Baseline Privacy Key Management Response (docsis\_bpkmrsp)**

| Field                     | Field Name            | Type                    | Description           |
|---------------------------|-----------------------|-------------------------|-----------------------|
| docsis.bpkmrsp            | BPKM Response Message | Byte array              | BPKM Response Message |
| docsis.bpkmrsp.code       | BPKM Code             | Unsigned 8-bit integer  | BPKM Response Message |
| docsis.bpkmrsp.identifier | BPKM Identifier       | Unsigned 8-bit integer  | BPKM Identifier       |
| docsis.bpkmrsp.length     | BPKM Length           | Unsigned 16-bit integer | BPKM Length           |

**DOCSIS Dynamic Service Addition Acknowledge (docsis\_dsaack)**

**Table A-85. DOCSIS Dynamic Service Addition Acknowledge (docsis\_dsaack)**

| Field                       | Field Name              | Type                    | Description                 |
|-----------------------------|-------------------------|-------------------------|-----------------------------|
| docsis.dsaack               | Dynamic Service Add Ack | Byte array              | Dynamic Service Add Request |
| docsis.dsaack.confcode      | Confirmation Code       | Unsigned 8-bit integer  | Confirmation Code           |
| docsis.dsaack.transactionid | Transaction Id          | Unsigned 16-bit integer | Service Identifier          |

**DOCSIS Dynamic Service Addition Request (docsis\_dsareq)**

**Table A-86. DOCSIS Dynamic Service Addition Request (docsis\_dsareq)**

| Field                       | Field Name                       | Type                    | Description                      |
|-----------------------------|----------------------------------|-------------------------|----------------------------------|
| docsis.dsareq               | Dynamic Service Addition Request | Byte array              | Dynamic Service Addition Request |
| docsis.dsareq.transactionid | Transaction Id                   | Unsigned 16-bit integer | Transaction Id                   |

**DOCSIS Dynamic Service Addition Response (docsis\_dsarsp)**

**Table A-87. DOCSIS Dynamic Service Addition Response (docsis\_dsarsp)**

| Field                       | Field Name                  | Type                    | Description                 |
|-----------------------------|-----------------------------|-------------------------|-----------------------------|
| docsis.dsarsp               | Dynamic Service Add Request | Byte array              | Dynamic Service Add Request |
| docsis.dsarsp.confcode      | Confirmation Code           | Unsigned 8-bit integer  | Confirmation Code           |
| docsis.dsarsp.transactionid | Transaction Id              | Unsigned 16-bit integer | Service Identifier          |

**DOCSIS Dynamic Service Change Acknowledgement (docsis\_dscack)**

**Table A-88. DOCSIS Dynamic Service Change Acknowledgement (docsis\_dscack)**

| Field                       | Field Name                 | Type                    | Description                 |
|-----------------------------|----------------------------|-------------------------|-----------------------------|
| docsis.dscack               | Dynamic Service Change Ack | Byte array              | Dynamic Service Add Request |
| docsis.dscack.confcode      | Confirmation Code          | Unsigned 8-bit integer  | Confirmation Code           |
| docsis.dscack.transactionid | Transaction Id             | Unsigned 16-bit integer | Service Identifier          |

**DOCSIS Dynamic Service Change Request (docsis\_dscreq)****Table A-89. DOCSIS Dynamic Service Change Request (docsis\_dscreq)**

| Field                       | Field Name                     | Type                    | Description                      |
|-----------------------------|--------------------------------|-------------------------|----------------------------------|
| docsis.dscreq               | Dynamic Service Change Request | Byte array              | Dynamic Service Addition Request |
| docsis.dscreq.transactionid | Transaction Id                 | Unsigned 16-bit integer | Transaction Id                   |

**DOCSIS Dynamic Service Change Response (docsis\_dscrsp)****Table A-90. DOCSIS Dynamic Service Change Response (docsis\_dscrsp)**

| Field                       | Field Name                     | Type                    | Description                 |
|-----------------------------|--------------------------------|-------------------------|-----------------------------|
| docsis.dscrsp               | Dynamic Service Change Request | Byte array              | Dynamic Service Add Request |
| docsis.dscrsp.confcode      | Confirmation Code              | Unsigned 8-bit integer  | Confirmation Code           |
| docsis.dscrsp.transactionid | Transaction Id                 | Unsigned 16-bit integer | Service Identifier          |

**DOCSIS Dynamic Service Delete Request (docsis\_dsdreq)****Table A-91. DOCSIS Dynamic Service Delete Request (docsis\_dsdreq)**

| Field                       | Field Name                     | Type                    | Description                    |
|-----------------------------|--------------------------------|-------------------------|--------------------------------|
| docsis.dsdreq               | Dynamic Service Delete Request | Byte array              | Dynamic Service Delete Request |
| docsis.dsdreq.resvd         | Reserved                       | Unsigned 16-bit integer | Reserved                       |
| docsis.dsdreq.sfid          | Service Flow ID                | Unsigned 32-bit integer | Service Flow Id                |
| docsis.dsdreq.transactionid | Transaction Id                 | Unsigned 16-bit integer | Transaction Id                 |

**DOCSIS Dynamic Service Delete Response (docsis\_dsdrsp)**

**Table A-92. DOCSIS Dynamic Service Delete Response (docsis\_dsdrsp)**

| Field                       | Field Name                      | Type                    | Description                     |
|-----------------------------|---------------------------------|-------------------------|---------------------------------|
| docsis.dsdrsp               | Dynamic Service Delete Response | Byte array              | Dynamic Service Delete Response |
| docsis.dsdrsp.confcode      | Confirmation Code               | Unsigned 8-bit integer  | Confirmation Code               |
| docsis.dsdrsp.rsvd          | Reserved                        | Unsigned 8-bit integer  | Reserved                        |
| docsis.dsdrsp.transactionid | Transaction Id                  | Unsigned 16-bit integer | Transaction Id                  |

**DOCSIS MAP Messages (docsis\_rngreq)****Table A-93. DOCSIS MAP Messages (docsis\_rngreq)**

| Field                       | Field Name                                 | Type                    | Description             |
|-----------------------------|--|-------------------------|-------------------------|
| docsis.rngreq               | RNG-REQ Message                            | Byte array              | Ranging Request Message |
| docsis.rngreq.downchannelid | Downstream Channel ID                      | Unsigned 8-bit integer  | Downstream Channel ID   |
| docsis.rngreq.sid           | Service Identifier                         | Unsigned 16-bit integer | Service Identifier      |
| docsis.rngreq.upchannelid   | Pending Till Complete (hundreths of a sec) | Unsigned 8-bit integer  | Upstream Channel ID     |

**DOCSIS Mac Management (docsis\_mgmt)****Table A-94. DOCSIS Mac Management (docsis\_mgmt)**

| Field                     | Field Name                           | Type                          | Description           |
|---------------------------|--------------------------------------|-------------------------------|-----------------------|
| docsis.mgmt               | Mac Management Header                | Byte array                    | Mac Management Header |
| docsis.mgmt.control       | Control [0x03]                       | Unsigned 8-bit integer        | Control               |
| docsis.mgmt.dsap          | DSAP [0x00]                          | Unsigned 8-bit integer        | Destination SAP       |
| docsis.mgmt.dst           | Destination Address                  | 6-byte Hardware (MAC) Address | Destination Address   |
| docsis.mgmt.messagelength | Message Length - DSAP to End (Bytes) | Unsigned 16-bit integer       | Message Length        |
| docsis.mgmt.rsvd          | Reserved [0x00]                      | Unsigned 8-bit integer        | Reserved              |

| Field               | Field Name     | Type                          | Description    |
|---------------------|----------------|-------------------------------|----------------|
| docsis.mgmt.src     | Source Address | 6-byte Hardware (MAC) Address | Source Address |
| docsis.mgmt.ssap    | SSAP [0x00]    | Unsigned 8-bit integer        | Source SAP     |
| docsis.mgmt.type    | Type           | Unsigned 8-bit integer        | Type           |
| docsis.mgmt.version | Version        | Unsigned 8-bit integer        | Version        |

### DOCSIS Ranging Response (docsis\_rngrsp)

Table A-95. DOCSIS Ranging Response (docsis\_rngrsp)

| Field                         | Field Name                         | Type                    | Description                   |
|-------------------------------|------------------------------------|-------------------------|-------------------------------|
| docsis.rngrsp                 | RNG-RSP Message                    | Byte array              | Ranging Response Message      |
| docsis.rngrsp.chid_override   | Upstream Channel ID Override       | Unsigned 8-bit integer  | Upstream Channel ID Override  |
| docsis.rngrsp.freq_over       | Downstream Frequency Override (Hz) | Unsigned 32-bit integer | Downstream Frequency Override |
| docsis.rngrsp.freq_adj        | Offset Freq Adjust (Hz)            | Signed 16-bit integer   | Frequency Adjust              |
| docsis.rngrsp.power_adj       | Power Level Adjust (0.25dB units)  | Signed 8-bit integer    | Power Level Adjust            |
| docsis.rngrsp.rng_stat        | Ranging Status                     | Unsigned 8-bit integer  | Ranging Status                |
| docsis.rngrsp.sid             | Service Identifier                 | Unsigned 16-bit integer | Service Identifier            |
| docsis.rngrsp.timing_adj      | Timing Adjust (6.25us/64)          | Signed 32-bit integer   | Timing Adjust                 |
| docsis.rngrsp.upchannel_id    | Upstream Channel ID                | Unsigned 8-bit integer  | Upstream Channel ID           |
| docsis.rngrsp.transmit_eq_adj | Transmit Equalisation Adjust       | Byte array              | Timing Equalisation Adjust    |

### DOCSIS Registration Acknowledge (docsis\_regack)

Table A-96. DOCSIS Registration Acknowledge (docsis\_regack)

| Field         | Field Name           | Type       | Description          |
|---------------|----------------------|------------|----------------------|
| docsis.regack | Registration Request | Byte array | Registration Request |

| Field                  | Field Name         | Type                    | Description        |
|------------------------|--------------------|-------------------------|--------------------|
| docsis.regack.response | Response Code      | Unsigned 8-bit integer  | Response Code      |
| docsis.regack.sid      | Service Identifier | Unsigned 16-bit integer | Service Identifier |

### DOCSIS Registration Requests (docsis\_regreq)

Table A-97. DOCSIS Registration Requests (docsis\_regreq)

| Field             | Field Name           | Type                    | Description          |
|-------------------|----------------------|-------------------------|----------------------|
| docsis.regreq     | Registration Request | Byte array              | Registration Request |
| docsis.regreq.sid | Service Identifier   | Unsigned 16-bit integer | Service Identifier   |

### DOCSIS Registration Responses (docsis\_regrsp)

Table A-98. DOCSIS Registration Responses (docsis\_regrsp)

| Field                  | Field Name            | Type                    | Description          |
|------------------------|-----------------------|-------------------------|----------------------|
| docsis.regrsp          | Registration Response | Byte array              | Registration Request |
| docsis.regrsp.response | Response Code         | Unsigned 8-bit integer  | Response Code        |
| docsis.regrsp.sid      | Service Identifier    | Unsigned 16-bit integer | Service Identifier   |

### DOCSIS Upstream Bandwidth Allocation (docsis\_map)

Table A-99. DOCSIS Upstream Bandwidth Allocation (docsis\_map)

| Field                 | Field Name                   | Type                    | Description                  |
|-----------------------|------------------------------|-------------------------|------------------------------|
| docsis.map            | Map Message                  | Byte array              | MAP Message                  |
| docsis.map.acktime    | ACK Time (minislots)         | Unsigned 32-bit integer | Ack Time (minislots)         |
| docsis.map.allocstart | Alloc Start Time (minislots) | Unsigned 32-bit integer | Alloc Start Time (minislots) |
| docsis.map.data_end   | Data Backoff End             | Unsigned 8-bit integer  | Data Backoff End             |
| docsis.map.data_start | Data Backoff Start           | Unsigned 8-bit integer  | Data Backoff Start           |
| docsis.map.ie         | Information Element          | Unsigned 32-bit integer | Information Element          |
| docsis.map.iuc        | Interval Usage Code          | Unsigned 32-bit integer | Interval Usage Code          |
| docsis.map.numie      | Number of IE's               | Unsigned 8-bit          | Number of                    |



| Field                   | Field Name            | Type                    | Description           |
|-------------------------|-----------------------|-------------------------|-----------------------|
|                         |                       | integer                 | Information Elements  |
| docsis.map.offset       | Offset                | Unsigned 32-bit integer | Offset                |
| docsis.map.rng_end      | Ranging Backoff End   | Unsigned 8-bit integer  | Ranging Backoff End   |
| docsis.map.rng_start    | Ranging Backoff Start | Unsigned 8-bit integer  | Ranging Backoff Start |
| docsis.map.rsvd         | Reserved [0x00]       | Unsigned 8-bit integer  | Reserved Byte         |
| docsis.map.sid          | Service Identifier    | Unsigned 32-bit integer | Service Identifier    |
| docsis.map.ucdcou<br>nt | UCD Count             | Unsigned 8-bit integer  | Map UCD Count         |
| docsis.map.upchid       | Upstream Channel ID   | Unsigned 8-bit integer  | Upstream Channel ID   |

### DOCSIS Upstream Channel Change Request (docsis\_uccreq)

Table A-100. DOCSIS Upstream Channel Change Request (docsis\_uccreq)

| Field                    | Field Name                      | Type                   | Description                     |
|--------------------------|---------------------------------|------------------------|---------------------------------|
| docsis.uccreq            | Upstream Channel Change Request | Byte array             | Upstream Channel Change Request |
| docsis.uccreq.upch<br>id | Upstream Channel Id             | Unsigned 8-bit integer | Upstream Channel Id             |

### DOCSIS Upstream Channel Change Response (docsis\_uccrsp)

Table A-101. DOCSIS Upstream Channel Change Response (docsis\_uccrsp)

| Field                    | Field Name                      | Type                   | Description                     |
|--------------------------|---------------------------------|------------------------|---------------------------------|
| docsis.uccrsp            | Upstream Channel Change Request | Byte array             | Upstream Channel Change Request |
| docsis.uccrsp.upch<br>id | Upstream Channel Id             | Unsigned 8-bit integer | Upstream Channel Id             |

### DOCSIS Upstream Channel Descriptor (docsis\_ucd)

Table A-102. DOCSIS Upstream Channel Descriptor (docsis\_ucd)

| Field                        | Field Name              | Type                   | Description                          |
|------------------------------|-------------------------|------------------------|--------------------------------------|
| docsis.ucd.burst.di<br>ffenc | 2 Differential Encoding | Unsigned 8-bit integer | Differential Encoding                |
| docsis.ucd.burst.fe<br>c     | 5 FEC (T)               | Unsigned 8-bit integer | FEC (T) Codeword Parity Bits = $2^T$ |

| Field                           | Field Name                        | Type                    | Description                       |
|---------------------------------|-----------------------------------|-------------------------|-----------------------------------|
| docsis.ucd.burst.fec_codeword   | 6 FEC Codeword Info bytes (k)     | Unsigned 8-bit integer  | FEC Codeword Info Bytes (k)       |
| docsis.ucd.burst.guardtime      | 9 Guard Time Size (Symbol Times)  | Unsigned 8-bit integer  | Guard Time Size                   |
| docsis.ucd.burst.last_cw_len    | 10 Last Codeword Length           | Unsigned 8-bit integer  | Last Codeword Length              |
| docsis.ucd.burst.maxburst       | 8 Max Burst Size (Minislots)      | Unsigned 8-bit integer  | Max Burst Size (Minislots)        |
| docsis.ucd.burst.modtype        | 1 Modulation Type                 | Unsigned 8-bit integer  | Modulation Type                   |
| docsis.ucd.burst.preamble_len   | 3 Preamble Length (Bits)          | Unsigned 16-bit integer | Preamble Length (Bits)            |
| docsis.ucd.burst.preamble_off   | 4 Preamble Offset (Bits)          | Unsigned 16-bit integer | Preamble Offset (Bits)            |
| docsis.ucd.burst.scrambler_seed | 7 Scrambler Seed                  | Unsigned 16-bit integer | Burst Descriptor                  |
| docsis.ucd.burst.scrambleronoff | 11 Scrambler On/Off               | Unsigned 8-bit integer  | Scrambler On/Off                  |
| docsis.ucd.confcnt              | Config Change Count               | Unsigned 8-bit integer  | Configuration Change Count        |
| docsis.ucd.downchid             | Downstream Channel ID             | Unsigned 8-bit integer  | Management Message                |
| docsis.ucd.freq                 | 2 Frequency (Hz)                  | Unsigned 32-bit integer | Upstream Center Frequency         |
| docsis.ucd.iuc                  | Interval Usage Code               | Unsigned 8-bit integer  | Interval Usage Code               |
| docsis.ucd.mslotsize            | Mini Slot Size (6.25us TimeTicks) | Unsigned 8-bit integer  | Mini Slot Size (6.25us TimeTicks) |
| docsis.ucd.preamble             | 3 Preamble Pattern                | Byte array              | Preamble Superstring              |
| docsis.ucd.symrate              | 1 Symbol Rate (ksym/sec)          | Unsigned 8-bit integer  | Symbol Rate                       |
| docsis.ucd.upchid               | Upstream Channel ID               | Unsigned 8-bit integer  | Upstream Channel ID               |

**DOCSIS Vendor Specific Endodings (docsis\_vsif)**

Table A-103. DOCSIS Vendor Specific Endodings (docsis\_vsif)

| Field       | Field Name     | Type       | Description               |
|-------------|----------------|------------|---------------------------|
| docsis_vsif | VSIF Encodings | Byte array | Vendor Specific Encodings |

| Field                              | Field Name                 | Type                       | Description                |
|------------------------------------|----------------------------|----------------------------|----------------------------|
| docsis.vsif.cisco.io<br>sfile      | IOS Config File            | String                     | IOS Config File            |
| docsis.vsif.cisco.ip<br>prec       | IP Precedence<br>Encodings | Byte array                 | IP Precedence<br>Encodings |
| docsis.vsif.cisco.ip<br>prec.bw    | IP Precedence<br>Bandwidth | Unsigned 8-bit<br>integer  | IP Precedence<br>Bandwidth |
| docsis.vsif.cisco.ip<br>prec.value | IP Precedence<br>Value     | Unsigned 8-bit<br>integer  | IP Precedence<br>Value     |
| docsis.vsif.cisco.nu<br>mphones    | Number of phone<br>lines   | Unsigned 8-bit<br>integer  | Number of phone<br>lines   |
| docsis.vsif.unkno<br>wn            | VSIF Encodings             | Byte array                 | Unknown Vendor             |
| docsis.vsif.vendori<br>d           | Vendor Id                  | Unsigned 24-bit<br>integer | Vendor Identifier          |

**Data (data)**

Table A-104. Data (data)

| Field | Field Name | Type | Description |
|-------|------------|------|-------------|
|       |            |      |             |

**Data Link SWitching (dlsW)**

Table A-105. Data Link SWitching (dlsW)

| Field | Field Name | Type | Description |
|-------|------------|------|-------------|
|       |            |      |             |

**Data Stream Interface (dsi)**

Table A-106. Data Stream Interface (dsi)

| Field                       | Field Name      | Type                       | Description                                   |
|-----------------------------|-----------------|----------------------------|---|
| dsi.attn_flag               | Flags           | Unsigned 16-bit<br>integer | Server attention<br>flag                      |
| dsi.attn_flag.crash         | Crash           | Boolean                    | Attention flag,<br>server crash bit           |
| dsi.attn_flag.msg           | Message         | Boolean                    | Attention flag,<br>server message bit         |
| dsi.attn_flag.recon<br>nect | Don't reconnect | Boolean                    | Attention flag,<br>don't reconnect bit        |
| dsi.attn_flag.shutd<br>own  | Shutdown        | Boolean                    | Attention flag,<br>server is shutting<br>down |
| dsi.attn_flag.time          | Minutes         | Unsigned 16-bit<br>integer | Number of<br>minutes                          |

| Field                 | Field Name        | Type                    | Description  |
|-----------------------|-------------------|-------------------------|--|
| dsi.command           | Command           | Unsigned 8-bit integer  | Represents a DSI command.  |
| dsi.data_offset       | Data offset       | Signed 32-bit integer   | Data offset  |
| dsi.error_code        | Error code        | Signed 32-bit integer   | Error code   |
| dsi.flags             | Flags             | Unsigned 8-bit integer  | Indicates request or reply.  |
| dsi.length            | Length            | Unsigned 32-bit integer | Total length of the data that follows the DSI header.  |
| dsi.open_len          | Length            | Unsigned 8-bit integer  | Open session option len  |
| dsi.open_option       | Option            | Byte array              | Open session options (undecoded)   |
| dsi.open_quantum      | Quantum           | Unsigned 32-bit integer | Server/ Attention quantum  |
| dsi.open_type         | Flags             | Unsigned 8-bit integer  | Open session option type.  |
| dsi.requestid         | Request ID        | Unsigned 16-bit integer | Keeps track of which request this is. Replies must match a Request. IDs must be generated in sequential order. |
| dsi.reserved          | Reserved          | Unsigned 32-bit integer | Reserved for future use. Should be set to zero.  |
| dsi.server_addr.len   | Length            | Unsigned 8-bit integer  | Address length.  |
| dsi.server_addr.type  | Type              | Unsigned 8-bit integer  | Address type.  |
| dsi.server_addr.value | Value             | Byte array              | Address value  |
| dsi.server_directory  | Directory service | String                  | Server directory service   |
| dsi.server_flag       | Flag              | Unsigned 16-bit integer | Server capabilities flag   |
| dsi.server_flag.cop   | Support copyfile  | Boolean                 | Server support   |

| Field                          | Field Name                   | Type       | Description                       |
|--------------------------------|------------------------------|------------|-----------------------------------|
| yfile                          |                              |            | copyfile                          |
| dsi.server_flag.directory      | Support directory services   | Boolean    | Server support directory services |
| dsi.server_flag.fast_copy      | Support fast copy            | Boolean    | Server support fast copy          |
| dsi.server_flag.no_save_passwd | Don't allow save password    | Boolean    | Don't allow save password         |
| dsi.server_flag.notify         | Support server notifications | Boolean    | Server support notifications      |
| dsi.server_flag.password       | Support change password      | Boolean    | Server support change password    |
| dsi.server_flag.reconnect      | Support server reconnect     | Boolean    | Server support reconnect          |
| dsi.server_flag.srv_msg        | Support server message       | Boolean    | Support server message            |
| dsi.server_flag.srv_sig        | Support server signature     | Boolean    | Support server signature          |
| dsi.server_flag.tcpip          | Support TCP/IP               | Boolean    | Server support TCP/IP             |
| dsi.server_flag.utf8_name      | Support UTF8 server name     | Boolean    | Server support UTF8 server name   |
| dsi.server_icon                | Icon bitmap                  | Byte array | Server icon bitmap                |
| dsi.server_name                | Server name                  | String     | Server name                       |
| dsi.server_signature           | Server signature             | Byte array | Server signature                  |
| dsi.server_type                | Server type                  | String     | Server type                       |
| dsi.server_uams                | UAM                          | String     | UAM                               |
| dsi.server_vers                | AFP version                  | String     | AFP version                       |

## Datagram Delivery Protocol (ddp)

Table A-107. Datagram Delivery Protocol (ddp)

| Field        | Field Name          | Type                    | Description |
|--------------|---------------------|-------------------------|-------------|
| ddp.checksum | Checksum            | Unsigned 16-bit integer |             |
| ddp.dst      | Destination address | String                  |             |
| ddp.dst.net  | Destination Net     | Unsigned 16-bit integer |             |
| ddp.dst.node | Destination Node    | Unsigned 8-bit          |             |

| Field          | Field Name         | Type                    | Description |
|----------------|--------------------|-------------------------|-------------|
|                |                    | integer                 |             |
| ddp.dst_socket | Destination Socket | Unsigned 8-bit integer  |             |
| ddp.hopcount   | Hop count          | Unsigned 8-bit integer  |             |
| ddp.len        | Datagram length    | Unsigned 16-bit integer |             |
| ddp.src        | Source address     | String                  |             |
| ddp.src.net    | Source Net         | Unsigned 16-bit integer |             |
| ddp.src.node   | Source Node        | Unsigned 8-bit integer  |             |
| ddp.src_socket | Source Socket      | Unsigned 8-bit integer  |             |
| ddp.type       | Protocol type      | Unsigned 8-bit integer  |             |

### Diameter Protocol (diameter)

Table A-108. Diameter Protocol (diameter)

| Field                    | Field Name   | Type                    | Description |
|--------------------------|--------------|-------------------------|-------------|
| diameter.avp.code        | AVP Code     | Unsigned 32-bit integer |             |
| diameter.avp.data.bytes  | Value        | Byte array              |             |
| diameter.avp.data.int32  | Value        | Signed 32-bit integer   |             |
| diameter.avp.data.int64  | Value        | Signed 64-bit integer   |             |
| diameter.avp.data.string | Value        | String                  |             |
| diameter.avp.data.time   | Time         | Date/Time stamp         |             |
| diameter.avp.data.uint32 | Value        | Unsigned 32-bit integer |             |
| diameter.avp.data.uint64 | Value        | Unsigned 64-bit integer |             |
| diameter.avp.data.v4addr | IPv4 Address | IPv4 address            |             |
| diameter.avp.data.v6addr | IPv6 Address | IPv6 address            |             |

| Field                        | Field Name            | Type                    | Description |
|------------------------------|-----------------------|-------------------------|-------------|
| diameter.avp.flags           | AVP Flags             | Unsigned 8-bit integer  |             |
| diameter.avp.flags.protected | Protected             | Boolean                 |             |
| diameter.avp.flags.reserved3 | Reserved              | Boolean                 |             |
| diameter.avp.flags.reserved4 | Reserved              | Boolean                 |             |
| diameter.avp.flags.reserved5 | Reserved              | Boolean                 |             |
| diameter.avp.flags.reserved6 | Reserved              | Boolean                 |             |
| diameter.avp.flags.reserved7 | Reserved              | Boolean                 |             |
| diameter.avp.length          | AVP Length            | Unsigned 24-bit integer |             |
| diameter.avp.vendorId        | AVP Vendor Id         | Unsigned 32-bit integer |             |
| diameter.code                | Command Code          | Unsigned 24-bit integer |             |
| diameter.endtoendId          | End-to-End Identifier | Unsigned 32-bit integer |             |
| diameter.flags               | Flags                 | Unsigned 8-bit integer  |             |
| diameter.flags.error         | Error                 | Boolean                 |             |
| diameter.flags.mandatory     | Mandatory             | Boolean                 |             |
| diameter.flags.proxyable     | Proxyable             | Boolean                 |             |
| diameter.flags.request       | Request               | Boolean                 |             |
| diameter.flags.reserved3     | Reserved              | Boolean                 |             |
| diameter.flags.reserved4     | Reserved              | Boolean                 |             |
| diameter.flags.reserved5     | Reserved              | Boolean                 |             |
| diameter.flags.reserved6     | Reserved              | Boolean                 |             |

| Field                         | Field Name            | Type                    | Description |
|-------------------------------|-----------------------|-------------------------|-------------|
| diameter.flags.reserved7      | Reserved              | Boolean                 |             |
| diameter.flags.vendorspecific | Vendor-Specific       | Boolean                 |             |
| diameter.hopbyhopid           | Hop-by-Hop Identifier | Unsigned 32-bit integer |             |
| diameter.length               | Length                | Unsigned 24-bit integer |             |
| diameter.vendorId             | VendorId              | Unsigned 32-bit integer |             |
| diameter.version              | Version               | Unsigned 8-bit integer  |             |

### Distance Vector Multicast Routing Protocol (dvmrp)

Table A-109. Distance Vector Multicast Routing Protocol (dvmrp)

| Field              | Field Name              | Type                    | Description                    |
|--------------------|-------------------------|-------------------------|--------------------------------|
| dvmrp.afi          | Address Family          | Unsigned 8-bit integer  | DVMRP Address Family Indicator |
| dvmrp.cap.genid    | Genid                   | Boolean                 | Genid capability               |
| dvmrp.cap.leaf     | Leaf                    | Boolean                 | Leaf                           |
| dvmrp.cap.mtrace   | Mtrace                  | Boolean                 | Mtrace capability              |
| dvmrp.cap.netmask  | Netmask                 | Boolean                 | Netmask capability             |
| dvmrp.cap.prune    | Prune                   | Boolean                 | Prune capability               |
| dvmrp.cap.snmp     | SNMP                    | Boolean                 | SNMP capability                |
| dvmrp.capabilities | Capabilities            | No value                | DVMRP V3 Capabilities          |
| dvmrp.checksum     | Checksum                | Unsigned 16-bit integer | DVMRP Checksum                 |
| dvmrp.checksum_bad | Bad Checksum            | Boolean                 | Bad DVMRP Checksum             |
| dvmrp.command      | Command                 | Unsigned 8-bit integer  | DVMRP V1 Command               |
| dvmrp.commands     | Commands                | No value                | DVMRP V1 Commands              |
| dvmrp.count        | Count                   | Unsigned 8-bit integer  | Count                          |
| dvmrp.dest_unreach | Destination Unreachable | Boolean                 | Destination Unreachable        |



| Field             | Field Name     | Type                    | Description                   |
|-------------------|----------------|-------------------------|-------------------------------|
| dvmrp.genid       | Generation ID  | Unsigned 32-bit integer | DVMRP Generation ID           |
| dvmrp.hold        | Hold Time      | Unsigned 32-bit integer | DVMRP Hold Time in seconds    |
| dvmrp.infinity    | Infinity       | Unsigned 8-bit integer  | DVMRP Infinity                |
| dvmrp.lifetime    | Prune lifetime | Unsigned 32-bit integer | DVMRP Prune Lifetime          |
| dvmrp.maj_ver     | Major Version  | Unsigned 8-bit integer  | DVMRP Major Version           |
| dvmrp.metric      | Metric         | Unsigned 8-bit integer  | DVMRP Metric                  |
| dvmrp.min_ver     | Minor Version  | Unsigned 8-bit integer  | DVMRP Minor Version           |
| dvmrp.route       | Route          | No value                | DVMRP V3 Route Report         |
| dvmrp.split_horiz | Split Horizon  | Boolean                 | Split Horizon concealed route |
| dvmrp.type        | Type           | Unsigned 8-bit integer  | DVMRP Packet Type             |
| dvmrp.v1.code     | Code           | Unsigned 8-bit integer  | DVMRP Packet Code             |
| dvmrp.v3.code     | Code           | Unsigned 8-bit integer  | DVMRP Packet Code             |
| dvmrp.version     | DVMRP Version  | Unsigned 8-bit integer  | DVMRP Version                 |
| igmp.daddr        | Dest Addr      | IPv4 address            | DVMRP Destination Address     |
| igmp.maddr        | Multicast Addr | IPv4 address            | DVMRP Multicast Address       |
| igmp.neighbor     | Neighbor Addr  | IPv4 address            | DVMRP Neighbor Address        |
| igmp.netmask      | Netmask        | IPv4 address            | DVMRP Netmask                 |
| igmp.saddr        | Source Addr    | IPv4 address            | DVMRP Source Address          |

### Distributed Checksum Clearinghouse Prototocl (dccp)

Table A-110. Distributed Checksum Clearinghouse Prototocl (dccp)

| Field | Field Name | Type | Description |
|-------|------------|------|-------------|
|-------|------------|------|-------------|

| Field                 | Field Name              | Type                    | Description             |
|-----------------------|-------------------------|-------------------------|-------------------------|
| dccp.adminop          | Admin Op                | Unsigned 8-bit integer  | Admin Op                |
| dccp.adminval         | Admin Value             | Unsigned 32-bit integer | Admin Value             |
| dccp.brand            | Server Brand            | String                  | Server Brand            |
| dccp.checksum.length  | Length                  | Unsigned 8-bit integer  | Checksum Length         |
| dccp.checksum.sum     | Sum                     | Byte array              | Checksum                |
| dccp.checksum.type    | Type                    | Unsigned 8-bit integer  | Checksum Type           |
| dccp.clientid         | Client ID               | Unsigned 32-bit integer | Client ID               |
| dccp.date             | Date                    | Date/Time stamp         | Date                    |
| dccp.floodop          | Flood Control Operation | Unsigned 32-bit integer | Flood Control Operation |
| dccp.len              | Packet Length           | Unsigned 16-bit integer | Packet Length           |
| dccp.max_pkt_versions | Maximum Packet Version  | Unsigned 8-bit integer  | Maximum Packet Version  |
| dccp.op               | Operation Type          | Unsigned 8-bit integer  | Operation Type          |
| dccp.opnums.host      | Host                    | IPv4 address            | Host                    |
| dccp.opnums.pid       | Process ID              | Unsigned 32-bit integer | Process ID              |
| dccp.opnums.report    | Report                  | Unsigned 32-bit integer | Report                  |
| dccp.opnums.retrans   | Retransmission          | Unsigned 32-bit integer | Retransmission          |
| dccp.pkt_vers         | Packet Version          | Unsigned 16-bit integer | Packet Version          |
| dccp.qdelay_ms        | Client Delay            | Unsigned 16-bit integer | Client Delay            |
| dccp.signature        | Signature               | Byte array              | Signature               |
| dccp.target           | Target                  | Unsigned 32-bit integer | Target                  |
| dccp.trace            | Trace Bits              | Unsigned 32-bit integer | Trace Bits              |
| dccp.trace.admin      | Admin Requests          | Boolean                 | Admin Requests          |

| Field             | Field Name                    | Type    | Description                   |
|-------------------|-------------------------------|---------|-------------------------------|
| dccp.trace.anon   | Anonymous Requests            | Boolean | Anonymous Requests            |
| dccp.trace.client | Authenticated Client Requests | Boolean | Authenticated Client Requests |
| dccp.trace.flood  | Input/Output Flooding         | Boolean | Input/Output Flooding         |
| dccp.trace.query  | Queries and Reports           | Boolean | Queries and Reports           |
| dccp.trace.ridc   | RID Cache Messages            | Boolean | RID Cache Messages            |
| dccp.trace.rlim   | Rate-Limited Requests         | Boolean | Rate-Limited Requests         |

## Domain Name Service (dns)

Table A-111. Domain Name Service (dns)

| Field                       | Field Name                | Type                    | Description                                     |
|-----------------------------|---------------------------|-------------------------|---|
| dns.count.add_rr            | Additional RRs            | Unsigned 16-bit integer | Number of additional records in packet          |
| dns.count.answers           | Answer RRs                | Unsigned 16-bit integer | Number of answers in packet                     |
| dns.count.auth_rr           | Authority RRs             | Unsigned 16-bit integer | Number of authoritative records in packet       |
| dns.count.queries           | Questions                 | Unsigned 16-bit integer | Number of queries in packet                     |
| dns.flags                   | Flags                     | Unsigned 16-bit integer |   |
| dns.flags.authenticat<br>ed | Answer authenticated      | Boolean                 | Was the reply data authenticated by the server? |
| dns.flags.authorita<br>tive | Authoritative             | Boolean                 | Is the server is an authority for the domain?   |
| dns.flags.checkdis<br>able  | Non-authenticated data OK | Boolean                 | Is non-authenticated data acceptable?           |
| dns.flags.opcode            | Opcode                    | Unsigned 16-bit integer | Operation code                                  |
| dns.flags.rcode             | Reply code                | Unsigned 16-bit integer | Reply code                                      |

| Field                | Field Name          | Type                    | Description                                |
|----------------------|---------------------|-------------------------|--|
| dns.flags.recavail   | Recursion available | Boolean                 | Can the server do recursive queries?       |
| dns.flags.recdesired | Recursion desired   | Boolean                 | Do query recursively?                      |
| dns.flags.response   | Response            | Boolean                 | Is the message a response?                 |
| dns.flags.truncated  | Truncated           | Boolean                 | Is the message truncated?                  |
| dns.id               | Transaction ID      | Unsigned 16-bit integer | Identification of transaction              |
| dns.length           | Length              | Unsigned 16-bit integer | Length of DNS-over-TCP request or response |

### Dynamic DNS Tools Protocol (ddtp)

Table A-112. Dynamic DNS Tools Protocol (ddtp)

| Field        | Field Name   | Type                    | Description         |
|--------------|--------------|-------------------------|---------------------|
| ddtp.encrypt | Encryption   | Unsigned 32-bit integer | Encryption type     |
| ddtp.hostid  | Hostid       | Unsigned 32-bit integer | Host ID             |
| ddtp.ipaddr  | IP address   | IPv4 address            | IP address          |
| ddtp.msgtype | Message type | Unsigned 32-bit integer | Message Type        |
| ddtp.opcode  | Opcode       | Unsigned 32-bit integer | Update query opcode |
| ddtp.status  | Status       | Unsigned 32-bit integer | Update reply status |
| ddtp.version | Version      | Unsigned 32-bit integer | Version             |

### Encapsulating Security Payload (esp)

Table A-113. Encapsulating Security Payload (esp)

| Field        | Field Name | Type                    | Description |
|--------------|------------|-------------------------|-------------|
| esp.sequence | Sequence   | Unsigned 32-bit integer |             |
| esp.spi      | SPI        | Unsigned 32-bit integer |             |

### Enhanced Interior Gateway Routing Protocol (eigrp)

Table A-114. Enhanced Interior Gateway Routing Protocol (eigrp)

| Field        | Field Name        | Type                    | Description              |
|--------------|-------------------|-------------------------|--------------------------|
| eigrp.as     | Autonomous System | Unsigned 16-bit integer | Autonomous System number |
| eigrp.opcode | Opcode            | Unsigned 8-bit integer  | Opcode number            |
| eigrp.tlv    | Entry             | Unsigned 16-bit integer | Type/Length/Value        |

**Ethernet (eth)**

Table A-115. Ethernet (eth)

| Field       | Field Name                    | Type                          | Description                            |
|-------------|-------------------------------|-------------------------------|--|
| eth.addr    | Source or Destination Address | 6-byte Hardware (MAC) Address | Source or Destination Hardware Address |
| eth.dst     | Destination                   | 6-byte Hardware (MAC) Address | Destination Hardware Address           |
| eth.len     | Length                        | Unsigned 16-bit integer       |  |
| eth.src     | Source                        | 6-byte Hardware (MAC) Address | Source Hardware Address                |
| eth.trailer | Trailer                       | Byte array                    | Ethernet Trailer or Checksum           |
| eth.type    | Type                          | Unsigned 16-bit integer       |  |

**Ethernet over IP (etherip)**

Table A-116. Ethernet over IP (etherip)

| Field       | Field Name | Type                   | Description |
|-------------|------------|------------------------|-------------|
| etherip.ver | Version    | Unsigned 8-bit integer |             |

**Extensible Authentication Protocol (eap)**

Table A-117. Extensible Authentication Protocol (eap)

| Field            | Field Name        | Type                   | Description |
|------------------|-------------------|------------------------|-------------|
| eap.code         | Code              | Unsigned 8-bit integer |             |
| eap.desired_type | Desired Auth Type | Unsigned 8-bit integer |             |

| Field                            | Field Name                           | Type                    | Description  |
|----------------------------------|--------------------------------------|-------------------------|--|
| eap.id                           | Id                                   | Unsigned 8-bit integer  |  |
| eap.len                          | Length                               | Unsigned 16-bit integer |  |
| eap.type                         | Type                                 | Unsigned 8-bit integer  |  |
| eaptls.fragment                  | EAP-TLS Fragment                     |                         | EAP-TLS Fragment                                       |
| eaptls.fragment.error            | Defragmentation error                |                         | Defragmentation error due to illegal fragments         |
| eaptls.fragment.multipletails    | Multiple tail fragments found        | Boolean                 | Several tails were found when defragmenting the packet |
| eaptls.fragment.overlap          | Fragment overlap                     | Boolean                 | Fragment overlaps with other fragments                 |
| eaptls.fragment.overlap.conflict | Conflicting data in fragment overlap | Boolean                 | Overlapping fragments contained conflicting data       |
| eaptls.fragment.too long         | Fragment too long                    | Boolean                 | Fragment contained data past end of packet             |
| eaptls.fragments                 | EAP-TLS Fragments                    | No value                | EAP-TLS Fragments                                      |

### FC Extended Link Svc (els)

Table A-118. FC Extended Link Svc (els)

| Field               | Field Name            | Type                    | Description |
|---------------------|-----------------------|-------------------------|-------------|
| fcels.alpa          | AL_PA Map             | Byte array              |             |
| fcels.edtov         | E_D_TOV               | Unsigned 16-bit integer |             |
| fcels.faddr         | Fabric Address        | String                  |             |
| fcels.faildrcvr     | Failed Receiver AL_PA | Unsigned 8-bit integer  |             |
| fcels.flacompliance | FC-FLA Compliance     | Unsigned 8-bit integer  |             |
| fcels.flag          | Flag                  | Unsigned 8-bit integer  |             |

| Field                  | Field Name                  | Type                    | Description |
|------------------------|-----------------------------|-------------------------|-------------|
| fcels.fname            | Fabric/Node Name            | String                  |             |
| fcels.fpname           | Fabric Port Name            | String                  |             |
| fcels.hrdaddr          | Hard Address of Originator  | String                  |             |
| fcels.logi.b2b         | B2B Credit                  | Unsigned 8-bit integer  |             |
| fcels.logi.bbscnum     | BB_SC Number                | Unsigned 8-bit integer  |             |
| fcels.logi.cls1param   | Class 1 Svc Param           | Byte array              |             |
| fcels.logi.cls2param   | Class 2 Svc Param           | Byte array              |             |
| fcels.logi.cls3param   | Class 3 Svc Param           | Byte array              |             |
| fcels.logi.cls4param   | Class 4 Svc Param           | Byte array              |             |
| fcels.logi.clsflags    | Class Flags                 | Unsigned 16-bit integer |             |
| fcels.logi.clsrcvsize  | Class Recv Size             | Unsigned 16-bit integer |             |
| fcels.logi.cmnfeatures | Common Features             | Unsigned 16-bit integer |             |
| fcels.logi.e2e         | End2End Credit              | Unsigned 16-bit integer |             |
| fcels.logi.initctl     | Initiator Ctl               | Unsigned 16-bit integer |             |
| fcels.logi.maxconseq   | Max Concurrent Seq          | Unsigned 16-bit integer |             |
| fcels.logi.openseq     | Open Seq Per Exchg          | Unsigned 8-bit integer  |             |
| fcels.logi.rcptctl     | Recipient Ctl               | Unsigned 16-bit integer |             |
| fcels.logi.rcvsize     | Receive Size                | Unsigned 16-bit integer |             |
| fcels.logi.reloff      | Relative Offset By Info Cat | Unsigned 16-bit integer |             |
| fcels.logi.svcavail    | Services Availability       | Byte array              |             |

Appendix A. Ethereal Display Filter Fields

| Field                | Field Name                 | Type                    | Description |
|----------------------|----------------------------|-------------------------|-------------|
| fcels.logi.totconseq | Total Concurrent Seq       | Unsigned 8-bit integer  |             |
| fcels.logi.vendvers  | Vendor Version             | Byte array              |             |
| fcels.loopstate      | Loop State                 | Unsigned 8-bit integer  |             |
| fcels.matchcp        | Match Address Code Points  | Unsigned 8-bit integer  |             |
| fcels.npname         | N_Port Port_Name           | String                  |             |
| fcels.opcode         | Cmd Code                   | Unsigned 8-bit integer  |             |
| fcels.oxid           | OXID                       | Unsigned 16-bit integer |             |
| fcels.portid         | Originator S_ID            | String                  |             |
| fcels.portnum        | Physical Port Number       | Unsigned 32-bit integer |             |
| fcels.portstatus     | Port Status                | Unsigned 16-bit integer |             |
| fcels.pubdev_bmap    | Public Loop Device Bitmap  | Byte array              |             |
| fcels.pvtdev_bmap    | Private Loop Device Bitmap | Byte array              |             |
| fcels.rcovqual       | Recovery Qualifier         | Unsigned 8-bit integer  |             |
| fcels.reqipaddr      | Requesting IP Address      | IPv6 address            |             |
| fcels.respaction     | Responder Action           | Unsigned 8-bit integer  |             |
| fcels.respipaddr     | Responding IP Address      | IPv6 address            |             |
| fcels.respname       | Responding Port Name       | String                  |             |
| fcels.respnname      | Responding Node Name       | String                  |             |
| fcels.resportid      | Responding Port ID         | String                  |             |
| fcels.rjt.detail     | Reason Explanation         | Unsigned 8-bit integer  |             |
| fcels.rjt.reason     | Reason Code                | Unsigned 8-bit integer  |             |



| Field                | Field Name                 | Type                    | Description |
|----------------------|----------------------------|-------------------------|-------------|
|                      |                            | integer                 |             |
| fcels.rjt.vnduniq    | Vendor Unique              | Unsigned 8-bit integer  |             |
| fcels.rnft.fc4type   | FC-4 Type                  | Unsigned 8-bit integer  |             |
| fcels.rnid.asstype   | Associated Type            | Unsigned 32-bit integer |             |
| fcels.rnid.attnodes  | Number of Attached Nodes   | Unsigned 32-bit integer |             |
| fcels.rnid.ip        | IP Address                 | IPv6 address            |             |
| fcels.rnid.ipvers    | IP Version                 | Unsigned 8-bit integer  |             |
| fcels.rnid.nodeidfmt | Node Identification Format | Unsigned 8-bit integer  |             |
| fcels.rnid.nodemgmt  | Node Management            | Unsigned 8-bit integer  |             |
| fcels.rnid.physport  | Physical Port Number       | Unsigned 32-bit integer |             |
| fcels.rnid.spidlen   | Specific Id Length         | Unsigned 8-bit integer  |             |
| fcels.rnid.tcpport   | TCP/UDP Port Number        | Unsigned 16-bit integer |             |
| fcels.rnid.vendorsp  | Vendor Specific            | Unsigned 16-bit integer |             |
| fcels.rnid.vndoruniq | Vendor Unique              | Byte array              |             |
| fcels.rscn.addrfmt   | Address Format             | Unsigned 8-bit integer  |             |
| fcels.rscn.area      | Affected Area              | Unsigned 8-bit integer  |             |
| fcels.rscn.domain    | Affected Domain            | Unsigned 8-bit integer  |             |
| fcels.rscn.evqual    | Event Qualifier            | Unsigned 8-bit integer  |             |
| fcels.rscn.port      | Affected Port              | Unsigned 8-bit integer  |             |
| fcels.rxid           | RXID                       | Unsigned 16-bit integer |             |

| Field          | Field Name            | Type                   | Description |
|----------------|-----------------------|------------------------|-------------|
| fcels.scr.regn | Registration Function | Unsigned 8-bit integer |             |

## FC Fabric Configuration Server (fcs)

Table A-119. FC Fabric Configuration Server (fcs)

| Field                 | Field Name                         | Type                    | Description |
|-----------------------|------------------------------------|-------------------------|-------------|
| fcs.err.vendor        | Vendor Unique Reject Code          | Unsigned 8-bit integer  |             |
| fcs.fcsmask           | Subtype Capability Bitmask         | Unsigned 32-bit integer |             |
| fcs.gssubtype         | Management GS Subtype              | Unsigned 8-bit integer  |             |
| fcs.ie.domainid       | Interconnect Element Domain ID     | Unsigned 8-bit integer  |             |
| fcs.ie.fname          | Interconnect Element Fabric Name   | String                  |             |
| fcs.ie.logname        | Interconnect Element Logical Name  | String                  |             |
| fcs.ie.mgmtaddr       | Interconnect Element Mgmt. Address | String                  |             |
| fcs.ie.mgmtid         | Interconnect Element Mgmt. ID      | String                  |             |
| fcs.ie.name           | Interconnect Element Name          | String                  |             |
| fcs.ie.type           | Interconnect Element Type          | Unsigned 8-bit integer  |             |
| fcs.maxres_size       | Maximum/Residual Size              | Unsigned 16-bit integer |             |
| fcs.modelname         | Model Name/Number                  | String                  |             |
| fcs.numcap            | Number of Capabilities             | Unsigned 32-bit integer |             |
| fcs.opcode            | Opcode                             | Unsigned 16-bit integer |             |
| fcs.platform.mgmtaddr | Management Address                 | String                  |             |
| fcs.platform.name     | Platform Name                      | String                  |             |

| Field                 | Field Name                       | Type                    | Description |
|-----------------------|----------------------------------|-------------------------|-------------|
| fcs.platform.nodename | Platform Node Name               | String                  |             |
| fcs.platform.type     | Platform Type                    | Unsigned 8-bit integer  |             |
| fcs.port.flags        | Port Flags                       | Boolean                 |             |
| fcs.port.moduletype   | Port Module Type                 | Unsigned 8-bit integer  |             |
| fcs.port.name         | Port Name                        | String                  |             |
| fcs.port.physportnum  | Physical Port Number             | Byte array              |             |
| fcs.port.state        | Port State                       | Unsigned 8-bit integer  |             |
| fcs.port.txtype       | Port TX Type                     | Unsigned 8-bit integer  |             |
| fcs.port.type         | Port Type                        | Unsigned 8-bit integer  |             |
| fcs.reason            | Reason Code                      | Unsigned 8-bit integer  |             |
| fcs.reasondet         | Reason Code Explanantion         | Unsigned 8-bit integer  |             |
| fcs.releasecode       | Release Code                     | String                  |             |
| fcs.unsmask           | Subtype Capability Bitmask       | Unsigned 32-bit integer |             |
| fcs.vbitmask          | Vendor Unique Capability Bitmask | Unsigned 24-bit integer |             |
| fcs.vendorname        | Vendor Name                      | String                  |             |

**FCIP (fcip)**

Table A-120. FCIP (fcip)

| Field             | Field Name              | Type                    | Description |
|-------------------|-------------------------|-------------------------|-------------|
| fcencap.crc       | CRC                     | Unsigned 32-bit integer |             |
| fcencap.flags     | Flags                   | Unsigned 8-bit integer  |             |
| fcencap.flagsc    | Flags (1's Complement)  | Unsigned 8-bit integer  |             |
| fcencap.frameLen  | Frame Length (in Words) | Unsigned 16-bit integer |             |
| fcencap.frameLenC | Frame Length (1's       | Unsigned 16-bit         |             |

Appendix A. Ethereal Display Filter Fields

| Field            | Field Name                | Type                    | Description               |
|------------------|---------------------------|-------------------------|---------------------------|
|                  | Complement)               | integer                 |                           |
| fcencap.proto    | Protocol                  | Unsigned 8-bit integer  | Protocol                  |
| fcencap.protoc   | Protocol (1's Complement) | Unsigned 8-bit integer  | Protocol (1's Complement) |
| fcencap.tsec     | Time (secs)               | Unsigned 32-bit integer |                           |
| fcencap.tusec    | Time (fraction)           | Unsigned 32-bit integer |                           |
| fcencap.version  | Version                   | Unsigned 8-bit integer  |                           |
| fcencap.versionc | Version (1's Complement)  | Unsigned 8-bit integer  |                           |
| fcip.conncode    | Connection Usage Code     | Unsigned 16-bit integer |                           |
| fcip.connflags   | Connection Usage Flags    | Unsigned 8-bit integer  |                           |
| fcip.dstwwn      | Destination Fabric WWN    | String                  |                           |
| fcip.eof         | EOF                       | Unsigned 8-bit integer  |                           |
| fcip.eofc        | EOF (1's Complement)      | Unsigned 8-bit integer  |                           |
| fcip.katov       | K_A_TOV                   | Unsigned 32-bit integer |                           |
| fcip.nonce       | Connection Nonce          | Byte array              |                           |
| fcip.pflags.ch   | Changed Flag              | Boolean                 |                           |
| fcip.pflags.sf   | Special Frame Flag        | Boolean                 |                           |
| fcip.pflagsc     | Pflags (1's Complement)   | Unsigned 8-bit integer  |                           |
| fcip.sof         | SOF                       | Unsigned 8-bit integer  |                           |
| fcip.sofc        | SOF (1's Complement)      | Unsigned 8-bit integer  |                           |
| fcip.srcid       | FC/FCIP Entity Id         | Byte array              |                           |
| fcip.srcwwn      | Source Fabric WWN         | String                  |                           |
| fcip.word1       | FCIP Encapsulation        | Unsigned 32-bit integer |                           |

| Field | Field Name | Type | Description |
|-------|------------|------|-------------|
|       | Word1      |      |             |

### FTP Data (ftp-data)

Table A-121. FTP Data (ftp-data)

| Field | Field Name | Type | Description |
|-------|------------|------|-------------|
|       |            |      |             |

### FTServer Operations (ftserver)

Table A-122. FTServer Operations (ftserver)

| Field          | Field Name | Type                    | Description |
|----------------|------------|-------------------------|-------------|
| ftserver.opnum | Operation  | Unsigned 16-bit integer | Operation   |

### Fiber Distributed Data Interface (fdi)

Table A-123. Fiber Distributed Data Interface (fdi)

| Field              | Field Name                    | Type                          | Description                            |
|--------------------|-------------------------------|-------------------------------|--|
| fdi.addr           | Source or Destination Address | 6-byte Hardware (MAC) Address | Source or Destination Hardware Address |
| fdi.dst            | Destination                   | 6-byte Hardware (MAC) Address | Destination Hardware Address           |
| fdi.fc             | Frame Control                 | Unsigned 8-bit integer        |  |
| fdi.fc.clf         | Class/Length/Format           | Unsigned 8-bit integer        |  |
| fdi.fc.mac_subtype | MAC Subtype                   | Unsigned 8-bit integer        |  |
| fdi.fc.prio        | Priority                      | Unsigned 8-bit integer        |  |
| fdi.fc.smt_subtype | SMT Subtype                   | Unsigned 8-bit integer        |  |
| fdi.src            | Source                        | 6-byte Hardware (MAC) Address |  |

### Fibre Channel (fc)

Table A-124. Fibre Channel (fc)

| Field          | Field Name  | Type                    | Description |
|----------------|-------------|-------------------------|-------------|
| fc.bls_hseqcnt | High SEQCNT | Unsigned 16-bit integer |             |

Appendix A. Ethereal Display Filter Fields

| Field            | Field Name           | Type                    | Description         |
|------------------|----------------------|-------------------------|---------------------|
| fc.bls_lastseqid | Last Valid SEQID     | Unsigned 8-bit integer  |                     |
| fc.bls_lseqcnt   | Low SEQCNT           | Unsigned 16-bit integer |                     |
| fc.bls_oxid      | OXID                 | Unsigned 16-bit integer |                     |
| fc.bls_reason    | Reason               | Unsigned 8-bit integer  |                     |
| fc.bls_rjtdetail | Reason Explanantion  | Unsigned 8-bit integer  |                     |
| fc.bls_rxid      | RXID                 | Unsigned 16-bit integer |                     |
| fc.bls_seqidvld  | SEQID Valid          | Unsigned 8-bit integer  |                     |
| fc.bls_vnduniq   | Vendor Unique Reason | Unsigned 8-bit integer  |                     |
| fc.cs_ctl        | CS_CTL               | Unsigned 8-bit integer  | CS_CTL              |
| fc.d_id          | Dest Addr            | String                  | Destination Address |
| fc.df_ctl        | DF_CTL               | Unsigned 8-bit integer  |                     |
| fc.f_ctl         | F_CTL                | Unsigned 24-bit integer |                     |
| fc.ftype         | Frame type           | Unsigned 8-bit integer  | Derived Type        |
| fc.nethdr.da     | Network DA           | String                  |                     |
| fc.nethdr.sa     | Network SA           | String                  |                     |
| fc.ox_id         | OX_ID                | Unsigned 16-bit integer | Originator ID       |
| fc.parameter     | Parameter            | Unsigned 32-bit integer | Parameter           |
| fc.r_ctl         | R_CTL                | Unsigned 8-bit integer  | R_CTL               |
| fc.reassembled   | Reassembled Frame    | Boolean                 |                     |
| fc.rx_id         | RX_ID                | Unsigned 16-bit integer | Receiver ID         |
| fc.s_id          | Src Addr             | String                  | Source Address      |

| Field        | Field Name          | Type                    | Description    |
|--------------|---------------------|-------------------------|----------------|
| fc.seq_cnt   | SEQ_CNT             | Unsigned 16-bit integer | Sequence Count |
| fc.seq_id    | SEQ_ID              | Unsigned 8-bit integer  | Sequence ID    |
| fc.type      | Type                | Unsigned 8-bit integer  |                |
| fc.xchg_orig | Exchange Originator | Boolean                 |                |
| fc.xchg_resp | Exchange Responder  | Boolean                 |                |

### Fibre Channel Common Transport (fcct)

Table A-125. Fibre Channel Common Transport (fcct)

| Field            | Field Name          | Type                    | Description                           |
|------------------|---------------------|-------------------------|---------------------------------------|
| fcct.ext_said    | Auth SAID           | Unsigned 32-bit integer |                                       |
| fcct.ext_tid     | Transaction ID      | Unsigned 32-bit integer |                                       |
| fcct.gssubtype   | GS Subtype          | Unsigned 8-bit integer  |                                       |
| fcct.gstype      | GS Type             | Unsigned 8-bit integer  |                                       |
| fcct.in_id       | IN_ID               | String                  |                                       |
| fcct.options     | Options             | Unsigned 8-bit integer  |                                       |
| fcct.revision    | Revision            | Unsigned 8-bit integer  |                                       |
| fcct.server      | Server              | Unsigned 8-bit integer  | Derived from GS Type & Subtype fields |
| fcct_ext_authblk | Auth Hash Blk       | Byte array              |                                       |
| fcct_ext_reqnm   | Requestor Port Name | Byte array              |                                       |
| fcct_ext_tstamp  | Timestamp           | Byte array              |                                       |

### Fibre Channel Fabric Zone Server (FZS)

Table A-126. Fibre Channel Fabric Zone Server (FZS)

| Field             | Field Name            | Type                    | Description |
|-------------------|-----------------------|-------------------------|-------------|
| fcfzs.gest.vendor | Vendor Specific State | Unsigned 32-bit integer |             |

Appendix A. Ethereal Display Filter Fields

| Field                  | Field Name                              | Type                    | Description |
|------------------------|---|-------------------------|-------------|
| fcfzs.gzc.flags        | Capabilities                            | Unsigned 8-bit integer  |             |
| fcfzs.gzc.vendor       | Vendor Specific Flags                   | Unsigned 32-bit integer |             |
| fcfzs.maxres_size      | Maximum/Residual Size                   | Unsigned 16-bit integer |             |
| fcfzs.opcode           | Opcode                                  | Unsigned 16-bit integer |             |
| fcfzs.reason           | Reason Code                             | Unsigned 8-bit integer  |             |
| fcfzs.rjtdetail        | Reason Code Explanation                 | Unsigned 8-bit integer  |             |
| fcfzs.rjtvendor        | Vendor Specific Reason                  | Unsigned 8-bit integer  |             |
| fcfzs.zone.lun         | LUN                                     | Byte array              |             |
| fcfzs.zone.mbrid       | Zone Member Identifier                  | String                  |             |
| fcfzs.zone.name        | Zone Name                               | String                  |             |
| fcfzs.zone.namelen     | Zone Name Length                        | Unsigned 8-bit integer  |             |
| fcfzs.zone.numattrs    | Number of Zone Attribute Entries        | Unsigned 32-bit integer |             |
| fcfzs.zone.nummembers  | Number of Zone Members                  | Unsigned 32-bit integer |             |
| fcfzs.zone.state       | Zone State                              | Unsigned 8-bit integer  |             |
| fcfzs.zonembr.idlen    | Zone Member Identifier Length           | Unsigned 8-bit integer  |             |
| fcfzs.zonembr.idtype   | Zone Member Identifier Type             | Unsigned 8-bit integer  |             |
| fcfzs.zonembr.numattrs | Number of Zone Member Attribute Entries | Unsigned 32-bit integer |             |
| fcfzs.zoneset.name     | Zone Set Name                           | String                  |             |
| fcfzs.zoneset.namelen  | Zone Set Name Length                    | Unsigned 8-bit integer  |             |
| fcfzs.zoneset.numattrs | Number of Zone Set Attribute Entries    | Unsigned 32-bit integer |             |



| Field                  | Field Name      | Type                    | Description |
|------------------------|-----------------|-------------------------|-------------|
| fcfzs.zoneset.numzones | Number of Zones | Unsigned 32-bit integer |             |

## Fibre Channel Name Server (FC-dNS)

Table A-127. Fibre Channel Name Server (FC-dNS)

| Field                    | Field Name                           | Type                    | Description |
|--------------------------|--------------------------------------|-------------------------|-------------|
| fcdns.entry.numfc4desc   | Number of FC4 Descriptors Registered | Unsigned 8-bit integer  |             |
| fcdns.entry.objfmt       | Name Entry Object Format             | Unsigned 8-bit integer  |             |
| fcdns.gssubtype          | GS_Subtype                           | Unsigned 8-bit integer  |             |
| fcdns.maxres_size        | Maximum/Residual Size                | Unsigned 16-bit integer |             |
| fcdns.opcode             | Opcode                               | Unsigned 16-bit integer |             |
| fcdns.portip             | Port IP Address                      | IPv4 address            |             |
| fcdns.req.areasid        | Area ID Scope                        | Unsigned 8-bit integer  |             |
| fcdns.req.class          | Class of Service Supported           | String                  |             |
| fcdns.req.domainid       | Domain ID Scope                      | Unsigned 8-bit integer  |             |
| fcdns.req.fc4desc        | FC-4 Descriptor                      | String                  |             |
| fcdns.req.fc4descle<br>n | FC-4 Descriptor Length               | Unsigned 8-bit integer  |             |
| fcdns.req.fc4featur<br>e | FC-4 Feature Bits                    | String                  |             |
| fcdns.req.fc4type        | FC-4 Type                            | String                  |             |
| fcdns.req.fc4types       | FC-4 TYPEs Supported                 | String                  |             |
| fcdns.req.ip             | IP Address                           | IPv6 address            |             |
| fcdns.req.nname          | Node Name                            | String                  |             |
| fcdns.req.portid         | Port Identifier                      | String                  |             |
| fcdns.req.portnam<br>e   | Port Name                            | String                  |             |
| fcdns.req.porttype       | Port Type                            | Unsigned 8-bit integer  |             |

Appendix A. Ethereal Display Filter Fields

| Field                        | Field Name                 | Type                   | Description |
|------------------------------|----------------------------|------------------------|-------------|
| fcdns.req.sname              | Symbolic Port Name         | String                 |             |
| fcdns.req.snamele<br>n       | Symbolic Name Length       | Unsigned 8-bit integer |             |
| fcdns.req.spname             | Symbolic Port Name         | String                 |             |
| fcdns.req.spnamele<br>n      | Symbolic Port Name Length  | Unsigned 8-bit integer |             |
| fcdns.rply.cos               | Class of Service Supported | String                 |             |
| fcdns.rply.fc4desc           | FC-4 Descriptor            | String                 |             |
| fcdns.rply.fc4descl<br>en    | FC-4 Descriptor Length     | Unsigned 8-bit integer |             |
| fcdns.rply.fc4featu<br>res   | FC-4 Features              | String                 |             |
| fcdns.rply.fc4type           | FC-4 Types Supported       | String                 |             |
| fcdns.rply.fpname            | Fabric Port Name           | String                 |             |
| fcdns.rply.hrdaddr           | Hard Address               | String                 |             |
| fcdns.rply.ipa               | Initial Process Associator | Byte array             |             |
| fcdns.rply.ipnode            | Node IP Address            | IPv6 address           |             |
| fcdns.rply.ipport            | Port IP Address            | IPv6 address           |             |
| fcdns.rply.nname             | Node Name                  | String                 |             |
| fcdns.rply.ownerid           | Owner Id                   | String                 |             |
| fcdns.rply.pname             | Port Name                  | String                 |             |
| fcdns.rply.portid            | Port Identifier            | String                 |             |
| fcdns.rply.porttyp<br>e      | Port Type                  | Unsigned 8-bit integer |             |
| fcdns.rply.reason            | Reason Code                | Unsigned 8-bit integer |             |
| fcdns.rply.reason<br>d<br>et | Reason Code Explanantion   | Unsigned 8-bit integer |             |
| fcdns.rply.sname             | Symbolic Node Name         | String                 |             |
| fcdns.rply.snamele<br>n      | Symbolic Node Name Length  | Unsigned 8-bit integer |             |
| fcdns.rply.spname            | Symbolic Port              | String                 |             |

| Field              | Field Name                | Type                   | Description |
|--------------------|---------------------------|------------------------|-------------|
|                    | Name                      |                        |             |
| fcdns.rply.spnamen | Symbolic Port Name Length | Unsigned 8-bit integer |             |
| fcdns.rply.vendor  | Vendor Unique Reject Code | Unsigned 8-bit integer |             |
| fcdns.zone.mbrtype | Zone Member Type          | Unsigned 8-bit integer |             |
| fcdns.zonename     | Zone Name                 | String                 |             |
| swils.zone.mbrid   | Member Identifier         | String                 |             |

### Fibre Channel Protocol for SCSI (fcp)

Table A-128. Fibre Channel Protocol for SCSI (fcp)

| Field          | Field Name            | Type                    | Description |
|----------------|-----------------------|-------------------------|-------------|
| fcp.addlcdblen | Additional CDB Length | Unsigned 8-bit integer  |             |
| fcp.burstlen   | Burst Length          | Unsigned 32-bit integer |             |
| fcp.crn        | Command Ref Num       | Unsigned 8-bit integer  |             |
| fcp.data_ro    | FCP_DATA_RO           | Unsigned 32-bit integer |             |
| fcp.dl         | FCP_DL                | Unsigned 32-bit integer |             |
| fcp.lun        | LUN                   | Unsigned 8-bit integer  |             |
| fcp.multilun   | Multi-Level LUN       | Byte array              |             |
| fcp.rddata     | RDDATA                | Boolean                 |             |
| fcp.resid      | FCP_RESID             | Unsigned 32-bit integer |             |
| fcp.rspcode    | RSP_CODE              | Unsigned 8-bit integer  |             |
| fcp.rspflags   | FCP_RSP Flags         | Unsigned 8-bit integer  |             |
| fcp.rsplen     | FCP_RSP_LEN           | Unsigned 32-bit integer |             |
| fcp.snslen     | FCP_SNS_LEN           | Unsigned 32-bit integer |             |
| fcp.status     | SCSI Status           | Unsigned 8-bit integer  |             |

| Field       | Field Name                  | Type                   | Description |
|-------------|-----------------------------|------------------------|-------------|
| fc.taskattr | Task Attribute              | Unsigned 8-bit integer |             |
| fc.taskmgmt | Task Management Flags       | Unsigned 8-bit integer |             |
| fc.type     | Field to branch off to SCSI | Unsigned 8-bit integer |             |
| fc.wrdata   | WRDATA                      | Boolean                |             |

### Fibre Channel SW\_ILS (swils)

Table A-129. Fibre Channel SW\_ILS (swils)

| Field                | Field Name                | Type                    | Description |
|----------------------|---------------------------|-------------------------|-------------|
| swils.aca.domainid   | Known Domain ID           | Unsigned 8-bit integer  |             |
| swils.dia.sname      | Switch Name               | String                  |             |
| swils.efp.aliastok   | Alias Token               | Byte array              |             |
| swils.efp.domid      | Domain ID                 | Unsigned 8-bit integer  |             |
| swils.efp.mcastno    | Mcast Grp#                | Unsigned 8-bit integer  |             |
| swils.efp.payloadlen | Payload Len               | Unsigned 16-bit integer |             |
| swils.efp.psname     | Principal Switch Name     | String                  |             |
| swils.efp.psprio     | Principal Switch Priority | Unsigned 8-bit integer  |             |
| swils.efp.rectype    | Record Type               | Unsigned 8-bit integer  |             |
| swils.efp.sname      | Switch Name               | String                  |             |
| swils.elp.b2b        | B2B Credit                | Unsigned 32-bit integer |             |
| swils.elp.cfe2e      | Class F E2E Credit        | Unsigned 16-bit integer |             |
| swils.elp.cls1p      | Class 1 Svc Param         | Byte array              |             |
| swils.elp.cls1rsz    | Class 1 Frame Size        | Unsigned 16-bit integer |             |
| swils.elp.cls2p      | Class 2 Svc Param         | Byte array              |             |
| swils.elp.cls3p      | Class 3 Svc Param         | Byte array              |             |
| swils.elp.clsfcs     | Class F Max               | Unsigned 16-bit         |             |

| Field               | Field Name             | Type                    | Description |
|---------------------|------------------------|-------------------------|-------------|
|                     | Concurrent Seq         | integer                 |             |
| swils.elp.clsfp     | Class F Svc Param      | Byte array              |             |
| swils.elp.clsfrsz   | Max Class F Frame Size | Unsigned 16-bit integer |             |
| swils.elp.compat1   | Compatability Param 1  | Unsigned 32-bit integer |             |
| swils.elp.compat2   | Compatability Param 2  | Unsigned 32-bit integer |             |
| swils.elp.compat3   | Compatability Param 3  | Unsigned 32-bit integer |             |
| swils.elp.compat4   | Compatability Param 4  | Unsigned 32-bit integer |             |
| swils.elp.edtov     | E_D_TOV                | Unsigned 32-bit integer |             |
| swils.elp.fcmode    | ISL Flow Ctrl Mode     | String                  |             |
| swils.elp.fcplen    | Flow Ctrl Param Len    | Unsigned 16-bit integer |             |
| swils.elp.flag      | Flag                   | Byte array              |             |
| swils.elp.oseq      | Class F Max Open Seq   | Unsigned 16-bit integer |             |
| swils.elp.ratov     | R_A_TOV                | Unsigned 32-bit integer |             |
| swils.elp.reqepn    | Req Eport Name         | String                  |             |
| swils.elp.reqesn    | Req Switch Name        | String                  |             |
| swils.elp.rev       | Revision               | Unsigned 8-bit integer  |             |
| swils.esc.protocol  | Protocol ID            | Unsigned 16-bit integer |             |
| swils.esc.swvendor  | Switch Vendor ID       | String                  |             |
| swils.esc.vendorid  | Vendor ID              | String                  |             |
| swils.fspf.arnum    | AR Number              | Unsigned 8-bit integer  |             |
| swils.fspf.auth     | Authentication         | Byte array              |             |
| swils.fspf.authtype | Authentication Type    | Unsigned 8-bit integer  |             |
| swils.fspf.cmd      | Command:               | Unsigned 8-bit          |             |

Appendix A. Ethereal Display Filter Fields

| Field                      | Field Name            | Type                    | Description |
|----------------------------|-----------------------|-------------------------|-------------|
|                            |                       | integer                 |             |
| swils.fspf.origdomid       | Originating Domain ID | Unsigned 8-bit integer  |             |
| swils.fspf.ver             | Version               | Unsigned 8-bit integer  |             |
| swils.hlo.deadint          | Dead Interval (secs)  | Unsigned 32-bit integer |             |
| swils.hlo.hloint           | Hello Interval (secs) | Unsigned 32-bit integer |             |
| swils.hlo.options          | Options               | Byte array              |             |
| swils.hlo.origpidx         | Originating Port Idx  | Unsigned 24-bit integer |             |
| swils.hlo.rcvdomid         | Recipient Domain ID   | Unsigned 8-bit integer  |             |
| swils.ldr.linkcost         | Link Cost             | Unsigned 16-bit integer |             |
| swils.ldr.linkid           | Link ID               | String                  |             |
| swils.ldr.linktype         | Link Type             | Unsigned 8-bit integer  |             |
| swils.ldr.nbr_portidx      | Neighbor Port Idx     | Unsigned 24-bit integer |             |
| swils.ldr.out_portidx      | Output Port Idx       | Unsigned 24-bit integer |             |
| swils.ls.id                | Link State Id         | Unsigned 8-bit integer  |             |
| swils.lsr.advdomid         | Advertising Domain Id | Unsigned 8-bit integer  |             |
| swils.lsr.incid            | LS Incarnation Number | Unsigned 32-bit integer |             |
| swils.lsr.type             | LSR Type              | Unsigned 8-bit integer  |             |
| swils.mr.activezonesetname | Active Zoneset Name   | String                  |             |
| swils.opcode               | Cmd Code              | Unsigned 8-bit integer  |             |
| swils.rdi.len              | Payload Len           | Unsigned 16-bit integer |             |
| swils.rdi.reqsn            | Req Switch Name       | String                  |             |
| swils.rjt.reason           | Reason Code           | Unsigned 8-bit          |             |

| Field                   | Field Name               | Type                    | Description                       |
|-------------------------|--------------------------|-------------------------|-----------------------------------|
|                         |                          | integer                 |                                   |
| swils.rjt.reasonexpl    | Reason Code Explanation  | Unsigned 8-bit integer  |                                   |
| swils.rjt.vendor        | Vendor Unique Error Code | Unsigned 8-bit integer  |                                   |
| swils.rscn.addrfmt      | Address Format           | Unsigned 8-bit integer  |                                   |
| swils.rscn.affectedport | Affected Port ID         | String                  |                                   |
| swils.rscn.detectfn     | Detection Function       | Unsigned 32-bit integer |                                   |
| swils.rscn.evtype       | Event Type               | Unsigned 8-bit integer  |                                   |
| swils.rscn.nwwn         | Node WWN                 | String                  |                                   |
| swils.rscn.portid       | Port Id                  | String                  |                                   |
| swils.rscn.portstate    | Port State               | Unsigned 8-bit integer  |                                   |
| swils.rscn.pwwn         | Port WWN                 | String                  |                                   |
| swils.sfc.opcode        | Operation Request        | Unsigned 8-bit integer  |                                   |
| swils.sfc.zonename      | Zone Set Name            | String                  |                                   |
| swils.zone.lun          | LUN                      | Byte array              |                                   |
| swils.zone.mbrtype      | Zone Member Type         | Unsigned 8-bit integer  |                                   |
| swils.zone.protocol     | Zone Protocol            | Unsigned 8-bit integer  |                                   |
| swils.zone.reason       | Zone Command Reason Code | Unsigned 8-bit integer  | Applies to MR, ACA, RCA, SFC, UFC |
| swils.zone.status       | Zone Command Status      | Unsigned 8-bit integer  | Applies to MR, ACA, RCA, SFC, UFC |
| swils.zone.zoneobjname  | Zone Object Name         | String                  |                                   |
| swils.zone.zoneobjtype  | Zone Object Type         | Unsigned 8-bit integer  |                                   |

### File Transfer Protocol (FTP) (ftp)

**Table A-130. File Transfer Protocol (FTP) (ftp)**

| Field               | Field Name      | Type                    | Description          |
|---------------------|-----------------|-------------------------|----------------------|
| ftp.request         | Request         | Boolean                 | TRUE if FTP request  |
| ftp.request.arg     | Request arg     | String                  |                      |
| ftp.request.command | Request command | String                  |                      |
| ftp.response        | Response        | Boolean                 | TRUE if FTP response |
| ftp.response.arg    | Response arg    | String                  |                      |
| ftp.response.code   | Response code   | Unsigned 32-bit integer |                      |

**Financial Information eXchange Protocol (fix)****Table A-131. Financial Information eXchange Protocol (fix)**

| Field                        | Field Name                     | Type   | Description              |
|------------------------------|--------------------------------|--------|--------------------------|
| fix.Account                  | Account (1)                    | String | Account                  |
| fix.AccountType              | AccountType (581)              | String | AccountType              |
| fix.AccruedInterestAmt       | AccruedInterestAmt (159)       | String | AccruedInterestAmt       |
| fix.AccruedInterestRate      | AccruedInterestRate (158)      | String | AccruedInterestRate      |
| fix.Adjustment               | Adjustment (334)               | String | Adjustment               |
| fix.AdvId                    | AdvId (2)                      | String | AdvId                    |
| fix.AdvRefID                 | AdvRefID (3)                   | String | AdvRefID                 |
| fix.AdvSide                  | AdvSide (4)                    | String | AdvSide                  |
| fix.AdvTransType             | AdvTransType (5)               | String | AdvTransType             |
| fix.AffectedOrderID          | AffectedOrderID (535)          | String | AffectedOrderID          |
| fix.AffectedSecondaryOrderID | AffectedSecondaryOrderID (536) | String | AffectedSecondaryOrderID |
| fix.AggregatedBook           | AggregatedBook (266)           | String | AggregatedBook           |
| fix.AllocAccount             | AllocAccount (79)              | String | AllocAccount             |
| fix.AllocAvgPx               | AllocAvgPx (153)               | String | AllocAvgPx               |
| fix.AllocHandlInst           | AllocHandlInst (209)           | String | AllocHandlInst           |
| fix.AllocID                  | AllocID (70)                   | String | AllocID                  |



| Field                      | Field Name                   | Type   | Description            |
|----------------------------|------------------------------|--------|------------------------|
| fix.AllocLinkID            | AllocLinkID (196)            | String | AllocLinkID            |
| fix.AllocLinkType          | AllocLinkType (197)          | String | AllocLinkType          |
| fix.AllocNetMoney          | AllocNetMoney (154)          | String | AllocNetMoney          |
| fix.AllocPrice             | AllocPrice (366)             | String | AllocPrice             |
| fix.AllocQty               | AllocQty (80)                | String | AllocQty               |
| fix.AllocRejCode           | AllocRejCode (88)            | String | AllocRejCode           |
| fix.AllocStatus            | AllocStatus (87)             | String | AllocStatus            |
| fix.AllocText              | AllocText (161)              | String | AllocText              |
| fix.AllocTransType         | AllocTransType (71)          | String | AllocTransType         |
| fix.AllocType              | AllocType (626)              | String | AllocType              |
| fix.AvgPrxPrecision        | AvgPrxPrecision (74)         | String | AvgPrxPrecision        |
| fix.AvgPx                  | AvgPx (6)                    | String | AvgPx                  |
| fix.BasisFeatureDate       | BasisFeatureDate (259)       | String | BasisFeatureDate       |
| fix.BasisFeaturePrice      | BasisFeaturePrice (260)      | String | BasisFeaturePrice      |
| fix.BasisPxType            | BasisPxType (419)            | String | BasisPxType            |
| fix.BeginSeqNo             | BeginSeqNo (7)               | String | BeginSeqNo             |
| fix.BeginString            | BeginString (8)              | String | BeginString            |
| fix.Benchmark              | Benchmark (219)              | String | Benchmark              |
| fix.BenchmarkCurveCurrency | BenchmarkCurveCurrency (220) | String | BenchmarkCurveCurrency |
| fix.BenchmarkCurveName     | BenchmarkCurveName (221)     | String | BenchmarkCurveName     |
| fix.BenchmarkCurvePoint    | BenchmarkCurvePoint (222)    | String | BenchmarkCurvePoint    |
| fix.BidDescriptor          | BidDescriptor (400)          | String | BidDescriptor          |
| fix.BidDescriptorType      | BidDescriptorType (399)      | String | BidDescriptorType      |
| fix.BidForwardPoints       | BidForwardPoints (189)       | String | BidForwardPoints       |
| fix.BidForwardPoi          | BidForwardPoints             | String | BidForwardPoints       |

Appendix A. Ethereal Display Filter Fields

| Field                          | Field Name                       | Type   | Description                |
|--------------------------------|----------------------------------|--------|----------------------------|
| nts2                           | 2 (642)                          |        | 2                          |
| fix.BidID                      | BidID (390)                      | String | BidID                      |
| fix.BidPx                      | BidPx (132)                      | String | BidPx                      |
| fix.BidRequestTransType        | BidRequestTransType (374)        | String | BidRequestTransType        |
| fix.BidSize                    | BidSize (134)                    | String | BidSize                    |
| fix.BidSpotRate                | BidSpotRate (188)                | String | BidSpotRate                |
| fix.BidType                    | BidType (394)                    | String | BidType                    |
| fix.BidYield                   | BidYield (632)                   | String | BidYield                   |
| fix.BodyLength                 | BodyLength (9)                   | String | BodyLength                 |
| fix.BookingRefID               | BookingRefID (466)               | String | BookingRefID               |
| fix.BookingUnit                | BookingUnit (590)                | String | BookingUnit                |
| fix.BrokerOfCredit             | BrokerOfCredit (92)              | String | BrokerOfCredit             |
| fix.BusinessRejectReason       | BusinessRejectReason (380)       | String | BusinessRejectReason       |
| fix.BusinessRejectRefID        | BusinessRejectRefID (379)        | String | BusinessRejectRefID        |
| fix.BuyVolume                  | BuyVolume (330)                  | String | BuyVolume                  |
| fix.CFICode                    | CFICode (461)                    | String | CFICode                    |
| fix.CancellationRights         | CancellationRights (480)         | String | CancellationRights         |
| fix.CardExpDate                | CardExpDate (490)                | String | CardExpDate                |
| fix.CardHolderName             | CardHolderName (488)             | String | CardHolderName             |
| fix.CardIssNo                  | CardIssNo (491)                  | String | CardIssNo                  |
| fix.CardNumber                 | CardNumber (489)                 | String | CardNumber                 |
| fix.CardStartDate              | CardStartDate (503)              | String | CardStartDate              |
| fix.CashDistribAgentAcctName   | CashDistribAgentAcctName (502)   | String | CashDistribAgentAcctName   |
| fix.CashDistribAgentAcctNumber | CashDistribAgentAcctNumber (500) | String | CashDistribAgentAcctNumber |
| fix.CashDistribAgentCode       | CashDistribAgentCode (499)       | String | CashDistribAgentCode       |
| fix.CashDistribAgent           | CashDistribAgent                 | String | CashDistribAgent           |

| Field                          | Field Name                       | Type   | Description                |
|--------------------------------|----------------------------------|--------|----------------------------|
| ntName                         | Name (498)                       |        | Name                       |
| fix.CashDistribCurr            | CashDistribCurr (478)            | String | CashDistribCurr            |
| fix.CashDistribPayRef          | CashDistribPayRef (501)          | String | CashDistribPayRef          |
| fix.CashMargin                 | CashMargin (544)                 | String | CashMargin                 |
| fix.CashOrderQty               | CashOrderQty (152)               | String | CashOrderQty               |
| fix.CashSettlAgentAcctName     | CashSettlAgentAcctName (185)     | String | CashSettlAgentAcctName     |
| fix.CashSettlAgentAcctNum      | CashSettlAgentAcctNum (184)      | String | CashSettlAgentAcctNum      |
| fix.CashSettlAgentCode         | CashSettlAgentCode (183)         | String | CashSettlAgentCode         |
| fix.CashSettlAgentContactName  | CashSettlAgentContactName (186)  | String | CashSettlAgentContactName  |
| fix.CashSettlAgentContactPhone | CashSettlAgentContactPhone (187) | String | CashSettlAgentContactPhone |
| fix.CashSettlAgentName         | CashSettlAgentName (182)         | String | CashSettlAgentName         |
| fix.CheckSum                   | Checksum (10)                    | String | Checksum                   |
| fix.ClOrdID                    | ClOrdID (11)                     | String | ClOrdID                    |
| fix.ClOrdLinkID                | ClOrdLinkID (583)                | String | ClOrdLinkID                |
| fix.ClearingAccount            | ClearingAccount (440)            | String | ClearingAccount            |
| fix.ClearingFeeIndicator       | ClearingFeeIndicator (635)       | String | ClearingFeeIndicator       |
| fix.ClearingFirm               | ClearingFirm (439)               | String | ClearingFirm               |
| fix.ClearingInstruction        | ClearingInstruction (577)        | String | ClearingInstruction        |
| fix.ClientBidID                | ClientBidID (391)                | String | ClientBidID                |
| fix.ClientID                   | ClientID (109)                   | String | ClientID                   |
| fix.CommCurrency               | CommCurrency (479)               | String | CommCurrency               |
| fix.CommType                   | CommType (13)                    | String | CommType                   |
| fix.Commission                 | Commission (12)                  | String | Commission                 |
| fix.ComplianceID               | ComplianceID (376)               | String | ComplianceID               |

Appendix A. Ethereal Display Filter Fields

| Field                   | Field Name                | Type   | Description         |
|-------------------------|---------------------------|--------|---------------------|
| fix.Concession          | Concession (238)          | String | Concession          |
| fix.ContAmtCurr         | ContAmtCurr (521)         | String | ContAmtCurr         |
| fix.ContAmtType         | ContAmtType (519)         | String | ContAmtType         |
| fix.ContAmtValue        | ContAmtValue (520)        | String | ContAmtValue        |
| fix.ContraBroker        | ContraBroker (375)        | String | ContraBroker        |
| fix.ContraLegRefID      | ContraLegRefID (655)      | String | ContraLegRefID      |
| fix.ContraTradeQty      | ContraTradeQty (437)      | String | ContraTradeQty      |
| fix.ContraTradeTime     | ContraTradeTime (438)     | String | ContraTradeTime     |
| fix.ContraTrader        | ContraTrader (337)        | String | ContraTrader        |
| fix.ContractMultiplier  | ContractMultiplier (231)  | String | ContractMultiplier  |
| fix.CorporateAction     | CorporateAction (292)     | String | CorporateAction     |
| fix.Country             | Country (421)             | String | Country             |
| fix.CountryOfIssue      | CountryOfIssue (470)      | String | CountryOfIssue      |
| fix.CouponPaymentDate   | CouponPaymentDate (224)   | String | CouponPaymentDate   |
| fix.CouponRate          | CouponRate (223)          | String | CouponRate          |
| fix.CoveredOrUncovered  | CoveredOrUncovered (203)  | String | CoveredOrUncovered  |
| fix.CreditRating        | CreditRating (255)        | String | CreditRating        |
| fix.CrossID             | CrossID (548)             | String | CrossID             |
| fix.CrossPercent        | CrossPercent (413)        | String | CrossPercent        |
| fix.CrossPrioritization | CrossPrioritization (550) | String | CrossPrioritization |
| fix.CrossType           | CrossType (549)           | String | CrossType           |
| fix.CumQty              | CumQty (14)               | String | CumQty              |
| fix.Currency            | Currency (15)             | String | Currency            |
| fix.CustOrderCapacity   | CustOrderCapacity (582)   | String | CustOrderCapacity   |

| Field                    | Field Name                 | Type   | Description          |
|--------------------------|----------------------------|--------|----------------------|
| fix.CustomerOrFirm       | CustomerOrFirm (204)       | String | CustomerOrFirm       |
| fix.CxlQty               | CxlQty (84)                | String | CxlQty               |
| fix.CxlRejReason         | CxlRejReason (102)         | String | CxlRejReason         |
| fix.CxlRejResponseTo     | CxlRejResponseTo (434)     | String | CxlRejResponseTo     |
| fix.CxlType              | CxlType (125)              | String | CxlType              |
| fix.DKReason             | DKReason (127)             | String | DKReason             |
| fix.DateOfBirth          | DateOfBirth (486)          | String | DateOfBirth          |
| fix.DayAvgPx             | DayAvgPx (426)             | String | DayAvgPx             |
| fix.DayBookingInst       | DayBookingInst (589)       | String | DayBookingInst       |
| fix.DayCumQty            | DayCumQty (425)            | String | DayCumQty            |
| fix.DayOrderQty          | DayOrderQty (424)          | String | DayOrderQty          |
| fix.DefBidSize           | DefBidSize (293)           | String | DefBidSize           |
| fix.DefOfferSize         | DefOfferSize (294)         | String | DefOfferSize         |
| fix.DeleteReason         | DeleteReason (285)         | String | DeleteReason         |
| fix.DeliverToCompID      | DeliverToCompID (128)      | String | DeliverToCompID      |
| fix.DeliverToLocationID  | DeliverToLocationID (145)  | String | DeliverToLocationID  |
| fix.DeliverToSubID       | DeliverToSubID (129)       | String | DeliverToSubID       |
| fix.Designation          | Designation (494)          | String | Designation          |
| fix.DeskID               | DeskID (284)               | String | DeskID               |
| fix.DiscretionInst       | DiscretionInst (388)       | String | DiscretionInst       |
| fix.DiscretionOffset     | DiscretionOffset (389)     | String | DiscretionOffset     |
| fix.DistribPaymentMethod | DistribPaymentMethod (477) | String | DistribPaymentMethod |
| fix.DistribPercentage    | DistribPercentage (512)    | String | DistribPercentage    |
| fix.DlvyInst             | DlvyInst (86)              | String | DlvyInst             |
| fix.DueToRelated         | DueToRelated               | String | DueToRelated         |

Appendix A. Ethereal Display Filter Fields

| Field                         | Field Name                      | Type   | Description               |
|-------------------------------|---------------------------------|--------|---------------------------|
|                               | (329)                           |        |                           |
| fix.EFPTrackingError          | EFPTrackingError (405)          | String | EFPTrackingError          |
| fix.EffectiveTime             | EffectiveTime (168)             | String | EffectiveTime             |
| fix.EmailThreadID             | EmailThreadID (164)             | String | EmailThreadID             |
| fix.EmailType                 | EmailType (94)                  | String | EmailType                 |
| fix.EncodedAllocText          | EncodedAllocText (361)          | String | EncodedAllocText          |
| fix.EncodedAllocTextLen       | EncodedAllocTextLen (360)       | String | EncodedAllocTextLen       |
| fix.EncodedHeadline           | EncodedHeadline (359)           | String | EncodedHeadline           |
| fix.EncodedHeadlineLen        | EncodedHeadlineLen (358)        | String | EncodedHeadlineLen        |
| fix.EncodedIssuer             | EncodedIssuer (349)             | String | EncodedIssuer             |
| fix.EncodedIssuerLen          | EncodedIssuerLen (348)          | String | EncodedIssuerLen          |
| fix.EncodedLegIssuer          | EncodedLegIssuer (619)          | String | EncodedLegIssuer          |
| fix.EncodedLegIssuerLen       | EncodedLegIssuerLen (618)       | String | EncodedLegIssuerLen       |
| fix.EncodedLegSecurityDesc    | EncodedLegSecurityDesc (622)    | String | EncodedLegSecurityDesc    |
| fix.EncodedLegSecurityDescLen | EncodedLegSecurityDescLen (621) | String | EncodedLegSecurityDescLen |
| fix.EncodedListExecInst       | EncodedListExecInst (353)       | String | EncodedListExecInst       |
| fix.EncodedListExecInstLen    | EncodedListExecInstLen (352)    | String | EncodedListExecInstLen    |
| fix.EncodedListStatusText     | EncodedListStatusText (446)     | String | EncodedListStatusText     |
| fix.EncodedListStatusTextLen  | EncodedListStatusTextLen (445)  | String | EncodedListStatusTextLen  |
| fix.EncodedSecurityDesc       | EncodedSecurityDesc (351)       | String | EncodedSecurityDesc       |
| fix.EncodedSecurityD          | EncodedSecurityD                | String | EncodedSecurityD          |

| <b>Field</b>                         | <b>Field Name</b>                      | <b>Type</b> | <b>Description</b>               |
|--------------------------------------|--|-------------|----------------------------------|
| yDescLen                             | escLen (350)                           |             | escLen                           |
| fix.EncodedSubject                   | EncodedSubject (357)                   | String      | EncodedSubject                   |
| fix.EncodedSubjectLen                | EncodedSubjectLen (356)                | String      | EncodedSubjectLen                |
| fix.EncodedText                      | EncodedText (355)                      | String      | EncodedText                      |
| fix.EncodedTextLen                   | EncodedTextLen (354)                   | String      | EncodedTextLen                   |
| fix.EncodedUnderlyingIssuer          | EncodedUnderlyingIssuer (363)          | String      | EncodedUnderlyingIssuer          |
| fix.EncodedUnderlyingIssuerLen       | EncodedUnderlyingIssuerLen (362)       | String      | EncodedUnderlyingIssuerLen       |
| fix.EncodedUnderlyingSecurityDesc    | EncodedUnderlyingSecurityDesc (365)    | String      | EncodedUnderlyingSecurityDesc    |
| fix.EncodedUnderlyingSecurityDescLen | EncodedUnderlyingSecurityDescLen (364) | String      | EncodedUnderlyingSecurityDescLen |
| fix.EncryptMethod                    | EncryptMethod (98)                     | String      | EncryptMethod                    |
| fix.EndSeqNo                         | EndSeqNo (16)                          | String      | EndSeqNo                         |
| fix.ExDate                           | ExDate (230)                           | String      | ExDate                           |
| fix.ExDestination                    | ExDestination (100)                    | String      | ExDestination                    |
| fix.ExchangeForPhysical              | ExchangeForPhysical (411)              | String      | ExchangeForPhysical              |
| fix.ExecBroker                       | ExecBroker (76)                        | String      | ExecBroker                       |
| fix.ExecID                           | ExecID (17)                            | String      | ExecID                           |
| fix.ExecInst                         | ExecInst (18)                          | String      | ExecInst                         |
| fix.ExecPriceAdjustment              | ExecPriceAdjustment (485)              | String      | ExecPriceAdjustment              |
| fix.ExecPriceType                    | ExecPriceType (484)                    | String      | ExecPriceType                    |
| fix.ExecRefID                        | ExecRefID (19)                         | String      | ExecRefID                        |
| fix.ExecRestatementReason            | ExecRestatementReason (378)            | String      | ExecRestatementReason            |
| fix.ExecTransType                    | ExecTransType (20)                     | String      | ExecTransType                    |

Appendix A. Ethereal Display Filter Fields

| Field                  | Field Name               | Type   | Description        |
|------------------------|--------------------------|--------|--------------------|
| fix.ExecType           | ExecType (150)           | String | ExecType           |
| fix.ExecValuationPoint | ExecValuationPoint (515) | String | ExecValuationPoint |
| fix.ExpireDate         | ExpireDate (432)         | String | ExpireDate         |
| fix.ExpireTime         | ExpireTime (126)         | String | ExpireTime         |
| fix.Factor             | Factor (228)             | String | Factor             |
| fix.FairValue          | FairValue (406)          | String | FairValue          |
| fix.FinancialStatus    | FinancialStatus (291)    | String | FinancialStatus    |
| fix.ForexReq           | ForexReq (121)           | String | ForexReq           |
| fix.FundRenewWaiv      | FundRenewWaiv (497)      | String | FundRenewWaiv      |
| fix.FutSettDate        | FutSettDate (64)         | String | FutSettDate        |
| fix.FutSettDate2       | FutSettDate2 (193)       | String | FutSettDate2       |
| fix.GTBookingInst      | GTBookingInst (427)      | String | GTBookingInst      |
| fix.GapFillFlag        | GapFillFlag (123)        | String | GapFillFlag        |
| fix.GrossTradeAmt      | GrossTradeAmt (381)      | String | GrossTradeAmt      |
| fix.HaltReason         | HaltReason (327)         | String | HaltReason         |
| fix.HandlInst          | HandlInst (21)           | String | HandlInst          |
| fix.Headline           | Headline (148)           | String | Headline           |
| fix.HeartBtInt         | HeartBtInt (108)         | String | HeartBtInt         |
| fix.HighPx             | HighPx (332)             | String | HighPx             |
| fix.HopCompID          | HopCompID (628)          | String | HopCompID          |
| fix.HopRefID           | HopRefID (630)           | String | HopRefID           |
| fix.HopSendingTime     | HopSendingTime (629)     | String | HopSendingTime     |
| fix.IOINaturalFlag     | IOINaturalFlag (130)     | String | IOINaturalFlag     |
| fix.IOIOthSvc          | IOIOthSvc (24)           | String | IOIOthSvc          |
| fix.IOIQltyInd         | IOIQltyInd (25)          | String | IOIQltyInd         |
| fix.IOIQty             | IOIQty (27)              | String | IOIQty             |
| fix.IOIQualifier       | IOIQualifier (104)       | String | IOIQualifier       |
| fix.IOIRefID           | IOIRefID (26)            | String | IOIRefID           |



| Field                          | Field Name                       | Type   | Description                |
|--------------------------------|----------------------------------|--------|----------------------------|
| fix.IOITransType               | IOITransType (28)                | String | IOITransType               |
| fix.IOLid                      | IOLid (23)                       | String | IOLid                      |
| fix.InViewOfCommon             | InViewOfCommon (328)             | String | InViewOfCommon             |
| fix.IncTaxInd                  | IncTaxInd (416)                  | String | IncTaxInd                  |
| fix.IndividualAllocID          | IndividualAllocID (467)          | String | IndividualAllocID          |
| fix.InstrRegistry              | InstrRegistry (543)              | String | InstrRegistry              |
| fix.InvestorCountryOfResidence | InvestorCountryOfResidence (475) | String | InvestorCountryOfResidence |
| fix.IssueDate                  | IssueDate (225)                  | String | IssueDate                  |
| fix.Issuer                     | Issuer (106)                     | String | Issuer                     |
| fix.LastCapacity               | LastCapacity (29)                | String | LastCapacity               |
| fix.LastForwardPoints          | LastForwardPoints (195)          | String | LastForwardPoints          |
| fix.LastForwardPoints2         | LastForwardPoints2 (641)         | String | LastForwardPoints2         |
| fix.LastMkt                    | LastMkt (30)                     | String | LastMkt                    |
| fix.LastMsgSeqNumProcessed     | LastMsgSeqNumProcessed (369)     | String | LastMsgSeqNumProcessed     |
| fix.LastPx                     | LastPx (31)                      | String | LastPx                     |
| fix.LastQty                    | LastQty (32)                     | String | LastQty                    |
| fix.LastSpotRate               | LastSpotRate (194)               | String | LastSpotRate               |
| fix.LeavesQty                  | LeavesQty (151)                  | String | LeavesQty                  |
| fix.LegCFICode                 | LegCFICode (608)                 | String | LegCFICode                 |
| fix.LegContractMultiplier      | LegContractMultiplier (614)      | String | LegContractMultiplier      |
| fix.LegCountryOfIssue          | LegCountryOfIssue (596)          | String | LegCountryOfIssue          |
| fix.LegCouponPaymentDate       | LegCouponPaymentDate (248)       | String | LegCouponPaymentDate       |
| fix.LegCouponRate              | LegCouponRate (615)              | String | LegCouponRate              |
| fix.LegCoveredOrUncovered      | LegCoveredOrUncovered (565)      | String | LegCoveredOrUncovered      |
| fix.LegCreditRating            | LegCreditRating (257)            | String | LegCreditRating            |

Appendix A. Ethereal Display Filter Fields

| Field                             | Field Name                          | Type   | Description                   |
|-----------------------------------|-------------------------------------|--------|-------------------------------|
| fix.LegCurrency                   | LegCurrency (556)                   | String | LegCurrency                   |
| fix.LegFactor                     | LegFactor (253)                     | String | LegFactor                     |
| fix.LegFutSettDate                | LegFutSettDate (588)                | String | LegFutSettDate                |
| fix.LegInstrRegistry              | LegInstrRegistry (599)              | String | LegInstrRegistry              |
| fix.LegIssueDate                  | LegIssueDate (249)                  | String | LegIssueDate                  |
| fix.LegIssuer                     | LegIssuer (617)                     | String | LegIssuer                     |
| fix.LegLastPx                     | LegLastPx (637)                     | String | LegLastPx                     |
| fix.LegLocaleOfIssue              | LegLocaleOfIssue (598)              | String | LegLocaleOfIssue              |
| fix.LegMaturityDate               | LegMaturityDate (611)               | String | LegMaturityDate               |
| fix.LegMaturityMonthYear          | LegMaturityMonthYear (610)          | String | LegMaturityMonthYear          |
| fix.LegOptAttribute               | LegOptAttribute (613)               | String | LegOptAttribute               |
| fix.LegPositionEffect             | LegPositionEffect (564)             | String | LegPositionEffect             |
| fix.LegPrice                      | LegPrice (566)                      | String | LegPrice                      |
| fix.LegProduct                    | LegProduct (607)                    | String | LegProduct                    |
| fix.LegRatioQty                   | LegRatioQty (623)                   | String | LegRatioQty                   |
| fix.LegRedemptionDate             | LegRedemptionDate (254)             | String | LegRedemptionDate             |
| fix.LegRefID                      | LegRefID (654)                      | String | LegRefID                      |
| fix.LegRepoCollateralSecurityType | LegRepoCollateralSecurityType (250) | String | LegRepoCollateralSecurityType |
| fix.LegRepurchaseRate             | LegRepurchaseRate (252)             | String | LegRepurchaseRate             |
| fix.LegRepurchaseTerm             | LegRepurchaseTerm (251)             | String | LegRepurchaseTerm             |
| fix.LegSecurityAltID              | LegSecurityAltID (605)              | String | LegSecurityAltID              |
| fix.LegSecurityAltIDSource        | LegSecurityAltIDSource (606)        | String | LegSecurityAltIDSource        |
| fix.LegSecurityDesc               | LegSecurityDesc (620)               | String | LegSecurityDesc               |
| fix.LegSecurityExchange           | LegSecurityExchange                 | String | LegSecurityExchange           |

| Field                         | Field Name                      | Type   | Description               |
|-------------------------------|---------------------------------|--------|---------------------------|
| hange                         | ge (616)                        |        | ge                        |
| fix.LegSecurityID             | LegSecurityID (602)             | String | LegSecurityID             |
| fix.LegSecurityIDSource       | LegSecurityIDSource (603)       | String | LegSecurityIDSource       |
| fix.LegSecurityType           | LegSecurityType (609)           | String | LegSecurityType           |
| fix.LegSettlmntTyp            | LegSettlmntTyp (587)            | String | LegSettlmntTyp            |
| fix.LegSide                   | LegSide (624)                   | String | LegSide                   |
| fix.LegStateOrProvinceOfIssue | LegStateOrProvinceOfIssue (597) | String | LegStateOrProvinceOfIssue |
| fix.LegStrikePrice            | LegStrikePrice (612)            | String | LegStrikePrice            |
| fix.LegSymbol                 | LegSymbol (600)                 | String | LegSymbol                 |
| fix.LegSymbolSfx              | LegSymbolSfx (601)              | String | LegSymbolSfx              |
| fix.LegalConfirm              | LegalConfirm (650)              | String | LegalConfirm              |
| fix.LinesOfText               | LinesOfText (33)                | String | LinesOfText               |
| fix.LiquidityIndType          | LiquidityIndType (409)          | String | LiquidityIndType          |
| fix.LiquidityNumSecurities    | LiquidityNumSecurities (441)    | String | LiquidityNumSecurities    |
| fix.LiquidityPctHigh          | LiquidityPctHigh (403)          | String | LiquidityPctHigh          |
| fix.LiquidityPctLow           | LiquidityPctLow (402)           | String | LiquidityPctLow           |
| fix.LiquidityValue            | LiquidityValue (404)            | String | LiquidityValue            |
| fix.ListExecInst              | ListExecInst (69)               | String | ListExecInst              |
| fix.ListExecInstType          | ListExecInstType (433)          | String | ListExecInstType          |
| fix.ListID                    | ListID (66)                     | String | ListID                    |
| fix.ListName                  | ListName (392)                  | String | ListName                  |
| fix.ListOrderStatus           | ListOrderStatus (431)           | String | ListOrderStatus           |
| fix.ListSeqNo                 | ListSeqNo (67)                  | String | ListSeqNo                 |

Appendix A. Ethereal Display Filter Fields

| Field                 | Field Name              | Type   | Description       |
|-----------------------|-------------------------|--------|-------------------|
| fix.ListStatusText    | ListStatusText (444)    | String | ListStatusText    |
| fix.ListStatusType    | ListStatusType (429)    | String | ListStatusType    |
| fix.LocaleOfIssue     | LocaleOfIssue (472)     | String | LocaleOfIssue     |
| fix.LocateReqd        | LocateReqd (114)        | String | LocateReqd        |
| fix.LocationID        | LocationID (283)        | String | LocationID        |
| fix.LowPx             | LowPx (333)             | String | LowPx             |
| fix.MDEntryBuyer      | MDEntryBuyer (288)      | String | MDEntryBuyer      |
| fix.MDEntryDate       | MDEntryDate (272)       | String | MDEntryDate       |
| fix.MDEntryID         | MDEntryID (278)         | String | MDEntryID         |
| fix.MDEntryOriginator | MDEntryOriginator (282) | String | MDEntryOriginator |
| fix.MDEntryPositionNo | MDEntryPositionNo (290) | String | MDEntryPositionNo |
| fix.MDEntryPx         | MDEntryPx (270)         | String | MDEntryPx         |
| fix.MDEntryRefID      | MDEntryRefID (280)      | String | MDEntryRefID      |
| fix.MDEntrySeller     | MDEntrySeller (289)     | String | MDEntrySeller     |
| fix.MDEntrySize       | MDEntrySize (271)       | String | MDEntrySize       |
| fix.MDEntryTime       | MDEntryTime (273)       | String | MDEntryTime       |
| fix.MDEntryType       | MDEntryType (269)       | String | MDEntryType       |
| fix.MDImplicitDelete  | MDImplicitDelete (547)  | String | MDImplicitDelete  |
| fix.MDMkt             | MDMkt (275)             | String | MDMkt             |
| fix.MDReqID           | MDReqID (262)           | String | MDReqID           |
| fix.MDReqRejReason    | MDReqRejReason (281)    | String | MDReqRejReason    |
| fix.MDUpdateAction    | MDUpdateAction (279)    | String | MDUpdateAction    |
| fix.MDUpdateType      | MDUpdateType (265)      | String | MDUpdateType      |

| Field                      | Field Name                   | Type   | Description            |
|----------------------------|------------------------------|--------|------------------------|
| fix.MailingDtls            | MailingDtls (474)            | String | MailingDtls            |
| fix.MailingInst            | MailingInst (482)            | String | MailingInst            |
| fix.MarketDepth            | MarketDepth (264)            | String | MarketDepth            |
| fix.MassCancelRejectReason | MassCancelRejectReason (532) | String | MassCancelRejectReason |
| fix.MassCancelRequestType  | MassCancelRequestType (530)  | String | MassCancelRequestType  |
| fix.MassCancelResponse     | MassCancelResponse (531)     | String | MassCancelResponse     |
| fix.MassStatusReqID        | MassStatusReqID (584)        | String | MassStatusReqID        |
| fix.MassStatusReqType      | MassStatusReqType (585)      | String | MassStatusReqType      |
| fix.MatchStatus            | MatchStatus (573)            | String | MatchStatus            |
| fix.MatchType              | MatchType (574)              | String | MatchType              |
| fix.MaturityDate           | MaturityDate (541)           | String | MaturityDate           |
| fix.MaturityDay            | MaturityDay (205)            | String | MaturityDay            |
| fix.MaturityMonthYear      | MaturityMonthYear (200)      | String | MaturityMonthYear      |
| fix.MaxFloor               | MaxFloor (111)               | String | MaxFloor               |
| fix.MaxMessageSize         | MaxMessageSize (383)         | String | MaxMessageSize         |
| fix.MaxShow                | MaxShow (210)                | String | MaxShow                |
| fix.MessageEncoding        | MessageEncoding (347)        | String | MessageEncoding        |
| fix.MidPx                  | MidPx (631)                  | String | MidPx                  |
| fix.MidYield               | MidYield (633)               | String | MidYield               |
| fix.MinBidSize             | MinBidSize (647)             | String | MinBidSize             |
| fix.MinOfferSize           | MinOfferSize (648)           | String | MinOfferSize           |
| fix.MinQty                 | MinQty (110)                 | String | MinQty                 |
| fix.MinTradeVol            | MinTradeVol (562)            | String | MinTradeVol            |
| fix.MiscFeeAmt             | MiscFeeAmt (137)             | String | MiscFeeAmt             |
| fix.MiscFeeCurr            | MiscFeeCurr (138)            | String | MiscFeeCurr            |
| fix.MiscFeeType            | MiscFeeType (139)            | String | MiscFeeType            |
| fix.MktBidPx               | MktBidPx (645)               | String | MktBidPx               |

Appendix A. Ethereal Display Filter Fields

| Field                      | Field Name                   | Type   | Description            |
|----------------------------|------------------------------|--------|------------------------|
| fix.MktOfferPx             | MktOfferPx (646)             | String | MktOfferPx             |
| fix.MoneyLaunderingStatus  | MoneyLaunderingStatus (481)  | String | MoneyLaunderingStatus  |
| fix.MsgDirection           | MsgDirection (385)           | String | MsgDirection           |
| fix.MsgSeqNum              | MsgSeqNum (34)               | String | MsgSeqNum              |
| fix.MsgType                | MsgType (35)                 | String | MsgType                |
| fix.MultiLegReportingType  | MultiLegReportingType (442)  | String | MultiLegReportingType  |
| fix.MultiLegRptTypeReq     | MultiLegRptTypeReq (563)     | String | MultiLegRptTypeReq     |
| fix.NestedPartyID          | NestedPartyID (524)          | String | NestedPartyID          |
| fix.NestedPartyIDSource    | NestedPartyIDSource (525)    | String | NestedPartyIDSource    |
| fix.NestedPartyRole        | NestedPartyRole (538)        | String | NestedPartyRole        |
| fix.NestedPartySubID       | NestedPartySubID (545)       | String | NestedPartySubID       |
| fix.NetChgPrevDay          | NetChgPrevDay (451)          | String | NetChgPrevDay          |
| fix.NetGrossInd            | NetGrossInd (430)            | String | NetGrossInd            |
| fix.NetMoney               | NetMoney (118)               | String | NetMoney               |
| fix.NewSeqNo               | NewSeqNo (36)                | String | NewSeqNo               |
| fix.NoAffectedOrders       | NoAffectedOrders (534)       | String | NoAffectedOrders       |
| fix.NoAllocs               | NoAllocs (78)                | String | NoAllocs               |
| fix.NoBidComponents        | NoBidComponents (420)        | String | NoBidComponents        |
| fix.NoBidDescriptors       | NoBidDescriptors (398)       | String | NoBidDescriptors       |
| fix.NoClearingInstructions | NoClearingInstructions (576) | String | NoClearingInstructions |
| fix.NoContAmts             | NoContAmts (518)             | String | NoContAmts             |
| fix.NoContraBrokers        | NoContraBrokers (382)        | String | NoContraBrokers        |
| fix.NoDates                | NoDates (580)                | String | NoDates                |
| fix.NoDistribInsts         | NoDistribInsts (510)         | String | NoDistribInsts         |

| Field                  | Field Name               | Type   | Description        |
|------------------------|--------------------------|--------|--------------------|
| fix.NoDlvyInst         | NoDlvyInst (85)          | String | NoDlvyInst         |
| fix.NoExecs            | NoExecs (124)            | String | NoExecs            |
| fix.NoHops             | NoHops (627)             | String | NoHops             |
| fix.NoIOIQualifiers    | NoIOIQualifiers (199)    | String | NoIOIQualifiers    |
| fix.NoLegSecurityAltID | NoLegSecurityAltID (604) | String | NoLegSecurityAltID |
| fix.NoLegs             | NoLegs (555)             | String | NoLegs             |
| fix.NoMDEntries        | NoMDEntries (268)        | String | NoMDEntries        |
| fix.NoMDEntryTypes     | NoMDEntryTypes (267)     | String | NoMDEntryTypes     |
| fix.NoMiscFees         | NoMiscFees (136)         | String | NoMiscFees         |
| fix.NoMsgTypes         | NoMsgTypes (384)         | String | NoMsgTypes         |
| fix.NoNestedPartyIDs   | NoNestedPartyIDs (539)   | String | NoNestedPartyIDs   |
| fix.NoOrders           | NoOrders (73)            | String | NoOrders           |
| fix.NoPartyIDs         | NoPartyIDs (453)         | String | NoPartyIDs         |
| fix.NoQuoteEntries     | NoQuoteEntries (295)     | String | NoQuoteEntries     |
| fix.NoQuoteSets        | NoQuoteSets (296)        | String | NoQuoteSets        |
| fix.NoRegistDtls       | NoRegistDtls (473)       | String | NoRegistDtls       |
| fix.NoRelatedSym       | NoRelatedSym (146)       | String | NoRelatedSym       |
| fix.NoRoutingIDs       | NoRoutingIDs (215)       | String | NoRoutingIDs       |
| fix.NoRpts             | NoRpts (82)              | String | NoRpts             |
| fix.NoSecurityAltID    | NoSecurityAltID (454)    | String | NoSecurityAltID    |
| fix.NoSecurityTypes    | NoSecurityTypes (558)    | String | NoSecurityTypes    |
| fix.NoSides            | NoSides (552)            | String | NoSides            |
| fix.NoStipulations     | NoStipulations (232)     | String | NoStipulations     |
| fix.NoStrikes          | NoStrikes (428)          | String | NoStrikes          |
| fix.NoTradingSessions  | NoTradingSessions (386)  | String | NoTradingSessions  |

Appendix A. Ethereal Display Filter Fields

| Field                         | Field Name                      | Type   | Description               |
|-------------------------------|---------------------------------|--------|---------------------------|
| fix.NoUnderlyingSecurityAltID | NoUnderlyingSecurityAltID (457) | String | NoUnderlyingSecurityAltID |
| fix.NotifyBrokerOfCredit      | NotifyBrokerOfCredit (208)      | String | NotifyBrokerOfCredit      |
| fix.NumBidders                | NumBidders (417)                | String | NumBidders                |
| fix.NumDaysInterest           | NumDaysInterest (157)           | String | NumDaysInterest           |
| fix.NumTickets                | NumTickets (395)                | String | NumTickets                |
| fix.NumberOfOrders            | NumberOfOrders (346)            | String | NumberOfOrders            |
| fix.OddLot                    | OddLot (575)                    | String | OddLot                    |
| fix.OfferForwardPoints        | OfferForwardPoints (191)        | String | OfferForwardPoints        |
| fix.OfferForwardPoints2       | OfferForwardPoints2 (643)       | String | OfferForwardPoints2       |
| fix.OfferPx                   | OfferPx (133)                   | String | OfferPx                   |
| fix.OfferSize                 | OfferSize (135)                 | String | OfferSize                 |
| fix.OfferSpotRate             | OfferSpotRate (190)             | String | OfferSpotRate             |
| fix.OfferYield                | OfferYield (634)                | String | OfferYield                |
| fix.OnBehalfOfCompID          | OnBehalfOfCompID (115)          | String | OnBehalfOfCompID          |
| fix.OnBehalfOfLocationID      | OnBehalfOfLocationID (144)      | String | OnBehalfOfLocationID      |
| fix.OnBehalfOfSendingTime     | OnBehalfOfSendingTime (370)     | String | OnBehalfOfSendingTime     |
| fix.OnBehalfOfSubID           | OnBehalfOfSubID (116)           | String | OnBehalfOfSubID           |
| fix.OpenCloseSettleFlag       | OpenCloseSettleFlag (286)       | String | OpenCloseSettleFlag       |
| fix.OptAttribute              | OptAttribute (206)              | String | OptAttribute              |
| fix.OrdRejReason              | OrdRejReason (103)              | String | OrdRejReason              |
| fix.OrdStatus                 | OrdStatus (39)                  | String | OrdStatus                 |
| fix.OrdType                   | OrdType (40)                    | String | OrdType                   |
| fix.OrderCapacity             | OrderCapacity (528)             | String | OrderCapacity             |
| fix.OrderID                   | OrderID (37)                    | String | OrderID                   |



| Field                  | Field Name               | Type   | Description        |
|------------------------|--------------------------|--------|--------------------|
| fix.OrderPercent       | OrderPercent (516)       | String | OrderPercent       |
| fix.OrderQty           | OrderQty (38)            | String | OrderQty           |
| fix.OrderQty2          | OrderQty2 (192)          | String | OrderQty2          |
| fix.OrderRestrictions  | OrderRestrictions (529)  | String | OrderRestrictions  |
| fix.OrigClOrdID        | OrigClOrdID (41)         | String | OrigClOrdID        |
| fix.OrigCrossID        | OrigCrossID (551)        | String | OrigCrossID        |
| fix.OrigOrdModTime     | OrigOrdModTime (586)     | String | OrigOrdModTime     |
| fix.OrigSendingTime    | OrigSendingTime (122)    | String | OrigSendingTime    |
| fix.OrigTime           | OrigTime (42)            | String | OrigTime           |
| fix.OutMainCntryUIndex | OutMainCntryUIndex (412) | String | OutMainCntryUIndex |
| fix.OutsideIndexPct    | OutsideIndexPct (407)    | String | OutsideIndexPct    |
| fix.OwnerType          | OwnerType (522)          | String | OwnerType          |
| fix.OwnershipType      | OwnershipType (517)      | String | OwnershipType      |
| fix.PartyID            | PartyID (448)            | String | PartyID            |
| fix.PartyIDSource      | PartyIDSource (447)      | String | PartyIDSource      |
| fix.PartyRole          | PartyRole (452)          | String | PartyRole          |
| fix.PartySubID         | PartySubID (523)         | String | PartySubID         |
| fix.Password           | Password (554)           | String | Password           |
| fix.PaymentDate        | PaymentDate (504)        | String | PaymentDate        |
| fix.PaymentMethod      | PaymentMethod (492)      | String | PaymentMethod      |
| fix.PaymentRef         | PaymentRef (476)         | String | PaymentRef         |
| fix.PaymentRemitterID  | PaymentRemitterID (505)  | String | PaymentRemitterID  |
| fix.PegDifference      | PegDifference (211)      | String | PegDifference      |
| fix.PositionEffect     | PositionEffect (77)      | String | PositionEffect     |
| fix.PossDupFlag        | PossDupFlag (43)         | String | PossDupFlag        |
| fix.PossResend         | PossResend (97)          | String | PossResend         |

Appendix A. Ethereal Display Filter Fields

| Field                        | Field Name                     | Type   | Description              |
|------------------------------|--------------------------------|--------|--------------------------|
| fix.PreallocMethod           | PreallocMethod (591)           | String | PreallocMethod           |
| fix.PrevClosePx              | PrevClosePx (140)              | String | PrevClosePx              |
| fix.PreviouslyReported       | PreviouslyReported (570)       | String | PreviouslyReported       |
| fix.Price                    | Price (44)                     | String | Price                    |
| fix.Price2                   | Price2 (640)                   | String | Price2                   |
| fix.PriceImprovement         | PriceImprovement (639)         | String | PriceImprovement         |
| fix.PriceType                | PriceType (423)                | String | PriceType                |
| fix.PriorityIndicator        | PriorityIndicator (638)        | String | PriorityIndicator        |
| fix.ProcessCode              | ProcessCode (81)               | String | ProcessCode              |
| fix.Product                  | Product (460)                  | String | Product                  |
| fix.ProgPeriodInterval       | ProgPeriodInterval (415)       | String | ProgPeriodInterval       |
| fix.ProgRptReqs              | ProgRptReqs (414)              | String | ProgRptReqs              |
| fix.PutOrCall                | PutOrCall (201)                | String | PutOrCall                |
| fix.Quantity                 | Quantity (53)                  | String | Quantity                 |
| fix.QuantityType             | QuantityType (465)             | String | QuantityType             |
| fix.QuoteCancelType          | QuoteCancelType (298)          | String | QuoteCancelType          |
| fix.QuoteCondition           | QuoteCondition (276)           | String | QuoteCondition           |
| fix.QuoteEntryID             | QuoteEntryID (299)             | String | QuoteEntryID             |
| fix.QuoteEntryRejectReason   | QuoteEntryRejectReason (368)   | String | QuoteEntryRejectReason   |
| fix.QuoteID                  | QuoteID (117)                  | String | QuoteID                  |
| fix.QuoteRejectReason        | QuoteRejectReason (300)        | String | QuoteRejectReason        |
| fix.QuoteReqID               | QuoteReqID (131)               | String | QuoteReqID               |
| fix.QuoteRequestRejectReason | QuoteRequestRejectReason (658) | String | QuoteRequestRejectReason |
| fix.QuoteRequestType         | QuoteRequestType (303)         | String | QuoteRequestType         |

| Field                          | Field Name                       | Type   | Description                |
|--------------------------------|----------------------------------|--------|----------------------------|
| fix.QuoteResponseLevel         | QuoteResponseLevel (301)         | String | QuoteResponseLevel         |
| fix.QuoteSetID                 | QuoteSetID (302)                 | String | QuoteSetID                 |
| fix.QuoteSetValidUntilTime     | QuoteSetValidUntilTime (367)     | String | QuoteSetValidUntilTime     |
| fix.QuoteStatus                | QuoteStatus (297)                | String | QuoteStatus                |
| fix.QuoteStatusReqID           | QuoteStatusReqID (649)           | String | QuoteStatusReqID           |
| fix.QuoteType                  | QuoteType (537)                  | String | QuoteType                  |
| fix.RFQReqID                   | RFQReqID (644)                   | String | RFQReqID                   |
| fix.RatioQty                   | RatioQty (319)                   | String | RatioQty                   |
| fix.RawData                    | RawData (96)                     | String | RawData                    |
| fix.RawDataLength              | RawDataLength (95)               | String | RawDataLength              |
| fix.RedemptionDate             | RedemptionDate (240)             | String | RedemptionDate             |
| fix.RefAllocID                 | RefAllocID (72)                  | String | RefAllocID                 |
| fix.RefMsgType                 | RefMsgType (372)                 | String | RefMsgType                 |
| fix.RefSeqNum                  | RefSeqNum (45)                   | String | RefSeqNum                  |
| fix.RefTagID                   | RefTagID (371)                   | String | RefTagID                   |
| fix.RegistAcctType             | RegistAcctType (493)             | String | RegistAcctType             |
| fix.RegistDetls                | RegistDetls (509)                | String | RegistDetls                |
| fix.RegistEmail                | RegistEmail (511)                | String | RegistEmail                |
| fix.RegistID                   | RegistID (513)                   | String | RegistID                   |
| fix.RegistRefID                | RegistRefID (508)                | String | RegistRefID                |
| fix.RegistRejReasonCode        | RegistRejReasonCode (507)        | String | RegistRejReasonCode        |
| fix.RegistRejReasonText        | RegistRejReasonText (496)        | String | RegistRejReasonText        |
| fix.RegistStatus               | RegistStatus (506)               | String | RegistStatus               |
| fix.RegistTransType            | RegistTransType (514)            | String | RegistTransType            |
| fix.RelatdSym                  | RelatdSym (46)                   | String | RelatdSym                  |
| fix.RepoCollateralSecurityType | RepoCollateralSecurityType (239) | String | RepoCollateralSecurityType |

Appendix A. Ethereal Display Filter Fields

| Field                   | Field Name                | Type   | Description         |
|-------------------------|---------------------------|--------|---------------------|
| fix.ReportToExch        | ReportToExch (113)        | String | ReportToExch        |
| fix.RepurchaseRate      | RepurchaseRate (227)      | String | RepurchaseRate      |
| fix.RepurchaseTerm      | RepurchaseTerm (226)      | String | RepurchaseTerm      |
| fix.ReservedAllocated   | ReservedAllocated (261)   | String | ReservedAllocated   |
| fix.ResetSeqNumFlag     | ResetSeqNumFlag (141)     | String | ResetSeqNumFlag     |
| fix.RoundLot            | RoundLot (561)            | String | RoundLot            |
| fix.RoundingDirection   | RoundingDirection (468)   | String | RoundingDirection   |
| fix.RoundingModulus     | RoundingModulus (469)     | String | RoundingModulus     |
| fix.RoutingID           | RoutingID (217)           | String | RoutingID           |
| fix.RoutingType         | RoutingType (216)         | String | RoutingType         |
| fix.RptSeq              | RptSeq (83)               | String | RptSeq              |
| fix.Rule80A             | Rule80A (47)              | String | Rule80A             |
| fix.Scope               | Scope (546)               | String | Scope               |
| fix.SecDefStatus        | SecDefStatus (653)        | String | SecDefStatus        |
| fix.SecondaryClOrdID    | SecondaryClOrdID (526)    | String | SecondaryClOrdID    |
| fix.SecondaryExecID     | SecondaryExecID (527)     | String | SecondaryExecID     |
| fix.SecondaryOrderID    | SecondaryOrderID (198)    | String | SecondaryOrderID    |
| fix.SecureData          | SecureData (91)           | String | SecureData          |
| fix.SecureDataLen       | SecureDataLen (90)        | String | SecureDataLen       |
| fix.SecurityAltID       | SecurityAltID (455)       | String | SecurityAltID       |
| fix.SecurityAltIDSource | SecurityAltIDSource (456) | String | SecurityAltIDSource |
| fix.SecurityDesc        | SecurityDesc (107)        | String | SecurityDesc        |
| fix.SecurityExchange    | SecurityExchange (207)    | String | SecurityExchange    |
| fix.SecurityID          | SecurityID (48)           | String | SecurityID          |

| Field                                   | Field Name                                | Type   | Description                         |
|---|---|--------|-------------------------------------|
| fix.SecurityIDSource                    | SecurityIDSource (22)                     | String | SecurityIDSource                    |
| fix.SecurityListRequestType             | SecurityListRequestType (559)             | String | SecurityListRequestType             |
| fix.SecurityReqID                       | SecurityReqID (320)                       | String | SecurityReqID                       |
| fix.SecurityRequestResult               | SecurityRequestResult (560)               | String | SecurityRequestResult               |
| fix.SecurityRequestType                 | SecurityRequestType (321)                 | String | SecurityRequestType                 |
| fix.SecurityResponseID                  | SecurityResponseID (322)                  | String | SecurityResponseID                  |
| fix.SecurityResponseType                | SecurityResponseType (323)                | String | SecurityResponseType                |
| fix.SecuritySettlementAgentAcctName     | SecuritySettlementAgentAcctName (179)     | String | SecuritySettlementAgentAcctName     |
| fix.SecuritySettlementAgentAcctNum      | SecuritySettlementAgentAcctNum (178)      | String | SecuritySettlementAgentAcctNum      |
| fix.SecuritySettlementAgentCode         | SecuritySettlementAgentCode (177)         | String | SecuritySettlementAgentCode         |
| fix.SecuritySettlementAgentContactName  | SecuritySettlementAgentContactName (180)  | String | SecuritySettlementAgentContactName  |
| fix.SecuritySettlementAgentContactPhone | SecuritySettlementAgentContactPhone (181) | String | SecuritySettlementAgentContactPhone |
| fix.SecuritySettlementAgentName         | SecuritySettlementAgentName (176)         | String | SecuritySettlementAgentName         |
| fix.SecurityStatusReqID                 | SecurityStatusReqID (324)                 | String | SecurityStatusReqID                 |
| fix.SecurityTradingStatus               | SecurityTradingStatus (326)               | String | SecurityTradingStatus               |
| fix.SecurityType                        | SecurityType (167)                        | String | SecurityType                        |
| fix.SellVolume                          | SellVolume (331)                          | String | SellVolume                          |
| fix.SellerDays                          | SellerDays (287)                          | String | SellerDays                          |
| fix.SenderCompID                        | SenderCompID (49)                         | String | SenderCompID                        |
| fix.SenderLocationID                    | SenderLocationID (142)                    | String | SenderLocationID                    |

Appendix A. Ethereal Display Filter Fields

| Field                    | Field Name                 | Type   | Description          |
|--------------------------|----------------------------|--------|----------------------|
| fix.SenderSubID          | SenderSubID (50)           | String | SenderSubID          |
| fix.SendingDate          | SendingDate (51)           | String | SendingDate          |
| fix.SendingTime          | SendingTime (52)           | String | SendingTime          |
| fix.SessionRejectReason  | SessionRejectReason (373)  | String | SessionRejectReason  |
| fix.SettlBrkrCode        | SettlBrkrCode (174)        | String | SettlBrkrCode        |
| fix.SettlCurrAmt         | SettlCurrAmt (119)         | String | SettlCurrAmt         |
| fix.SettlCurrBidFxRate   | SettlCurrBidFxRate (656)   | String | SettlCurrBidFxRate   |
| fix.SettlCurrFxRate      | SettlCurrFxRate (155)      | String | SettlCurrFxRate      |
| fix.SettlCurrFxRateCalc  | SettlCurrFxRateCalc (156)  | String | SettlCurrFxRateCalc  |
| fix.SettlCurrOfferFxRate | SettlCurrOfferFxRate (657) | String | SettlCurrOfferFxRate |
| fix.SettlCurrency        | SettlCurrency (120)        | String | SettlCurrency        |
| fix.SettlDeliveryType    | SettlDeliveryType (172)    | String | SettlDeliveryType    |
| fix.SettlDepositoryCode  | SettlDepositoryCode (173)  | String | SettlDepositoryCode  |
| fix.SettlInstCode        | SettlInstCode (175)        | String | SettlInstCode        |
| fix.SettlInstID          | SettlInstID (162)          | String | SettlInstID          |
| fix.SettlInstMode        | SettlInstMode (160)        | String | SettlInstMode        |
| fix.SettlInstRefID       | SettlInstRefID (214)       | String | SettlInstRefID       |
| fix.SettlInstSource      | SettlInstSource (165)      | String | SettlInstSource      |
| fix.SettlInstTransType   | SettlInstTransType (163)   | String | SettlInstTransType   |
| fix.SettlLocation        | SettlLocation (166)        | String | SettlLocation        |
| fix.SettlMntTyp          | SettlMntTyp (63)           | String | SettlMntTyp          |
| fix.Side                 | Side (54)                  | String | Side                 |
| fix.SideComplianceID     | SideComplianceID (659)     | String | SideComplianceID     |
| fix.SideValue1           | SideValue1 (396)           | String | SideValue1           |

| <b>Field</b>                | <b>Field Name</b>             | <b>Type</b> | <b>Description</b>      |
|-----------------------------|-------------------------------|-------------|-------------------------|
| fix.SideValue2              | SideValue2 (397)              | String      | SideValue2              |
| fix.SideValueInd            | SideValueInd (401)            | String      | SideValueInd            |
| fix.Signature               | Signature (89)                | String      | Signature               |
| fix.SignatureLength         | SignatureLength (93)          | String      | SignatureLength         |
| fix.SolicitedFlag           | SolicitedFlag (377)           | String      | SolicitedFlag           |
| fix.Spread                  | Spread (218)                  | String      | Spread                  |
| fix.StandInstDbID           | StandInstDbID (171)           | String      | StandInstDbID           |
| fix.StandInstDbName         | StandInstDbName (170)         | String      | StandInstDbName         |
| fix.StandInstDbType         | StandInstDbType (169)         | String      | StandInstDbType         |
| fix.StateOrProvinceOfIssue  | StateOrProvinceOfIssue (471)  | String      | StateOrProvinceOfIssue  |
| fix.StipulationType         | StipulationType (233)         | String      | StipulationType         |
| fix.StipulationValue        | StipulationValue (234)        | String      | StipulationValue        |
| fix.StopPx                  | StopPx (99)                   | String      | StopPx                  |
| fix.StrikePrice             | StrikePrice (202)             | String      | StrikePrice             |
| fix.StrikeTime              | StrikeTime (443)              | String      | StrikeTime              |
| fix.Subject                 | Subject (147)                 | String      | Subject                 |
| fix.SubscriptionRequestType | SubscriptionRequestType (263) | String      | SubscriptionRequestType |
| fix.Symbol                  | Symbol (55)                   | String      | Symbol                  |
| fix.SymbolSfx               | SymbolSfx (65)                | String      | SymbolSfx               |
| fix.TargetCompID            | TargetCompID (56)             | String      | TargetCompID            |
| fix.TargetLocationID        | TargetLocationID (143)        | String      | TargetLocationID        |
| fix.TargetSubID             | TargetSubID (57)              | String      | TargetSubID             |
| fix.TaxAdvantageType        | TaxAdvantageType (495)        | String      | TaxAdvantageType        |
| fix.TestMessageIndicator    | TestMessageIndicator (464)    | String      | TestMessageIndicator    |
| fix.TestReqID               | TestReqID (112)               | String      | TestReqID               |

Appendix A. Ethereal Display Filter Fields

| Field                       | Field Name                    | Type   | Description             |
|-----------------------------|-------------------------------|--------|-------------------------|
| fix.Text                    | Text (58)                     | String | Text                    |
| fix.TickDirection           | TickDirection (274)           | String | TickDirection           |
| fix.TimeInForce             | TimeInForce (59)              | String | TimeInForce             |
| fix.TotNoOrders             | TotNoOrders (68)              | String | TotNoOrders             |
| fix.TotNoStrikes            | TotNoStrikes (422)            | String | TotNoStrikes            |
| fix.TotQuoteEntries         | TotQuoteEntries (304)         | String | TotQuoteEntries         |
| fix.TotalAccruedInterestAmt | TotalAccruedInterestAmt (540) | String | TotalAccruedInterestAmt |
| fix.TotalAffectedOrders     | TotalAffectedOrders (533)     | String | TotalAffectedOrders     |
| fix.TotalNumSecurities      | TotalNumSecurities (393)      | String | TotalNumSecurities      |
| fix.TotalNumSecurityTypes   | TotalNumSecurityTypes (557)   | String | TotalNumSecurityTypes   |
| fix.TotalTakedown           | TotalTakedown (237)           | String | TotalTakedown           |
| fix.TotalVolumeTraded       | TotalVolumeTraded (387)       | String | TotalVolumeTraded       |
| fix.TotalVolumeTradedDate   | TotalVolumeTradedDate (449)   | String | TotalVolumeTradedDate   |
| fix.TotalVolumeTradedTime   | TotalVolumeTradedTime (450)   | String | TotalVolumeTradedTime   |
| fix.TradSesCloseTime        | TradSesCloseTime (344)        | String | TradSesCloseTime        |
| fix.TradSesEndTime          | TradSesEndTime (345)          | String | TradSesEndTime          |
| fix.TradSesMethod           | TradSesMethod (338)           | String | TradSesMethod           |
| fix.TradSesMode             | TradSesMode (339)             | String | TradSesMode             |
| fix.TradSesOpenTime         | TradSesOpenTime (342)         | String | TradSesOpenTime         |
| fix.TradSesPreCloseTime     | TradSesPreCloseTime (343)     | String | TradSesPreCloseTime     |
| fix.TradSesReqID            | TradSesReqID (335)            | String | TradSesReqID            |
| fix.TradSesStartTime        | TradSesStartTime (341)        | String | TradSesStartTime        |



| Field                            | Field Name                         | Type   | Description                  |
|----------------------------------|------------------------------------|--------|------------------------------|
| fix.TradSesStatus                | TradSesStatus (340)                | String | TradSesStatus                |
| fix.TradSesStatusRejReason       | TradSesStatusRejReason (567)       | String | TradSesStatusRejReason       |
| fix.TradeCondition               | TradeCondition (277)               | String | TradeCondition               |
| fix.TradeDate                    | TradeDate (75)                     | String | TradeDate                    |
| fix.TradeInputDevice             | TradeInputDevice (579)             | String | TradeInputDevice             |
| fix.TradeInputSource             | TradeInputSource (578)             | String | TradeInputSource             |
| fix.TradeOriginationDate         | TradeOriginationDate (229)         | String | TradeOriginationDate         |
| fix.TradeReportID                | TradeReportID (571)                | String | TradeReportID                |
| fix.TradeReportRefID             | TradeReportRefID (572)             | String | TradeReportRefID             |
| fix.TradeReportTransType         | TradeReportTransType (487)         | String | TradeReportTransType         |
| fix.TradeRequestID               | TradeRequestID (568)               | String | TradeRequestID               |
| fix.TradeRequestType             | TradeRequestType (569)             | String | TradeRequestType             |
| fix.TradeType                    | TradeType (418)                    | String | TradeType                    |
| fix.TradedFlatSwitch             | TradedFlatSwitch (258)             | String | TradedFlatSwitch             |
| fix.TradingSessionID             | TradingSessionID (336)             | String | TradingSessionID             |
| fix.TradingSessionSubID          | TradingSessionSubID (625)          | String | TradingSessionSubID          |
| fix.TransBkdTime                 | TransBkdTime (483)                 | String | TransBkdTime                 |
| fix.TransactTime                 | TransactTime (60)                  | String | TransactTime                 |
| fix.URLLink                      | URLLink (149)                      | String | URLLink                      |
| fix.Underlying                   | Underlying (318)                   | String | Underlying                   |
| fix.UnderlyingCFI Code           | UnderlyingCFI Code (463)           | String | UnderlyingCFI Code           |
| fix.UnderlyingContractMultiplier | UnderlyingContractMultiplier (436) | String | UnderlyingContractMultiplier |

Appendix A. Ethereal Display Filter Fields

| Field                                    | Field Name                                 | Type   | Description                          |
|--|--|--------|--------------------------------------|
| fix.UnderlyingCountryOfIssue             | UnderlyingCountryOfIssue (592)             | String | UnderlyingCountryOfIssue             |
| fix.UnderlyingCouponPaymentDate          | UnderlyingCouponPaymentDate (241)          | String | UnderlyingCouponPaymentDate          |
| fix.UnderlyingCouponRate                 | UnderlyingCouponRate (435)                 | String | UnderlyingCouponRate                 |
| fix.UnderlyingCreditRating               | UnderlyingCreditRating (256)               | String | UnderlyingCreditRating               |
| fix.UnderlyingFactor                     | UnderlyingFactor (246)                     | String | UnderlyingFactor                     |
| fix.UnderlyingInstrRegistry              | UnderlyingInstrRegistry (595)              | String | UnderlyingInstrRegistry              |
| fix.UnderlyingIssueDate                  | UnderlyingIssueDate (242)                  | String | UnderlyingIssueDate                  |
| fix.UnderlyingIssuer                     | UnderlyingIssuer (306)                     | String | UnderlyingIssuer                     |
| fix.UnderlyingLastPx                     | UnderlyingLastPx (651)                     | String | UnderlyingLastPx                     |
| fix.UnderlyingLastQty                    | UnderlyingLastQty (652)                    | String | UnderlyingLastQty                    |
| fix.UnderlyingLocaleOfIssue              | UnderlyingLocaleOfIssue (594)              | String | UnderlyingLocaleOfIssue              |
| fix.UnderlyingMaturityDate               | UnderlyingMaturityDate (542)               | String | UnderlyingMaturityDate               |
| fix.UnderlyingMaturityDay                | UnderlyingMaturityDay (314)                | String | UnderlyingMaturityDay                |
| fix.UnderlyingMaturityMonthYear          | UnderlyingMaturityMonthYear (313)          | String | UnderlyingMaturityMonthYear          |
| fix.UnderlyingOptAttribute               | UnderlyingOptAttribute (317)               | String | UnderlyingOptAttribute               |
| fix.UnderlyingProduct                    | UnderlyingProduct (462)                    | String | UnderlyingProduct                    |
| fix.UnderlyingPutOrCall                  | UnderlyingPutOrCall (315)                  | String | UnderlyingPutOrCall                  |
| fix.UnderlyingRedemptionDate             | UnderlyingRedemptionDate (247)             | String | UnderlyingRedemptionDate             |
| fix.UnderlyingRepoCollateralSecurityType | UnderlyingRepoCollateralSecurityType (243) | String | UnderlyingRepoCollateralSecurityType |

| Field                                | Field Name                             | Type   | Description                      |
|--------------------------------------|--|--------|----------------------------------|
| fix.UnderlyingRepurchaseRate         | UnderlyingRepurchaseRate (245)         | String | UnderlyingRepurchaseRate         |
| fix.UnderlyingRepurchaseTerm         | UnderlyingRepurchaseTerm (244)         | String | UnderlyingRepurchaseTerm         |
| fix.UnderlyingSecurityAltID          | UnderlyingSecurityAltID (458)          | String | UnderlyingSecurityAltID          |
| fix.UnderlyingSecurityAltIDSource    | UnderlyingSecurityAltIDSource (459)    | String | UnderlyingSecurityAltIDSource    |
| fix.UnderlyingSecurityDesc           | UnderlyingSecurityDesc (307)           | String | UnderlyingSecurityDesc           |
| fix.UnderlyingSecurityExchange       | UnderlyingSecurityExchange (308)       | String | UnderlyingSecurityExchange       |
| fix.UnderlyingSecurityID             | UnderlyingSecurityID (309)             | String | UnderlyingSecurityID             |
| fix.UnderlyingSecurityIDSource       | UnderlyingSecurityIDSource (305)       | String | UnderlyingSecurityIDSource       |
| fix.UnderlyingSecurityType           | UnderlyingSecurityType (310)           | String | UnderlyingSecurityType           |
| fix.UnderlyingStateOrProvinceOfIssue | UnderlyingStateOrProvinceOfIssue (593) | String | UnderlyingStateOrProvinceOfIssue |
| fix.UnderlyingStrikePrice            | UnderlyingStrikePrice (316)            | String | UnderlyingStrikePrice            |
| fix.UnderlyingSymbol                 | UnderlyingSymbol (311)                 | String | UnderlyingSymbol                 |
| fix.UnderlyingSymbolSfx              | UnderlyingSymbolSfx (312)              | String | UnderlyingSymbolSfx              |
| fix.UnsolicitedIndicator             | UnsolicitedIndicator (325)             | String | UnsolicitedIndicator             |
| fix.Urgency                          | Urgency (61)                           | String | Urgency                          |
| fix.Username                         | Username (553)                         | String | Username                         |
| fix.ValidUntilTime                   | ValidUntilTime (62)                    | String | ValidUntilTime                   |
| fix.ValueOfFutures                   | ValueOfFutures (408)                   | String | ValueOfFutures                   |
| fix.WaveNo                           | WaveNo (105)                           | String | WaveNo                           |
| fix.WorkingIndicator                 | WorkingIndicator (636)                 | String | WorkingIndicator                 |
| fix.WtAverageLiq                     | WtAverageLiquiditi                     | String | WtAverageLiquiditi               |

| Field          | Field Name       | Type   | Description |
|----------------|------------------|--------|-------------|
| uidity         | ty (410)         |        | ty          |
| fix.XmlData    | XmlData (213)    | String | XmlData     |
| fix.XmlDataLen | XmlDataLen (212) | String | XmlDataLen  |
| fix.Yield      | Yield (236)      | String | Yield       |
| fix.YieldType  | YieldType (235)  | String | YieldType   |

### Frame (frame)

Table A-132. Frame (frame)

| Field               | Field Name                      | Type                    | Description                |
|---------------------|---------------------------------|-------------------------|----------------------------|
| frame.cap_len       | Capture Frame Length            | Unsigned 32-bit integer |                            |
| frame.file_off      | File Offset                     | Signed 32-bit integer   |                            |
| frame.marked        | Frame is marked                 | Boolean                 | Frame is marked in the GUI |
| frame.number        | Frame Number                    | Unsigned 32-bit integer |                            |
| frame.p2p_dir       | Point-to-Point Direction        | Unsigned 8-bit integer  |                            |
| frame.pkt_len       | Total Frame Length              | Unsigned 32-bit integer |                            |
| frame.time          | Arrival Time                    | Date/Time stamp         |                            |
| frame.time_delta    | Time delta from previous packet | Time duration           |                            |
| frame.time_relative | Time relative to first packet   | Time duration           |                            |

### Frame Relay (fr)

Table A-133. Frame Relay (fr)

| Field        | Field Name | Type                    | Description                                 |
|--------------|------------|-------------------------|---|
| fr.becn      | BECN       | Boolean                 | Backward Explicit Congestion Notification   |
| fr.chdlctype | Type       | Unsigned 16-bit integer | FrameRelay Cisco HDLC Encapsulated Protocol |
| fr.cr        | CR         | Boolean                 | Command/Response                            |

| Field       | Field Name        | Type                    | Description                              |
|-------------|-------------------|-------------------------|--|
| fr.dc       | DC                | Boolean                 | Address/Control                          |
| fr.de       | DE                | Boolean                 | Discard Eligibility                      |
| fr.dlci     | DLCI              | Unsigned 16-bit integer | Data-Link Connection Identifier          |
| fr.ea       | EA                | Boolean                 | Extended Address                         |
| fr.fecn     | FECN              | Boolean                 | Forward Explicit Congestion Notification |
| fr.nlpid    | NLPID             | Unsigned 8-bit integer  | FrameRelay Encapsulated Protocol NLPID   |
| fr.snap.oui | Organization Code | Unsigned 24-bit integer |  |
| fr.snap.pid | Protocol ID       | Unsigned 16-bit integer |  |
| fr.snaptype | Type              | Unsigned 16-bit integer | FrameRelay SNAP Encapsulated Protocol    |

### GARP Multicast Registration Protocol (gmrp)

Table A-134. GARP Multicast Registration Protocol (gmrp)

| Field                                    | Field Name  | Type                          | Description |
|--|-------------|-------------------------------|-------------|
| garp.attribute_event                     | Event       | Unsigned 8-bit integer        |             |
| garp.attribute_length                    | Length      | Unsigned 8-bit integer        |             |
| garp.attribute_type                      | Type        | Unsigned 8-bit integer        |             |
| garp.attribute_value_group_membership    | Value       | 6-byte Hardware (MAC) Address |             |
| garp.attribute_value_service_requirement | Value       | Unsigned 8-bit integer        |             |
| garp.protocol_id                         | Protocol ID | Unsigned 16-bit integer       |             |

### GARP VLAN Registration Protocol (gvrp)

Table A-135. GARP VLAN Registration Protocol (gvrp)

| Field | Field Name | Type | Description |
|-------|------------|------|-------------|
|-------|------------|------|-------------|

| Field                | Field Name | Type                    | Description |
|----------------------|------------|-------------------------|-------------|
| garp.attribute_value | Value      | Unsigned 16-bit integer |             |

## GPRS Tunneling Protocol (gtp)

Table A-136. GPRS Tunneling Protocol (gtp)

| Field | Field Name | Type | Description |
|-------|------------|------|-------------|
|       |            |      |             |

## GPRS Tunnelling Protocol v0 (gtpv0)

Table A-137. GPRS Tunnelling Protocol v0 (gtpv0)

| Field                | Field Name               | Type                    | Description   |
|----------------------|--------------------------|-------------------------|---|
| gtpv0.apn            | APN                      | String                  | Access Point Name                                     |
| gtpv0.cause          | Cause                    | Unsigned 8-bit integer  | Cause of operation                                    |
| gtpv0.chrg_id        | Charging ID              | Unsigned 32-bit integer | Charging ID   |
| gtpv0.chrg_ipv4      | CG address IPv4          | IPv4 address            | Charging Gateway address IPv4                         |
| gtpv0.chrg_ipv6      | CG address IPv6          | IPv6 address            | Charging Gateway address IPv6                         |
| gtpv0.ext_flow_label | Flow Label Data I        | Unsigned 16-bit integer | Flow label data                                       |
| gtpv0.ext_id         | Extension identifier     | Unsigned 16-bit integer | Extension Identifier                                  |
| gtpv0.ext_val        | Extension value          | String                  | Extension Value                                       |
| gtpv0.flags          | Flags                    | Unsigned 8-bit integer  | Ver/PT/Spare/SNN                                      |
| gtpv0.flags.payload  | Protocol type            | Unsigned 8-bit integer  | Protocol Type (1 = GTP, 0 = GTP')                     |
| gtpv0.flags.reserved | Reserved                 | Unsigned 8-bit integer  | Reserved (shall be sent as '111')                     |
| gtpv0.flags.snn      | Is SMDCP N-PDU included? | Boolean                 | Is SMDCP N-PDU LLC Number included? (1 = yes, 0 = no) |
| gtpv0.flags.version  | Version                  | Unsigned 8-bit integer  | GTP Version   |
| gtpv0.flow_ii        | Flow Label Data II       | Unsigned 16-bit integer | Downlink flow label data                              |

| Field                 | Field Name              | Type                    | Description                                      |
|-----------------------|-------------------------|-------------------------|--|
| gtpv0.flow_label      | Flow label              | Unsigned 16-bit integer | Flow label                                       |
| gtpv0.flow_sig        | Flow label Signalling   | Unsigned 16-bit integer | Flow label signalling                            |
| gtpv0.gsn_addr_length | GSN address length      | Unsigned 8-bit integer  | GSN Address Length                               |
| gtpv0.gsn_addr_type   | GSN address type        | Unsigned 8-bit integer  | GSN Address Type                                 |
| gtpv0.gsn_ipv4        | GSN address IPv4        | IPv4 address            | GSN address IPv4                                 |
| gtpv0.gsn_ipv6        | GSN address IPv6        | IPv6 address            | GSN address IPv6                                 |
| gtpv0.imsi            | IMSI                    | String                  | International Mobile Subscriber Identity number  |
| gtpv0.lac             | LAC                     | Unsigned 16-bit integer | Location Area Code                               |
| gtpv0.length          | Length                  | Unsigned 16-bit integer | Length (i.e. number of octets after TID or TEID) |
| gtpv0.map_cause       | MAP cause               | Unsigned 8-bit integer  | MAP cause  |
| gtpv0.mcc             | MCC                     | Unsigned 16-bit integer | Mobile Country Code                              |
| gtpv0.message         | Message type            | Unsigned 8-bit integer  | GTP Message Type                                 |
| gtpv0.mnc             | MNC                     | Unsigned 8-bit integer  | Mobile Network Code                              |
| gtpv0.ms_reason       | MS not reachable reason | Unsigned 8-bit integer  | MS Not Reachable Reason                          |
| gtpv0.ms_valid        | MS validated            | Boolean                 | MS validated                                     |
| gtpv0.msisdn          | MSISDN                  | String                  | MS international PSTN/ISDN number                |
| gtpv0.node_ipv4       | Node address IPv4       | IPv4 address            | Recommended node address IPv4                    |
| gtpv0.node_ipv6       | Node address IPv6       | IPv6 address            | Recommended node address IPv6                    |
| gtpv0.nsapi           | NSAPI                   | Unsigned 8-bit integer  | Network layer Service Access Point Identifier    |
| gtpv0.ptmsi           | P-TMSI                  | Unsigned 32-bit         | Packet-Temporary                                 |

| Field                 | Field Name              | Type                    | Description                          |
|-----------------------|-------------------------|-------------------------|--------------------------------------|
|                       |                         | integer                 | Mobile Subscriber Identity           |
| gtpv0.ptmsi_sig       | P-TMSI signature        | Unsigned 24-bit integer | P-TMSI Signature                     |
| gtpv0.qos_delay       | QoS delay               | Unsigned 8-bit integer  | Quality of Service Delay Class       |
| gtpv0.qos_mean        | QoS mean                | Unsigned 8-bit integer  | Quality of Service Mean Throughput   |
| gtpv0.qos_peak        | QoS peak                | Unsigned 8-bit integer  | Quality of Service Peak Throughput   |
| gtpv0.qos_precedence  | QoS precedence          | Unsigned 8-bit integer  | Quality of Service Precedence Class  |
| gtpv0.qos_reliability | QoS reliability         | Unsigned 8-bit integer  | Quality of Service Reliability Class |
| gtpv0.qos_spare1      | Spare                   | Unsigned 8-bit integer  | Spare (shall be sent as '00' )       |
| gtpv0.qos_spare2      | Spare                   | Unsigned 8-bit integer  | Spare (shall be sent as 0)           |
| gtpv0.qos_spare3      | Spare                   | Unsigned 8-bit integer  | Spare (shall be sent as '000' )      |
| gtpv0.rac             | RAC                     | Unsigned 8-bit integer  | Routing Area Code                    |
| gtpv0.recovery        | Recovery                | Unsigned 8-bit integer  | Restart counter                      |
| gtpv0.reorder         | Reordering required     | Boolean                 | Reordering required                  |
| gtpv0.sel_mode        | Selection mode          | Unsigned 8-bit integer  | Selection Mode                       |
| gtpv0.seq_number      | Sequence number         | Unsigned 16-bit integer | Sequence Number                      |
| gtpv0.sndcp_number    | SNDCP N-PDU LLC Number  | Unsigned 8-bit integer  | SNDCP N-PDU LLC Number               |
| gtpv0.tid             | TID                     | String                  | Tunnel Identifier                    |
| gtpv0.tlli            | TLLI                    | Unsigned 32-bit integer | Temporary Logical Link Identity      |
| gtpv0.tr_comm         | Packet transfer command | Unsigned 8-bit integer  | Packet transfer command              |
| gtpv0.unknown         | Unknown data (length)   | Unsigned 16-bit integer | Unknown data                         |
| gtpv0.user_addr_p     | PDP type                | Unsigned 8-bit          | PDP type                             |



| Field                    | Field Name            | Type                   | Description           |
|--------------------------|-----------------------|------------------------|-----------------------|
| dp_org                   | organization          | integer                | organization          |
| gtpv0.user_addr_pdp_type | PDP type number       | Unsigned 8-bit integer | PDP type              |
| gtpv0.user_ipv4          | End user address IPv4 | IPv4 address           | End user address IPv4 |
| gtpv0.user_ipv6          | End user address IPv6 | IPv6 address           | End user address IPv6 |

## GPRS Tunnelling Protocol v1 (gtpv1)

Table A-138. GPRS Tunnelling Protocol v1 (gtpv1)

| Field             | Field Name                        | Type                    | Description                          |
|-------------------|-----------------------------------|-------------------------|--------------------------------------|
| gtpv1.apn         | APN                               | String                  | Access Point Name                    |
| gtpv1.cause       | Cause                             | Unsigned 8-bit integer  | Cause of operation                   |
| gtpv1.chrg_char_f | Flat rate charging                | Unsigned 8-bit integer  | Flat rate charging                   |
| gtpv1.chrg_char_h | Hot billing charging              | Unsigned 8-bit integer  | Hot billing charging                 |
| gtpv1.chrg_char_n | Normal charging                   | Unsigned 8-bit integer  | Normal charging                      |
| gtpv1.chrg_char_p | Prepaid charging                  | Unsigned 8-bit integer  | Prepaid charging                     |
| gtpv1.chrg_char_r | Reserved                          | Unsigned 8-bit integer  | Reserved                             |
| gtpv1.chrg_char_s | Spare                             | Unsigned 8-bit integer  | Spare                                |
| gtpv1.chrg_id     | Charging ID                       | Unsigned 32-bit integer | Charging ID                          |
| gtpv1.chrg_ipv4   | CG address IPv4                   | IPv4 address            | Charging Gateway address IPv4        |
| gtpv1.chrg_ipv6   | CG address IPv6                   | IPv6 address            | Charging Gateway address IPv6        |
| gtpv1.ext_id      | Extensio Identifier               | Unsigned 16-bit integer | Extension Identifier                 |
| gtpv1.ext_val     | Extension Value                   | String                  | Extension Value                      |
| gtpv1.flags       | Flags                             | Unsigned 8-bit integer  | Ver/PT/Spare/E/S/PN                  |
| gtpv1.flags.e     | Is Next Extension Header present? | Boolean                 | Is Next Extension Header present? (1 |

| Field                    | Field Name                  | Type                    | Description   |
|--------------------------|-----------------------------|-------------------------|---|
|                          |                             |                         | = yes, 0 = no)  |
| gtpv1.flags.payload_type | Protocol type               | Unsigned 8-bit integer  | Protocol Type (1 = GTP, 0 = GPRS charging protocol : GTP' ) |
| gtpv1.flags.pn           | Is N-PDU number present?    | Boolean                 | Is N-PDU number present? (1 = yes, 0 = no)                  |
| gtpv1.flags.s            | Is Sequence Number present? | Boolean                 | Is Sequence Number present? (1 = yes, 0 = no)               |
| gtpv1.flags.spare        | Spare bit                   | Unsigned 8-bit integer  | Spare bit (shall be sent as 0)                              |
| gtpv1.flags.version      | Version                     | Unsigned 8-bit integer  | GTP Version   |
| gtpv1.gsn_addr_length    | GSN Address Length          | Unsigned 8-bit integer  | GSN Address Length  |
| gtpv1.gsn_addr_type      | GSN Address Type            | Unsigned 8-bit integer  | GSN Address Type  |
| gtpv1.gsn_ipv4           | GSN address IPv4            | IPv4 address            | GSN address IPv4  |
| gtpv1.gsn_ipv6           | GSN address IPv6            | IPv6 address            | GSN address IPv6  |
| gtpv1.imsi               | IMSI                        | String                  | International Mobile Subscriber Identity number             |
| gtpv1.lac                | LAC                         | Unsigned 16-bit integer | Location Area Code  |
| gtpv1.length             | Length                      | Unsigned 16-bit integer | Length (i.e. number of octets after TID or TEID)            |
| gtpv1.map_cause          | MAP cause                   | Unsigned 8-bit integer  | MAP cause   |
| gtpv1.mcc                | MCC                         | Unsigned 16-bit integer | Mobile Country Code   |
| gtpv1.message            | Message Type                | Unsigned 8-bit integer  | GTP Message Type  |
| gtpv1.mnc                | MNC                         | Unsigned 8-bit integer  | Mobile Network Code   |
| gtpv1.ms_reason          | MS not reachable reason     | Unsigned 8-bit integer  | MS not reachable reason                                     |
| gtpv1.ms_valid           | MS validated                | Boolean                 | MS validated  |

| Field                     | Field Name                       | Type                    | Description                                   |
|---------------------------|----------------------------------|-------------------------|---|
| gtpv1.msisdn              | MSISDN                           | String                  | MS international PSTN/ISDN number             |
| gtpv1.next                | Next extension header type       | Unsigned 8-bit integer  | Next Extension Header Type                    |
| gtpv1.node_ipv4           | Node address IPv4                | IPv4 address            | Recommended node address IPv4                 |
| gtpv1.node_ipv6           | Node address IPv6                | IPv6 address            | Recommended node address IPv6                 |
| gtpv1.npdu_number         | N-PDU Number                     | Unsigned 8-bit integer  | N-PDU Number                                  |
| gtpv1.nsapi               | NSAPI                            | Unsigned 8-bit integer  | Network layer Service Access Point Identifier |
| gtpv1.pkt_flow_id         | Packet Flow ID                   | Unsigned 8-bit integer  | Packet Flow ID                                |
| gtpv1.ptmsi               | P-TMSI                           | Unsigned 32-bit integer | Packet-Temporary Mobile Subscriber Identity   |
| gtpv1.ptmsi_sig           | P-TMSI Signature                 | Unsigned 24-bit integer | P-TMSI Signature                              |
| gtpv1.qos_al_ret_priority | Allocation/Retention priority    | Unsigned 8-bit integer  | Allocation/Retention Priority                 |
| gtpv1.qos_del_err_sdu     | Delivery of erroneous SDU        | Unsigned 8-bit integer  | Delivery of Erroneous SDU                     |
| gtpv1.qos_del_order       | Delivery order                   | Unsigned 8-bit integer  | Delivery Order                                |
| gtpv1.qos_delay           | QoS Delay                        | Unsigned 8-bit integer  | Quality of Service Delay Class                |
| gtpv1.qos_guar_dl         | Guaranteed bit rate for downlink | Unsigned 8-bit integer  | Guaranteed bit rate for downlink              |
| gtpv1.qos_guar_ul         | Guaranteed bit rate for uplink   | Unsigned 8-bit integer  | Guaranteed bit rate for uplink                |
| gtpv1.qos_max_dl          | Maximum bit rate for downlink    | Unsigned 8-bit integer  | Maximum bit rate for downlink                 |
| gtpv1.qos_max_sdu_size    | Maximum SDU size                 | Unsigned 8-bit integer  | Maximum SDU size                              |
| gtpv1.qos_max_ul          | Maximum bit rate for uplink      | Unsigned 8-bit integer  | Maximum bit rate for uplink                   |
| gtpv1.qos_mean            | QoS Mean                         | Unsigned 8-bit          | Quality of Service                            |

| Field                     | Field Name                        | Type                    | Description                            |
|---------------------------|-----------------------------------|-------------------------|--|
|                           |                                   | integer                 | Mean Throughput                        |
| gtpv1.qos_peak            | QoS Peak                          | Unsigned 8-bit integer  | Quality of Service Peak Throughput     |
| gtpv1.qos_precedence      | QoS Precedence                    | Unsigned 8-bit integer  | Quality of Service Precedence Class    |
| gtpv1.qos_reliability     | QoS Reliability                   | Unsigned 8-bit integer  | Quality of Service Reliability Class   |
| gtpv1.qos_res_ber         | Residual BER                      | Unsigned 8-bit integer  | Residual Bit Error Rate                |
| gtpv1.qos_sdu_err_ratio   | SDU Error ratio                   | Unsigned 8-bit integer  | SDU Error Ratio                        |
| gtpv1.qos_spare1          | Spare                             | Unsigned 8-bit integer  | Spare (shall be sent as '00' )         |
| gtpv1.qos_spare2          | Spare                             | Unsigned 8-bit integer  | Spare (shall be sent as 0)             |
| gtpv1.qos_spare3          | Spare                             | Unsigned 8-bit integer  | Spare (shall be sent as '000' )        |
| gtpv1.qos_traf_class      | Traffic class                     | Unsigned 8-bit integer  | Traffic Class                          |
| gtpv1.qos_traf_handl_prio | Traffic handling priority         | Unsigned 8-bit integer  | Traffic Handling Priority              |
| gtpv1.qos_trans_delay     | Transfer delay                    | Unsigned 8-bit integer  | Transfer Delay                         |
| gtpv1.rab_gtp_dn          | Downlink GTP-U seq number         | Unsigned 16-bit integer | Downlink GTP-U sequence number         |
| gtpv1.rab_gtp_up          | Uplink GTP-U seq number           | Unsigned 16-bit integer | Uplink GTP-U sequence number           |
| gtpv1.rab_pdu_dn          | Downlink next PDCP-PDU seq number | Unsigned 8-bit integer  | Downlink next PDCP-PDU sequence number |
| gtpv1.rab_pdu_up          | Uplink next PDCP-PDU seq number   | Unsigned 8-bit integer  | Uplink next PDCP-PDU sequence number   |
| gtpv1.rac                 | RAC                               | Unsigned 8-bit integer  | Routing Area Code                      |
| gtpv1.ranap_cause         | RANAP cause                       | Unsigned 8-bit integer  | RANAP cause                            |
| gtpv1.recovery            | Recovery                          | Unsigned 8-bit integer  | Restart counter                        |
| gtpv1.reorder             | Reordering                        | Boolean                 | Reordering                             |

| Field            | Field Name               | Type                    | Description   |
|------------------|--------------------------|-------------------------|---|
|                  | required                 |                         | required  |
| gtpv1.rnc_ipv4   | RNC address IPv4         | IPv4 address            | Radio Network Controller address IPv4                           |
| gtpv1.rnc_ipv6   | RNC address IPv6         | IPv6 address            | Radio Network Controller address IPv6                           |
| gtpv1.rp         | Radio Priority           | Unsigned 8-bit integer  | Radio Priority for uplink tx                                    |
| gtpv1.rp_nsapi   | NSAPI in Radio Priority  | Unsigned 8-bit integer  | Network layer Service Access Point Identifier in Radio Priority |
| gtpv1.rp_sms     | Radio Priority SMS       | Unsigned 8-bit integer  | Radio Priority for MO SMS                                       |
| gtpv1.rp_spare   | Reserved                 | Unsigned 8-bit integer  | Spare bit   |
| gtpv1.sel_mode   | Selection Mode           | Unsigned 8-bit integer  | Selection Mode  |
| gtpv1.seq_number | Sequence Number          | Unsigned 16-bit integer | Sequence Number   |
| gtpv1.tear_ind   | Teardown Indicator       | Boolean                 | Teardown Indicator  |
| gtpv1.teid       | TEID                     | Unsigned 32-bit integer | Tunnel Endpoint Identifier                                      |
| gtpv1.teid_cp    | TEID Control Plane       | Unsigned 32-bit integer | Tunnel Endpoint Identifier Control Plane                        |
| gtpv1.teid_data  | TEID Data I              | Unsigned 32-bit integer | Tunnel Endpoint Identifier Data I                               |
| gtpv1.teid_ii    | TEID Data II             | Unsigned 32-bit integer | Tunnel Endpoint Identifier Data II                              |
| gtpv1.tft_code   | TFT operation code       | Unsigned 8-bit integer  | TFT operation code  |
| gtpv1.tft_eval   | Evaluation precedence    | Unsigned 8-bit integer  | Evaluation precedence   |
| gtpv1.tft_number | Number of packet filters | Unsigned 8-bit integer  | Number of packet filters  |
| gtpv1.tft_spare  | TFT spare bit            | Unsigned 8-bit integer  | TFT spare bit   |
| gtpv1.tlli       | TLLI                     | Unsigned 32-bit         | Temporary Logical   |

| Field                    | Field Name              | Type                    | Description             |
|--------------------------|-------------------------|-------------------------|-------------------------|
|                          |                         | integer                 | Link Identity           |
| gtpv1.tr_comm            | Packet transfer command | Unsigned 8-bit integer  | Packet transfer command |
| gtpv1.trace_ref          | Trace reference         | Unsigned 16-bit integer | Trace reference         |
| gtpv1.trace_type         | Trace type              | Unsigned 16-bit integer | Trace type              |
| gtpv1.unknown            | Unknown data (length)   | Unsigned 16-bit integer | Unknown data            |
| gtpv1.user_addr_pdp_org  | PDP type organization   | Unsigned 8-bit integer  | PDP type organization   |
| gtpv1.user_addr_pdp_type | PDP type number         | Unsigned 8-bit integer  | PDP type                |
| gtpv1.user_ipv4          | End user address IPv4   | IPv4 address            | End user address IPv4   |
| gtpv1.user_ipv6          | End user address IPv6   | IPv6 address            | End user address IPv6   |

### General Inter-ORB Protocol (giop)

Table A-139. General Inter-ORB Protocol (giop)

| Field           | Field Name         | Type                    | Description |
|-----------------|--------------------|-------------------------|-------------|
| giop.TCKind     | TypeCode enum      | Unsigned 32-bit integer |             |
| giop.endianess  | Endianess          | Unsigned 8-bit integer  |             |
| giop.iiop.host  | IIOF::Profile_host | String                  |             |
| giop.iiop.port  | IIOF::Profile_port | Unsigned 16-bit integer |             |
| giop.iiop.scid  | SCID               | Unsigned 32-bit integer |             |
| giop.iiop.vscid | VSCID              | Unsigned 32-bit integer |             |
| giop.iiop_vmaj  | IIOF Major Version | Unsigned 8-bit integer  |             |
| giop.iiop_vmin  | IIOF Minor Version | Unsigned 8-bit integer  |             |
| giop.iioptag    | IIOF Component TAG | Unsigned 32-bit integer |             |
| giop.iortag     | IOR Profile TAG    | Unsigned 8-bit integer  |             |

| Field                | Field Name            | Type                            | Description |
|----------------------|-----------------------|---------------------------------|-------------|
| giop.len             | Message size          | Unsigned 32-bit integer         |             |
| giop.profid          | Profile ID            | Unsigned 32-bit integer         |             |
| giop.repoid          | Repository ID         | String                          |             |
| giop.seqlen          | Sequence Length       | Unsigned 32-bit integer         |             |
| giop.strlen          | String Length         | Unsigned 32-bit integer         |             |
| giop.tcValueModifier | ValueModifier         | Signed 16-bit integer           |             |
| giop.tcVisibility    | Visibility            | Signed 16-bit integer           |             |
| giop.tcboolean       | TypeCode boolean data | Boolean                         |             |
| giop.tcchar          | TypeCode char data    | Unsigned 8-bit integer          |             |
| giop.tccount         | TypeCode count        | Unsigned 32-bit integer         |             |
| giop.tcdefault_used  | default_used          | Signed 32-bit integer           |             |
| giop.tcdigits        | Digits                | Unsigned 16-bit integer         |             |
| giop.tcdouble        | TypeCode double data  | Double-precision floating point |             |
| giop.tcenumdata      | TypeCode enum data    | Unsigned 32-bit integer         |             |
| giop.tcfloat         | TypeCode float data   | Double-precision floating point |             |
| giop.tclength        | Length                | Unsigned 32-bit integer         |             |
| giop.tclongdata      | TypeCode long data    | Signed 32-bit integer           |             |
| giop.tcmaxlen        | Maximum length        | Unsigned 32-bit integer         |             |
| giop.tcmemname       | TypeCode member name  | String                          |             |
| giop.tcname          | TypeCode name         | String                          |             |
| giop.tcoctet         | TypeCode octet        | Unsigned 8-bit                  |             |

| Field             | Field Name           | Type                    | Description |
|-------------------|----------------------|-------------------------|-------------|
|                   | data                 | integer                 |             |
| giop.tcscale      | Scale                | Signed 16-bit integer   |             |
| giop.tcshortdata  | TypeCode short data  | Signed 16-bit integer   |             |
| giop.tcstring     | TypeCode string data | String                  |             |
| giop.tculongdata  | TypeCode ulong data  | Unsigned 32-bit integer |             |
| giop.tcushortdata | TypeCode ushort data | Unsigned 16-bit integer |             |
| giop.type         | Message type         | Unsigned 8-bit integer  |             |
| giop.typeid       | IOR::type_id         | String                  |             |

### Generic Routing Encapsulation (gre)

Table A-140. Generic Routing Encapsulation (gre)

| Field     | Field Name    | Type                    | Description                           |
|-----------|---------------|-------------------------|---------------------------------------|
| gre.proto | Protocol Type | Unsigned 16-bit integer | The protocol that is GRE encapsulated |

### Generic Security Service Application Program Interface (gss-api)

Table A-141. Generic Security Service Application Program Interface (gss-api)

| Field | Field Name | Type | Description |
|-------|------------|------|-------------|
|       |            |      |             |

### Gnutella Protocol (gnutella)

Table A-142. Gnutella Protocol (gnutella)

| Field                   | Field Name        | Type                   | Description                   |
|-------------------------|-------------------|------------------------|-------------------------------|
| gnutella.header         | Descriptor Header | No value               | Gnutella Descriptor Header    |
| gnutella.header.hops    | Hops              | Unsigned 8-bit integer | Gnutella Descriptor Hop Count |
| gnutella.header.id      | ID                | Byte array             | Gnutella Descriptor ID        |
| gnutella.header.payload | Payload           | Unsigned 8-bit integer | Gnutella Descriptor Payload   |



| Field                       | Field Name    | Type                    | Description                        |
|-----------------------------|---------------|-------------------------|------------------------------------|
| gnutella.header.size        | Length        | Unsigned 8-bit integer  | Gnutella Descriptor Payload Length |
| gnutella.header.ttl         | TTL           | Unsigned 8-bit integer  | Gnutella Descriptor Time To Live   |
| gnutella.pong.files         | Files Shared  | Unsigned 32-bit integer | Gnutella Pong Files Shared         |
| gnutella.pong.ip            | IP            | IPv4 address            | Gnutella Pong IP Address           |
| gnutella.pong.kbytes        | KBytes Shared | Unsigned 32-bit integer | Gnutella Pong KBytes Shared        |
| gnutella.pong.payload       | Pong          | No value                | Gnutella Pong Payload              |
| gnutella.pong.port          | Port          | Unsigned 16-bit integer | Gnutella Pong TCP Port             |
| gnutella.push.index         | Index         | Unsigned 32-bit integer | Gnutella Push Index                |
| gnutella.push.ip            | IP            | IPv4 address            | Gnutella Push IP Address           |
| gnutella.push.payload       | Push          | No value                | Gnutella Push Payload              |
| gnutella.push.port          | Port          | Unsigned 16-bit integer | Gnutella Push Port                 |
| gnutella.push.servent_id    | Servent ID    | Byte array              | Gnutella Push Servent ID           |
| gnutella.query.min_speed    | Min Speed     | Unsigned 32-bit integer | Gnutella Query Minimum Speed       |
| gnutella.query.payload      | Query         | No value                | Gnutella Query Payload             |
| gnutella.query.search       | Search        | String                  | Gnutella Query Search              |
| gnutella.queryhit.count     | Count         | Unsigned 8-bit integer  | Gnutella QueryHit Count            |
| gnutella.queryhit.extra     | Extra         | Byte array              | Gnutella QueryHit Extra            |
| gnutella.queryhit.hit       | Hit           | No value                | Gnutella QueryHit                  |
| gnutella.queryhit.hit.extra | Extra         | Byte array              | Gnutella Query Extra               |

| Field                        | Field Name                        | Type                    | Description                       |
|------------------------------|-----------------------------------|-------------------------|-----------------------------------|
| gnutella.queryhit.hit.index  | Index                             | Unsigned 32-bit integer | Gnutella QueryHit Index           |
| gnutella.queryhit.hit.name   | Name                              | String                  | Gnutella Query Name               |
| gnutella.queryhit.hit.size   | Size                              | Unsigned 32-bit integer | Gnutella QueryHit Size            |
| gnutella.queryhit.ip         | IP                                | IPv4 address            | Gnutella QueryHit IP Address      |
| gnutella.queryhit.payload    | QueryHit                          | No value                | Gnutella QueryHit Payload         |
| gnutella.queryhit.port       | Port                              | Unsigned 16-bit integer | Gnutella QueryHit Port            |
| gnutella.queryhit.servent_id | Servent ID                        | Byte array              | Gnutella QueryHit Servent ID      |
| gnutella.queryhit.speed      | Speed                             | Unsigned 32-bit integer | Gnutella QueryHit Speed           |
| gnutella.stream              | Gnutella Upload / Download Stream | No value                | Gnutella Upload / Download Stream |
| gnutella.truncated           | Truncated Frame                   | No value                | The Gnutella Frame Was Truncated  |

### HP Extended Local-Link Control (hpext)

Table A-143. HP Extended Local-Link Control (hpext)

| Field       | Field Name | Type                    | Description |
|-------------|------------|-------------------------|-------------|
| hpext.dxsap | DXSAP      | Unsigned 16-bit integer |             |
| hpext.sxsap | SXSAP      | Unsigned 16-bit integer |             |

### HP Remote Maintenance Protocol (rmp)

Table A-144. HP Remote Maintenance Protocol (rmp)

| Field        | Field Name      | Type                    | Description |
|--------------|-----------------|-------------------------|-------------|
| rmp.filename | Filename        | String                  |             |
| rmp.machtype | Machine Type    | String                  |             |
| rmp.offset   | Offset          | Unsigned 32-bit integer |             |
| rmp.retcode  | Returncode      | Unsigned 8-bit integer  |             |
| rmp.seqnum   | Sequence Number | Unsigned 32-bit         |             |

| Field         | Field Name | Type                    | Description |
|---------------|------------|-------------------------|-------------|
|               |            | integer                 |             |
| rmp.sessionid | Session ID | Unsigned 16-bit integer |             |
| rmp.size      | Size       | Unsigned 16-bit integer |             |
| rmp.type      | Type       | Unsigned 8-bit integer  |             |
| rmp.version   | Version    | Unsigned 16-bit integer |             |

### Hummingbird NFS Daemon (hclnfsd)

Table A-145. Hummingbird NFS Daemon (hclnfsd)

| Field                          | Field Name     | Type                    | Description                  |
|--------------------------------|----------------|-------------------------|------------------------------|
| hclnfsd.access                 | Access         | Unsigned 32-bit integer | Access                       |
| hclnfsd.authorize.ident.obscur | Obscure Ident  | String                  | Authentication Obscure Ident |
| hclnfsd.cookie                 | Cookie         | Unsigned 32-bit integer | Cookie                       |
| hclnfsd.copies                 | Copies         | Unsigned 32-bit integer | Copies                       |
| hclnfsd.device                 | Device         | String                  | Device                       |
| hclnfsd.exclusive              | Exclusive      | Unsigned 32-bit integer | Exclusive                    |
| hclnfsd.fileext                | File Extension | Unsigned 32-bit integer | File Extension               |
| hclnfsd.filename               | Filename       | String                  | Filename                     |
| hclnfsd.gid                    | GID            | Unsigned 32-bit integer | Group ID                     |
| hclnfsd.group                  | Group          | String                  | Group                        |
| hclnfsd.host_ip                | Host IP        | IPv4 address            | Host IP                      |
| hclnfsd.hostname               | Hostname       | String                  | Hostname                     |
| hclnfsd.jobstatus              | Job Status     | Unsigned 32-bit integer | Job Status                   |
| hclnfsd.length                 | Length         | Unsigned 32-bit integer | Length                       |
| hclnfsd.lockname               | Lockname       | String                  | Lockname                     |
| hclnfsd.lockowner              | Lockowner      | Byte array              | Lockowner                    |

| Field                     | Field Name                  | Type                    | Description                 |
|---------------------------|-----------------------------|-------------------------|-----------------------------|
| hclnfsd.logintext         | Login Text                  | String                  | Login Text                  |
| hclnfsd.mode              | Mode                        | Unsigned 32-bit integer | Mode                        |
| hclnfsd.npp               | Number of Physical Printers | Unsigned 32-bit integer | Number of Physical Printers |
| hclnfsd.offset            | Offset                      | Unsigned 32-bit integer | Offset                      |
| hclnfsd.pqn               | Print Queue Number          | Unsigned 32-bit integer | Print Queue Number          |
| hclnfsd.printername       | Printer Name                | String                  | Printer name                |
| hclnfsd.printparameters   | Print Parameters            | String                  | Print Parameters            |
| hclnfsd.printqueuecomment | Comment                     | String                  | Print Queue Comment         |
| hclnfsd.printqueue name   | Name                        | String                  | Print Queue Name            |
| hclnfsd.procedure_v1      | V1 Procedure                | Unsigned 32-bit integer | V1 Procedure                |
| hclnfsd.queuestatus       | Queue Status                | Unsigned 32-bit integer | Queue Status                |
| hclnfsd.request_type      | Request Type                | Unsigned 32-bit integer | Request Type                |
| hclnfsd.sequence          | Sequence                    | Unsigned 32-bit integer | Sequence                    |
| hclnfsd.server_ip         | Server IP                   | IPv4 address            | Server IP                   |
| hclnfsd.size              | Size                        | Unsigned 32-bit integer | Size                        |
| hclnfsd.status            | Status                      | Unsigned 32-bit integer | Status                      |
| hclnfsd.timesubmitted     | Time Submitted              | Unsigned 32-bit integer | Time Submitted              |
| hclnfsd.uid               | UID                         | Unsigned 32-bit integer | User ID                     |
| hclnfsd.unknown_data      | Unknown                     | Byte array              | Data                        |
| hclnfsd.username          | Username                    | String                  | Username                    |

**HyperSCSI (hyperscsi)**

**Table A-146. HyperSCSI (hyperscsi)**

| Field              | Field Name        | Type                    | Description |
|--------------------|-------------------|-------------------------|-------------|
| hyperscsi.cmd      | HyperSCSI Command | Unsigned 8-bit integer  |             |
| hyperscsi.fragno   | Fragment No       | Unsigned 16-bit integer |             |
| hyperscsi.lastfrag | Last Fragment     | Boolean                 |             |
| hyperscsi.reserved | Reserved          | Unsigned 8-bit integer  |             |
| hyperscsi.tagno    | Tag No            | Unsigned 16-bit integer |             |
| hyperscsi.version  | HyperSCSI Version | Unsigned 8-bit integer  |             |

**Hypertext Transfer Protocol (http)****Table A-147. Hypertext Transfer Protocol (http)**

| Field             | Field Name   | Type    | Description               |
|-------------------|--------------|---------|---------------------------|
| http.notification | Notification | Boolean | TRUE if HTTP notification |
| http.request      | Request      | Boolean | TRUE if HTTP request      |
| http.response     | Response     | Boolean | TRUE if HTTP response     |

**ICQ Protocol (icq)****Table A-148. ICQ Protocol (icq)**

| Field          | Field Name     | Type                    | Description |
|----------------|----------------|-------------------------|-------------|
| icq.checkcode  | Checkcode      | Unsigned 32-bit integer |             |
| icq.client_cmd | Client command | Unsigned 16-bit integer |             |
| icq.decode     | Decode         | String                  |             |
| icq.server_cmd | Server command | Unsigned 16-bit integer |             |
| icq.sessionid  | Session ID     | Unsigned 32-bit integer |             |
| icq.type       | Type           | Unsigned 16-bit integer |             |
| icq.uin        | UIN            | Unsigned 32-bit integer |             |

**IEEE 802.11 wireless LAN (wlan)**

**Table A-149. IEEE 802.11 wireless LAN (wlan)**

| Field                | Field Name                    | Type                          | Description                            |
|----------------------|-------------------------------|-------------------------------|--|
| wlan.addr            | Source or Destination address | 6-byte Hardware (MAC) Address | Source or Destination Hardware Address |
| wlan.aid             | Association ID                | Unsigned 16-bit integer       | Association-ID field                   |
| wlan.bssid           | BSS Id                        | 6-byte Hardware (MAC) Address | Basic Service Set ID                   |
| wlan.channel         | Channel                       | Unsigned 8-bit integer        | Radio channel                          |
| wlan.da              | Destination address           | 6-byte Hardware (MAC) Address | Destination Hardware Address           |
| wlan.data_rate       | Data Rate                     | Unsigned 8-bit integer        | Data rate (.5 Mb/s units)              |
| wlan.duration        | Duration                      | Unsigned 16-bit integer       | Duration field                         |
| wlan.fc              | Frame Control Field           | Unsigned 16-bit integer       | MAC Frame control                      |
| wlan.fc.ds           | DS status                     | Unsigned 8-bit integer        | Data-frame DS-traversal status         |
| wlan.fc.frag         | More Fragments                | Boolean                       | More Fragments flag                    |
| wlan.fc.fromds       | From DS                       | Boolean                       | From DS flag                           |
| wlan.fc.moredata     | More Data                     | Boolean                       | More data flag                         |
| wlan.fc.order        | Order flag                    | Boolean                       | Strictly ordered flag                  |
| wlan.fc.pwrmtg       | PWR MGT                       | Boolean                       | Power management status                |
| wlan.fc.retry        | Retry                         | Boolean                       | Retransmission flag                    |
| wlan.fc.subtype      | Subtype                       | Unsigned 8-bit integer        | Frame subtype                          |
| wlan.fc.tods         | To DS                         | Boolean                       | To DS flag                             |
| wlan.fc.type         | Type                          | Unsigned 8-bit integer        | Frame type                             |
| wlan.fc.type_subtype | Type/Subtype                  | Unsigned 16-bit integer       | Type and subtype combined              |

| Field                          | Field Name                           | Type                          | Description  |
|--------------------------------|--------------------------------------|-------------------------------|--|
| wlan.fc.version                | Version                              | Unsigned 8-bit integer        | MAC Protocol version                                   |
| wlan.fc.wep                    | WEP flag                             | Boolean                       | WEP flag   |
| wlan.fcs                       | Frame check sequence                 | Unsigned 32-bit integer       | FCS  |
| wlan.flags                     | Protocol Flags                       | Unsigned 8-bit integer        | Protocol flags   |
| wlan.frag                      | Fragment number                      | Unsigned 16-bit integer       | Fragment number  |
| wlan.fragment                  | 802.11 Fragment                      |                               | 802.11 Fragment  |
| wlan.fragment.error            | Defragmentation error                |                               | Defragmentation error due to illegal fragments         |
| wlan.fragment.multipletails    | Multiple tail fragments found        | Boolean                       | Several tails were found when defragmenting the packet |
| wlan.fragment.overlap          | Fragment overlap                     | Boolean                       | Fragment overlaps with other fragments                 |
| wlan.fragment.overlap.conflict | Conflicting data in fragment overlap | Boolean                       | Overlapping fragments contained conflicting data       |
| wlan.fragment.too longfragment | Fragment too long                    | Boolean                       | Fragment contained data past end of packet             |
| wlan.fragments                 | 802.11 Fragments                     | No value                      | 802.11 Fragments                                       |
| wlan.ra                        | Receiver address                     | 6-byte Hardware (MAC) Address | Receiving Station Hardware Address                     |
| wlan.sa                        | Source address                       | 6-byte Hardware (MAC) Address | Source Hardware Address                                |
| wlan.seq                       | Sequence number                      | Unsigned 16-bit integer       | Sequence number  |
| wlan.signal_strength           | Signal Strength                      | Unsigned 8-bit integer        | Signal strength (percentage)                           |
| wlan.ta                        | Transmitter address                  | 6-byte Hardware (MAC) Address | Transmitting Station Hardware Address                  |
| wlan.wep.icv                   | WEP ICV                              | Unsigned 32-bit               | WEP ICV  |

| Field        | Field Name            | Type                    | Description           |
|--------------|-----------------------|-------------------------|-----------------------|
|              |                       | integer                 |                       |
| wlan.wep.iv  | Initialization Vector | Unsigned 24-bit integer | Initialization Vector |
| wlan.wep.key | Key                   | Unsigned 8-bit integer  | Key                   |

### IEEE 802.11 wireless LAN management frame (wlan\_mgt)

Table A-150. IEEE 802.11 wireless LAN management frame (wlan\_mgt)

| Field                                  | Field Name                     | Type                            | Description                    |
|--|--------------------------------|---------------------------------|--------------------------------|
| wlan_mgt.fixed.aid                     | Association ID                 | Unsigned 16-bit integer         | Association ID                 |
| wlan_mgt.fixed.all                     | Fixed parameters               | Unsigned 16-bit integer         |                                |
| wlan_mgt.fixed.auth.alg                | Authentication Algorithm       | Unsigned 16-bit integer         |                                |
| wlan_mgt.fixed.auth.seq                | Authentication SEQ             | Unsigned 16-bit integer         | Authentication sequence number |
| wlan_mgt.fixed.beacon                  | Beacon Interval                | Double-precision floating point |                                |
| wlan_mgt.fixed.capabilities            | Capabilities                   | Unsigned 16-bit integer         | Capability information         |
| wlan_mgt.fixed.capabilities.agility    | Channel Agility                | Boolean                         | Channel Agility                |
| wlan_mgt.fixed.capabilities.cfpoll.ap  | CFP participation capabilities | Unsigned 16-bit integer         | CF-Poll capabilities for an AP |
| wlan_mgt.fixed.capabilities.cfpoll.sta | CFP participation capabilities | Unsigned 16-bit integer         | CF-Poll capabilities for a STA |
| wlan_mgt.fixed.capabilities.dsss_ofdm  | DSSS-OFDM                      | Boolean                         | DSSS-OFDM Modulation           |
| wlan_mgt.fixed.capabilities.ess        | ESS capabilities               | Boolean                         | ESS capabilities               |
| wlan_mgt.fixed.capabilities.ibss       | IBSS status                    | Boolean                         | IBSS participation             |
| wlan_mgt.fixed.capabilities.pbcc       | PBCC                           | Boolean                         | PBCC Modulation                |
| wlan_mgt.fixed.capabilities.preamble   | Short Preamble                 | Boolean                         | Short Preamble                 |



| Field                                       | Field Name         | Type                          | Description                         |
|---|--------------------|-------------------------------|-------------------------------------|
| wlan_mgt.fixed.capabilities.privacy         | Privacy            | Boolean                       | WEP support                         |
| wlan_mgt.fixed.capabilities.short_slot_time | Short Slot Time    | Boolean                       | Short Slot Time                     |
| wlan_mgt.fixed.current_ap                   | Current AP         | 6-byte Hardware (MAC) Address | MAC address of current AP           |
| wlan_mgt.fixed.listen_ival                  | Listen Interval    | Unsigned 16-bit integer       | Listen Interval                     |
| wlan_mgt.fixed.reason_code                  | Reason code        | Unsigned 16-bit integer       | Reason for unsolicited notification |
| wlan_mgt.fixed.status_code                  | Status code        | Unsigned 16-bit integer       | Status of requested event           |
| wlan_mgt.fixed.timestamp                    | Timestamp          | String                        |                                     |
| wlan_mgt.tag.interpretation                 | Tag interpretation | String                        | Interpretation of tag               |
| wlan_mgt.tag.length                         | Tag length         | Unsigned 16-bit integer       | Length of tag                       |
| wlan_mgt.tag.number                         | Tag                | Unsigned 16-bit integer       | Element ID                          |
| wlan_mgt.tagged.all                         | Tagged parameters  | Unsigned 16-bit integer       |                                     |

**ILMI (ilmi)**

Table A-151. ILMI (ilmi)

| Field | Field Name | Type | Description |
|-------|------------|------|-------------|
|       |            |      |             |

**IP Over FC (ipfc)**

Table A-152. IP Over FC (ipfc)

| Field      | Field Name | Type   | Description |
|------------|------------|--------|-------------|
| ipfc.nh.da | Network DA | String |             |
| ipfc.nh.sa | Network SA | String |             |

**IP Payload Compression (ipcomp)**

Table A-153. IP Payload Compression (ipcomp)

| Field      | Field Name | Type            | Description |
|------------|------------|-----------------|-------------|
| ipcomp.cpi | CPI        | Unsigned 16-bit |             |

| Field        | Field Name | Type                   | Description |
|--------------|------------|------------------------|-------------|
|              |            | integer                |             |
| ipcomp.flags | Flags      | Unsigned 8-bit integer |             |

### IPX Message (ipxmsg)

Table A-154. IPX Message (ipxmsg)

| Field          | Field Name        | Type                   | Description       |
|----------------|-------------------|------------------------|-------------------|
| ipxmsg.conn    | Connection Number | Unsigned 8-bit integer | Connection Number |
| ipxmsg.sigchar | Signature Char    | Unsigned 8-bit integer | Signature Char    |

### IPX Routing Information Protocol (ipxrip)

Table A-155. IPX Routing Information Protocol (ipxrip)

| Field           | Field Name | Type    | Description              |
|-----------------|------------|---------|--------------------------|
| ipxrip.request  | Request    | Boolean | TRUE if IPX RIP request  |
| ipxrip.response | Response   | Boolean | TRUE if IPX RIP response |

### ISDN (isdn)

Table A-156. ISDN (isdn)

| Field        | Field Name | Type                   | Description |
|--------------|------------|------------------------|-------------|
| isdn.channel | Channel    | Unsigned 8-bit integer |             |

### ISDN Q.921-User Adaptation Layer (iua)

Table A-157. ISDN Q.921-User Adaptation Layer (iua)

| Field                      | Field Name             | Type                    | Description |
|----------------------------|------------------------|-------------------------|-------------|
| iua.asp_identifier         | ASP identifier         | Unsigned 32-bit integer |             |
| iua.asp_reason             | Reason                 | Unsigned 32-bit integer |             |
| iua.diagnostic_information | Diagnostic information | Byte array              |             |
| iua.dlci_one_bit           | One bit                | Boolean                 |             |
| iua.dlci_sapi              | SAPI                   | Unsigned 8-bit integer  |             |
| iua.dlci_spare             | Spare                  | Unsigned 16-bit integer |             |

| Field                        | Field Name                   | Type                    | Description |
|------------------------------|------------------------------|-------------------------|-------------|
| iua.dlci_spare_bit           | Spare bit                    | Boolean                 |             |
| iua.dlci_tei                 | TEI                          | Unsigned 8-bit integer  |             |
| iua.dlci_zero_bit            | Zero bit                     | Boolean                 |             |
| iua.error_code               | Error code                   | Unsigned 32-bit integer |             |
| iua.heartbeat_data           | Heartbeat data               | Byte array              |             |
| iua.info_string              | Info string                  | String                  |             |
| iua.int_interface_identifier | Integer interface identifier | Signed 32-bit integer   |             |
| iua.interface_range_end      | End                          | Unsigned 32-bit integer |             |
| iua.interface_range_start    | Start                        | Unsigned 32-bit integer |             |
| iua.message_class            | Message class                | Unsigned 8-bit integer  |             |
| iua.message_length           | Message length               | Unsigned 32-bit integer |             |
| iua.message_type             | Message Type                 | Unsigned 8-bit integer  |             |
| iua.parameter_length         | Parameter length             | Unsigned 16-bit integer |             |
| iua.parameter_padding        | Parameter padding            | Byte array              |             |
| iua.parameter_tag            | Parameter Tag                | Unsigned 16-bit integer |             |
| iua.parameter_value          | Parameter value              | Byte array              |             |
| iua.release_reason           | Reason                       | Unsigned 32-bit integer |             |
| iua.reserved                 | Reserved                     | Unsigned 8-bit integer  |             |
| iua.status_identification    | Status identification        | Unsigned 16-bit integer |             |
| iua.status_type              | Status type                  | Unsigned 16-bit integer |             |
| iua.tei_status               | TEI status                   | Unsigned 32-bit integer |             |
| iua.text_interface_i         | Text interface               | String                  |             |

| Field                 | Field Name        | Type                    | Description |
|-----------------------|-------------------|-------------------------|-------------|
| identifier            | identifier        |                         |             |
| iua.traffic_mode_type | Traffic mode type | Unsigned 32-bit integer |             |
| iua.version           | Version           | Unsigned 8-bit integer  |             |

## ISDN User Part (isup)

Table A-158. ISDN User Part (isup)

| Field  | Field Name                                | Type                    | Description |
|--|---|-------------------------|-------------|
| isup.access_delivery_ind                         | Access delivery indicator                 | Boolean                 |             |
| isup.address_presentation_restricted_indicator   | Address presentation restricted indicator | Unsigned 8-bit integer  |             |
| isup.automatic_congestion_level                  | Automatic congestion level                | Unsigned 8-bit integer  |             |
| isup.backw_call_echo_control_device_indicator    | Echo Control Device Indicator             | Boolean                 |             |
| isup.backw_call_end_to_end_information_indicator | End-to-end information indicator          | Boolean                 |             |
| isup.backw_call_end_to_end_method_indicator      | End-to-end method indicator               | Unsigned 16-bit integer |             |
| isup.backw_call_holding_indicator                | Holding indicator                         | Boolean                 |             |
| isup.backw_call_interworking_indicator           | Interworking indicator                    | Boolean                 |             |
| isup.backw_call_isdn_access_indicator            | ISDN access indicator                     | Boolean                 |             |
| isup.backw_call_isdn_user_part_indicator         | ISDN user part indicator                  | Boolean                 |             |
| isup.backw_call_sccp_method_indicator            | SCCP method indicator                     | Unsigned 16-bit integer |             |
| isup.call_diversion_may_occur_ind                | Call diversion may occur indicator        | Boolean                 |             |
| isup.call_processing                             | Call processing                           | Unsigned 8-bit          |             |

| Field  | Field Name                                  | Type                    | Description |
|--|---|-------------------------|-------------|
| g_state  | state                                       | integer                 |             |
| isup.call_to_be_diverted_ind                     | Call to be diverted indicator               | Unsigned 8-bit integer  |             |
| isup.call_to_be_offered_ind                      | Call to be offered indicator                | Unsigned 8-bit integer  |             |
| isup.called_party_even_address_signal_digit      | Address signal digit                        | Unsigned 8-bit integer  |             |
| isup.called_party_nature_of_address_indicator    | Nature of address indicator                 | Unsigned 8-bit integer  |             |
| isup.called_party_odd_address_signal_digit       | Address signal digit                        | Unsigned 8-bit integer  |             |
| isup.called_party_category_indicator             | Called party's category indicator           | Unsigned 16-bit integer |             |
| isup.called_party_status_indicator               | Called party's status indicator             | Unsigned 16-bit integer |             |
| isup.calling_party_address_request_indicator     | Calling party address request indicator     | Boolean                 |             |
| isup.calling_party_address_response_indicator    | Calling party address response indicator    | Unsigned 16-bit integer |             |
| isup.calling_party_even_address_signal_digit     | Address signal digit                        | Unsigned 8-bit integer  |             |
| isup.calling_party_nature_of_addresses_indicator | Nature of address indicator                 | Unsigned 8-bit integer  |             |
| isup.calling_party_odd_address_signal_digit      | Address signal digit                        | Unsigned 8-bit integer  |             |
| isup.calling_party_category                      | Calling Party's category                    | Unsigned 8-bit integer  |             |
| isup.calling_party_category_request_indicator    | Calling party's category request indicator  | Boolean                 |             |
| isup.calling_party_category_response_indicator   | Calling party's category response indicator | Boolean                 |             |

Appendix A. Ethereal Display Filter Fields

| Field   | Field Name                                | Type                    | Description |
|---|---|-------------------------|-------------|
| isup.cause_indicator                            | Cause indicator                           | Unsigned 8-bit integer  |             |
| isup.cgs_message_type                           | Circuit group supervision message type    | Unsigned 8-bit integer  |             |
| isup.charge_indicator                           | Charge indicator                          | Unsigned 16-bit integer |             |
| isup.charge_information_request_indicator       | Charge information request indicator      | Boolean                 |             |
| isup.charge_information_response_indicator      | Charge information response indicator     | Boolean                 |             |
| isup.cic  | CIC                                       | Unsigned 16-bit integer |             |
| isup.clg_call_ind                               | Closed user group call indicator          | Unsigned 8-bit integer  |             |
| isup.conference_acceptance_ind                  | Conference acceptance indicator           | Unsigned 8-bit integer  |             |
| isup.connected_line_identity_request_ind        | Connected line identity request indicator | Boolean                 |             |
| isup.continuity_check_indicator                 | Continuity Check Indicator                | Unsigned 8-bit integer  |             |
| isup.continuity_indicator                       | Continuity indicator                      | Boolean                 |             |
| isup.echo_control_device_indicator              | Echo Control Device Indicator             | Boolean                 |             |
| isup.event_ind                                  | Event indicator                           | Unsigned 8-bit integer  |             |
| isup.event_presentation_restriction_ind         | Event presentation restricted indicator   | Boolean                 |             |
| isup.extension_ind                              | Extension indicator                       | Boolean                 |             |
| isup.forw_call_end_to_end_information_indicator | End-to-end information indicator          | Boolean                 |             |
| isup.forw_call_end_to_end_method_indicator      | End-to-end method indicator               | Unsigned 16-bit integer |             |

| Field                                       | Field Name  | Type                    | Description |
|---|---|-------------------------|-------------|
| isup.forw_call_interworking_indicator       | Interworking indicator                                    | Boolean                 |             |
| isup.forw_call_isdn_access_indicator        | ISDN access indicator                                     | Boolean                 |             |
| isup.forw_call_isdn_user_part_indicator     | ISDN user part indicator                                  | Boolean                 |             |
| isup.forw_call_natl_inatnl_call_indicator   | National/international call indicator                     | Boolean                 |             |
| isup.forw_call_preferences_indicator        | ISDN user part preference indicator                       | Unsigned 16-bit integer |             |
| isup.forw_call_sccp_method_indicator        | SCCP method indicator                                     | Unsigned 16-bit integer |             |
| isup.hold_provided_indicator                | Hold provided indicator                                   | Boolean                 |             |
| isup.hw_blocking_state                      | HW blocking state   | Unsigned 8-bit integer  |             |
| isup.inband_information_ind                 | In-band information indicator                             | Boolean                 |             |
| isup.info_req_holding_indicator             | Holding indicator   | Boolean                 |             |
| isup.inn_indicator                          | INN indicator   | Boolean                 |             |
| isup.isdn_odd_even_indicator                | Odd/even indicator  | Boolean                 |             |
| isup.loop_prevention_response_ind           | Response indicator  | Unsigned 8-bit integer  |             |
| isup.malicious_call_ident_request_indicator | Malicious call identification request indicator (ISUP'88) | Boolean                 |             |
| isup.mandatory_variable_parameter_pointer   | Pointer to Parameter                                      | Unsigned 8-bit integer  |             |
| isup.map_type                               | Map Type  | Unsigned 8-bit integer  |             |
| isup.message_type                           | Message Type  | Unsigned 8-bit          |             |

| Field                              | Field Name                         | Type                    | Description |
|------------------------------------|------------------------------------|-------------------------|-------------|
|                                    |                                    | integer                 |             |
| isup.mlpp_user                     | MLPP user indicator                | Boolean                 |             |
| isup.mtc_blocking_state            | Maintenance blocking state         | Unsigned 8-bit integer  |             |
| isup.network_identification_plan   | Network identification plan        | Unsigned 8-bit integer  |             |
| isup.ni_indicator                  | NI indicator                       | Boolean                 |             |
| isup.numbering_plan_indicator      | Numbering plan indicator           | Unsigned 8-bit integer  |             |
| isup.optional_parameter_pointer    | Pointer to optional parameter part | Unsigned 8-bit integer  |             |
| isup.original_redirection_reason   | Original redirection reason        | Unsigned 16-bit integer |             |
| isup.parameter_length              | Parameter Length                   | Unsigned 8-bit integer  |             |
| isup.parameter_type                | Parameter Type                     | Unsigned 8-bit integer  |             |
| isup.range_indicator               | Range indicator                    | Unsigned 8-bit integer  |             |
| isup.redirecting_indicator         | Redirection indicator              | Unsigned 16-bit integer |             |
| isup.redirection_counter           | Redirection counter                | Unsigned 16-bit integer |             |
| isup.redirection_reason            | Redirection reason                 | Unsigned 16-bit integer |             |
| isup.satellite_indicator           | Satellite Indicator                | Unsigned 8-bit integer  |             |
| isup.screening_indicator           | Screening indicator                | Unsigned 8-bit integer  |             |
| isup.screening_indicator_enhanced  | Screening indicator                | Unsigned 8-bit integer  |             |
| isup.simple_segmentation_indicator | Simple segmentation indicator      | Boolean                 |             |
| isup.solicited_indicator           | Solicited indicator                | Boolean                 |             |
| isup.suspend_resume_indicator      | Suspend/Resume indicator           | Boolean                 |             |



| Field  | Field Name                              | Type                   | Description |
|--|---|------------------------|-------------|
| isup.temporary_alternative_routing_indicator | Temporary alternative routing indicator | Boolean                |             |
| isup.transmission_medium_requirement         | Transmission medium requirement         | Unsigned 8-bit integer |             |
| isup.transmission_medium_requirement_prime   | Transmission medium requirement prime   | Unsigned 8-bit integer |             |
| isup.type_of_network_identification          | Type of network identification          | Unsigned 8-bit integer |             |

### ISO 10589 ISIS InTRA Domain Routing Information Exchange Protocol (isis)

Table A-159. ISO 10589 ISIS InTRA Domain Routing Information Exchange Protocol (isis)

| Field                        | Field Name                | Type                    | Description |
|------------------------------|---------------------------|-------------------------|-------------|
| isis.csnp.pdu_length         | PDU length                | Unsigned 16-bit integer |             |
| isis.hello.circuit_type      | Circuit type              | Unsigned 8-bit integer  |             |
| isis.hello.clv_ipv4_int_addr | IPv4 interface address    | IPv4 address            |             |
| isis.hello.clv_ipv6_int_addr | IPv6 interface address    | IPv6 address            |             |
| isis.hello.clv_mt            | MT-ID                     | Unsigned 16-bit integer |             |
| isis.hello.clv_ptp_adj       | Point-to-point Adjacency  | Unsigned 8-bit integer  |             |
| isis.hello.holding_timer     | Holding timer             | Unsigned 16-bit integer |             |
| isis.hello.lan_id            | SystemID{ Designated IS } | Byte array              |             |
| isis.hello.local_circuit_id  | Local circuit ID          | Unsigned 8-bit integer  |             |
| isis.hello.pdu_length        | PDU length                | Unsigned 16-bit integer |             |
| isis.hello.priority          | Priority                  | Unsigned 8-bit integer  |             |
| isis.hello.source_id         | SystemID{ Sender of PDU } | Byte array              |             |

| Field                      | Field Name                                  | Type                    | Description |
|----------------------------|---|-------------------------|-------------|
| isis.irpd                  | Intra Domain Routing Protocol Discriminator | Unsigned 8-bit integer  |             |
| isis.len                   | PDU Header Length                           | Unsigned 8-bit integer  |             |
| isis.lsp.checksum          | Checksum                                    | Unsigned 16-bit integer |             |
| isis.lsp.clv_ipv4_int_addr | IPv4 interface address                      | IPv4 address            |             |
| isis.lsp.clv_ipv6_int_addr | IPv6 interface address                      | IPv6 address            |             |
| isis.lsp.clv_mt            | MT-ID                                       | Unsigned 16-bit integer |             |
| isis.lsp.clv_te_router_id  | Traffic Engineering Router ID               | IPv4 address            |             |
| isis.lsp.pdu_length        | PDU length                                  | Unsigned 16-bit integer |             |
| isis.lsp.remaining_life    | Remaining lifetime                          | Unsigned 16-bit integer |             |
| isis.lsp.sequence_number   | Sequence number                             | Unsigned 32-bit integer |             |
| isis.max_area_adr          | Max.AREAs: (0==3)                           | Unsigned 8-bit integer  |             |
| isis.psnp.pdu_length       | PDU length                                  | Unsigned 16-bit integer |             |
| isis.reserved              | Reserved (==0)                              | Unsigned 8-bit integer  |             |
| isis.sysid_len             | System ID Length                            | Unsigned 8-bit integer  |             |
| isis.type                  | PDU Type                                    | Unsigned 8-bit integer  |             |
| isis.version               | Version (==1)                               | Unsigned 8-bit integer  |             |
| isis.version2              | Version2 (==1)                              | Unsigned 8-bit integer  |             |

**ISO 8073 COTP Connection-Oriented Transport Protocol (cotp)**

Table A-160. ISO 8073 COTP Connection-Oriented Transport Protocol (cotp)

| Field | Field Name | Type | Description |
|-------|------------|------|-------------|
|       |            |      |             |

| Field | Field Name | Type | Description |
|-------|------------|------|-------------|
|-------|------------|------|-------------|

## ISO 8473 CLNP ConnectionLess Network Protocol (clnp)

Table A-161. ISO 8473 CLNP ConnectionLess Network Protocol (clnp)

| Field                         | Field Name                          | Type                    | Description   |
|-------------------------------|-------------------------------------|-------------------------|---|
| clnp.checksum                 | Checksum                            | Unsigned 16-bit integer |   |
| clnp.dsap                     | DA                                  | Byte array              |   |
| clnp.dsap.len                 | DAL                                 | Unsigned 8-bit integer  |   |
| clnp.len                      | HDR Length                          | Unsigned 8-bit integer  |   |
| clnp.nlpi                     | Network Layer Protocol Identifier   | Unsigned 8-bit integer  |   |
| clnp.pdu.len                  | PDU length                          | Unsigned 16-bit integer |   |
| clnp.segment                  | CLNP Segment                        |                         | CLNP Segment  |
| clnp.segment.error            | Reassembly error                    |                         | Reassembly error due to illegal segments              |
| clnp.segment.multiple tails   | Multiple tail segments found        | Boolean                 | Several tails were found when reassembling the packet |
| clnp.segment.overlap          | Segment overlap                     | Boolean                 | Segment overlaps with other segments                  |
| clnp.segment.overlap.conflict | Conflicting data in segment overlap | Boolean                 | Overlapping segments contained conflicting data       |
| clnp.segment.too long segment | Segment too long                    | Boolean                 | Segment contained data past end of packet             |
| clnp.segments                 | CLNP Segments                       | No value                | CLNP Segments   |
| clnp.ssap                     | SA                                  | Byte array              |   |
| clnp.ssap.len                 | SAL                                 | Unsigned 8-bit integer  |   |
| clnp.ttl                      | Holding Time                        | Unsigned 8-bit integer  |   |
| clnp.type                     | PDU Type                            | Unsigned 8-bit          |   |

| Field        | Field Name | Type                   | Description |
|--------------|------------|------------------------|-------------|
|              |            | integer                |             |
| clnp.version | Version    | Unsigned 8-bit integer |             |

### ISO 8602 CLTP ConnectionLess Transport Protocol (cltp)

Table A-162. ISO 8602 CLTP ConnectionLess Transport Protocol (cltp)

| Field | Field Name | Type | Description |
|-------|------------|------|-------------|
|       |            |      |             |

### ISO 9542 ESIS Routeing Information Exchange Protocol (esis)

Table A-163. ISO 9542 ESIS Routeing Information Exchange Protocol (esis)

| Field       | Field Name                        | Type                    | Description |
|-------------|-----------------------------------|-------------------------|-------------|
| esis.chksum | Checksum                          | Unsigned 16-bit integer |             |
| esis.htime  | Holding Time                      | Unsigned 16-bit integer | s           |
| esis.length | PDU Length                        | Unsigned 8-bit integer  |             |
| esis.nlpi   | Network Layer Protocol Identifier | Unsigned 8-bit integer  |             |
| esis.res    | Reserved(==0)                     | Unsigned 8-bit integer  |             |
| esis.type   | PDU Type                          | Unsigned 8-bit integer  |             |
| esis.ver    | Version (==1)                     | Unsigned 8-bit integer  |             |

### ITU-T Recommendation H.261 (h261)

Table A-164. ITU-T Recommendation H.261 (h261)

| Field     | Field Name                    | Type                   | Description |
|-----------|-------------------------------|------------------------|-------------|
| h261.ebit | End bit position              | Unsigned 8-bit integer |             |
| h261.gobn | GOB Number                    | Unsigned 8-bit integer |             |
| h261.hmvd | Horizontal motion vector data | Unsigned 8-bit integer |             |
| h261.i    | Intra frame encoded data flag | Boolean                |             |
| h261.mbap | Macroblock address predictor  | Unsigned 8-bit integer |             |

| Field       | Field Name                  | Type                   | Description |
|-------------|-----------------------------|------------------------|-------------|
| h261.quant  | Quantizer                   | Unsigned 8-bit integer |             |
| h261.sbit   | Start bit position          | Unsigned 8-bit integer |             |
| h261.stream | H.261 stream                | Byte array             |             |
| h261.v      | Motion vector flag          | Boolean                |             |
| h261.vmvd   | Vertical motion vector data | Unsigned 8-bit integer |             |

### Inter-Access-Point Protocol (iapp)

Table A-165. Inter-Access-Point Protocol (iapp)

| Field        | Field Name | Type                   | Description |
|--------------|------------|------------------------|-------------|
| iapp.type    | type       | Unsigned 8-bit integer |             |
| iapp.version | Version    | Unsigned 8-bit integer |             |

### Interbase (ib)

Table A-166. Interbase (ib)

| Field     | Field Name | Type                    | Description   |
|-----------|------------|-------------------------|---------------|
| ib.opcode | Opcode     | Unsigned 32-bit integer | packet opcode |

### Internet Cache Protocol (icp)

Table A-167. Internet Cache Protocol (icp)

| Field       | Field Name     | Type                    | Description |
|-------------|----------------|-------------------------|-------------|
| icp.length  | Length         | Unsigned 16-bit integer |             |
| icp.nr      | Request Number | Unsigned 32-bit integer |             |
| icp.opcode  | Opcode         | Unsigned 8-bit integer  |             |
| icp.version | Version        | Unsigned 8-bit integer  |             |

### Internet Content Adaptation Protocol (icap)

Table A-168. Internet Content Adaptation Protocol (icap)

| Field        | Field Name | Type    | Description          |
|--------------|------------|---------|----------------------|
| icap.options | Options    | Boolean | TRUE if ICAP options |

| Field         | Field Name | Type    | Description           |
|---------------|------------|---------|-----------------------|
| icap.other    | Other      | Boolean | TRUE if ICAP other    |
| icap.reqmod   | Reqmod     | Boolean | TRUE if ICAP reqmod   |
| icap.respmod  | Respmod    | Boolean | TRUE if ICAP respmod  |
| icap.response | Response   | Boolean | TRUE if ICAP response |

### Internet Control Message Protocol (icmp)

Table A-169. Internet Control Message Protocol (icmp)

| Field              | Field Name            | Type                    | Description                                     |
|--------------------|-----------------------|-------------------------|---|
| icmp.checksum      | Checksum              | Unsigned 16-bit integer |   |
| icmp.checksum_bad  | Bad Checksum          | Boolean                 |   |
| icmp.code          | Code                  | Unsigned 8-bit integer  |   |
| icmp.mip.b         | Busy                  | Boolean                 | This FA will not accept requests at this time   |
| icmp.mip.challenge | Challenge             | Byte array              |   |
| icmp.mip.coa       | Care-Of-Address       | IPv4 address            |   |
| icmp.mip.f         | Foreign Agent         | Boolean                 | Foreign Agent Services Offered                  |
| icmp.mip.flags     | Flags                 | Unsigned 8-bit integer  |   |
| icmp.mip.g         | GRE                   | Boolean                 | GRE encapsulated tunneled datagram support      |
| icmp.mip.h         | Home Agent            | Boolean                 | Home Agent Services Offered                     |
| icmp.mip.length    | Length                | Unsigned 8-bit integer  |   |
| icmp.mip.life      | Registration Lifetime | Unsigned 16-bit integer |   |
| icmp.mip.m         | Minimal Encapsulation | Boolean                 | Minimal encapsulation tunneled datagram support |

| Field                 | Field Name            | Type                    | Description                             |
|-----------------------|-----------------------|-------------------------|---|
| icmp.mip.prefixlength | Prefix Length         | Unsigned 8-bit integer  |   |
| icmp.mip.r            | Registration Required | Boolean                 | Registration with this FA is required   |
| icmp.mip.res          | Reserved              | Boolean                 | Reserved                                |
| icmp.mip.reserved     | Reserved              | Unsigned 8-bit integer  |   |
| icmp.mip.seq          | Sequence Number       | Unsigned 16-bit integer |   |
| icmp.mip.type         | Extension Type        | Unsigned 8-bit integer  |   |
| icmp.mip.v            | VJ Comp               | Boolean                 | Van Jacobson Header Compression Support |
| icmp.type             | Type                  | Unsigned 8-bit integer  |   |

### Internet Control Message Protocol v6 (icmpv6)

Table A-170. Internet Control Message Protocol v6 (icmpv6)

| Field               | Field Name   | Type                    | Description |
|---------------------|--------------|-------------------------|-------------|
| icmpv6.checksum     | Checksum     | Unsigned 16-bit integer |             |
| icmpv6.checksum_bad | Bad Checksum | Boolean                 |             |
| icmpv6.code         | Code         | Unsigned 8-bit integer  |             |
| icmpv6.type         | Type         | Unsigned 8-bit integer  |             |

### Internet Group Management Protocol (igmp)

Table A-171. Internet Group Management Protocol (igmp)

| Field             | Field Name   | Type                   | Description                           |
|-------------------|--------------|------------------------|---------------------------------------|
| igmp.access_key   | Access Key   | Byte array             | IGMP V0 Access Key                    |
| igmp.aux_data     | Aux Data     | Byte array             | IGMP V3 Auxiliary Data                |
| igmp.aux_data_len | Aux Data Len | Unsigned 8-bit integer | Aux Data Len, In units of 32bit words |

| Field                  | Field Name      | Type                    | Description   |
|------------------------|-----------------|-------------------------|---|
| igmp.checksum          | Checksum        | Unsigned 16-bit integer | IGMP Checksum   |
| igmp.checksum_bad      | Bad Checksum    | Boolean                 | Bad IGMP Checksum                                       |
| igmp.group_type        | Type Of Group   | Unsigned 8-bit integer  | IGMP V0 Type Of Group                                   |
| igmp.identifier        | Identifier      | Unsigned 32-bit integer | IGMP V0 Identifier                                      |
| igmp.max_resp          | Max Resp Time   | Unsigned 8-bit integer  | Max Response Time                                       |
| igmp.max_resp.exp      | Exponent        | Unsigned 8-bit integer  | Maximum Response Time, Exponent                         |
| igmp.max_resp.mant     | Mantissa        | Unsigned 8-bit integer  | Maximum Response Time, Mantissa                         |
| igmp.mtrace.max_hops   | # hops          | Unsigned 8-bit integer  | Maximum Number of Hops to Trace                         |
| igmp.mtrace.q_arrival  | Query Arrival   | Unsigned 32-bit integer | Query Arrival Time                                      |
| igmp.mtrace.q_fwd_code | Forwarding Code | Unsigned 8-bit integer  | Forwarding information/error code                       |
| igmp.mtrace.q_fwd_ttl  | FwdTTL          | Unsigned 8-bit integer  | TTL required for forwarding                             |
| igmp.mtrace.q_id       | Query ID        | Unsigned 24-bit integer | Identifier for this Traceroute Request                  |
| igmp.mtrace.q_in_addr  | In itf addr     | IPv4 address            | Incoming Interface Address                              |
| igmp.mtrace.q_in_pkt   | In pkts         | Unsigned 32-bit integer | Input packet count on incoming interface                |
| igmp.mtrace.q_mbz      | MBZ             | Unsigned 8-bit integer  | Must be zeroed on transmission and ignored on reception |
| igmp.mtrace.q_out_addr | Out itf addr    | IPv4 address            | Outgoing Interface Address                              |
| igmp.mtrace.q_out      | Out pkts        | Unsigned 32-bit         | Output packet count on outgoing                         |



| Field                   | Field Name        | Type                    | Description   |
|-------------------------|-------------------|-------------------------|---|
| pkt                     |                   | integer                 | interface   |
| igmp.mtrace.q_prevrtr   | Previous rtr addr | IPv4 address            | Previous-Hop Router Address                           |
| igmp.mtrace.q_rtg_proto | Rtg Protocol      | Unsigned 8-bit integer  | Routing protocol between this and previous hop rtr    |
| igmp.mtrace.q_s         | S                 | Unsigned 8-bit integer  | Set if S,G packet count is for source network         |
| igmp.mtrace.q_src_mask  | Src Mask          | Unsigned 8-bit integer  | Source mask length. 63 when forwarding on group state |
| igmp.mtrace.q_total     | S,G pkt count     | Unsigned 32-bit integer | Total number of packets for this source-group pair    |
| igmp.mtrace.raddr       | Receiver Address  | IPv4 address            | Multicast Receiver for the Path Being Traced          |
| igmp.mtrace.resp_ttl    | Response TTL      | Unsigned 8-bit integer  | TTL for Multicast Responses                           |
| igmp.mtrace.rspaddr     | Response Address  | IPv4 address            | Destination of Completed Traceroute Response          |
| igmp.mtrace.saddr       | Source Address    | IPv4 address            | Multicast Source for the Path Being Traced            |
| igmp.num_grp_recs       | Num Group Records | Unsigned 16-bit integer | Number Of Group Records                               |
| igmp.num_src            | Num Src           | Unsigned 16-bit integer | Number Of Sources                                     |
| igmp.qqic               | QQIC              | Unsigned 8-bit integer  | Querier's Query Interval Code                         |
| igmp.qrv                | QRV               | Unsigned 8-bit integer  | Querier's Robustness Value                            |
| igmp.record_type        | Record Type       | Unsigned 8-bit integer  | Record Type   |
| igmp.reply              | Reply             | Unsigned 8-bit integer  | IGMP V0 Reply   |
| igmp.reply.pendin       | Reply Pending     | Unsigned 8-bit          | IGMP V0 Reply   |

| Field        | Field Name   | Type                   | Description                         |
|--------------|--------------|------------------------|-------------------------------------|
| g            |              | integer                | Pending, Retry in this many seconds |
| igmp.s       | S            | Boolean                | Supress Router Side Processing      |
| igmp.type    | Type         | Unsigned 8-bit integer | IGMP Packet Type                    |
| igmp.version | IGMP Version | Unsigned 8-bit integer | IGMP Version                        |

### Internet Message Access Protocol (imap)

Table A-172. Internet Message Access Protocol (imap)

| Field         | Field Name | Type    | Description           |
|---------------|------------|---------|-----------------------|
| imap.request  | Request    | Boolean | TRUE if IMAP request  |
| imap.response | Response   | Boolean | TRUE if IMAP response |

### Internet Printing Protocol (ipp)

Table A-173. Internet Printing Protocol (ipp)

| Field | Field Name | Type | Description |
|-------|------------|------|-------------|
|       |            |      |             |

### Internet Protocol (ip)

Table A-174. Internet Protocol (ip)

| Field           | Field Name                        | Type                    | Description |
|-----------------|-----------------------------------|-------------------------|-------------|
| ip.addr         | Source or Destination Address     | IPv4 address            |             |
| ip.checksum     | Header checksum                   | Unsigned 16-bit integer |             |
| ip.checksum_bad | Bad Header checksum               | Boolean                 |             |
| ip.dsfield      | Differentiated Services field     | Unsigned 8-bit integer  |             |
| ip.dsfield.ce   | ECN-CE                            | Unsigned 8-bit integer  |             |
| ip.dsfield.dscp | Differentiated Services Codepoint | Unsigned 8-bit integer  |             |
| ip.dsfield.ect  | ECN-Capable Transport (ECT)       | Unsigned 8-bit integer  |             |

| Field                        | Field Name                           | Type                    | Description  |
|------------------------------|--------------------------------------|-------------------------|--|
| ip.dst                       | Destination                          | IPv4 address            |  |
| ip.flags                     | Flags                                | Unsigned 8-bit integer  |  |
| ip.flags.df                  | Don't fragment                       | Boolean                 |  |
| ip.flags.mf                  | More fragments                       | Boolean                 |  |
| ip.frag_offset               | Fragment offset                      | Unsigned 16-bit integer |  |
| ip.fragment                  | IP Fragment                          |                         | IP Fragment  |
| ip.fragment.error            | Defragmentation error                |                         | Defragmentation error due to illegal fragments         |
| ip.fragment.multipletails    | Multiple tail fragments found        | Boolean                 | Several tails were found when defragmenting the packet |
| ip.fragment.overlap          | Fragment overlap                     | Boolean                 | Fragment overlaps with other fragments                 |
| ip.fragment.overlap.conflict | Conflicting data in fragment overlap | Boolean                 | Overlapping fragments contained conflicting data       |
| ip.fragment.toolongfragment  | Fragment too long                    | Boolean                 | Fragment contained data past end of packet             |
| ip.fragments                 | IP Fragments                         | No value                | IP Fragments   |
| ip.hdr_len                   | Header Length                        | Unsigned 8-bit integer  |  |
| ip.id                        | Identification                       | Unsigned 16-bit integer |  |
| ip.len                       | Total Length                         | Unsigned 16-bit integer |  |
| ip.proto                     | Protocol                             | Unsigned 8-bit integer  |  |
| ip.src                       | Source                               | IPv4 address            |  |
| ip.tos                       | Type of Service                      | Unsigned 8-bit integer  |  |
| ip.tos.cost                  | Cost                                 | Boolean                 |  |
| ip.tos.delay                 | Delay                                | Boolean                 |  |

| Field              | Field Name   | Type                   | Description |
|--------------------|--------------|------------------------|-------------|
| ip.tos.precedence  | Precedence   | Unsigned 8-bit integer |             |
| ip.tos.reliability | Reliability  | Boolean                |             |
| ip.tos.throughput  | Throughput   | Boolean                |             |
| ip.ttl             | Time to live | Unsigned 8-bit integer |             |
| ip.version         | Version      | Unsigned 8-bit integer |             |

## Internet Protocol Version 6 (ipv6)

Table A-175. Internet Protocol Version 6 (ipv6)

| Field                          | Field Name                           | Type                    | Description  |
|--------------------------------|--------------------------------------|-------------------------|--|
| ipv6.addr                      | Address                              | IPv6 address            | Source or Destination IPv6 Address                     |
| ipv6.class                     | Traffic class                        | Unsigned 8-bit integer  |  |
| ipv6.dst                       | Destination                          | IPv6 address            | Destination IPv6 Address                               |
| ipv6.flow                      | Flowlabel                            | Unsigned 32-bit integer |  |
| ipv6.fragment                  | IPv6 Fragment                        |                         | IPv6 Fragment  |
| ipv6.fragment.error            | Defragmentation error                |                         | Defragmentation error due to illegal fragments         |
| ipv6.fragment.multipletails    | Multiple tail fragments found        | Boolean                 | Several tails were found when defragmenting the packet |
| ipv6.fragment.overlap          | Fragment overlap                     | Boolean                 | Fragment overlaps with other fragments                 |
| ipv6.fragment.overlap.conflict | Conflicting data in fragment overlap | Boolean                 | Overlapping fragments contained conflicting data       |
| ipv6.fragment.toolongfragment  | Fragment too long                    | Boolean                 | Fragment contained data past end of packet             |
| ipv6.fragments                 | IPv6 Fragments                       | No value                | IPv6 Fragments   |
| ipv6.hlim                      | Hop limit                            | Unsigned 8-bit          |  |

| Field                   | Field Name     | Type                    | Description         |
|-------------------------|----------------|-------------------------|---------------------|
|                         |                | integer                 |                     |
| ipv6.mipv6_home_address | Home Address   | IPv6 address            |                     |
| ipv6.mipv6_length       | Option Length  | Unsigned 8-bit integer  |                     |
| ipv6.mipv6_type         | Option Type    | Unsigned 8-bit integer  |                     |
| ipv6.nxt                | Next header    | Unsigned 8-bit integer  |                     |
| ipv6.plen               | Payload length | Unsigned 16-bit integer |                     |
| ipv6.src                | Source         | IPv6 address            | Source IPv6 Address |
| ipv6.version            | Version        | Unsigned 8-bit integer  |                     |

### Internet Relay Chat (irc)

Table A-176. Internet Relay Chat (irc)

| Field        | Field Name | Type    | Description                     |
|--------------|------------|---------|---------------------------------|
| irc.command  | Command    | String  | Command associated with request |
| irc.request  | Request    | Boolean | TRUE if IRC request             |
| irc.response | Response   | Boolean | TRUE if IRC response            |

### Internet Security Association and Key Management Protocol (isakmp)

Table A-177. Internet Security Association and Key Management Protocol (isakmp)

| Field | Field Name | Type | Description |
|-------|------------|------|-------------|
|       |            |      |             |

### Internetwork Packet eXchange (ipx)

Table A-178. Internetwork Packet eXchange (ipx)

| Field        | Field Name          | Type                       | Description |
|--------------|---------------------|----------------------------|-------------|
| ipx.checksum | Checksum            | Unsigned 16-bit integer    |             |
| ipx.dst.net  | Destination Network | IPX network or server name |             |

| Field           | Field Name               | Type                          | Description |
|-----------------|--------------------------|-------------------------------|-------------|
| ipx.dst.node    | Destination Node         | 6-byte Hardware (MAC) Address |             |
| ipx.dst.socket  | Destination Socket       | Unsigned 16-bit integer       |             |
| ipx.hops        | Transport Control (Hops) | Unsigned 8-bit integer        |             |
| ipx.len         | Length                   | Unsigned 16-bit integer       |             |
| ipx.packet_type | Packet Type              | Unsigned 8-bit integer        |             |
| ipx.src.net     | Source Network           | IPX network or server name    |             |
| ipx.src.node    | Source Node              | 6-byte Hardware (MAC) Address |             |
| ipx.src.socket  | Source Socket            | Unsigned 16-bit integer       |             |

## Java RMI (rmi)

Table A-179. Java RMI (rmi)

| Field                    | Field Name            | Type                    | Description                     |
|--------------------------|-----------------------|-------------------------|---------------------------------|
| rmi.endpoint_id.hostname | Hostname              | String                  | RMI Endpointidentifier Hostname |
| rmi.endpoint_id.length   | Length                | Unsigned 16-bit integer | RMI Endpointidentifier Length   |
| rmi.endpoint_id.port     | Port                  | Unsigned 16-bit integer | RMI Endpointidentifier Port     |
| rmi.inputstream.message  | Input Stream Message  | Unsigned 8-bit integer  | RMI Inputstream Message Token   |
| rmi.magic                | Magic                 | Unsigned 32-bit integer | RMI Header Magic                |
| rmi.outputstream.message | Output Stream Message | Unsigned 8-bit integer  | RMI Outputstream Message token  |
| rmi.protocol             | Protocol              | Unsigned 8-bit integer  | RMI Protocol Type               |
| rmi.ser.magic            | Magic                 | Unsigned 16-bit integer | Java Serialization Magic        |
| rmi.ser.version          | Version               | Unsigned 16-bit integer | Java Serialization Version      |

| Field       | Field Name | Type                    | Description          |
|-------------|------------|-------------------------|----------------------|
| rmi.version | Version    | Unsigned 16-bit integer | RMI Protocol Version |

## Java Serialization (serialization)

Table A-180. Java Serialization (serialization)

| Field | Field Name | Type | Description |
|-------|------------|------|-------------|
|       |            |      |             |

## Kerberos (kerberos)

Table A-181. Kerberos (kerberos)

| Field | Field Name | Type | Description |
|-------|------------|------|-------------|
|       |            |      |             |

## Kernel Lock Manager (klm)

Table A-182. Kernel Lock Manager (klm)

| Field            | Field Name   | Type                    | Description           |
|------------------|--------------|-------------------------|-----------------------|
| klm.block        | block        | Boolean                 | Block                 |
| klm.exclusive    | exclusive    | Boolean                 | Exclusive lock        |
| klm.holder       | holder       | No value                | KLM lock holder       |
| klm.len          | length       | Unsigned 32-bit integer | Length of lock region |
| klm.lock         | lock         | No value                | KLM lock structure    |
| klm.offset       | offset       | Unsigned 32-bit integer | File offset           |
| klm.pid          | pid          | Unsigned 32-bit integer | ProcessID             |
| klm.procedure_v1 | V1 Procedure | Unsigned 32-bit integer | V1 Procedure          |
| klm.servername   | server name  | String                  | Server name           |
| klm.stats        | stats        | Unsigned 32-bit integer | stats                 |

## Label Distribution Protocol (ldp)

Table A-183. Label Distribution Protocol (ldp)

| Field                       | Field Name      | Type            | Description                                 |
|-----------------------------|-----------------|-----------------|---|
| ldp.msg.tlv.hello.requested | Hello Requested | Boolean         | Hello Common Parameters Hello Requested Bit |
| ldp.hdr.ldpid.lsid          | Label Space ID  | Unsigned 16-bit | LDP Label Space                             |

| Field                           | Field Name      | Type                            | Description   |
|---------------------------------|-----------------|---------------------------------|---|
|                                 |                 | integer                         | ID  |
| ldp.hdr.ldpid.lsr               | LSR ID          | IPv4 address                    | LDP Label Space Router ID                           |
| ldp.hdr.pdu_len                 | PDU Length      | Unsigned 16-bit integer         | LDP PDU Length                                      |
| ldp.hdr.version                 | Version         | Unsigned 16-bit integer         | LDP Version Number                                  |
| ldp.msg.experiment.id           | Experiment ID   | Unsigned 32-bit integer         | LDP Experimental Message ID                         |
| ldp.msg.id                      | Message ID      | Unsigned 32-bit integer         | LDP Message ID                                      |
| ldp.msg.len                     | Message Length  | Unsigned 16-bit integer         | LDP Message Length (excluding message type and len) |
| ldp.msg.tlv.addr.address        | Address         | String                          | Address   |
| ldp.msg.tlv.addr.address_family | Address Family  | Unsigned 16-bit integer         | Address Family List                                 |
| ldp.msg.tlv.atm.label.vbits     | V-bits          | Unsigned 8-bit integer          | ATM Label V Bits                                    |
| ldp.msg.tlv.atm.label.vci       | VCI             | Unsigned 16-bit integer         | ATM Label VCI                                       |
| ldp.msg.tlv.atm.label.vpi       | VPI             | Unsigned 16-bit integer         | ATM Label VPI                                       |
| ldp.msg.tlv.cbs                 | CBS             | Double-precision floating point | Committed Burst Size                                |
| ldp.msg.tlv.cdr                 | CDR             | Double-precision floating point | Committed Data Rate                                 |
| ldp.msg.tlv.ebs                 | EBS             | Double-precision floating point | Excess Burst Size                                   |
| ldp.msg.tlv.er_hop.as           | AS Number       | Unsigned 16-bit integer         | AS Number   |
| ldp.msg.tlv.er_hop.local_lsp_id | Local CR-LSP ID | Unsigned 16-bit integer         | Local CR-LSP ID                                     |
| ldp.msg.tlv.er_hop.loose        | Loose route bit | Unsigned 24-bit integer         | Loose route bit                                     |
| ldp.msg.tlv.er_hop.local_lsp_id | Local CR-LSP ID | IPv4 address                    | Local CR-LSP ID                                     |
| ldp.msg.tlv.er_hop.ipv4_address | IPv4 Address    | IPv4 address                    | IPv4 Address  |



| Field                                      | Field Name                     | Type                    | Description   |
|--|--------------------------------|-------------------------|---|
| .prefix4                                   |                                |                         |   |
| ldp.msg.tlv.er_hop.prefix6                 | IPv6 Address                   | IPv6 address            | IPv6 Address  |
| ldp.msg.tlv.er_hop.prefixlen               | Prefix length                  | Unsigned 8-bit integer  | Prefix len  |
| ldp.msg.tlv.experiment_id                  | Experiment ID                  | Unsigned 32-bit integer | Experiment ID                                       |
| ldp.msg.tlv.extstatus.data                 | Extended Status Data           | Unsigned 32-bit integer | Extended Status Data                                |
| ldp.msg.tlv.fec.af                         | FEC Element Address Type       | Unsigned 16-bit integer | Forwarding Equivalence Class Element Address Family |
| ldp.msg.tlv.fec.hostval                    | FEC Element Host Address Value | String                  | Forwarding Equivalence Class Element Address        |
| ldp.msg.tlv.fec.len                        | FEC Element Length             | Unsigned 8-bit integer  | Forwarding Equivalence Class Element Length         |
| ldp.msg.tlv.fec.prefixval                  | FEC Element Prefix Value       | String                  | Forwarding Equivalence Class Element Prefix         |
| ldp.msg.tlv.fec.type                       | FEC Element Type               | Unsigned 8-bit integer  | Forwarding Equivalence Class Element Types          |
| ldp.msg.tlv.fec.vc.controlword             | C-bit                          | Boolean                 | Control Word Present                                |
| ldp.msg.tlv.fec.vc.groupid                 | Group ID                       | Unsigned 32-bit integer | VC FEC Group ID                                     |
| ldp.msg.tlv.fec.vc.info.length             | VC Info Length                 | Unsigned 8-bit integer  | VC FEC Info Length                                  |
| ldp.msg.tlv.fec.vc.interfaceparam.cembytes | Payload Bytes                  | Unsigned 16-bit integer | VC FEC Interface Param CEM Payload Bytes            |
| ldp.msg.tlv.fec.vc.interfaceparam.desc     | Description                    | String                  | VC FEC Interface Description                        |
| ldp.msg.tlv.fec.vc.interfaceparam.id       | ID                             | Unsigned 8-bit integer  | VC FEC Interface Parameter ID                       |
| ldp.msg.tlv.fec.vc.interfaceparam.length   | Length                         | Unsigned 8-bit integer  | VC FEC Interface Parameter Length                   |
| ldp.msg.tlv.fec.vc.interfaceparam.numcells | Number of Cells                | Unsigned 16-bit         | VC FEC Interface                                    |

| Field   | Field Name                       | Type                       | Description                               |
|---|----------------------------------|----------------------------|---|
| ntparam.maxatm                                  |                                  | integer                    | Param Max ATM Concat Cells                |
| ldp.msg.tlv.fec.vc.i<br>ntparam.mtu             | MTU                              | Unsigned 16-bit<br>integer | VC FEC Interface<br>Paramater MTU         |
| ldp.msg.tlv.fec.vc.i<br>ntparam.vpnid.ind<br>ex | VPN Index                        | Unsigned 32-bit<br>integer | VC FEC Interface<br>Param VPN Index       |
| ldp.msg.tlv.fec.vc.i<br>ntparam.vpnid.oui       | VPN OUI                          | Unsigned 24-bit<br>integer | VC FEC Interface<br>Param VPN OUI         |
| ldp.msg.tlv.fec.vc.<br>vcid                     | VC ID                            | Unsigned 32-bit<br>integer | VC FEC VCID                               |
| ldp.msg.tlv.fec.vc.<br>vctype                   | VC Type                          | Unsigned 16-bit<br>integer | Virtual Circuit<br>Type                   |
| ldp.msg.tlv.flags_c<br>bs                       | CBS                              | Boolean                    | CBS negotiability<br>flag                 |
| ldp.msg.tlv.flags_c<br>dr                       | CDR                              | Boolean                    | CDR negotiability<br>flag                 |
| ldp.msg.tlv.flags_e<br>bs                       | EBS                              | Boolean                    | EBS negotiability<br>flag                 |
| ldp.msg.tlv.flags_<br>pbs                       | PBS                              | Boolean                    | PBS negotiability<br>flag                 |
| ldp.msg.tlv.flags_<br>pdr                       | PDR                              | Boolean                    | PDR negotiability<br>flag                 |
| ldp.msg.tlv.flags_r<br>eserv                    | Reserved                         | Unsigned 8-bit<br>integer  | Reserved                                  |
| ldp.msg.tlv.flags_<br>weight                    | Weight                           | Boolean                    | Weight<br>negotiability flag              |
| ldp.msg.tlv.fr.label<br>.dlsi                   | DLCI                             | Unsigned 24-bit<br>integer | FRAME RELAY<br>Label DLCI                 |
| ldp.msg.tlv.fr.label<br>.len                    | Number of DLCI<br>bits           | Unsigned 16-bit<br>integer | DLCI Number of<br>bits                    |
| ldp.msg.tlv.freque<br>ncy                       | Frequency                        | Unsigned 8-bit<br>integer  | Frequency                                 |
| ldp.msg.tlv.generi<br>c.label                   | Generic Label                    | Unsigned 32-bit<br>integer | Generic Label                             |
| ldp.msg.tlv.hc.val<br>ue                        | Hop Count Value                  | Unsigned 8-bit<br>integer  | Hop Count                                 |
| ldp.msg.tlv.hello.c<br>nf_seqno                 | Configuration<br>Sequence Number | Unsigned 32-bit<br>integer | Hello<br>Configuration<br>Sequence Number |

| Field                           | Field Name                  | Type                            | Description                            |
|---------------------------------|-----------------------------|---------------------------------|--|
| ldp.msg.tlv.hello.hold          | Hold Time                   | Unsigned 16-bit integer         | Hello Common Parameters Hold Time      |
| ldp.msg.tlv.hello.res           | Reserved                    | Unsigned 16-bit integer         | Hello Common Parameters Reserved Field |
| ldp.msg.tlv.hello.targeted      | Targeted Hello              | Boolean                         | Hello Common Parameters Targeted Bit   |
| ldp.msg.tlv.hold_prio           | Hold Prio                   | Unsigned 8-bit integer          | LSP hold priority                      |
| ldp.msg.tlv.ipv4.taddr          | IPv4 Transport Address      | IPv4 address                    | IPv4 Transport Address                 |
| ldp.msg.tlv.ipv6.taddr          | IPv6 Transport Address      | IPv6 address                    | IPv6 Transport Address                 |
| ldp.msg.tlv.len                 | TLV Length                  | Unsigned 16-bit integer         | TLV Length Field                       |
| ldp.msg.tlv.lspid.actflg        | Action Indicator Flag       | Unsigned 16-bit integer         | Action Indicator Flag                  |
| ldp.msg.tlv.lspid.localspid     | Local CR-LSP ID             | Unsigned 16-bit integer         | Local CR-LSP ID                        |
| ldp.msg.tlv.lspid.lsr_id        | Ingress LSR Router ID       | IPv4 address                    | Ingress LSR Router ID                  |
| ldp.msg.tlv.mac                 | MAC address                 | 6-byte Hardware (MAC) Address   | MAC address                            |
| ldp.msg.tlv.pbs                 | PBS                         | Double-precision floating point | Peak Burst Size                        |
| ldp.msg.tlv.pdr                 | PDR                         | Double-precision floating point | Peak Data Rate                         |
| ldp.msg.tlv.pv.lsr_id           | LSR Id                      | IPv4 address                    | Path Vector LSR Id                     |
| ldp.msg.tlv.resource_class      | Resource Class              | Unsigned 32-bit integer         | Resource Class (Color)                 |
| ldp.msg.tlv.returned.lspid.lsid | Returned PDU Label Space ID | Unsigned 16-bit integer         | LDP Label Space ID                     |
| ldp.msg.tlv.returned.lspid.lsr  | Returned PDU LSR ID         | IPv4 address                    | LDP Label Space Router ID              |
| ldp.msg.tlv.returned.msg.id     | Returned Message ID         | Unsigned 32-bit integer         | LDP Message ID                         |
| ldp.msg.tlv.returned.msg.len    | Returned Message            | Unsigned 16-bit integer         | LDP Message Length (excluding          |

| Field                         | Field Name                             | Type                    | Description  |
|-------------------------------|--|-------------------------|--|
| ed.msg.len                    | Length                                 | integer                 | message type and len)                                    |
| ldp.msg.tlv.returned.msg.type | Returned Message Type                  | Unsigned 16-bit integer | LDP message type   |
| ldp.msg.tlv.returned.msg.ubit | Returned Message Unknown bit           | Unsigned 8-bit integer  | Message Unknown bit                                      |
| ldp.msg.tlv.returned.pdu_len  | Returned PDU Length                    | Unsigned 16-bit integer | LDP PDU Length   |
| ldp.msg.tlv.returned.version  | Returned PDU Version                   | Unsigned 16-bit integer | LDP Version Number                                       |
| ldp.msg.tlv.route_pinning     | Route Pinning                          | Unsigned 32-bit integer | Route Pinning  |
| ldp.msg.tlv.sess.advbit       | Session Label Advertisement Discipline | Boolean                 | Common Session Parameters Label Advertisement Discipline |
| ldp.msg.tlv.sess.atm.dir      | Directionality                         | Boolean                 | Label Directionality                                     |
| ldp.msg.tlv.sess.atm.lr       | Number of ATM Label Ranges             | Unsigned 8-bit integer  | Number of Label Ranges                                   |
| ldp.msg.tlv.sess.atm.maxvci   | Maximum VCI                            | Unsigned 16-bit integer | Maximum VCI  |
| ldp.msg.tlv.sess.atm.maxvpi   | Maximum VPI                            | Unsigned 16-bit integer | Maximum VPI  |
| ldp.msg.tlv.sess.atm.merge    | Session ATM Merge Parameter            | Unsigned 8-bit integer  | Merge ATM Session Parameters                             |
| ldp.msg.tlv.sess.atm.minvci   | Minimum VCI                            | Unsigned 16-bit integer | Minimum VCI  |
| ldp.msg.tlv.sess.atm.minvpi   | Minimum VPI                            | Unsigned 16-bit integer | Minimum VPI  |
| ldp.msg.tlv.sess.fr.dir       | Directionality                         | Boolean                 | Label Directionality                                     |
| ldp.msg.tlv.sess.fr.len       | Number of DLCI bits                    | Unsigned 16-bit integer | DLCI Number of bits                                      |
| ldp.msg.tlv.sess.fr.lr        | Number of Frame Relay Label Ranges     | Unsigned 8-bit integer  | Number of Label Ranges                                   |
| ldp.msg.tlv.sess.fr.maxdlci   | Maximum DLCI                           | Unsigned 24-bit integer | Maximum DLCI   |
| ldp.msg.tlv.sess.fr.          | Session Frame                          | Unsigned 8-bit          | Merge Frame  |

| Field                       | Field Name                      | Type                    | Description  |
|-----------------------------|---------------------------------|-------------------------|--|
| merge                       | Relay Merge Parameter           | integer                 | Relay Session Parameters                           |
| ldp.msg.tlv.sess.fr.mindlci | Minimum DLCI                    | Unsigned 24-bit integer | Minimum DLCI                                       |
| ldp.msg.tlv.sess.ka         | Session KeepAlive Time          | Unsigned 16-bit integer | Common Session Parameters KeepAlive Time           |
| ldp.msg.tlv.sess.ldetbit    | Session Loop Detection          | Boolean                 | Common Session Parameters Loop Detection           |
| ldp.msg.tlv.sess.maxpdu     | Session Max PDU Length          | Unsigned 16-bit integer | Common Session Parameters Max PDU Length           |
| ldp.msg.tlv.sess.pathlim    | Session Path Vector Limit       | Unsigned 8-bit integer  | Common Session Parameters Path Vector Limit        |
| ldp.msg.tlv.sess.receiver   | Session Receiver LSR Identifier | IPv4 address            | Common Session Parameters LSR Identifier           |
| ldp.msg.tlv.sess.version    | Session Protocol Version        | Unsigned 16-bit integer | Common Session Parameters Protocol Version         |
| ldp.msg.tlv.set_priority    | Set Prio                        | Unsigned 8-bit integer  | LSP setup priority                                 |
| ldp.msg.tlv.status.data     | Status Data                     | Unsigned 32-bit integer | Status Data  |
| ldp.msg.tlv.status.ebit     | E Bit                           | Boolean                 | Fatal Error Bit                                    |
| ldp.msg.tlv.status.fbit     | F Bit                           | Boolean                 | Forward Bit  |
| ldp.msg.tlv.status.msg.id   | Message ID                      | Unsigned 32-bit integer | Identifies peer message to which Status TLV refers |
| ldp.msg.tlv.status.msg.type | Message Type                    | Unsigned 16-bit integer | Type of peer message to which Status TLV refers    |
| ldp.msg.tlv.type            | TLV Type                        | Unsigned 16-bit integer | TLV Type Field                                     |
| ldp.msg.tlv.unknown         | TLV Unknown bits                | Unsigned 8-bit integer  | TLV Unknown bits Field                             |
| ldp.msg.tlv.value           | TLV Value                       | Byte array              | TLV Value Bytes                                    |

| Field                  | Field Name               | Type                    | Description                         |
|------------------------|--------------------------|-------------------------|-------------------------------------|
| ldp.msg.tlv.vendor_id  | Vendor ID                | Unsigned 32-bit integer | IEEE 802 Assigned Vendor ID         |
| ldp.msg.tlv.weight     | Weight                   | Unsigned 8-bit integer  | Weight of the CR-LSP                |
| ldp.msg.type           | Message Type             | Unsigned 16-bit integer | LDP message type                    |
| ldp.msg.ubit           | U bit                    | Boolean                 | Unknown Message Bit                 |
| ldp.msg.vendor.id      | Vendor ID                | Unsigned 32-bit integer | LDP Vendor-private Message ID       |
| ldp.req                | Request                  | Boolean                 |                                     |
| ldp.rsp                | Response                 | Boolean                 |                                     |
| ldp.tlv.lbl_req_msg_id | Label Request Message ID | Unsigned 32-bit integer | Label Request Message to be aborted |

## Layer 2 Tunneling Protocol (L2tp)

Table A-184. Layer 2 Tunneling Protocol (L2tp)

| Field              | Field Name | Type                    | Description  |
|--------------------|------------|-------------------------|--|
| l2tp.Nr            | Nr         | Unsigned 16-bit integer |  |
| l2tp.Ns            | Ns         | Unsigned 16-bit integer |  |
| l2tp.avp.hidden    | Hidden     | Boolean                 | Hidden AVP   |
| l2tp.avp.length    | Length     | Unsigned 16-bit integer | AVP Length   |
| l2tp.avp.mandatory | Mandatory  | Boolean                 | Mandatory AVP  |
| l2tp.avp.type      | Type       | Unsigned 16-bit integer | AVP Type   |
| l2tp.avp.vendor_id | Vendor ID  | Unsigned 16-bit integer | AVP Vendor ID  |
| l2tp.length        | Length     | Unsigned 16-bit integer |  |
| l2tp.length_bit    | Length Bit | Boolean                 | Length bit   |
| l2tp.offset        | Offset     | Unsigned 16-bit integer | Number of octet past the L2TP header at which the payload data |

| Field            | Field Name   | Type                    | Description  |
|------------------|--------------|-------------------------|--------------|
|                  |              |                         | starts.      |
| l2tp.offset_bit  | Offset bit   | Boolean                 | Offset bit   |
| l2tp.priority    | Priority     | Boolean                 | Priority bit |
| l2tp.seq_bit     | Sequence Bit | Boolean                 | Sequence bit |
| l2tp.session     | Session ID   | Unsigned 16-bit integer | Session ID   |
| l2tp.tie_breaker | Tie Breaker  | Unsigned 64-bit integer | Tie Breaker  |
| l2tp.tunnel      | Tunnel ID    | Unsigned 16-bit integer | Tunnel ID    |
| l2tp.type        | Type         | Unsigned 16-bit integer | Type bit     |
| l2tp.version     | Version      | Unsigned 16-bit integer | Version      |

## Lightweight Directory Access Protocol (Ldap)

Table A-185. Lightweight Directory Access Protocol (Ldap)

| Field                        | Field Name         | Type                    | Description                  |
|------------------------------|--------------------|-------------------------|------------------------------|
| ldap.abandon.msg_id          | Abandon Msg Id     | Unsigned 32-bit integer | LDAP Abandon Msg Id          |
| ldap.attribute               | Attribute          | String                  | LDAP Attribute               |
| ldap.bind.auth_type          | Auth Type          | Unsigned 8-bit integer  | LDAP Bind Auth Type          |
| ldap.bind.credentials        | Credentials        | Byte array              | LDAP Bind Credentials        |
| ldap.bind.dn                 | DN                 | String                  | LDAP Bind Distinguished Name |
| ldap.bind.mechanism          | Mechanism          | String                  | LDAP Bind Mechanism          |
| ldap.bind.password           | Password           | String                  | LDAP Bind Password           |
| ldap.bind.server_credentials | Server Credentials | Byte array              | LDAP Bind Server Credentials |
| ldap.bind.version            | Version            | Unsigned 32-bit integer | LDAP Bind Version            |
| ldap.compare.test            | Test               | String                  | LDAP Compare Test            |
| ldap.dn                      | Distinguished      | String                  | LDAP                         |

| Field                    | Field Name         | Type                    | Description                              |
|--------------------------|--------------------|-------------------------|--|
|                          | Name               |                         | Distinguished Name                       |
| ldap.length              | Length             | Unsigned 32-bit integer | LDAP Length                              |
| ldap.message_id          | Message Id         | Unsigned 32-bit integer | LDAP Message Id                          |
| ldap.message_length      | Message Length     | Unsigned 32-bit integer | LDAP Message Length                      |
| ldap.message_type        | Message Type       | Unsigned 8-bit integer  | LDAP Message Type                        |
| ldap.modify.add          | Add                | String                  | LDAP Add                                 |
| ldap.modify.delete       | Delete             | String                  | LDAP Delete                              |
| ldap.modify.replace      | Replace            | String                  | LDAP Replace                             |
| ldap.modrdn.delete       | Delete Values      | Boolean                 | LDAP Modify RDN - Delete original values |
| ldap.modrdn.name         | New Name           | String                  | LDAP New Name                            |
| ldap.modrdn.superior     | New Location       | String                  | LDAP Modify RDN - New Location           |
| ldap.result.code         | Result Code        | Unsigned 8-bit integer  | LDAP Result Code                         |
| ldap.result.errorMessage | Error Message      | String                  | LDAP Result Error Message                |
| ldap.result.matcheddn    | Matched DN         | String                  | LDAP Result Matched DN                   |
| ldap.result.referral     | Referral           | String                  | LDAP Result Referral URL                 |
| ldap.sasl_buffer_length  | SASL Buffer Length | Unsigned 32-bit integer | SASL Buffer Length                       |
| ldap.search.basedn       | Base DN            | String                  | LDAP Search Base Distinguished Name      |
| ldap.search.dereference  | Dereference        | Unsigned 8-bit integer  | LDAP Search Dereference                  |
| ldap.search.filter       | Filter             | String                  | LDAP Search Filter                       |
| ldap.search.scope        | Scope              | Unsigned 8-bit          | LDAP Search                              |



| Field                 | Field Name      | Type                    | Description                 |
|-----------------------|-----------------|-------------------------|-----------------------------|
|                       |                 | integer                 | Scope                       |
| ldap.search.sizelimit | Size Limit      | Unsigned 32-bit integer | LDAP Search Size Limit      |
| ldap.search.timelimit | Time Limit      | Unsigned 32-bit integer | LDAP Search Time Limit      |
| ldap.search.typesonly | Attributes Only | Boolean                 | LDAP Search Attributes Only |
| ldap.value            | Value           | String                  | LDAP Value                  |

### Line Printer Daemon Protocol (lpd)

Table A-186. Line Printer Daemon Protocol (lpd)

| Field        | Field Name | Type    | Description          |
|--------------|------------|---------|----------------------|
| lpd.request  | Request    | Boolean | TRUE if LPD request  |
| lpd.response | Response   | Boolean | TRUE if LPD response |

### Link Access Procedure Balanced (LAPB) (lapb)

Table A-187. Link Access Procedure Balanced (LAPB) (lapb)

| Field        | Field Name    | Type                   | Description   |
|--------------|---------------|------------------------|---------------|
| lapb.address | Address Field | Unsigned 8-bit integer | Address       |
| lapb.control | Control Field | Unsigned 8-bit integer | Control field |

### Link Access Procedure Balanced Ethernet (LAPBETHER) (lapbether)

Table A-188. Link Access Procedure Balanced Ethernet (LAPBETHER) (lapbether)

| Field            | Field Name   | Type                    | Description            |
|------------------|--------------|-------------------------|------------------------|
| lapbether.length | Length Field | Unsigned 16-bit integer | LAPBETHER Length Field |

### Link Access Procedure, Channel D (LAPD) (lapd)

Table A-189. Link Access Procedure, Channel D (LAPD) (lapd)

| Field        | Field Name    | Type                    | Description   |
|--------------|---------------|-------------------------|---------------|
| lapd.address | Address Field | Unsigned 16-bit integer | Address       |
| lapd.control | Control Field | Unsigned 16-bit integer | Control field |
| lapd.cr      | C/R           | Unsigned 16-bit         | Command/Respo |

| Field     | Field Name | Type                    | Description                     |
|-----------|------------|-------------------------|---------------------------------|
|           |            | integer                 | nse bit                         |
| lapd.ea1  | EA1        | Unsigned 16-bit integer | First Address Extension bit     |
| lapd.ea2  | EA2        | Unsigned 16-bit integer | Second Address Extension bit    |
| lapd.sapi | SAPI       | Unsigned 16-bit integer | Service Access Point Identifier |
| lapd.tei  | TEI        | Unsigned 16-bit integer | Terminal Endpoint Identifier    |

### Link Aggregation Control Protocol (lACP)

Table A-190. Link Aggregation Control Protocol (lACP)

| Field                       | Field Name               | Type                    | Description   |
|-----------------------------|--------------------------|-------------------------|---|
| lACP.actorInfo              | Actor Information        | Unsigned 8-bit integer  | TLV type = Actor  |
| lACP.actorInfoLen           | Actor Information Length | Unsigned 8-bit integer  | The length of the Actor TLV   |
| lACP.actorKey               | Actor Key                | Unsigned 16-bit integer | The operational Key value assigned to the port by the Actor                     |
| lACP.actorPort              | Actor Port               | Unsigned 16-bit integer | The port number assigned to the port by the Actor (via Management or Admin)     |
| lACP.actorPortPriority      | Actor Port Priority      | Unsigned 16-bit integer | The priority assigned to the port by the Actor (via Management or Admin)        |
| lACP.actorState             | Actor State              | Unsigned 8-bit integer  | The Actor's state variables for the port, encoded as bits within a single octet |
| lACP.actorState.activity    | LACP Activity            | Boolean                 | Activity control value for this link. Active = 1, Passive = 0                   |
| lACP.actorState.aggregation | Aggregation              | Boolean                 | Aggregatable = 1, Individual = 0  |

| Field                              | Field Name                   | Type                          | Description   |
|------------------------------------|------------------------------|-------------------------------|---|
| lcp.actorState.coll<br>ecting      | Collecting                   | Boolean                       | Collection of incoming frames is: Enabled = 1, Disabled = 0                       |
| lcp.actorState.def<br>aulted       | Defaulted                    | Boolean                       | 1 = Actor Rx machine is using DEFAULT Partner info, 0 = using info in Rx'd LACPDU |
| lcp.actorState.dist<br>ributing    | Distributing                 | Boolean                       | Distribution of outgoing frames is: Enabled = 1, Disabled = 0                     |
| lcp.actorState.exp<br>ired         | Expired                      | Boolean                       | 1 = Actor Rx machine is EXPIRED, 0 = is NOT EXPIRED                               |
| lcp.actorState.syn<br>chronization | Synchronization              | Boolean                       | In Sync = 1, Out of Sync = 0  |
| lcp.actorState.tim<br>eout         | LACP Timeout                 | Boolean                       | Timeout control value for this link. Short Timeout = 1, Long Timeout = 0          |
| lcp.actorSysPriot<br>y             | Actor System Priority        | Unsigned 16-bit integer       | The priority assigned to this System by management or admin                       |
| lcp.actorSystem                    | Actor System                 | 6-byte Hardware (MAC) Address | The Actor's System ID encoded as a MAC address                                    |
| lcp.collectorInfo                  | Collector Information        | Unsigned 8-bit integer        | TLV type = Collector  |
| lcp.collectorInfoL<br>en           | Collector Information Length | Unsigned 8-bit integer        | The length of the Collector TLV   |
| lcp.collectorMax<br>Delay          | Collector Max Delay          | Unsigned 16-bit integer       | The max delay of the station tx'ing the LACPDU (in tens of usecs)                 |
| lcp.partnerInfo                    | Partner Information          | Unsigned 8-bit integer        | TLV type = Partner  |
| lcp.partnerInfoLe<br>n             | Partner Information          | Unsigned 8-bit integer        | The length of the Partner TLV   |

Appendix A. Ethereal Display Filter Fields

| Field                          | Field Name            | Type                    | Description   |
|--------------------------------|-----------------------|-------------------------|---|
|                                | Length                |                         |   |
| lACP.partnerKey                | Partner Key           | Unsigned 16-bit integer | The operational Key value assigned to the port associated with this link by the Partner                 |
| lACP.partnerPort               | Partner Port          | Unsigned 16-bit integer | The port number associated with this link assigned to the port by the Partner (via Management or Admin) |
| lACP.partnerPortPriority       | Partner Port Priority | Unsigned 16-bit integer | The priority assigned to the port by the Partner (via Management or Admin)                              |
| lACP.partnerState              | Partner State         | Unsigned 8-bit integer  | The Partner's state variables for the port, encoded as bits within a single octet                       |
| lACP.partnerState.activity     | LACP Activity         | Boolean                 | Activity control value for this link. Active = 1, Passive = 0   |
| lACP.partnerState.aggregation  | Aggregation           | Boolean                 | Aggregatable = 1, Individual = 0  |
| lACP.partnerState.collecting   | Collecting            | Boolean                 | Collection of incoming frames is: Enabled = 1, Disabled = 0   |
| lACP.partnerState.defaulted    | Defaulted             | Boolean                 | 1 = Actor Rx machine is using DEFAULT Partner info, 0 = using info in Rx'd LACPDU                       |
| lACP.partnerState.distributing | Distributing          | Boolean                 | Distribution of outgoing frames is: Enabled = 1, Disabled = 0   |
| lACP.partnerState.expired      | Expired               | Boolean                 | 1 = Actor Rx machine is   |

| Field                             | Field Name              | Type                          | Description  |
|-----------------------------------|-------------------------|-------------------------------|--|
|                                   |                         |                               | EXPIRED, 0 = is NOT EXPIRED  |
| lACP.partnerState.synchronization | Synchronization         | Boolean                       | In Sync = 1, Out of Sync = 0   |
| lACP.partnerState.timeout         | LACP Timeout            | Boolean                       | Timeout control value for this link. Short Timeout = 1, Long Timeout = 0 |
| lACP.partnerSystemPriority        | Partner System Priority | Unsigned 16-bit integer       | The priority assigned to the Partner System by management or admin       |
| lACP.partnerSystem                | Partner System          | 6-byte Hardware (MAC) Address | The Partner's System ID encoded as a MAC address                         |
| lACP.reserved                     | Reserved                | Byte array                    |  |
| lACP.subtype                      | Subtype                 | Unsigned 8-bit integer        | The specific Slow Protocol being used                                    |
| lACP.termInfo                     | Terminator Information  | Unsigned 8-bit integer        | TLV type = Terminator  |
| lACP.termLen                      | Terminator Length       | Unsigned 8-bit integer        | The length of the Terminator TLV   |
| lACP.version                      | LACP Version Number     | Unsigned 8-bit integer        | Identifies the LACP version  |

### Link Management Protocol (LMP) (Imp)

Table A-191. Link Management Protocol (LMP) (Imp)

| Field                          | Field Name             | Type                    | Description |
|--------------------------------|------------------------|-------------------------|-------------|
| Imp.begin_verify.all_links     | Verify All Links       | Boolean                 |             |
| Imp.begin_verify.encoding_type | Encoding Type          | Unsigned 8-bit integer  |             |
| Imp.begin_verify.flags         | Flags                  | Unsigned 16-bit integer |             |
| Imp.begin_verify.link_type     | Data Link Type         | Boolean                 |             |
| Imp.data_link.link_verify      | Data-Link is Allocated | Boolean                 |             |

| Field                               | Field Name                                       | Type                    | Description |
|-------------------------------------|--|-------------------------|-------------|
| Imp.data_link.local_ipv4            | Data-Link Local ID - IPv4                        | IPv4 address            |             |
| Imp.data_link.local_unnum           | Data-Link Local ID - Unnumbered                  | Unsigned 32-bit integer |             |
| Imp.data_link.port                  | Data-Link is Individual Port                     | Boolean                 |             |
| Imp.data_link.remote_ipv4           | Data-Link Remote ID - IPv4                       | IPv4 address            |             |
| Imp.data_link.remote_unnum          | Data-Link Remote ID - Unnumbered                 | Unsigned 32-bit integer |             |
| Imp.data_link_encoding              | LSP Encoding Type                                | Unsigned 8-bit integer  |             |
| Imp.data_link_flags                 | Data-Link Flags                                  | Unsigned 8-bit integer  |             |
| Imp.data_link_subobj                | Subobject  | No value                |             |
| Imp.data_link_switching             | Interface Switching Capability                   | Unsigned 8-bit integer  |             |
| Imp.error                           | Error Code                                       | Unsigned 32-bit integer |             |
| Imp.error.config_bad_ccid           | Config - Bad CC ID                               | Boolean                 |             |
| Imp.error.config_bad_params         | Config - Unacceptable non-negotiable parameters  | Boolean                 |             |
| Imp.error.config_renegotiate        | Config - Renegotiate Parameter                   | Boolean                 |             |
| Imp.error.summary_bad_data_link     | Summary - Bad Data Link Object                   | Boolean                 |             |
| Imp.error.summary_bad_params        | Summary - Unacceptable non-negotiable parameters | Boolean                 |             |
| Imp.error.summary_bad_remote_linkid | Summary - Bad Remote Link ID                     | Boolean                 |             |
| Imp.error.summary_bad_te_link       | Summary - Bad TE Link Object                     | Boolean                 |             |

| Field                                  | Field Name                                      | Type                    | Description |
|--|---|-------------------------|-------------|
| lmp.error.summary_renegotiate          | Summary - Renegotiate Parameters                | Boolean                 |             |
| lmp.error.verify_te_link_id            | Verification - TE Link ID Configuration Error   | Boolean                 |             |
| lmp.error.verify_unsupported_link      | Verification - Unsupported for this TE-Link     | Boolean                 |             |
| lmp.error.verify_unsupported_transport | Verification - Transport Unsupported            | Boolean                 |             |
| lmp.error.verify_unwilling             | Verification - Unwilling to Verify at this time | Boolean                 |             |
| lmp.hdr.auth                           | Authentication                                  | Boolean                 |             |
| lmp.hdr.ccdwn                          | ControlChannelDown                              | Boolean                 |             |
| lmp.hdr.dwdm                           | DWDM Node                                       | Boolean                 |             |
| lmp.hdr.flags                          | LMP Header - Flags                              | Unsigned 8-bit integer  |             |
| lmp.hdr.reboot                         | Reboot  | Boolean                 |             |
| lmp.hellodeadinterval                  | HelloDeadInterval                               | Unsigned 32-bit integer |             |
| lmp.hellointerval                      | HelloInterval                                   | Unsigned 32-bit integer |             |
| lmp.local_ccid                         | Local CCID Value                                | Unsigned 32-bit integer |             |
| lmp.local_interface_id_ipv4            | Local Interface ID - IPv4                       | IPv4 address            |             |
| lmp.local_interface_id_unnum           | Local Interface ID - Unnumbered                 | Unsigned 32-bit integer |             |
| lmp.local_linkid_ipv4                  | Local Link ID - IPv4                            | IPv4 address            |             |
| lmp.local_linkid_unnum                 | Local Link ID - Unnumbered                      | Unsigned 32-bit integer |             |
| lmp.local_nodeid                       | Local Node ID Value                             | IPv4 address            |             |
| lmp.messageid                          | Message-ID Value                                | Unsigned 32-bit         |             |

Appendix A. Ethereal Display Filter Fields

| Field                         | Field Name                    | Type                    | Description |
|-------------------------------|-------------------------------|-------------------------|-------------|
|                               |                               | integer                 |             |
| Imp.messageid_ack             | Message-ID Ack Value          | Unsigned 32-bit integer |             |
| Imp.msg                       | Message Type                  | Unsigned 8-bit integer  |             |
| Imp.msg.beginverify           | BeginVerify Message           | Boolean                 |             |
| Imp.msg.beginverifyack        | BeginVerifyAck Message        | Boolean                 |             |
| Imp.msg.beginverifynack       | BeginVerifyNack Message       | Boolean                 |             |
| Imp.msg.channelfail           | ChannelFail Message           | Boolean                 |             |
| Imp.msg.channelfailack        | ChannelFailAck Message        | Boolean                 |             |
| Imp.msg.channelfailnack       | ChannelFailNack Message       | Boolean                 |             |
| Imp.msg.channelstatus         | ChannelStatus Message         | Boolean                 |             |
| Imp.msg.channelstatusack      | ChannelStatusAck Message      | Boolean                 |             |
| Imp.msg.channelstatusrequest  | ChannelStatusRequest Message  | Boolean                 |             |
| Imp.msg.channelstatusresponse | ChannelStatusResponse Message | Boolean                 |             |
| Imp.msg.config                | Config Message                | Boolean                 |             |
| Imp.msg.configack             | ConfigAck Message             | Boolean                 |             |
| Imp.msg.confignack            | ConfigNack Message            | Boolean                 |             |
| Imp.msg.endverify             | EndVerify Message             | Boolean                 |             |
| Imp.msg.endverifyack          | EndVerifyAck Message          | Boolean                 |             |
| Imp.msg.hello                 | HELLO Message                 | Boolean                 |             |
| Imp.msg.linksummary           | LinkSummary Message           | Boolean                 |             |
| Imp.msg.linksummaryack        | LinkSummaryAck Message        | Boolean                 |             |



| Field                          | Field Name                | Type                   | Description |
|--------------------------------|---------------------------|------------------------|-------------|
| Imp.msg.linksummaryack         | LinkSummaryNack Message   | Boolean                |             |
| Imp.msg.test                   | Test Message              | Boolean                |             |
| Imp.msg.teststatusack          | TestStatusAck Message     | Boolean                |             |
| Imp.msg.teststatusfailure      | TestStatusFailure Message | Boolean                |             |
| Imp.msg.teststatussuccess      | TestStatusSuccess Message | Boolean                |             |
| Imp.obj.begin_verify           | BEGIN_VERIFY              | No value               |             |
| Imp.obj.begin_verify_ack       | BEGIN_VERIFY_ACK          | No value               |             |
| Imp.obj.channel_status         | CHANNEL_STATUS            | No value               |             |
| Imp.obj.channel_status_request | CHANNEL_STATUS_REQUEST    | No value               |             |
| Imp.obj.config                 | CONFIG                    | No value               |             |
| Imp.obj.ctype                  | Object C-Type             | Unsigned 8-bit integer |             |
| Imp.obj.data_link              | DATA_LINK                 | No value               |             |
| Imp.obj.error                  | ERROR                     | No value               |             |
| Imp.obj.hello                  | HELLO                     | No value               |             |
| Imp.obj.local_ccid             | LOCAL_CCID                | No value               |             |
| Imp.obj.local_interfaceid      | LOCAL_INTERFACE_ID        | No value               |             |
| Imp.obj.local_linkid           | LOCAL_LINK_ID             | No value               |             |
| Imp.obj.local_nodeid           | LOCAL_NODE_ID             | No value               |             |
| Imp.obj.messageid              | MESSAGE_ID                | No value               |             |
| Imp.obj.messageid_ack          | MESSAGE_ID_ACK            | No value               |             |
| Imp.obj.remote_ccid            | REMOTE_CCID               | No value               |             |
| Imp.obj.remote_interfaceid     | REMOTE_INTERFACE_ID       | No value               |             |
| Imp.obj.remote_linkid          | REMOTE_LINK_ID            | No value               |             |

Appendix A. Ethereal Display Filter Fields

| Field                            | Field Name                          | Type                       | Description |
|----------------------------------|-------------------------------------|----------------------------|-------------|
| kid                              | D                                   |                            |             |
| Imp.obj.remote_no<br>deid        | REMOTE_NODE_<br>ID                  | No value                   |             |
| Imp.obj.te_link                  | TE_LINK                             | No value                   |             |
| Imp.obj.verifyid                 | VERIFY_ID                           | No value                   |             |
| Imp.object                       | LOCAL_CCID                          | Unsigned 8-bit<br>integer  |             |
| Imp.remote_ccid                  | Remote CCID<br>Value                | Unsigned 32-bit<br>integer |             |
| Imp.remote_interf<br>aceid_ipv4  | Remote Interface<br>ID - IPv4       | IPv4 address               |             |
| Imp.remote_interf<br>aceid_unnum | Remote Interface<br>ID - Unnumbered | Unsigned 32-bit<br>integer |             |
| Imp.remote_linkid<br>_ipv4       | Remote Link ID -<br>IPv4            | Unsigned 32-bit<br>integer |             |
| Imp.remote_linkid<br>_unnum      | Remote Link ID -<br>Unnumbered      | Unsigned 32-bit<br>integer |             |
| Imp.remote_nodei<br>d            | Remote Node ID<br>Value             | IPv4 address               |             |
| Imp.rxseqnum                     | RxSeqNum                            | Unsigned 32-bit<br>integer |             |
| Imp.te_link.fault_<br>mgmt       | Fault Management<br>Supported       | Boolean                    |             |
| Imp.te_link.link_v<br>erify      | Link Verification<br>Supported      | Boolean                    |             |
| Imp.te_link.local_i<br>pv4       | TE-Link Local ID -<br>IPv4          | IPv4 address               |             |
| Imp.te_link.local_u<br>nnum      | TE-Link Local ID -<br>Unnumbered    | Unsigned 32-bit<br>integer |             |
| Imp.te_link.remote<br>_ipv4      | TE-Link Remote<br>ID - IPv4         | IPv4 address               |             |
| Imp.te_link.remote<br>_unnum     | TE-Link Remote<br>ID - Unnumbered   | Unsigned 32-bit<br>integer |             |
| Imp.te_link_flags                | TE-Link Flags                       | Unsigned 8-bit<br>integer  |             |
| Imp.txseqnum                     | TxSeqNum                            | Unsigned 32-bit<br>integer |             |
| Imp.verifyid                     | Verify-ID                           | Unsigned 32-bit<br>integer |             |

## Linux cooked-mode capture (sll)

Table A-192. Linux cooked-mode capture (sll)

| Field         | Field Name                | Type                          | Description               |
|---------------|---------------------------|-------------------------------|---------------------------|
| sll.etype     | Protocol                  | Unsigned 16-bit integer       | Ethernet protocol type    |
| sll.halen     | Link-layer address length | Unsigned 16-bit integer       | Link-layer address length |
| sll.hatype    | Link-layer address type   | Unsigned 16-bit integer       | Link-layer address type   |
| sll.ltype     | Protocol                  | Unsigned 16-bit integer       | Linux protocol type       |
| sll.pkttype   | Packet type               | Unsigned 16-bit integer       | Packet type               |
| sll.src.eth   | Source                    | 6-byte Hardware (MAC) Address | Source link-layer address |
| sll.src.other | Source                    | Byte array                    | Source link-layer address |
| sll.trailer   | Trailer                   | Byte array                    | Trailer                   |

## Local Management Interface (lmi)

Table A-193. Local Management Interface (lmi)

| Field            | Field Name          | Type                   | Description                |
|------------------|---------------------|------------------------|----------------------------|
| lmi.cmd          | Call reference      | Unsigned 8-bit integer | Call Reference             |
| lmi.dlci_act     | DLCI Active         | Unsigned 8-bit integer | DLCI Active Flag           |
| lmi.dlci_hi      | DLCI High           | Unsigned 8-bit integer | DLCI High bits             |
| lmi.dlci_low     | DLCI Low            | Unsigned 8-bit integer | DLCI Low bits              |
| lmi.dlci_new     | DLCI New            | Unsigned 8-bit integer | DLCI New Flag              |
| lmi.ele_rcd_type | Record Type         | Unsigned 8-bit integer | Record Type                |
| lmi.inf_ele      | Information Element | Unsigned 8-bit integer | Information Element        |
| lmi.inf_ele_len  | Length              | Unsigned 8-bit integer | Information Element Length |
| lmi.inf_ele_type | Type                | Unsigned 8-bit integer | Information Element Type   |

| Field        | Field Name   | Type                   | Description      |
|--------------|--------------|------------------------|------------------|
| lmi.msg_type | Message Type | Unsigned 8-bit integer | Message Type     |
| lmi.recv_seq | Recv Seq     | Unsigned 8-bit integer | Receive Sequence |
| lmi.send_seq | Send Seq     | Unsigned 8-bit integer | Send Sequence    |

### LocalTalk Link Access Protocol (llap)

Table A-194. LocalTalk Link Access Protocol (llap)

| Field     | Field Name       | Type                   | Description |
|-----------|------------------|------------------------|-------------|
| llap.dst  | Destination Node | Unsigned 8-bit integer |             |
| llap.src  | Source Node      | Unsigned 8-bit integer |             |
| llap.type | Type             | Unsigned 8-bit integer |             |

### Logical-Link Control (llc)

Table A-195. Logical-Link Control (llc)

| Field       | Field Name        | Type                    | Description      |
|-------------|-------------------|-------------------------|------------------|
| llc.control | Control           | Unsigned 16-bit integer |                  |
| llc.dsap    | DSAP              | Unsigned 8-bit integer  |                  |
| llc.dsap.ig | IG Bit            | Boolean                 | Individual/Group |
| llc.oui     | Organization Code | Unsigned 24-bit integer |                  |
| llc.pid     | Protocol ID       | Unsigned 16-bit integer |                  |
| llc.ssap    | SSAP              | Unsigned 8-bit integer  |                  |
| llc.ssap.cr | CR Bit            | Boolean                 | Command/Response |
| llc.type    | Type              | Unsigned 16-bit integer |                  |

### Lucent/Ascend debug output (ascend)

Table A-196. Lucent/Ascend debug output (ascend)

| Field        | Field Name | Type            | Description |
|--------------|------------|-----------------|-------------|
| ascend.chunk | WDD Chunk  | Unsigned 32-bit |             |

| Field         | Field Name    | Type                    | Description |
|---------------|---------------|-------------------------|-------------|
|               |               | integer                 |             |
| ascend.number | Called number | String                  |             |
| ascend.sess   | Session ID    | Unsigned 32-bit integer |             |
| ascend.task   | Task          | Unsigned 32-bit integer |             |
| ascend.type   | Link type     | Unsigned 32-bit integer |             |
| ascend.user   | User name     | String                  |             |

### MDS Header (mdshdr)

Table A-197. MDS Header (mdshdr)

| Field         | Field Name | Type                    | Description |
|---------------|------------|-------------------------|-------------|
| mdshdr.dstidx | Dst Index  | Unsigned 16-bit integer |             |
| mdshdr.eof    | EOF        | Unsigned 8-bit integer  |             |
| mdshdr.plen   | Packet Len | Unsigned 16-bit integer |             |
| mdshdr.sof    | SOF        | Unsigned 8-bit integer  |             |
| mdshdr.span   | SPAN Frame | Unsigned 8-bit integer  |             |
| mdshdr.srcidx | Src Index  | Unsigned 16-bit integer |             |
| mdshdr.vsan   | VSAN       | Unsigned 16-bit integer |             |

### MEGACO (megaco)

Table A-198. MEGACO (megaco)

| Field              | Field Name     | Type   | Description                      |
|--------------------|----------------|--------|----------------------------------|
| megaco.mid         | mID            | String | Message Originator               |
| megaco.transaction | Transaction    | String | Transaction type of this message |
| megaco.transid     | Transaction ID | String | Transaction ID of this message   |
| megaco.version     | Version        | String | MEGACO Version                   |

### MMS Message Encapsulation (mmse)

Table A-199. MMS Message Encapsulation (mmse)

| Field                  | Field Name                       | Type                   | Description   |
|------------------------|----------------------------------|------------------------|---|
| mmse.bcc               | Bcc                              | String                 | Blind carbon copy.  |
| mmse.cc                | Cc                               | String                 | Carbon copy.  |
| mmse.content_location  | Content-Location                 | String                 | Defines the location of the message.                            |
| mmse.content_type      | Data                             | No value               | Media content of the message.                                   |
| mmse.date              | Date                             | Date/Time stamp        | Arrival timestamp of the message or sending timestamp.          |
| mmse.delivery_report   | Delivery-Report                  | Unsigned 8-bit integer | Whether a report of message delivery is wanted or not.          |
| mmse.delivery_time.abs | Delivery-Time                    | Date/Time stamp        | The time at which message delivery is desired.                  |
| mmse.delivery_time.rel | Delivery-Time                    | Time duration          | The desired message delivery delay.                             |
| mmse.expiry.abs        | Expiry                           | Date/Time stamp        | Time when message expires and need not be delivered anymore.    |
| mmse.expiry.rel        | Expiry                           | Time duration          | Delay before message expires and need not be delivered anymore. |
| mmse.ffheader          | Free format (not encoded) header | String                 | Application header without corresponding encoding.              |
| mmse.from              | From                             | String                 | Address of the message sender.                                  |
| mmse.message_class.id  | Message-Class                    | Unsigned 8-bit integer | Of what category is the message.                                |
| mmse.message_class.str | Message-Class                    | String                 | Of what category is the message.                                |

| Field                  | Field Name        | Type                    | Description   |
|------------------------|-------------------|-------------------------|---|
| mmse.message_id        | Message-Id        | String                  | Unique identification of the message.   |
| mmse.message_size      | Message-Size      | Unsigned 32-bit integer | The size of the message in octets.  |
| mmse.message_type      | Message-Type      | Unsigned 8-bit integer  | Specifies the transaction type. Effectively defines PDU.                                      |
| mmse.mms_version       | MMS-Version       | String                  | Version of the protocol used.   |
| mmse.priority          | Priority          | Unsigned 8-bit integer  | Priority of the message.  |
| mmse.read_reply        | Read-Reply        | Unsigned 8-bit integer  | Whether a read report from every recipient is wanted.   |
| mmse.report_allowed    | Report-Allowed    | Unsigned 8-bit integer  | Sending of delivery report allowed or not.  |
| mmse.response_status   | Response-Status   | Unsigned 8-bit integer  | MMS-specific result of a message submission or retrieval.                                     |
| mmse.response_text     | Response-Text     | String                  | Additional information on MMS-specific result.  |
| mmse.sender_visibility | Sender-Visibility | Unsigned 8-bit integer  | Disclose sender identity to receiver or not.  |
| mmse.status            | Status            | Unsigned 8-bit integer  | Current status of the message.  |
| mmse.subject           | Subject           | String                  | Subject of the message.   |
| mmse.to                | To                | String                  | Recipient(s) of the message.  |
| mmse.transaction_id    | Transaction-ID    | String                  | A unique identifier for this transaction. Identifies request and corresponding response only. |

## MS Proxy Protocol (msproxy)

Table A-200. MS Proxy Protocol (msproxy)

| Field                       | Field Name              | Type                    | Description |
|-----------------------------|-------------------------|-------------------------|-------------|
| msproxy.bindaddr            | Destination             | IPv4 address            |             |
| msproxy.bindid              | Bound Port Id           | Unsigned 32-bit integer |             |
| msproxy.bindport            | Bind Port               | Unsigned 16-bit integer |             |
| msproxy.boundport           | Bound Port              | Unsigned 16-bit integer |             |
| msproxy.clntport            | Client Port             | Unsigned 16-bit integer |             |
| msproxy.command             | Command                 | Unsigned 16-bit integer |             |
| msproxy.dstaddr             | Destination Address     | IPv4 address            |             |
| msproxy.dstport             | Destination Port        | Unsigned 16-bit integer |             |
| msproxy.resolva<br>dr       | Address                 | IPv4 address            |             |
| msproxy.server_ex<br>t_addr | Server External Address | IPv4 address            |             |
| msproxy.server_ex<br>t_port | Server External Port    | Unsigned 16-bit integer |             |
| msproxy.server_in<br>t_addr | Server Internal Address | IPv4 address            |             |
| msproxy.server_in<br>t_port | Server Internal Port    | Unsigned 16-bit integer |             |
| msproxy.serverad<br>dr      | Server Address          | IPv4 address            |             |
| msproxy.serverpor<br>t      | Server Port             | Unsigned 16-bit integer |             |
| msproxy.srcport             | Source Port             | Unsigned 16-bit integer |             |

## MSN Messenger Service (msnms)

Table A-201. MSN Messenger Service (msnms)

| Field | Field Name | Type | Description |
|-------|------------|------|-------------|
|       |            |      |             |

## MSNIP: Multicast Source Notification of Interest Protocol (msnip)



**Table A-202. MSNIP: Multicast Source Notification of Interest Protocol (msnip)**

| Field              | Field Name      | Type                    | Description               |
|--------------------|-----------------|-------------------------|---------------------------|
| msnip.checksum     | Checksum        | Unsigned 16-bit integer | MSNIP Checksum            |
| msnip.checksum_bad | Bad Checksum    | Boolean                 | Bad MSNIP Checksum        |
| msnip.count        | Count           | Unsigned 8-bit integer  | MSNIP Number of groups    |
| msnip.genid        | Generation ID   | Unsigned 16-bit integer | MSNIP Generation ID       |
| msnip.groups       | Groups          | No value                | MSNIP Groups              |
| msnip.holdtime     | Holdtime        | Unsigned 32-bit integer | MSNIP Holdtime in seconds |
| msnip.holdtime16   | Holdtime        | Unsigned 16-bit integer | MSNIP Holdtime in seconds |
| msnip.maddr        | Multicast group | IPv4 address            | MSNIP Multicast Group     |
| msnip.netmask      | Netmask         | Unsigned 8-bit integer  | MSNIP Netmask             |
| msnip.rec_type     | Record Type     | Unsigned 8-bit integer  | MSNIP Record Type         |
| msnip.type         | Type            | Unsigned 8-bit integer  | MSNIP Packet Type         |

**MTP 2 Transparent Proxy (m2tp)****Table A-203. MTP 2 Transparent Proxy (m2tp)**

| Field                     | Field Name             | Type                    | Description |
|---------------------------|------------------------|-------------------------|-------------|
| m2tp.diagnostic_info      | Diagnostic information | Byte array              |             |
| m2tp.error_code           | Error code             | Unsigned 32-bit integer |             |
| m2tp.heartbeat_data       | Heartbeat data         | Byte array              |             |
| m2tp.info_string          | Info string            | String                  |             |
| m2tp.interface_identifier | Interface Identifier   | Unsigned 32-bit integer |             |
| m2tp.master_slave         | Master Slave Indicator | Unsigned 32-bit integer |             |
| m2tp.message_classes      | Message class          | Unsigned 8-bit integer  |             |

| Field                  | Field Name           | Type                    | Description |
|------------------------|----------------------|-------------------------|-------------|
| m2tp.message_length    | Message length       | Unsigned 32-bit integer |             |
| m2tp.message_type      | Message Type         | Unsigned 8-bit integer  |             |
| m2tp.parameter_length  | Parameter length     | Unsigned 16-bit integer |             |
| m2tp.parameter_padding | Padding              | Byte array              |             |
| m2tp.parameter_tag     | Parameter Tag        | Unsigned 16-bit integer |             |
| m2tp.parameter_value   | Parameter Value      | Byte array              |             |
| m2tp.reason            | Reason               | Unsigned 32-bit integer |             |
| m2tp.reserved          | Reserved             | Unsigned 8-bit integer  |             |
| m2tp.user_identifier   | M2tp User Identifier | Unsigned 32-bit integer |             |
| m2tp.version           | Version              | Unsigned 8-bit integer  |             |

## MTP 2 User Adaptation Layer (m2ua)

Table A-204. MTP 2 User Adaptation Layer (m2ua)

| Field                       | Field Name             | Type                    | Description |
|-----------------------------|------------------------|-------------------------|-------------|
| m2ua.action                 | Actions                | Unsigned 32-bit integer |             |
| m2ua.asp_identifier         | ASP identifier         | Unsigned 32-bit integer |             |
| m2ua.congestion_status      | Congestion status      | Unsigned 32-bit integer |             |
| m2ua.correlation_identifier | Correlation identifier | Unsigned 32-bit integer |             |
| m2ua.data_2_length          | Length indicator       | Unsigned 8-bit integer  |             |
| m2ua.deregistration_status  | Deregistration status  | Unsigned 32-bit integer |             |
| m2ua.diagnostic_information | Diagnostic information | Byte array              |             |
| m2ua.discard_status         | Discard status         | Unsigned 32-bit integer |             |

| Field                           | Field Name                     | Type                    | Description |
|---------------------------------|--------------------------------|-------------------------|-------------|
| m2ua.error_code                 | Error code                     | Unsigned 32-bit integer |             |
| m2ua.event                      | Event                          | Unsigned 32-bit integer |             |
| m2ua.heartbeat_data             | Heartbeat data                 | Byte array              |             |
| m2ua.info_string                | Info string                    | String                  |             |
| m2ua.interface_identifier_int   | Interface Identifier (integer) | Unsigned 32-bit integer |             |
| m2ua.interface_identifier_start | Interface Identifier (start)   | Unsigned 32-bit integer |             |
| m2ua.interface_identifier_stop  | Interface Identifier (stop)    | Unsigned 32-bit integer |             |
| m2ua.interface_identifier_text  | Interface identifier (text)    | String                  |             |
| m2ua.local_lk_identifier        | Local LK identifier            | Unsigned 32-bit integer |             |
| m2ua.message_class              | Message class                  | Unsigned 8-bit integer  |             |
| m2ua.message_length             | Message length                 | Unsigned 32-bit integer |             |
| m2ua.message_type               | Message Type                   | Unsigned 8-bit integer  |             |
| m2ua.parameter_length           | Parameter length               | Unsigned 16-bit integer |             |
| m2ua.parameter_padding          | Padding                        | Byte array              |             |
| m2ua.parameter_tag              | Parameter Tag                  | Unsigned 16-bit integer |             |
| m2ua.parameter_value            | Parameter value                | Byte array              |             |
| m2ua.registration_status        | Registration status            | Unsigned 32-bit integer |             |
| m2ua.reserved                   | Reserved                       | Unsigned 8-bit integer  |             |
| m2ua.retrieval_result           | Retrieval result               | Unsigned 32-bit integer |             |
| m2ua.sdl_identifier             | SDL identifier                 | Unsigned 16-bit integer |             |

| Field                  | Field Name        | Type                    | Description |
|------------------------|-------------------|-------------------------|-------------|
| m2ua.sdl_reserved      | Reserved          | Unsigned 16-bit integer |             |
| m2ua.sdt_identifier    | SDT identifier    | Unsigned 16-bit integer |             |
| m2ua.sdt_reserved      | Reserved          | Unsigned 16-bit integer |             |
| m2ua.sequence_number   | Sequence number   | Unsigned 32-bit integer |             |
| m2ua.state             | State             | Unsigned 32-bit integer |             |
| m2ua.status_info       | Status info       | Unsigned 16-bit integer |             |
| m2ua.status_type       | Status type       | Unsigned 16-bit integer |             |
| m2ua.traffic_mode_type | Traffic mode Type | Unsigned 32-bit integer |             |
| m2ua.version           | Version           | Unsigned 8-bit integer  |             |

### MTP 3 User Adaptation Layer (m3ua)

Table A-205. MTP 3 User Adaptation Layer (m3ua)

| Field                         | Field Name             | Type                    | Description |
|-------------------------------|------------------------|-------------------------|-------------|
| m3ua.affected_point_code_mask | Mask                   | Unsigned 8-bit integer  |             |
| m3ua.affected_point_code_pc   | Affected point code    | Unsigned 24-bit integer |             |
| m3ua.asp_identifier           | ASP identifier         | Unsigned 32-bit integer |             |
| m3ua.cic_range_lower          | Lower CIC value        | Unsigned 16-bit integer |             |
| m3ua.cic_range_mask           | Mask                   | Unsigned 8-bit integer  |             |
| m3ua.cic_range_pc             | Originating point code | Unsigned 24-bit integer |             |
| m3ua.cic_range_upper          | Upper CIC value        | Unsigned 16-bit integer |             |
| m3ua.concerned_dpc            | Concerned DPC          | Unsigned 24-bit integer |             |
| m3ua.concerned_reserved       | Reserved               | Byte array              |             |

| Field                                      | Field Name                   | Type                    | Description |
|--|------------------------------|-------------------------|-------------|
| m3ua.congestion_level                      | Congestion level             | Unsigned 8-bit integer  |             |
| m3ua.congestion_reserved                   | Reserved                     | Byte array              |             |
| m3ua.correlation_identifier                | Correlation Identifier       | Unsigned 32-bit integer |             |
| m3ua.deregistration_result_routing_context | Routing context              | Unsigned 32-bit integer |             |
| m3ua.deregistration_results_status         | De-Registration status       | Unsigned 32-bit integer |             |
| m3ua.deregistration_status                 | Deregistration status        | Unsigned 32-bit integer |             |
| m3ua.diagnostic_information                | Diagnostic information       | Byte array              |             |
| m3ua.dpc_mask                              | Mask                         | Unsigned 8-bit integer  |             |
| m3ua.dpc_pc                                | Destination point code       | Unsigned 24-bit integer |             |
| m3ua.error_code                            | Error code                   | Unsigned 32-bit integer |             |
| m3ua.heartbeat_data                        | Heartbeat data               | Byte array              |             |
| m3ua.info_string                           | Info string                  | String                  |             |
| m3ua.local_routing_key_identifier          | Local routing key identifier | Unsigned 32-bit integer |             |
| m3ua.message_class                         | Message class                | Unsigned 8-bit integer  |             |
| m3ua.message_length                        | Message length               | Unsigned 32-bit integer |             |
| m3ua.message_type                          | Message Type                 | Unsigned 8-bit integer  |             |
| m3ua.network_appearance                    | Network appearance           | Unsigned 32-bit integer |             |
| m3ua.opc_list_mask                         | Mask                         | Unsigned 8-bit integer  |             |
| m3ua.opc_list_pc                           | Originating point code       | Unsigned 24-bit integer |             |
| m3ua.parameter_length                      | Parameter length             | Unsigned 16-bit integer |             |

Appendix A. Ethereal Display Filter Fields

| Field                                    | Field Name                | Type                    | Description |
|--|---------------------------|-------------------------|-------------|
| m3ua.parameter_padding                   | Padding                   | Byte array              |             |
| m3ua.parameter_tag                       | Parameter Tag             | Unsigned 16-bit integer |             |
| m3ua.parameter_value                     | Parameter value           | Byte array              |             |
| m3ua.paramter_trailer                    | Trailer                   | Byte array              |             |
| m3ua.protocol_data_2_li                  | Length indicator          | Unsigned 8-bit integer  |             |
| m3ua.protocol_data_dpc                   | DPC                       | Unsigned 32-bit integer |             |
| m3ua.protocol_data_mp                    | MP                        | Unsigned 8-bit integer  |             |
| m3ua.protocol_data_ni                    | NI                        | Unsigned 8-bit integer  |             |
| m3ua.protocol_data_opc                   | OPC                       | Unsigned 32-bit integer |             |
| m3ua.protocol_data_si                    | SI                        | Unsigned 8-bit integer  |             |
| m3ua.protocol_data_sls                   | SLS                       | Unsigned 8-bit integer  |             |
| m3ua.reason                              | Reason                    | Unsigned 32-bit integer |             |
| m3ua.registration_result_identifier      | Local RK-identifier value | Unsigned 32-bit integer |             |
| m3ua.registration_result_routing_context | Routing context           | Unsigned 32-bit integer |             |
| m3ua.registration_results_status         | Registration status       | Unsigned 32-bit integer |             |
| m3ua.registration_status                 | Registration status       | Unsigned 32-bit integer |             |
| m3ua.reserved                            | Reserved                  | Unsigned 8-bit integer  |             |
| m3ua.routing_context                     | Routing context           | Unsigned 32-bit integer |             |
| m3ua.si                                  | Service indicator         | Unsigned 8-bit integer  |             |
| m3ua.ssn                                 | Subsystem                 | Unsigned 8-bit          |             |

| Field                     | Field Name           | Type                    | Description |
|---------------------------|----------------------|-------------------------|-------------|
|                           | number               | integer                 |             |
| m3ua.status_info          | Status info          | Unsigned 16-bit integer |             |
| m3ua.status_type          | Status type          | Unsigned 16-bit integer |             |
| m3ua.traffic_mode_type    | Traffic mode Type    | Unsigned 32-bit integer |             |
| m3ua.unavailability_cause | Unavailability cause | Unsigned 16-bit integer |             |
| m3ua.user_identity        | User Identity        | Unsigned 16-bit integer |             |
| m3ua.version              | Version              | Unsigned 8-bit integer  |             |

### MTP2 Peer Adaptation Layer (m2pa)

Table A-206. MTP2 Peer Adaptation Layer (m2pa)

| Field             | Field Name     | Type                    | Description |
|-------------------|----------------|-------------------------|-------------|
| m2pa.bsn          | BSN            | Unsigned 24-bit integer |             |
| m2pa.class        | Message Class  | Unsigned 8-bit integer  |             |
| m2pa.filler       | Filler         | Byte array              |             |
| m2pa.fsn          | FSN            | Unsigned 24-bit integer |             |
| m2pa.length       | Message length | Unsigned 32-bit integer |             |
| m2pa.li_priority  | Priority       | Unsigned 8-bit integer  |             |
| m2pa.li_spare     | Spare          | Unsigned 8-bit integer  |             |
| m2pa.spare        | Spare          | Unsigned 8-bit integer  |             |
| m2pa.status       | Link Status    | Unsigned 32-bit integer |             |
| m2pa.type         | Message Type   | Unsigned 16-bit integer |             |
| m2pa.unknown_data | Unknown Data   | Byte array              |             |
| m2pa.unused       | Unused         | Unsigned 8-bit integer  |             |

| Field        | Field Name | Type                   | Description |
|--------------|------------|------------------------|-------------|
| m2pa.version | Version    | Unsigned 8-bit integer |             |

### Malformed Packet (malformed)

Table A-207. Malformed Packet (malformed)

| Field | Field Name | Type | Description |
|-------|------------|------|-------------|
|       |            |      |             |

### Media Gateway Control Protocol (mgcp)

Table A-208. Media Gateway Control Protocol (mgcp)

| Field                             | Field Name                 | Type                    | Description                        |
|-----------------------------------|----------------------------|-------------------------|------------------------------------|
| mgcp.dup                          | Duplicate Message          | Unsigned 32-bit integer | Duplicate Message                  |
| mgcp.messagecount                 | MGCP Message Count         | Unsigned 32-bit integer | Number of MGCP message in a packet |
| mgcp.param.bearinfo               | BearerInformation (B)      | String                  | Bearer Information                 |
| mgcp.param.callid                 | CallId (C)                 | String                  | Call Id                            |
| mgcp.param.capabilities           | Capabilities (A)           | String                  | Capabilities                       |
| mgcp.param.connectionid           | ConnectionIdentifier (I)   | String                  | Connection Identifier              |
| mgcp.param.connectionmode         | ConnectionMode (M)         | String                  | Connection Mode                    |
| mgcp.param.connectionparam        | ConnectionParameters (P)   | String                  | Connection Parameters              |
| mgcp.param.detectedevents         | DetectedEvents (T)         | String                  | Detected Events                    |
| mgcp.param.digitmap               | DigitMap (D)               | String                  | Digit Map                          |
| mgcp.param.eventstates            | EventStates (ES)           | String                  | Event States                       |
| mgcp.param.extension              | Extension Parameter (X-*)  | String                  | Extension Parameter                |
| mgcp.param.invalid                | Invalid Parameter          | String                  | Invalid Parameter                  |
| mgcp.param.localconnectionoptions | LocalConnectionOptions (L) | String                  | Local Connection Options           |
| mgcp.param.notified               | NotifiedEntity (N)         | String                  | Notified Entity                    |



| Field                         | Field Name              | Type                    | Description                        |
|-------------------------------|-------------------------|-------------------------|------------------------------------|
| edentity                      |                         |                         |                                    |
| mgcp.param.observedevents     | ObservedEvents (O)      | String                  | Observed Events                    |
| mgcp.param.quarantinehandling | QuarantineHandling (Q)  | String                  | Quarantine Handling                |
| mgcp.param.reasoncode         | ReasonCode (E)          | String                  | Reason Code                        |
| mgcp.param.reqevents          | RequestedEvents (R)     | String                  | Requested Events                   |
| mgcp.param.reqinfo            | RequestedInfo (F)       | String                  | Requested Info                     |
| mgcp.param.requestid          | RequestIdentifier (X)   | String                  | Request Identifier                 |
| mgcp.param.restartdelay       | RestartDelay (RD)       | String                  | Restart Delay                      |
| mgcp.param.restartmethod      | RestartMethod (RM)      | String                  | Restart Method                     |
| mgcp.param.responseack        | ResponseAck (K)         | String                  | Response Ack                       |
| mgcp.param.secondconnectionid | SecondConnectionID (I2) | String                  | Second Connection Identifier       |
| mgcp.param.secondendpointid   | SecondEndpointID (Z2)   | String                  | Second Endpoing ID                 |
| mgcp.param.signalreq          | SignalRequests (S)      | String                  | Signal Request                     |
| mgcp.param.specificendpointid | SpecificEndpointID (Z)  | String                  | Specific Endpoint ID               |
| mgcp.req                      | Request                 | Boolean                 | True if MGCP request               |
| mgcp.req.dup                  | Duplicate Request       | Unsigned 32-bit integer | Duplicate Request                  |
| mgcp.req.endpoint             | Endpoint                | String                  | Endpoint referenced by the message |
| mgcp.req.verb                 | Verb                    | String                  | Name of the verb                   |
| mgcp.reqframe                 | Request Frame           |                         | Request Frame                      |
| mgcp.rsp                      | Response                | Boolean                 | TRUE if MGCP response              |

| Field              | Field Name         | Type                    | Description                            |
|--------------------|--------------------|-------------------------|--|
| mgcp.rsp.dup       | Duplicate Response | Unsigned 32-bit integer | Duplicate Response                     |
| mgcp.rsp.rspcode   | Response Code      | String                  | Response Code                          |
| mgcp.rsp.rspstring | Response String    | String                  | Response String                        |
| mgcp.rspframe      | Response Frame     |                         | Response Frame                         |
| mgcp.time          | Time from request  | Time duration           | Timedelta between Request and Response |
| mgcp.transid       | Transaction ID     | String                  | Transaction ID of this message         |
| mgcp.version       | Version            | String                  | MGCP Version                           |

### Message Transfer Part Level 2 (mtp2)

Table A-209. Message Transfer Part Level 2 (mtp2)

| Field        | Field Name               | Type                    | Description |
|--------------|--------------------------|-------------------------|-------------|
| mtp2.bib     | Backward indicator bit   | Unsigned 8-bit integer  |             |
| mtp2.bsn     | Backward sequence number | Unsigned 8-bit integer  |             |
| mtp2.fib     | Forward indicator bit    | Unsigned 8-bit integer  |             |
| mtp2.fsn     | Forward sequence number  | Unsigned 8-bit integer  |             |
| mtp2.li      | Length Indicator         | Unsigned 8-bit integer  |             |
| mtp2.long_sf | Status field             | Unsigned 16-bit integer |             |
| mtp2.sf      | Status field             | Unsigned 8-bit integer  |             |
| mtp2.spare   | Spare                    | Unsigned 8-bit integer  |             |

### Message Transfer Part Level 3 (mtp3)

Table A-210. Message Transfer Part Level 3 (mtp3)

| Field         | Field Name | Type                    | Description |
|---------------|------------|-------------------------|-------------|
| mtp3.ansi_dpc | DPC        | String                  |             |
| mtp3.ansi_opc | DPC        | String                  |             |
| mtp3.dpc      | DPC        | Unsigned 32-bit integer |             |

| Field                  | Field Name               | Type                    | Description |
|------------------------|--------------------------|-------------------------|-------------|
| mtp3.dpc.cluster       | DPC Cluster              | Unsigned 24-bit integer |             |
| mtp3.dpc.member        | DPC Member               | Unsigned 24-bit integer |             |
| mtp3.dpc.network       | DPC Network              | Unsigned 24-bit integer |             |
| mtp3.network_indicator | Network indicator        | Unsigned 8-bit integer  |             |
| mtp3.opc               | OPC                      | Unsigned 32-bit integer |             |
| mtp3.opc.cluster       | OPC Cluster              | Unsigned 24-bit integer |             |
| mtp3.opc.member        | OPC Member               | Unsigned 24-bit integer |             |
| mtp3.opc.network       | OPC Network              | Unsigned 24-bit integer |             |
| mtp3.priority          | Priority                 | Unsigned 8-bit integer  |             |
| mtp3.service_indicator | Service indicator        | Unsigned 8-bit integer  |             |
| mtp3.sls               | Signalling Link Selector | Unsigned 32-bit integer |             |
| mtp3.spare             | Spare                    | Unsigned 8-bit integer  |             |

### Message Transfer Part Level 3 Management (mtp3mg)

Table A-211. Message Transfer Part Level 3 Management (mtp3mg)

| Field              | Field Name                  | Type                    | Description                  |
|--------------------|-----------------------------|-------------------------|------------------------------|
| mtp3mg.ansi_apc    | Affected Point Code         | String                  |                              |
| mtp3mg.apc         | Affected Point Code (ITU)   | Unsigned 8-bit integer  |                              |
| mtp3mg.apc.cluster | Affected Point Code cluster | Unsigned 24-bit integer |                              |
| mtp3mg.apc.member  | Affected Point Code member  | Unsigned 24-bit integer |                              |
| mtp3mg.apc.network | Affected Point Code network | Unsigned 24-bit integer |                              |
| mtp3mg.cause       | Cause                       | Unsigned 8-bit integer  | Cause of user unavailability |

| Field              | Field Name              | Type                    | Description                                      |
|--------------------|-------------------------|-------------------------|--|
| mtp3mg.cbc         | Change Back Code        | Unsigned 16-bit integer |  |
| mtp3mg.fsn         | Forward Sequence Number | Unsigned 8-bit integer  | Forward Sequence Number of last accepted message |
| mtp3mg.h0          | H0 (Message Group)      | Unsigned 8-bit integer  | Message group identifier                         |
| mtp3mg.h1          | H1 (Message)            | Unsigned 8-bit integer  | Message type                                     |
| mtp3mg.link        | Link                    | Unsigned 8-bit integer  | CIC of BIC used to carry data                    |
| mtp3mg.slc         | Signalling Link Code    | Unsigned 8-bit integer  | SLC of affected link                             |
| mtp3mg.status      | Status                  | Unsigned 8-bit integer  | Congestion status                                |
| mtp3mg.test.h0     | H0 (Message Group)      | Unsigned 8-bit integer  | Message group identifier                         |
| mtp3mg.test.h1     | H1 (Message)            | Unsigned 8-bit integer  | SLT message type                                 |
| mtp3mg.test.length | Test length             | Unsigned 8-bit integer  | Signalling link test pattern length              |
| mtp3mg.user        | User                    | Unsigned 8-bit integer  | Unavailable user part                            |

### Microsoft Distributed File System (dfs)

Table A-212. Microsoft Distributed File System (dfs)

| Field     | Field Name | Type                    | Description |
|-----------|------------|-------------------------|-------------|
| dfs.opnum | Operation  | Unsigned 16-bit integer | Operation   |

### Microsoft Exchange MAPI (mapi)

Table A-213. Microsoft Exchange MAPI (mapi)

| Field                      | Field Name     | Type                    | Description                               |
|----------------------------|----------------|-------------------------|---|
| mapi.decrypted.data        | Decrypted data | Byte array              | Decrypted data                            |
| mapi.decrypted.data.len    | Length         | Unsigned 32-bit integer | Used size of buffer for decrypted data    |
| mapi.decrypted.data.maxlen | Max Length     | Unsigned 32-bit integer | Maximum size of buffer for decrypted data |

| Field                      | Field Name     | Type                    | Description  |
|----------------------------|----------------|-------------------------|--|
| mapi.decrypted.data.offset | Offset         | Unsigned 32-bit integer | Offset into buffer for decrypted data                                  |
| mapi.encap_len             | Length         | Unsigned 16-bit integer | Length of encapsulated/encrypted data                                  |
| mapi.encrypted_data        | Encrypted data | Byte array              | Encrypted data   |
| mapi.hnd                   | Context Handle | Byte array              |  |
| mapi.pdu.extra_trailer     | unknown        | Byte array              | If you know what this is, contact ethereal developers                  |
| mapi.pdu.len               | Length         | Unsigned 16-bit integer | Size of the command PDU  |
| mapi.pdu.trailer           | Trailer        | Unsigned 32-bit integer | If you know what this is, contact ethereal developers                  |
| mapi.rc                    | Return code    | Unsigned 32-bit integer |  |
| mapi.unknown_short         | Unknown short  | Unsigned 16-bit integer | Unknown short. If you know what this is, contact ethereal developers.  |
| mapi.unknown_string        | Unknown string | String                  | Unknown string. If you know what this is, contact ethereal developers. |

## Microsoft Local Security Architecture (lsa)

Table A-214. Microsoft Local Security Architecture (lsa)

| Field                          | Field Name       | Type                    | Description      |
|--------------------------------|------------------|-------------------------|------------------|
| lsa.access_mask                | Access Mask      | Unsigned 32-bit integer | LSA Access Mask  |
| lsa.access_mask.create_account | Create account   | Boolean                 | Create account   |
| lsa.access_mask.create_priv    | Create privilege | Boolean                 | Create privilege |
| lsa.access_mask.create_secret  | Create secret    | Boolean                 | Create secret    |

| Field                                    | Field Name               | Type                    | Description               |
|--|--------------------------|-------------------------|---------------------------|
| lsa.access_mask.get_privateinfo          | Get private info         | Boolean                 | Get private info          |
| lsa.access_mask.lookup_names             | Lookup names             | Boolean                 | Lookup names              |
| lsa.access_mask.server_admin             | Server admin             | Boolean                 | Server admin              |
| lsa.access_mask.set_audit_requirements   | Set audit requirements   | Boolean                 | Set audit requirements    |
| lsa.access_mask.set_default_quota_limits | Set default quota limits | Boolean                 | Set default quota limits  |
| lsa.access_mask.trust_admin              | Trust admin              | Boolean                 | Trust admin               |
| lsa.access_mask.view_audit_info          | View audit info          | Boolean                 | View audit info           |
| lsa.access_mask.view_local_info          | View local info          | Boolean                 | View local info           |
| lsa.acct                                 | Account                  | String                  | Account                   |
| lsa.attr                                 | Attr                     | Unsigned 64-bit integer | LSA Attributes            |
| lsa.auth.blob                            | Auth blob                | Byte array              |                           |
| lsa.auth.len                             | Auth Len                 | Unsigned 32-bit integer | Auth Info len             |
| lsa.auth.type                            | Auth Type                | Unsigned 32-bit integer | Auth Info type            |
| lsa.auth.update                          | Update                   | Unsigned 64-bit integer | LSA Auth Info update      |
| lsa.controller                           | Controller               | String                  | Name of Domain Controller |
| lsa.count                                | Count                    | Unsigned 32-bit integer | Count of objects          |
| lsa.cur.mtime                            | Current MTime            | Date/Time stamp         | Current MTime to set      |
| lsa.domain                               | Domain                   | String                  | Domain                    |
| lsa.flat_name                            | Flat Name                | String                  |                           |
| lsa.forest                               | Forest                   | String                  |                           |
| lsa.hnd                                  | Context Handle           | Byte array              | LSA policy handle         |
| lsa.index                                | Index                    | Unsigned 32-bit         |                           |

| Field                      | Field Name        | Type                    | Description                                   |
|----------------------------|-------------------|-------------------------|---|
|                            |                   | integer                 |   |
| lsa.info.level             | Level             | Unsigned 16-bit integer | Information level of requested data           |
| lsa.info_type              | Info Type         | Unsigned 32-bit integer |   |
| lsa.key                    | Key               | String                  |   |
| lsa.max_count              | Max Count         | Unsigned 32-bit integer |   |
| lsa.mod.mtime              | MTime             | Date/Time stamp         | Time when this modification occurred          |
| lsa.mod.seq_no             | Seq No            | Unsigned 64-bit integer | Sequence number for this modification         |
| lsa.name                   | Name              | String                  |   |
| lsa.new_pwd                | New Password      | Byte array              | New password                                  |
| lsa.num_mapped             | Num Mapped        | Unsigned 32-bit integer |   |
| lsa.obj_attr               | Attributes        | Unsigned 32-bit integer | LSA Attributes                                |
| lsa.obj_attr.len           | Length            | Unsigned 32-bit integer | Length of object attribute structure          |
| lsa.obj_attr.name          | Name              | String                  | Name of object attribute                      |
| lsa.old.mtime              | Old MTime         | Date/Time stamp         | Old MTime for this object                     |
| lsa.old_pwd                | Old Password      | Byte array              | Old password                                  |
| lsa.opnum                  | Operation         | Unsigned 16-bit integer | Operation                                     |
| lsa.paei.enabled           | Enabled           | Unsigned 8-bit integer  | If Audit Events Information is Enabled or not |
| lsa.paei.settings          | Settings          | Unsigned 32-bit integer | Audit Events Information settings             |
| lsa.pali.log_size          | Log Size          | Unsigned 32-bit integer | Size of audit log                             |
| lsa.pali.next_audit_record | Next Audit Record | Unsigned 32-bit integer | Next audit record                             |

| Field                         | Field Name           | Type                    | Description  |
|-------------------------------|----------------------|-------------------------|--|
| lsa.pali.percent_full         | Percent Full         | Unsigned 32-bit integer | How full audit log is in percentage                                  |
| lsa.pali.retention_period     | Retention Period     | Time duration           |  |
| lsa.pali.shutdown_in_progress | Shutdown in progress | Unsigned 8-bit integer  | Flag whether shutdown is in progress or not                          |
| lsa.pali.time_to_shutdown     | Time to shutdown     | Time duration           | Time to shutdown   |
| lsa.policy.info               | Info Class           | Unsigned 16-bit integer | Policy information class   |
| lsa.privilege.name            | Name                 | String                  | LSA Privilege Name   |
| lsa.qos.effective_only        | Effective only       | Unsigned 8-bit integer  | QOS Flag whether this is Effective Only or not                       |
| lsa.qos.imp_level             | Impersonation level  | Unsigned 16-bit integer | QOS Impersonation Level  |
| lsa.qos.len                   | Length               | Unsigned 32-bit integer | Length of quality of service structure                               |
| lsa.qos.track_ctx             | Context Tracking     | Unsigned 8-bit integer  | QOS Context Tracking Mode  |
| lsa.quota.max_wss             | Max WSS              | Unsigned 32-bit integer | Size of Quota Max WSS  |
| lsa.quota.min_wss             | Min WSS              | Unsigned 32-bit integer | Size of Quota Min WSS  |
| lsa.quota.non_paged_pool      | Non Paged Pool       | Unsigned 32-bit integer | Size of Quota non-Paged Pool   |
| lsa.quota.paged_pool          | Paged Pool           | Unsigned 32-bit integer | Size of Quota Paged Pool   |
| lsa.quota.pagefile            | Pagefile             | Unsigned 32-bit integer | Size of quota pagefile usage   |
| lsa.rc                        | Return code          | Unsigned 32-bit integer | LSA return status code   |
| lsa.remove_all                | Remove All           | Unsigned 8-bit integer  | Flag whether all rights should be removed or only the specified ones |
| lsa.resume_handle             | Resume Handle        | Unsigned 32-bit integer | Resume Handle  |



| Field                       | Field Name      | Type                    | Description   |
|-----------------------------|-----------------|-------------------------|---|
| lsa.rid                     | RID             | Unsigned 32-bit integer | RID   |
| lsa.rid.offset              | RID Offset      | Unsigned 32-bit integer | RID Offset  |
| lsa.rights                  | Rights          | String                  | Account Rights  |
| lsa.sd_size                 | Size            | Unsigned 32-bit integer | Size of lsa security descriptor                           |
| lsa.secret                  | LSA Secret      | Byte array              |   |
| lsa.server                  | Server          | String                  | Name of Server  |
| lsa.server_role             | Role            | Unsigned 16-bit integer | LSA Server Role   |
| lsa.sid_type                | SID Type        | Unsigned 16-bit integer | Type of SID   |
| lsa.size                    | Size            | Unsigned 32-bit integer |   |
| lsa.size_needed             | Size Needed     | Unsigned 16-bit integer |   |
| lsa.source                  | Source          | String                  | Replica Source  |
| lsa.trust.attr              | Trust Attr      | Unsigned 32-bit integer | Trust attributes  |
| lsa.trust.attr.non_trans    | Non Transitive  | Boolean                 | Non Transitive trust                                      |
| lsa.trust.attr.tree_parent  | Tree Parent     | Boolean                 | Tree Parent trust   |
| lsa.trust.attr.tree_root    | Tree Root       | Boolean                 | Tree Root trust   |
| lsa.trust.attr.uplevel_only | Uplevel only    | Boolean                 | Uplevel only trust  |
| lsa.trust.direction         | Trust Direction | Unsigned 32-bit integer | Trust direction   |
| lsa.trust.type              | Trust Type      | Unsigned 32-bit integer | Trust type  |
| lsa.trusted.info_level      | Info Level      | Unsigned 16-bit integer | Information level of requested Trusted Domain Information |
| lsa.unknown.char            | Unknown char    | Unsigned 8-bit integer  | Unknown char. If you know what this is, contact ethereal  |

| Field              | Field Name     | Type                    | Description  |
|--------------------|----------------|-------------------------|--|
|                    |                |                         | developers.  |
| lsa.unknown.hyper  | Unknown hyper  | Unsigned 64-bit integer | Unknown hyper. If you know what this is, contact ethereal developers.  |
| lsa.unknown.long   | Unknown long   | Unsigned 32-bit integer | Unknown long. If you know what this is, contact ethereal developers.   |
| lsa.unknown.short  | Unknown short  | Unsigned 16-bit integer | Unknown short. If you know what this is, contact ethereal developers.  |
| lsa.unknown_string | Unknown string | String                  | Unknown string. If you know what this is, contact ethereal developers. |
| nt.luid.high       | High           | Unsigned 32-bit integer | LUID High component  |
| nt.luid.low        | Low            | Unsigned 32-bit integer | LUID Low component   |

### Microsoft Local Security Architecture (Directory Services) (lsa\_ds)

Table A-215. Microsoft Local Security Architecture (Directory Services) (lsa\_ds)

| Field                  | Field Name         | Type                    | Description                |
|------------------------|--------------------|-------------------------|----------------------------|
| lsa_ds.op_status       | Operational status | Unsigned 16-bit integer | Current operational status |
| lsa_ds.opnum           | Operation          | Unsigned 16-bit integer | Operation                  |
| lsa_ds.upgrading       | Upgrading          | Unsigned 32-bit integer | Upgrade State              |
| lsa_ds.dominfo.dnsname | DNS name           | String                  | DNS Domain Name            |
| lsa_ds.dominfo.flags   | Flags              | Unsigned 32-bit integer | Machine flags              |
| lsa_ds.dominfo.forest  | Forest name        | String                  | DNS Forest Name            |
| lsa_ds.dominfo.level   | Level              | Unsigned 16-bit         | Information level          |

| Field                 | Field Name   | Type                    | Description               |
|-----------------------|--------------|-------------------------|---------------------------|
| el                    |              | integer                 | of requested data         |
| lsa_ds.dominio.nbname | Netbios name | String                  | Netbios Domain Name       |
| lsa_ds.rc             | Return code  | Unsigned 32-bit integer | LSA_DS return status code |
| lsa_ds.role           | Machine role | Unsigned 16-bit integer | Role of machine in domain |

### Microsoft Network Logon (rpc\_netlogon)

Table A-216. Microsoft Network Logon (rpc\_netlogon)

| Field                           | Field Name             | Type                    | Description                   |
|---------------------------------|------------------------|-------------------------|-------------------------------|
| netlogon.acct.expiry_time       | Acct Expiry Time       | Date/Time stamp         | When this account will expire |
| netlogon.acct_desc              | Acct Desc              | String                  | Account Description           |
| netlogon.acct_name              | Acct Name              | String                  | Account Name                  |
| netlogon.alias_name             | Alias Name             | String                  | Alias Name                    |
| netlogon.alias_rid              | Alias RID              | Unsigned 32-bit integer |                               |
| netlogon.attrs                  | Attributes             | Unsigned 32-bit integer | Attributes                    |
| netlogon.audit_retention_period | Audit Retention Period | Time duration           | Audit retention period        |
| netlogon.auditing_mode          | Auditing Mode          | Unsigned 8-bit integer  | Auditing Mode                 |
| netlogon.auth.data              | Auth Data              | Byte array              | Auth Data                     |
| netlogon.auth.size              | Auth Size              | Unsigned 32-bit integer | Size of AuthData in bytes     |
| netlogon.auth_flags             | Auth Flags             | Unsigned 32-bit integer |                               |
| netlogon.authoritative          | Authoritative          | Unsigned 8-bit integer  |                               |
| netlogon.bad_pw_count           | Bad PW Count           | Unsigned 32-bit integer | Number of failed logins       |
| netlogon.bad_pw_count16         | Bad PW Count           | Unsigned 16-bit integer | Number of failed logins       |
| netlogon.blob                   | BLOB                   | Byte array              | BLOB                          |

| Field                            | Field Name              | Type                    | Description                             |
|----------------------------------|-------------------------|-------------------------|---|
| netlogon.blob.size               | Size                    | Unsigned 32-bit integer | Size in bytes of BLOB                   |
| netlogon.challenge               | Challenge               | Byte array              | Netlogon challenge                      |
| netlogon.cipher_current_data     | Cipher Current Data     | Byte array              |   |
| netlogon.cipher_current_set_time | Cipher Current Set Time | Date/Time stamp         | Time when current cipher was initiated  |
| netlogon.cipher_len              | Cipher Len              | Unsigned 32-bit integer |   |
| netlogon.cipher_maxlen           | Cipher Max Len          | Unsigned 32-bit integer |   |
| netlogon.cipher_old_data         | Cipher Old Data         | Byte array              |   |
| netlogon.cipher_old_set_time     | Cipher Old Set Time     | Date/Time stamp         | Time when previous cipher was initiated |
| netlogon.client_site_name        | Client Site Name        | String                  | Client Site Name                        |
| netlogon.code                    | Code                    | Unsigned 32-bit integer | Code                                    |
| netlogon.codepage                | Codepage                | Unsigned 16-bit integer | Codepage setting for this account       |
| netlogon.comment                 | Comment                 | String                  | Comment                                 |
| netlogon.computer_name           | Computer Name           | String                  | Computer Name                           |
| netlogon.count                   | Count                   | Unsigned 32-bit integer |   |
| netlogon.country                 | Country                 | Unsigned 16-bit integer | Country setting for this account        |
| netlogon.credential              | Credential              | Byte array              | Netlogon credential                     |
| netlogon.database_id             | Database Id             | Unsigned 32-bit integer | Database Id                             |
| netlogon.db_create_time          | DB Create Time          | Date/Time stamp         | Time when created                       |
| netlogon.db_modify_time          | DB Modify Time          | Date/Time stamp         | Time when last modified                 |
| netlogon.dc.address              | DC Address              | String                  | DC Address                              |

| Field                            | Field Name      | Type                    | Description                                   |
|----------------------------------|-----------------|-------------------------|---|
| s                                |                 |                         |   |
| netlogon.dc.address_type         | DC Address Type | Unsigned 32-bit integer | DC Address Type                               |
| netlogon.dc.flags                | Flags           | Unsigned 32-bit integer | Domain Controller Flags                       |
| netlogon.dc.flags.closest        | Closest         | Boolean                 | If this is the closest server                 |
| netlogon.dc.flags.dns_controller | DNS Controller  | Boolean                 | If this server is a DNS Controller            |
| netlogon.dc.flags.dns_domain     | DNS Domain      | Boolean                 |   |
| netlogon.dc.flags.dns_forest     | DNS Forest      | Boolean                 |   |
| netlogon.dc.flags.ds             | DS              | Boolean                 | If this server is a DS                        |
| netlogon.dc.flags.gc             | GC              | Boolean                 | If this server is a GC                        |
| netlogon.dc.flags.good_timeserv  | Good Timeserv   | Boolean                 | If this is a Good TimeServer                  |
| netlogon.dc.flags.kdc            | KDC             | Boolean                 | If this is a KDC                              |
| netlogon.dc.flags.ldap           | LDAP            | Boolean                 | If this is an LDAP server                     |
| netlogon.dc.flags.ndnc           | NDNC            | Boolean                 | If this is an NDNC server                     |
| netlogon.dc.flags.pdc            | PDC             | Boolean                 | If this server is a PDC                       |
| netlogon.dc.flags.timeserv       | Timeserv        | Boolean                 | If this server is a TimeServer                |
| netlogon.dc.flags.writable       | Writable        | Boolean                 | If this server can do updates to the database |
| netlogon.dc.name                 | DC Name         | String                  | DC Name                                       |
| netlogon.dc.site_name            | DC Site Name    | String                  | DC Site Name                                  |
| netlogon.delta_type              | Delta Type      | Unsigned 16-bit integer | Delta Type                                    |
| netlogon.dir_drive               | Dir Drive       | String                  | Drive letter for home directory               |

| Field   | Field Name         | Type                    | Description  |
|---|--------------------|-------------------------|--|
| netlogon.dns.forest_name                          | DNS Forest Name    | String                  | DNS Forest Name  |
| netlogon.dns_domain                               | DNS Domain         | String                  | DNS Domain Name  |
| netlogon.dns_host                                 | DNS Host           | String                  | DNS Host   |
| netlogon.domain                                   | Domain             | String                  | Domain   |
| netlogon.domain_create_time                       | Domain Create Time | Date/Time stamp         | Time when this domain was created                                |
| netlogon.domain_modify_time                       | Domain Modify Time | Date/Time stamp         | Time when this domain was last modified                          |
| netlogon.downlevel_domain                         | Downlevel Domain   | String                  | Downlevel Domain Name  |
| netlogon.dummy                                    | Dummy              | String                  | Dummy string   |
| netlogon.entries                                  | Entries            | Unsigned 32-bit integer |  |
| netlogon.event_audit_option                       | Event Audit Option | Unsigned 32-bit integer | Event audit option   |
| netlogon.flags                                    | Flags              | Unsigned 32-bit integer |  |
| netlogon.full_name                                | Full Name          | String                  | Full Name  |
| netlogon.get_dcname.request.flags                 | Flags              | Unsigned 32-bit integer | Flags for DSGetDCName request                                    |
| netlogon.get_dcname.request.flags.avoid_self      | Avoid Self         | Boolean                 | Return another DC than the one we ask                            |
| netlogon.get_dcname.request.flags.background_only | Background Only    | Boolean                 | If we want cached data, even if it may have expired              |
| netlogon.get_dcname.request.flags.ds_preferred    | DS Preferred       | Boolean                 | Whether we prefer the call to return a w2k server (if available) |
| netlogon.get_dcname.request.flags.ds_required     | DS Required        | Boolean                 | Whether we require that the returned DC supports w2k or not      |

| Field   | Field Name         | Type    | Description  |
|---|--------------------|---------|--|
| netlogon.get_dcname.request.flags.force_rediscovery       | Force Rediscovery  | Boolean | Whether to allow the server to returned cached information or not      |
| netlogon.get_dcname.request.flags.gc_server_required      | GC Required        | Boolean | Whether we require that the returned DC is a Global Catalog server     |
| netlogon.get_dcname.request.flags.good_timeserv_preferred | Timeserv Preferred | Boolean | If we prefer Windows Time Servers                                      |
| netlogon.get_dcname.request.flags.ip_required             | IP Required        | Boolean | If we require the IP of the DC in the reply                            |
| netlogon.get_dcname.request.flags.is_dns_name             | Is DNS Name        | Boolean | If the specified domain name is a DNS name                             |
| netlogon.get_dcname.request.flags.is_flat_name            | Is Flat Name       | Boolean | If the specified domain name is a NetBIOS name                         |
| netlogon.get_dcname.request.flags.kdc_required            | KDC Required       | Boolean | If we require that the returned server is a KDC                        |
| netlogon.get_dcname.request.flags.only_ldap_needed        | Only LDAP Needed   | Boolean | We just want an LDAP server, it does not have to be a DC               |
| netlogon.get_dcname.request.flags.pdc_required            | PDC Required       | Boolean | Whether we require the returned DC to be the PDC                       |
| netlogon.get_dcname.request.flags.return_dns_name         | Return DNS Name    | Boolean | Only return a DNS name (or an error)                                   |
| netlogon.get_dcname.request.flags.return_flat_name        | Return Flat Name   | Boolean | Only return a NetBIOS name (or an error)                               |
| netlogon.get_dcname.request.flags.timeserv_required       | Timeserv Required  | Boolean | If we require the retruned server to be a NTP serveruns WindowsTimeSer |

| Field   | Field Name        | Type                    | Description                                      |
|---|-------------------|-------------------------|--|
|   |                   |                         | vicar  |
| netlogon.get_dcname.request.flags.writable_required | Writable Required | Boolean                 | If we require that the return server is writable |
| netlogon.group_desc                                 | Group Desc        | String                  | Group Description                                |
| netlogon.group_name                                 | Group Name        | String                  | Group Name                                       |
| netlogon.group_rid                                  | Group RID         | Unsigned 32-bit integer |  |
| netlogon.guid                                       | GUID              | String                  | GUID (uuid for groups?)                          |
| netlogon.handle                                     | Handle            | String                  | Logon Srv Handle                                 |
| netlogon.home_dir                                   | Home Dir          | String                  | Home Directory                                   |
| netlogon.kickoff_time                               | Kickoff Time      | Date/Time stamp         | Time when this user will be kicked off           |
| netlogon.len  | Len               | Unsigned 32-bit integer | Length   |
| netlogon.level                                      | Level             | Unsigned 32-bit integer | Which option of the union is represented here    |
| netlogon.level16                                    | Level             | Unsigned 16-bit integer | Which option of the union is represented here    |
| netlogon.lm_challenge_response                      | LM Chal resp      | Byte array              | Challenge response for LM authentication         |
| netlogon.lm_owf_pwd                                 | LM Pwd            | Byte array              | LanManager OWF Password                          |
| netlogon.lm_owf_pwd.encrypted                       | Encrypted LM Pwd  | Byte array              | Encrypted LanManager OWF Password                |
| netlogon.lm_pwd_present                             | LM PWD Present    | Unsigned 8-bit integer  | Is LanManager password present for this account? |
| netlogon.logoff_time                                | Logoff Time       | Date/Time stamp         | Time for last time this user logged off          |
| netlogon.logon_attempts                             | Logon Attempts    | Unsigned 32-bit integer | Number of logon attempts                         |



| Field                          | Field Name            | Type                    | Description                                 |
|--------------------------------|-----------------------|-------------------------|---|
| netlogon.logon_count           | Logon Count           | Unsigned 32-bit integer | Number of successful logins                 |
| netlogon.logon_count16         | Logon Count           | Unsigned 16-bit integer | Number of successful logins                 |
| netlogon.logon_id              | Logon ID              | Unsigned 64-bit integer | Logon ID                                    |
| netlogon.logon_script          | Logon Script          | String                  | Logon Script                                |
| netlogon.logon_time            | Logon Time            | Date/Time stamp         | Time for last time this user logged on      |
| netlogon.max_audit_event_count | Max Audit Event Count | Unsigned 32-bit integer | Max audit event count                       |
| netlogon.max_log_size          | Max Log Size          | Unsigned 32-bit integer | Max Size of log                             |
| netlogon.max_size              | Max Size              | Unsigned 32-bit integer | Max Size of database                        |
| netlogon.max_working_set_size  | Max Working Set Size  | Unsigned 32-bit integer |   |
| netlogon.min_password_len      | Min Password Len      | Unsigned 16-bit integer | Minimum length of password                  |
| netlogon.min_working_set_size  | Min Working Set Size  | Unsigned 32-bit integer |   |
| netlogon.modify_count          | Modify Count          | Unsigned 64-bit integer | How many times the object has been modified |
| netlogon.neg_flags             | Neg Flags             | Unsigned 32-bit integer | Negotiation Flags                           |
| netlogon.next_reference        | Next Reference        | Unsigned 32-bit integer |   |
| netlogon.nonpaged_pool_limit   | Non-Paged Pool Limit  | Unsigned 32-bit integer |   |
| netlogon.nt_challenge_response | NT Chal resp          | Byte array              | Challenge response for NT authentication    |
| netlogon.nt_owf_password       | NT Pwd                | Byte array              | NT OWF Password                             |
| netlogon.nt_pwd_present        | NT PWD Present        | Unsigned 8-bit integer  | Is NT password present for this account?    |
| netlogon.num_dc                | Num DCs               | Unsigned 32-bit         | Number of                                   |

Appendix A. Ethereal Display Filter Fields

| Field                          | Field Name            | Type                    | Description                   |
|--------------------------------|-----------------------|-------------------------|-------------------------------|
|                                |                       | integer                 | domain controllers            |
| netlogon.num_deltas            | Num Deltas            | Unsigned 32-bit integer | Number of SAM Deltas in array |
| netlogon.num_other_groups      | Num Other Groups      | Unsigned 32-bit integer |                               |
| netlogon.num_rids              | Num RIDs              | Unsigned 32-bit integer | Number of RIDs                |
| netlogon.num_trusts            | Num Trusts            | Unsigned 32-bit integer |                               |
| netlogon.oem_info              | OEM Info              | String                  | OEM Info                      |
| netlogon.opnum                 | Operation             | Unsigned 16-bit integer | Operation                     |
| netlogon.pac.data              | Pac Data              | Byte array              | Pac Data                      |
| netlogon.pac.size              | Pac Size              | Unsigned 32-bit integer | Size of PacData in bytes      |
| netlogon.page_file_limit       | Page File Limit       | Unsigned 32-bit integer |                               |
| netlogon.paged_pool_limit      | Paged Pool Limit      | Unsigned 32-bit integer |                               |
| netlogon.param_ctrl            | Param Ctrl            | Unsigned 32-bit integer | Param ctrl                    |
| netlogon.parameters            | Parameters            | String                  | Parameters                    |
| netlogon.parent_index          | Parent Index          | Unsigned 32-bit integer | Parent Index                  |
| netlogon.passwd_history_len    | Passwd History Len    | Unsigned 16-bit integer | Length of password history    |
| netlogon.pdc_connection_status | PDC Connection Status | Unsigned 32-bit integer | PDC Connection Status         |
| netlogon.principal             | Principal             | String                  | Principal                     |
| netlogon.priv                  | Priv                  | Unsigned 32-bit integer |                               |
| netlogon.privilege_control     | Privilege Control     | Unsigned 32-bit integer |                               |
| netlogon.privilege_entries     | Privilege Entries     | Unsigned 32-bit integer |                               |
| netlogon.privilege_name        | Privilege Name        | String                  |                               |
| netlogon.profile_path          | Profile Path          | String                  | Profile Path                  |

| Field                         | Field Name           | Type                    | Description                               |
|-------------------------------|----------------------|-------------------------|---|
| ath                           |                      |                         |   |
| netlogon.pwd_can_change_time  | PWD Can Change       | Date/Time stamp         | When this users password may be changed   |
| netlogon.pwd_expired          | PWD Expired          | Unsigned 8-bit integer  | Whether this password has expired or not  |
| netlogon.pwd_last_set_time    | PWD Last Set         | Date/Time stamp         | Last time this users password was changed |
| netlogon.pwd_must_change_time | PWD Must Change      | Date/Time stamp         | When this users password must be changed  |
| netlogon.rc                   | Return code          | Unsigned 32-bit integer | Netlogon return code                      |
| netlogon.reference            | Reference            | Unsigned 32-bit integer |   |
| netlogon.reserved             | Reserved             | Unsigned 32-bit integer | Reserved                                  |
| netlogon.restart_state        | Restart State        | Unsigned 16-bit integer | Restart State                             |
| netlogon.rid                  | User RID             | Unsigned 32-bit integer |   |
| netlogon.sec_chan_type        | Sec Chan Type        | Unsigned 16-bit integer | Secure Channel Type                       |
| netlogon.security_information | Security Information | Unsigned 32-bit integer | Security Information                      |
| netlogon.sensitive_data       | Data                 | Byte array              | Sensitive Data                            |
| netlogon.sensitive_data_flag  | Sensitive Data       | Unsigned 8-bit integer  | Sensitive data flag                       |
| netlogon.sensitive_data_len   | Length               | Unsigned 32-bit integer | Length of sensitive data                  |
| netlogon.serial_number        | Serial Number        | Unsigned 32-bit integer |   |
| netlogon.server               | Server               | String                  | Server                                    |
| netlogon.site_name            | Site Name            | String                  | Site Name                                 |
| netlogon.sync_context         | Sync Context         | Unsigned 32-bit integer | Sync Context                              |

| Field                            | Field Name           | Type                    | Description  |
|----------------------------------|----------------------|-------------------------|--|
| netlogon.system_flags            | System Flags         | Unsigned 32-bit integer |  |
| netlogon.tc_connection_status    | TC Connection Status | Unsigned 32-bit integer | TC Connection Status   |
| netlogon.time_limit              | Time Limit           | Time duration           |  |
| netlogon.timestamp               | Timestamp            | Date/Time stamp         |  |
| netlogon.trust.flags.in_forest   | In Forest            | Boolean                 | Whether this domain is a member of the same forest as the servers domain     |
| netlogon.trust.flags.inbound     | Inbound Trust        | Boolean                 | Inbound trust. Whether the domain directly trusts the queried servers domain |
| netlogon.trust.flags.native_mode | Native Mode          | Boolean                 | Whether the domain is a w2k native mode domain or not                        |
| netlogon.trust.flags.outbound    | Outbound Trust       | Boolean                 | Outbound Trust. Whether the domain is directly trusted by the servers domain |
| netlogon.trust.flags.primary     | Primary              | Boolean                 | Whether the domain is the primary domain for the queried server or not       |
| netlogon.trust.flags.tree_root   | Tree Root            | Boolean                 | Whether the domain is the root of the tree for the queried server            |
| netlogon.trust.attributes        | Trust Attributes     | Unsigned 32-bit integer | Trust Attributes   |
| netlogon.trust_flags             | Trust Flags          | Unsigned 32-bit integer | Trust Flags  |
| netlogon.trust_type              | Trust Type           | Unsigned 32-bit integer | Trust Type   |
| netlogon.trusted_dc              | Trusted DC           | String                  | Trusted DC   |

| Field                     | Field Name       | Type                    | Description  |
|---------------------------|------------------|-------------------------|--|
| c                         |                  |                         |  |
| netlogon.unknown.char     | Unknown char     | Unsigned 8-bit integer  | Unknown char. If you know what this is, contact ethereal developers.   |
| netlogon.unknown.long     | Unknown long     | Unsigned 32-bit integer | Unknown long. If you know what this is, contact ethereal developers.   |
| netlogon.unknown.short    | Unknown short    | Unsigned 16-bit integer | Unknown short. If you know what this is, contact ethereal developers.  |
| netlogon.unknown_string   | Unknown string   | String                  | Unknown string. If you know what this is, contact ethereal developers. |
| netlogon.user_flags       | User Flags       | Unsigned 32-bit integer |  |
| netlogon.user_session_key | User Session Key | Byte array              | User Session Key   |
| netlogon.validation_level | Validation Level | Unsigned 16-bit integer | Requested level of validation  |
| netlogon.wkst.fqdn        | Wkst FQDN        | String                  | Workstation FQDN   |
| netlogon.wkst.name        | Wkst Name        | String                  | Workstation Name   |
| netlogon.wkst.os          | Wkst OS          | String                  | Workstation OS   |
| netlogon.wkst.site_name   | Wkst Site Name   | String                  | Workstation Site Name  |
| netlogon.wksts            | Workstations     | String                  | Workstations   |

### Microsoft Registry (winreg)

Table A-217. Microsoft Registry (winreg)

| Field           | Field Name     | Type                    | Description       |
|-----------------|----------------|-------------------------|-------------------|
| reg.access_mask | Access mask    | Unsigned 32-bit integer | Access mask       |
| reg.hnd         | Context handle | Byte array              | REG policy handle |

| Field                        | Field Name      | Type                    | Description     |
|------------------------------|-----------------|-------------------------|-----------------|
| reg.keyname                  | Key name        | String                  | Keyname         |
| reg.openentry.unknown1       | Unknown 1       | Unsigned 32-bit integer | Unknown 1       |
| reg.openhklm.unknown1        | Unknown 1       | Unsigned 16-bit integer | Unknown 1       |
| reg.openhklm.unknown2        | Unknown 2       | Unsigned 16-bit integer | Unknown 2       |
| reg.opnum                    | Operation       | Unsigned 16-bit integer | Operation       |
| reg.querykey.class           | Class           | String                  | Class           |
| reg.querykey.max_subkey_len  | Max subkey len  | Unsigned 32-bit integer | Max subkey len  |
| reg.querykey.max_valbuf_size | Max valbuf size | Unsigned 32-bit integer | Max valbuf size |
| reg.querykey.max_valname_len | Max valnum len  | Unsigned 32-bit integer | Max valname len |
| reg.querykey.modtime         | Mod time        | Date/Time stamp         | Secdesc         |
| reg.querykey.num_subkeys     | Num subkeys     | Unsigned 32-bit integer | Num subkeys     |
| reg.querykey.num_values      | Num values      | Unsigned 32-bit integer | Num values      |
| reg.querykey.reserved        | Reserved        | Unsigned 32-bit integer | Reserved        |
| reg.querykey.secdesc         | Secdesc         | Unsigned 32-bit integer | Secdesc         |
| reg.rc                       | Return code     | Unsigned 32-bit integer | REG return code |
| reg.unknown1A.unknown1       | Unknown 1       | Unsigned 32-bit integer | Unknown 1       |

### Microsoft Security Account Manager (samr)

Table A-218. Microsoft Security Account Manager (samr)

| Field             | Field Name     | Type                    | Description    |
|-------------------|----------------|-------------------------|----------------|
| nt.acct_ctrl      | Acct Ctrl      | Unsigned 32-bit integer | Acct CTRL      |
| samr.access       | Access Mask    | Unsigned 32-bit integer | Access         |
| samr.access_grant | Access Granted | Unsigned 32-bit         | Access Granted |

| Field                 | Field Name     | Type                    | Description                             |
|-----------------------|----------------|-------------------------|---|
| ed                    |                | integer                 |   |
| samr.acct_desc        | Account Desc   | String                  | Account Description                     |
| samr.acct_expiry_time | Acct Expiry    | Date/Time stamp         | When this user account expires          |
| samr.acct_name        | Account Name   | String                  | Name of Account                         |
| samr.alias            | Alias          | Unsigned 32-bit integer | Alias                                   |
| samr.alias_name       | Alias Name     | String                  | Name of Alias                           |
| samr.attr             | Attributes     | Unsigned 32-bit integer |   |
| samr.bad_pwd_count    | Bad Pwd Count  | Unsigned 16-bit integer | Number of bad pwd entries for this user |
| samr.codepage         | Codepage       | Unsigned 16-bit integer | Codepage setting for this user          |
| samr.comment          | Comment        | String                  | Comment                                 |
| samr.count            | Count          | Unsigned 32-bit integer | Number of elements in following array   |
| samr.country          | Country        | Unsigned 16-bit integer | Country setting for this user           |
| samr.crypt_hash       | Hash           | Byte array              | Encrypted Hash                          |
| samr.crypt_password   | Password       | Byte array              | Encrypted Password                      |
| samr.dc               | DC             | String                  | Name of Domain Controller               |
| samr.divisions        | Divisions      | Unsigned 16-bit integer | Number of divisions for LOGON_HOURS     |
| samr.domain           | Domain         | String                  | Name of Domain                          |
| samr.entries          | Entries        | Unsigned 32-bit integer | Number of entries to return             |
| samr.full_name        | Full Name      | String                  | Full Name of Account                    |
| samr.group            | Group          | Unsigned 32-bit integer | Group                                   |
| samr.group_name       | Group Name     | String                  | Name of Group                           |
| samr.hnd              | Context Handle | Byte array              |   |

Appendix A. Ethereal Display Filter Fields

| Field                     | Field Name      | Type                    | Description  |
|---------------------------|-----------------|-------------------------|--|
| samr.home                 | Home            | String                  | Home directory for this user                                 |
| samr.home_drive           | Home Drive      | String                  | Home drive for this user                                     |
| samr.index                | Index           | Unsigned 32-bit integer | Index  |
| samr.info_type            | Info Type       | Unsigned 32-bit integer | Information Type   |
| samr.kickoff_time         | Kickoff Time    | Date/Time stamp         | Time when this user will be kicked off                       |
| samr.level                | Level           | Unsigned 16-bit integer | Level requested/returned for Information                     |
| samr.lm_change            | LM Change       | Unsigned 8-bit integer  | LM Change value  |
| samr.lm_passchange_block  | Encrypted Block | Byte array              | Lan Manager Password Change Block                            |
| samr.lm_password_verifier | Verifier        | Byte array              | Lan Manager Password Verifier                                |
| samr.lm_pwd_set           | LM Pwd Set      | Unsigned 8-bit integer  | Flag indicating whether the LanManager password has been set |
| samr.logoff_time          | Logoff Time     | Date/Time stamp         | Time for last time this user logged off                      |
| samr.logon_count          | Logon Count     | Unsigned 16-bit integer | Number of logons for this user                               |
| samr.logon_time           | Logon Time      | Date/Time stamp         | Time for last time this user logged on                       |
| samr.max_entries          | Max Entries     | Unsigned 32-bit integer | Maximum number of entries                                    |
| samr.max_pwd_age          | Max Pwd Age     | Time duration           | Maximum Password Age before it expires                       |
| samr.min_pwd_age          | Min Pwd Age     | Time duration           | Minimum Password Age before it can be changed                |



| Field                                       | Field Name                     | Type                    | Description   |
|---|--------------------------------|-------------------------|---|
| samr.min_pwd_len                            | Min Pwd Len                    | Unsigned 16-bit integer | Minimum Password Length   |
| samr.nt_passchange_block                    | Encrypted Block                | Byte array              | NT Password Change Block  |
| samr.nt_passchange_block_decrypted          | Decrypted Block                | Byte array              | NT Password Change Decrypted Block                                  |
| samr.nt_passchange_block_new_ntpassword     | New NT Password                | String                  | New NT Password   |
| samr.nt_passchange_block_new_ntpassword_len | New NT Unicode Password length | Unsigned 32-bit integer | New NT Password Unicode Length                                      |
| samr.nt_passchange_block_pseudorandom       | Pseudorandom data              | Byte array              | Pseudorandom data   |
| samr.nt_password_verifier                   | Verifier                       | Byte array              | NT Password Verifier  |
| samr.nt_pwd_set                             | NT Pwd Set                     | Unsigned 8-bit integer  | Flag indicating whether the NT password has been set                |
| samr.num_aliases                            | Num Aliases                    | Unsigned 32-bit integer | Number of aliases in this domain                                    |
| samr.num_groups                             | Num Groups                     | Unsigned 32-bit integer | Number of groups in this domain                                     |
| samr.num_users                              | Num Users                      | Unsigned 32-bit integer | Number of users in this domain                                      |
| samr.opnum                                  | Operation                      | Unsigned 16-bit integer | Operation   |
| samr.parameters                             | Parameters                     | String                  | Parameters  |
| samr.pref_maxsize                           | Pref MaxSize                   | Unsigned 32-bit integer | Maximum Size of data to return                                      |
| samr.profile                                | Profile                        | String                  | Profile for this user   |
| samr.pwd_Expired                            | Expired flag                   | Unsigned 8-bit integer  | Flag indicating if the password for this account has expired or not |
| samr.pwd_can_change_time                    | PWD Can Change                 | Date/Time stamp         | When this users password may be changed                             |

Appendix A. Ethereal Display Filter Fields

| Field                     | Field Name      | Type                    | Description   |
|---------------------------|-----------------|-------------------------|---|
| samr.pwd_history_len      | Pwd History Len | Unsigned 16-bit integer | Password History Length   |
| samr.pwd_last_set_time    | PWD Last Set    | Date/Time stamp         | Last time this users password was changed                             |
| samr.pwd_must_change_time | PWD Must Change | Date/Time stamp         | When this users password must be changed                              |
| samr.rc                   | Return code     | Unsigned 32-bit integer |   |
| samr.resume_hnd           | Resume Hnd      | Unsigned 32-bit integer | Resume handle   |
| samr.ret_size             | Returned Size   | Unsigned 32-bit integer | Number of returned objects in this PDU                                |
| samr.revision             | Revision        | Unsigned 64-bit integer | Revision number for this structure                                    |
| samr.rid                  | Rid             | Unsigned 32-bit integer | RID   |
| samr.rid.attrib           | Rid Attrib      | Unsigned 32-bit integer |   |
| samr.script               | Script          | String                  | Login script for this user  |
| samr.server               | Server          | String                  | Name of Server  |
| samr.start_idx            | Start Idx       | Unsigned 32-bit integer | Start Index for returned Information                                  |
| samr.total_size           | Total Size      | Unsigned 32-bit integer | Total size of data  |
| samr.type                 | Type            | Unsigned 32-bit integer | Type  |
| samr.unknown.char         | Unknown char    | Unsigned 8-bit integer  | Unknown char. If you know what this is, contact ethereal developers.  |
| samr.unknown.hyper        | Unknown hyper   | Unsigned 64-bit integer | Unknown hyper. If you know what this is, contact ethereal developers. |

| Field                                    | Field Name      | Type                    | Description  |
|--|-----------------|-------------------------|--|
| samr.unknown.long                        | Unknown long    | Unsigned 32-bit integer | Unknown long. If you know what this is, contact ethereal developers.   |
| samr.unknown.short                       | Unknown short   | Unsigned 16-bit integer | Unknown short. If you know what this is, contact ethereal developers.  |
| samr.unknown_string                      | Unknown string  | String                  | Unknown string. If you know what this is, contact ethereal developers. |
| samr.unknown_time                        | Unknown time    | Date/Time stamp         | Unknown NT TIME, contact ethereal developers if you know what this is  |
| samr.workstations                        | Workstations    | String                  |  |
| samr_access_mask.alias_add_member        | Add member      | Boolean                 | Add member   |
| samr_access_mask.alias_get_members       | Get members     | Boolean                 | Get members  |
| samr_access_mask.alias_lookup_info       | Lookup info     | Boolean                 | Lookup info  |
| samr_access_mask.alias_remove_member     | Remove member   | Boolean                 | Remove member  |
| samr_access_mask.alias_set_info          | Set info        | Boolean                 | Set info   |
| samr_access_mask.connect_enum_domains    | Enum domains    | Boolean                 | Enum domains   |
| samr_access_mask.connect_open_domain     | Open domain     | Boolean                 | Open domain  |
| samr_access_mask.connect_shutdown_server | Shutdown server | Boolean                 | Shutdown server  |

Appendix A. Ethereal Display Filter Fields

| Field   | Field Name    | Type    | Description   |
|---|---------------|---------|---------------|
| samr_access_mask<br>.connect_unknown_01         | Unknown 0x01  | Boolean | Unknown 0x01  |
| samr_access_mask<br>.connect_unknown_04         | Unknown 0x04  | Boolean | Unknown 0x04  |
| samr_access_mask<br>.connect_unknown_08         | Unknown 0x08  | Boolean | Unknown 0x08  |
| samr_access_mask<br>.domain_create_alias        | Create alias  | Boolean | Create alias  |
| samr_access_mask<br>.domain_create_group        | Create group  | Boolean | Create group  |
| samr_access_mask<br>.domain_create_user         | Create user   | Boolean | Create user   |
| samr_access_mask<br>.domain_enum_accounts       | Enum accounts | Boolean | Enum accounts |
| samr_access_mask<br>.domain_lookup_alias_by_mem | Lookup alias  | Boolean | Lookup alias  |
| samr_access_mask<br>.domain_lookup_info1        | Lookup info1  | Boolean | Lookup info1  |
| samr_access_mask<br>.domain_lookup_info2        | Lookup info2  | Boolean | Lookup info2  |
| samr_access_mask<br>.domain_open_account        | Open account  | Boolean | Open account  |
| samr_access_mask<br>.domain_set_info1           | Set info1     | Boolean | Set info1     |
| samr_access_mask<br>.domain_set_info2           | Set info2     | Boolean | Set info2     |
| samr_access_mask<br>.domain_set_info3           | Set info3     | Boolean | Set info3     |
| samr_access_mask<br>.group_add_member           | Add member    | Boolean | Add member    |

| Field                                 | Field Name      | Type    | Description     |
|---------------------------------------|-----------------|---------|-----------------|
| samr_access_mask.group_get_members    | Get members     | Boolean | Get members     |
| samr_access_mask.group_lookup_info    | Lookup info     | Boolean | Lookup info     |
| samr_access_mask.group_remove_member  | Remove member   | Boolean | Remove member   |
| samr_access_mask.group_set_info       | Get info        | Boolean | Get info        |
| samr_access_mask.user_change_password | Change password | Boolean | Change password |
| samr_access_mask.user_get_groups      | Get groups      | Boolean | Get groups      |
| samr_access_mask.user_get_locale      | Get locale      | Boolean | Get locale      |
| samr_access_mask.user_get_logoninfo   | Get logon info  | Boolean | Get logon info  |
| samr_access_mask.user_get_name_etc    | Get name, etc   | Boolean | Get name, etc   |
| samr_access_mask.user_set_attributes  | Set attributes  | Boolean | Set attributes  |
| samr_access_mask.user_set_loc_com     | Set loc com     | Boolean | Set loc com     |
| samr_access_mask.user_set_password    | Set password    | Boolean | Set password    |
| samr_access_mask.user_unknown_10      | Unknown 0x10    | Boolean | Unknown 0x10    |
| samr_access_mask.user_unknown_200     | Unknown 0x200   | Boolean | Unknown 0x200   |
| samr_access_mask.user_unknown_400     | Unknown 0x400   | Boolean | Unknown 0x400   |

**Microsoft Server Service (srvsvc)**

**Table A-219. Microsoft Server Service (srvsvc)**

| Field                      | Field Name            | Type                    | Description                        |
|----------------------------|-----------------------|-------------------------|------------------------------------|
| srvsvc.                    | Max Raw Buf Len       | Unsigned 32-bit integer | Max Raw Buf Len                    |
| srvsvc.acceptdownlevelapis | Accept Downlevel APIs | Unsigned 32-bit integer | Accept Downlevel APIs              |
| srvsvc.accessalert         | Access Alerts         | Unsigned 32-bit integer | Number of access alerts            |
| srvsvc.activelocks         | Active Locks          | Unsigned 32-bit integer | Active Locks                       |
| srvsvc.alerts              | Alerts                | String                  | Alerts                             |
| srvsvc.alertsched          | Alert Sched           | Unsigned 32-bit integer | Alert Schedule                     |
| srvsvc.alist_mtime         | Alist mtime           | Unsigned 32-bit integer | Alist mtime                        |
| srvsvc.ann_delta           | Announce Delta        | Unsigned 32-bit integer | Announce Delta                     |
| srvsvc.announce            | Announce              | Unsigned 32-bit integer | Announce                           |
| srvsvc.auditedevents       | Audited Events        | Unsigned 32-bit integer | Number of audited events           |
| srvsvc.auditprofile        | Audit Profile         | Unsigned 32-bit integer | Audit Profile                      |
| srvsvc.autopath            | Autopath              | String                  | Autopath                           |
| srvsvc.chdevjobs           | Char Dev Jobs         | Unsigned 32-bit integer | Number of Char Device Jobs         |
| srvsvc.chdevqs             | Char Devqs            | Unsigned 32-bit integer | Number of Char Device Queues       |
| srvsvc.chdevs              | Char Devs             | Unsigned 32-bit integer | Number of Char Devices             |
| srvsvc.chrdev              | Char Device           | String                  | Char Device Name                   |
| srvsvc.chrdev_opcode       | Opcode                | Unsigned 32-bit integer | Opcode to apply to the Char Device |
| srvsvc.chrdev_status       | Status                | Unsigned 32-bit integer | Char Device Status                 |
| srvsvc.chrdev_time         | Time                  | Unsigned 32-bit integer | Char Device Time?                  |
| srvsvc.chrdevq             | Device Queue          | String                  | Char Device Queue Name             |
| srvsvc.chrqdev_num         | Num Ahead             | Unsigned 32-bit         |                                    |

| Field                    | Field Name         | Type                    | Description   |
|--------------------------|--------------------|-------------------------|---|
| mahead                   |                    | integer                 |   |
| srvsvc.chrqdev_numusers  | Num Users          | Unsigned 32-bit integer | Char QDevice Number Of Users  |
| srvsvc.chrqdev_pri       | Priority           | Unsigned 32-bit integer | Char QDevice Priority   |
| srvsvc.client.type       | Client Type        | String                  | Client Type   |
| srvsvc.comment           | Comment            | String                  | Comment   |
| srvsvc.computer          | Computer           | String                  | Computer Name   |
| srvsvc.con_id            | Connection ID      | Unsigned 32-bit integer | Connection ID   |
| srvsvc.con_num_opens     | Num Opens          | Unsigned 32-bit integer | Num Opens   |
| srvsvc.con_time          | Connection Time    | Unsigned 32-bit integer | Connection Time   |
| srvsvc.con_type          | Connection Type    | Unsigned 32-bit integer | Connection Type   |
| srvsvc.connections       | Connections        | Unsigned 32-bit integer | Number of Connections   |
| srvsvc.cur_uses          | Current Uses       | Unsigned 32-bit integer | Current Uses  |
| srvsvc.dfs_root_flags    | DFS Root Flags     | Unsigned 32-bit integer | DFS Root Flags. Contact ethereal developers if you know what the bits are |
| srvsvc.disc              | Disc               | Unsigned 32-bit integer |   |
| srvsvc.disk_name         | Disk Name          | String                  | Disk Name   |
| srvsvc.disk_name_len     | Disk Name Length   | Unsigned 32-bit integer | Length of Disk Name   |
| srvsvc.diskalert         | Disk Alerts        | Unsigned 32-bit integer | Number of disk alerts   |
| srvsvc.diskspacetrashold | Diskspace Treshold | Unsigned 32-bit integer | Diskspace Treshold  |
| srvsvc.domain            | Domain             | String                  | Domain  |
| srvsvc.emulated_server   | Emulated Server    | String                  | Emulated Server Name  |
| srvsvc.enablefcbopens    | Enable FCB Opens   | Unsigned 32-bit integer | Enable FCB Opens  |

| Field                         | Field Name                | Type                    | Description               |
|-------------------------------|---------------------------|-------------------------|---------------------------|
| srvsvc.enableforcedlogoff     | Enable Forced Logoff      | Unsigned 32-bit integer | Enable Forced Logoff      |
| srvsvc.enableoplockforceclose | Enable Oplock Force Close | Unsigned 32-bit integer | Enable Oplock Force Close |
| srvsvc.enableoplocks          | Enable Oplocks            | Unsigned 32-bit integer | Enable Oplocks            |
| srvsvc.enableraw              | Enable RAW                | Unsigned 32-bit integer | Enable RAW                |
| srvsvc.enablesharednetdrives  | Enable Shared Net Drives  | Unsigned 32-bit integer | Enable Shared Net Drives  |
| srvsvc.enablesoftcompat       | Enable Soft Compat        | Unsigned 32-bit integer | Enable Soft Compat        |
| srvsvc.enum_hnd               | Enumeration handle        | Byte array              | Enumeration Handle        |
| srvsvc.erroralert             | Error Alerts              | Unsigned 32-bit integer | Number of error alerts    |
| srvsvc.errortreshold          | Error Treshold            | Unsigned 32-bit integer | Error Treshold            |
| srvsvc.file_id                | File ID                   | Unsigned 32-bit integer | File ID                   |
| srvsvc.file_num_locks         | Num Locks                 | Unsigned 32-bit integer | Number of locks for file  |
| srvsvc.glist_mtime            | Glist mtime               | Unsigned 32-bit integer | Glist mtime               |
| srvsvc.guest                  | Guest Account             | String                  | Guest Account             |
| srvsvc.hidden                 | Hidden                    | Unsigned 32-bit integer | Hidden                    |
| srvsvc.hnd                    | Context Handle            | Byte array              | Context Handle            |
| srvsvc.info.platform_id       | Platform ID               | Unsigned 32-bit integer | Platform ID               |
| srvsvc.initconntable          | Init Connection Table     | Unsigned 32-bit integer | Init Connection Table     |
| srvsvc.initfiletable          | Init File Table           | Unsigned 32-bit integer | Init File Table           |
| srvsvc.initsearchtable        | Init Search Table         | Unsigned 32-bit integer | Init Search Table         |
| srvsvc.initsesstable          | Init Session Table        | Unsigned 32-bit integer | Init Session Table        |
| srvsvc.initworkitem           | Init Workitems            | Unsigned 32-bit integer | Workitems                 |



| Field                         | Field Name                 | Type                    | Description                |
|-------------------------------|----------------------------|-------------------------|----------------------------|
| ms                            |                            | integer                 |                            |
| srvsvc.irpstacksize           | Irp Stack Size             | Unsigned 32-bit integer | Irp Stack Size             |
| srvsvc.lanmask                | LANMask                    | Unsigned 32-bit integer | LANMask                    |
| srvsvc.licences               | Licences                   | Unsigned 32-bit integer | Licences                   |
| srvsvc.linkinfovalidtime      | Link Info Valid Time       | Unsigned 32-bit integer | Link Info Valid Time       |
| srvsvc.lmannounce             | LM Announce                | Unsigned 32-bit integer | LM Announce                |
| srvsvc.logonalert             | Logon Alerts               | Unsigned 32-bit integer | Number of logon alerts     |
| srvsvc.max_uses               | Max Uses                   | Unsigned 32-bit integer | Max Uses                   |
| srvsvc.maxaudits              | Max Audits                 | Unsigned 32-bit integer | Maximum number of audits   |
| srvsvc.maxcopyreadlen         | Max Copy Read Len          | Unsigned 32-bit integer | Max Copy Read Len          |
| srvsvc.maxcopywritelength     | Max Copy Write Len         | Unsigned 32-bit integer | Max Copy Write Len         |
| srvsvc.maxfreeconnections     | Max Free Connections       | Unsigned 32-bit integer | Max Free Connections       |
| srvsvc.maxkeepcomplsearch     | Max Keep Compl Search      | Unsigned 32-bit integer | Max Keep Compl Search      |
| srvsvc.maxkeepsearch          | Max Keep Search            | Unsigned 32-bit integer | Max Keep Search            |
| srvsvc.maxlinkdelay           | Max Link Delay             | Unsigned 32-bit integer | Max Link Delay             |
| srvsvc.maxmpxct               | MaxMpxCt                   | Unsigned 32-bit integer | MaxMpxCt                   |
| srvsvc.maxnonpagedmemoryusage | Max Non-Paged Memory Usage | Unsigned 32-bit integer | Max Non-Paged Memory Usage |
| srvsvc.maxpagedmemoryusage    | Max Paged Memory Usage     | Unsigned 32-bit integer | Max Paged Memory Usage     |
| srvsvc.maxworkitemidletime    | Max Workitem Idle Time     | Unsigned 32-bit integer | Max Workitem Idle Time     |
| srvsvc.maxworkitems           | Max Workitems              | Unsigned 32-bit integer | Workitems                  |
| srvsvc.minfreecon             | Min Free                   | Unsigned 32-bit         | Min Free                   |

| Field                          | Field Name                 | Type                    | Description                |
|--------------------------------|----------------------------|-------------------------|----------------------------|
| nections                       | Conenctions                | integer                 | Connections                |
| srvsvc.minfreeworkitems        | Min Free Workitems         | Unsigned 32-bit integer | Min Free Workitems         |
| srvsvc.minkeepcomplsearch      | Min Keep Compl Search      | Unsigned 32-bit integer | Min Keep Compl Search      |
| srvsvc.minkeepsearch           | Min Keep Search            | Unsigned 32-bit integer | Min Keep Search            |
| srvsvc.minlinkthroughput       | Min Link Throughput        | Unsigned 32-bit integer | Min Link Throughput        |
| srvsvc.minrcvqueue             | Min Rcv Queue              | Unsigned 32-bit integer | Min Rcv Queue              |
| srvsvc.netioalert              | Net I/O Alerts             | Unsigned 32-bit integer | Number of Net I/O Alerts   |
| srvsvc.networkerrorthreshold   | Network Error Threshold    | Unsigned 32-bit integer | Network Error Threshold    |
| srvsvc.num_admins              | Num Admins                 | Unsigned 32-bit integer | Number of Administrators   |
| srvsvc.numbigbufs              | Num Big Bufs               | Unsigned 32-bit integer | Number of big buffers      |
| srvsvc.numblockthreads         | Num Block Threads          | Unsigned 32-bit integer | Num Block Threads          |
| srvsvc.numfiletasks            | Num Filetasks              | Unsigned 32-bit integer | Number of filetasks        |
| srvsvc.openfiles               | Open Files                 | Unsigned 32-bit integer | Open Files                 |
| srvsvc.opensearch              | Open Search                | Unsigned 32-bit integer | Open Search                |
| srvsvc.oplockbreakresponsewait | Oplock Break Response wait | Unsigned 32-bit integer | Oplock Break response Wait |
| srvsvc.oplockbreakwait         | Oplock Break Wait          | Unsigned 32-bit integer | Oplock Break Wait          |
| srvsvc.opnum                   | Operation                  | Unsigned 16-bit integer | Operation                  |
| srvsvc.outbuflen               | OutBufLen                  | Unsigned 32-bit integer | Output Buffer Length       |
| srvsvc.parm_error              | Parameter Error            | Unsigned 32-bit integer | Parameter Error            |
| srvsvc.path                    | Path                       | String                  | Path                       |
| srvsvc.path_flags              | Flags                      | Unsigned 32-bit         | Path flags                 |

| Field                         | Field Name                | Type                    | Description                   |
|-------------------------------|---------------------------|-------------------------|-------------------------------|
|                               |                           | integer                 |                               |
| srvsvc.path_len               | Len                       | Unsigned 32-bit integer | Path len                      |
| srvsvc.path_type              | Type                      | Unsigned 32-bit integer | Path type                     |
| srvsvc.perm                   | Permissions               | Unsigned 32-bit integer | Permissions                   |
| srvsvc.policy                 | Policy                    | Unsigned 32-bit integer | Policy                        |
| srvsvc.preferred_len          | Preferred length          | Unsigned 32-bit integer | Preferred Length              |
| srvsvc.prefix                 | Prefix                    | String                  | Path Prefix                   |
| srvsvc.qualifier              | Qualifier                 | String                  | Connection Qualifier          |
| srvsvc.rawworkitems           | Raw Workitems             | Unsigned 32-bit integer | Workitems                     |
| srvsvc.rc                     | Return code               | Unsigned 32-bit integer | Return Code                   |
| srvsvc.reserved               | Reserved                  | Unsigned 32-bit integer | Announce                      |
| srvsvc.scavqosinfo_updatetime | Scav QoS Info Update Time | Unsigned 32-bit integer | Scav QoS Info Update Time     |
| srvsvc.scavtimeout            | Scav Timeout              | Unsigned 32-bit integer | Scav Timeout                  |
| srvsvc.security               | Security                  | Unsigned 32-bit integer | Security                      |
| srvsvc.server                 | Server                    | String                  | Server Name                   |
| srvsvc.server_stat.avresponse | Avresponse                | Unsigned 32-bit integer |                               |
| srvsvc.server_stat.bigbufneed | Big Buf Need              | Unsigned 32-bit integer | Number of big buffers needed? |
| srvsvc.server_stat.bytesrcvd  | Bytes Rcvd                | Unsigned 64-bit integer | Number of bytes received      |
| srvsvc.server_stat.bytestent  | Bytes Sent                | Unsigned 64-bit integer | Number of bytes sent          |
| srvsvc.server_stat.devopens   | Devopens                  | Unsigned 32-bit integer | Number of devopens            |
| srvsvc.server_stat.fopens     | Fopens                    | Unsigned 32-bit integer | Number of fopens              |

| Field                           | Field Name               | Type                    | Description                       |
|---------------------------------|--------------------------|-------------------------|-----------------------------------|
| srvsvc.server_stat.jobsqueued   | Jobs Queued              | Unsigned 32-bit integer | Number of jobs queued             |
| srvsvc.server_stat.permerrors   | Permerrors               | Unsigned 32-bit integer | Number of permission errors       |
| srvsvc.server_stat.pwerrors     | Pwerrors                 | Unsigned 32-bit integer | Number of password errors         |
| srvsvc.server_stat.reqbufneed   | Req Buf Need             | Unsigned 32-bit integer | Number of request buffers needed? |
| srvsvc.server_stat.serrorout    | Serrorout                | Unsigned 32-bit integer | Number of serrorout               |
| srvsvc.server_stat.sopens       | Sopens                   | Unsigned 32-bit integer | Number of sopens                  |
| srvsvc.server_stat.start        | Start                    | Unsigned 32-bit integer |                                   |
| srvsvc.server_stat.stimeouts    | stimeouts                | Unsigned 32-bit integer | Number of stimeouts               |
| srvsvc.server_stat.syserrors    | Syserrors                | Unsigned 32-bit integer | Number of system errors           |
| srvsvc.service                  | Service                  | String                  | Service                           |
| srvsvc.service_bits             | Service Bits             | Unsigned 32-bit integer | Service Bits                      |
| srvsvc.service_bits_of_interest | Service Bits Of Interest | Unsigned 32-bit integer | Service Bits Of Interest          |
| srvsvc.service_options          | Options                  | Unsigned 32-bit integer | Service Options                   |
| srvsvc.session                  | Session                  | String                  | Session Name                      |
| srvsvc.session.idle_time        | Idle Time                | Unsigned 32-bit integer | Idle Time                         |
| srvsvc.session.num_opens        | Num Opens                | Unsigned 32-bit integer | Num Opens                         |
| srvsvc.session.time             | Time                     | Unsigned 32-bit integer | Time                              |
| srvsvc.session.user_flags       | User Flags               | Unsigned 32-bit integer | User Flags                        |
| srvsvc.ssessopens               | Sessions Open            | Unsigned 32-bit integer | Sessions Open                     |
| srvsvc.ssessreqs                | Sessions Reqs            | Unsigned 32-bit integer | Sessions Requests                 |
| srvsvc.ssessvcs                 | Sessions VCs             | Unsigned 32-bit integer | Sessions VCs                      |

| <b>Field</b>                | <b>Field Name</b> | <b>Type</b>             | <b>Description</b>            |
|-----------------------------|-------------------|-------------------------|-------------------------------|
|                             |                   | integer                 |                               |
| srvsvc.share                | Share             | String                  | Share                         |
| srvsvc.share.num_entries    | Number of entries | Unsigned 32-bit integer | Number of Entries             |
| srvsvc.share.alternate_name | Alternate Name    | String                  | Alternate name for this share |
| srvsvc.share.flags          | Flags             | Unsigned 32-bit integer | Share flags                   |
| srvsvc.share.password       | Share Passwd      | String                  | Password for this share       |
| srvsvc.share.type           | Share Type        | Unsigned 32-bit integer | Share Type                    |
| srvsvc.shares               | Shares            | Unsigned 32-bit integer | Number of Shares              |
| srvsvc.sizereqbufs          | Siz Req Bufs      | Unsigned 32-bit integer |                               |
| srvsvc.srvheuristics        | Server Heuristics | String                  | Server Heuristics             |
| srvsvc.threadcount.add      | Thread Count Add  | Unsigned 32-bit integer | Thread Count Add              |
| srvsvc.threadpriority       | Thread Priority   | Unsigned 32-bit integer | Thread Priority               |
| srvsvc.timesource           | Timesource        | Unsigned 32-bit integer | Timesource                    |
| srvsvc.tod.day              | Day               | Unsigned 32-bit integer |                               |
| srvsvc.tod.elapsed          | Elapsed           | Unsigned 32-bit integer |                               |
| srvsvc.tod.hours            | Hours             | Unsigned 32-bit integer |                               |
| srvsvc.tod.hours            | Hours             | Unsigned 32-bit integer |                               |
| srvsvc.tod.mins             | Mins              | Unsigned 32-bit integer |                               |
| srvsvc.tod.month            | Month             | Unsigned 32-bit integer |                               |
| srvsvc.tod.msecs            | msecs             | Unsigned 32-bit integer |                               |
| srvsvc.tod.secs             | Secs              | Unsigned 32-bit         |                               |

| Field                           | Field Name         | Type                    | Description                      |
|---------------------------------|--------------------|-------------------------|----------------------------------|
|                                 |                    | integer                 |                                  |
| srvsvc.tod.timezone             | Timezone           | Unsigned 32-bit integer |                                  |
| srvsvc.tod.tinterval            | Tinterval          | Unsigned 32-bit integer |                                  |
| srvsvc.tod.weekday              | Weekday            | Unsigned 32-bit integer |                                  |
| srvsvc.tod.year                 | Year               | Unsigned 32-bit integer |                                  |
| srvsvc.transport                | Transport          | String                  | Transport Name                   |
| srvsvc.transport.address        | Address            | Byte array              | Address of transport             |
| srvsvc.transport.addresslen     | Address Len        | Unsigned 32-bit integer | Length of transport address      |
| srvsvc.transport.name           | Name               | String                  | Name of transport                |
| srvsvc.transport.networkaddress | Network Address    | String                  | Network address for transport    |
| srvsvc.transport.num_vcs        | VCs                | Unsigned 32-bit integer | Number of VCs for this transport |
| srvsvc.ulist_mtime              | Ulist mtime        | Unsigned 32-bit integer | Ulist mtime                      |
| srvsvc.update_immediately       | Update Immediately | Unsigned 32-bit integer | Update Immediately               |
| srvsvc.user                     | User               | String                  | User Name                        |
| srvsvc.user_path                | User Path          | String                  | User Path                        |
| srvsvc.users                    | Users              | Unsigned 32-bit integer | User Count                       |
| srvsvc.version.major            | Major Version      | Unsigned 32-bit integer | Major Version                    |
| srvsvc.version.minor            | Minor Version      | Unsigned 32-bit integer | Minor Version                    |
| srvsvc.xactmemsize              | Xact Mem Size      | Unsigned 32-bit integer | Xact Mem Size                    |
| srvsvc.info_level               | Info Level         | Unsigned 32-bit integer | Info Level                       |

### Microsoft Spool Subsystem (spoolss)

Table A-220. Microsoft Spool Subsystem (spoolss)

| Field                             | Field Name           | Type                    | Description                         |
|-----------------------------------|----------------------|-------------------------|-------------------------------------|
| secdescbuf.len                    | Length               | Unsigned 32-bit integer | Length                              |
| secdescbuf.max_len                | Max len              | Unsigned 32-bit integer | Max len                             |
| secdescbuf.undoc                  | Undocumented         | Unsigned 32-bit integer | Undocumented                        |
| setprinterdataex.data             | Data                 | Byte array              | Data                                |
| setprinterdataex.max_len          | Max len              | Unsigned 32-bit integer | Max len                             |
| setprinterdataex.real_len         | Real len             | Unsigned 32-bit integer | Real len                            |
| spoolprinterinfo.devmode_ptr      | Devmode pointer      | Unsigned 32-bit integer | Devmode pointer                     |
| spoolprinterinfo.secdesc_ptr      | Secdesc pointer      | Unsigned 32-bit integer | Secdesc pointer                     |
| spoolss.Datatype                  | Datatype             | String                  | Datatype                            |
| spoolss.access_mask.job_admin     | Job admin            | Boolean                 | Job admin                           |
| spoolss.access_mask.printer_admin | Printer admin        | Boolean                 | Printer admin                       |
| spoolss.access_mask.printer_use   | Printer use          | Boolean                 | Printer use                         |
| spoolss.access_mask.server_admin  | Server admin         | Boolean                 | Server admin                        |
| spoolss.access_mask.server_enum   | Server enum          | Boolean                 | Server enum                         |
| spoolss.access_required           | Access required      | Unsigned 32-bit integer | Access required                     |
| spoolss.architecture              | Architecture name    | String                  | Architecture name                   |
| spoolss.buffer.data               | Buffer data          | Byte array              | Contents of buffer                  |
| spoolss.buffer.size               | Buffer size          | Unsigned 32-bit integer | Size of buffer                      |
| spoolss.clientmajorversion        | Client major version | Unsigned 32-bit integer | Client printer driver major version |
| spoolss.clientminor               | Client minor         | Unsigned 32-bit         | Client printer driver minor         |

| Field                               | Field Name          | Type                    | Description         |
|-------------------------------------|---------------------|-------------------------|---------------------|
| rversion                            | version             | integer                 | version             |
| spoolss.configfile                  | Config file         | String                  | Printer name        |
| spoolss.datafile                    | Data file           | String                  | Data file           |
| spoolss.defaultdatatype             | Default data type   | String                  | Default data type   |
| spoolss.dependentfiles              | Dependent files     | String                  | Dependent files     |
| spoolss.devicemodectr.size          | Devicemode ctr size | Unsigned 32-bit integer | Devicemode ctr size |
| spoolss.devmode                     | Devicemode          | Unsigned 32-bit integer | Devicemode          |
| spoolss.devmode.bits_per_pel        | Bits per pel        | Unsigned 32-bit integer | Bits per pel        |
| spoolss.devmode.collate             | Collate             | Unsigned 16-bit integer | Collate             |
| spoolss.devmode.color               | Color               | Unsigned 16-bit integer | Color               |
| spoolss.devmode.copies              | Copies              | Unsigned 16-bit integer | Copies              |
| spoolss.devmode.default_source      | Default source      | Unsigned 16-bit integer | Default source      |
| spoolss.devmode.display_flags       | Display flags       | Unsigned 32-bit integer | Display flags       |
| spoolss.devmode.display_freq        | Display frequency   | Unsigned 32-bit integer | Display frequency   |
| spoolss.devmode.dither_type         | Dither type         | Unsigned 32-bit integer | Dither type         |
| spoolss.devmode.driver_extra        | Driver extra        | Unsigned 16-bit integer | Driver extra        |
| spoolss.devmode.driver_extra_len    | Driver extra length | Unsigned 32-bit integer | Driver extra length |
| spoolss.devmode.driver_version      | Driver version      | Unsigned 16-bit integer | Driver version      |
| spoolss.devmode.duplex              | Duplex              | Unsigned 16-bit integer | Duplex              |
| spoolss.devmode.fields              | Fields              | Unsigned 32-bit integer | Fields              |
| spoolss.devmode.fields.bits_per_pel | Bits per pel        | Boolean                 | Bits per pel        |



| <b>Field</b>                             | <b>Field Name</b> | <b>Type</b> | <b>Description</b> |
|--|-------------------|-------------|--------------------|
| spoolss.devmode.fields.collate           | Collate           | Boolean     | Collate            |
| spoolss.devmode.fields.color             | Color             | Boolean     | Color              |
| spoolss.devmode.fields.copies            | Copies            | Boolean     | Copies             |
| spoolss.devmode.fields.default_source    | Default source    | Boolean     | Default source     |
| spoolss.devmode.fields.display_flags     | Display flags     | Boolean     | Display flags      |
| spoolss.devmode.fields.display_frequency | Display frequency | Boolean     | Display frequency  |
| spoolss.devmode.fields.dither_type       | Dither type       | Boolean     | Dither type        |
| spoolss.devmode.fields.duplex            | Duplex            | Boolean     | Duplex             |
| spoolss.devmode.fields.form_name         | Form name         | Boolean     | Form name          |
| spoolss.devmode.fields.icm_intent        | ICM intent        | Boolean     | ICM intent         |
| spoolss.devmode.fields.icm_method        | ICM method        | Boolean     | ICM method         |
| spoolss.devmode.fields.log_pixels        | Log pixels        | Boolean     | Log pixels         |
| spoolss.devmode.fields.media_type        | Media type        | Boolean     | Media type         |
| spoolss.devmode.fields.nup               | N-up              | Boolean     | N-up               |
| spoolss.devmode.fields.orientation       | Orientation       | Boolean     | Orientation        |
| spoolss.devmode.fields.panning_height    | Panning height    | Boolean     | Panning height     |
| spoolss.devmode.fields.panning_width     | Panning width     | Boolean     | Panning width      |
| spoolss.devmode.fields.paper_length      | Paper length      | Boolean     | Paper length       |

Appendix A. Ethereal Display Filter Fields

| Field                                | Field Name     | Type                    | Description    |
|--------------------------------------|----------------|-------------------------|----------------|
| spoolss.devmode.fields.paper_size    | Paper size     | Boolean                 | Paper size     |
| spoolss.devmode.fields.paper_width   | Paper width    | Boolean                 | Paper width    |
| spoolss.devmode.fields.pels_height   | Pels height    | Boolean                 | Pels height    |
| spoolss.devmode.fields.pels_width    | Pels width     | Boolean                 | Pels width     |
| spoolss.devmode.fields.position      | Position       | Boolean                 | Position       |
| spoolss.devmode.fields.print_quality | Print quality  | Boolean                 | Print quality  |
| spoolss.devmode.fields.scale         | Scale          | Boolean                 | Scale          |
| spoolss.devmode.fields.tt_option     | TT option      | Boolean                 | TT option      |
| spoolss.devmode.fields.y_resolution  | Y resolution   | Boolean                 | Y resolution   |
| spoolss.devmode.icm_intent           | ICM intent     | Unsigned 32-bit integer | ICM intent     |
| spoolss.devmode.icm_method           | ICM method     | Unsigned 32-bit integer | ICM method     |
| spoolss.devmode.log_pixels           | Log pixels     | Unsigned 16-bit integer | Log pixels     |
| spoolss.devmode.media_type           | Media type     | Unsigned 32-bit integer | Media type     |
| spoolss.devmode.orientation          | Orientation    | Unsigned 16-bit integer | Orientation    |
| spoolss.devmode.panning_height       | Panning height | Unsigned 32-bit integer | Panning height |
| spoolss.devmode.panning_width        | Panning width  | Unsigned 32-bit integer | Panning width  |
| spoolss.devmode.paper_length         | Paper length   | Unsigned 16-bit integer | Paper length   |
| spoolss.devmode.paper_size           | Paper size     | Unsigned 16-bit integer | Paper size     |
| spoolss.devmode.paper_width          | Paper width    | Unsigned 16-bit integer | Paper width    |
| spoolss.devmode.pels_height          | Pels height    | Unsigned 32-bit integer | Pels height    |

| Field                         | Field Name       | Type                    | Description                  |
|-------------------------------|------------------|-------------------------|------------------------------|
| spoolss.devmode.pels_width    | Pels width       | Unsigned 32-bit integer | Pels width                   |
| spoolss.devmode.print_quality | Print quality    | Unsigned 16-bit integer | Print quality                |
| spoolss.devmode.reserved1     | Reserved1        | Unsigned 32-bit integer | Reserved1                    |
| spoolss.devmode.reserved2     | Reserved2        | Unsigned 32-bit integer | Reserved2                    |
| spoolss.devmode.scale         | Scale            | Unsigned 16-bit integer | Scale                        |
| spoolss.devmode.size          | Size             | Unsigned 32-bit integer | Size                         |
| spoolss.devmode.size2         | Size2            | Unsigned 16-bit integer | Size2                        |
| spoolss.devmode.spec_version  | Spec version     | Unsigned 16-bit integer | Spec version                 |
| spoolss.devmode.tt_option     | TT option        | Unsigned 16-bit integer | TT option                    |
| spoolss.devmode.y_resolution  | Y resolution     | Unsigned 16-bit integer | Y resolution                 |
| spoolss.document              | Document name    | String                  | Document name                |
| spoolss.drivername            | Driver name      | String                  | Driver name                  |
| spoolss.driverpath            | Driver path      | String                  | Driver path                  |
| spoolss.driverversion         | Driver version   | Unsigned 32-bit integer | Printer name                 |
| spoolss.elapsed_time          | Elapsed time     | Unsigned 32-bit integer | Elapsed time                 |
| spoolss.end_time              | End time         | Unsigned 32-bit integer | End time                     |
| spoolss.enumforms.num         | Num              | Unsigned 32-bit integer | Num                          |
| spoolss.enumjobs.firstjob     | First job        | Unsigned 32-bit integer | Index of first job to return |
| spoolss.enumjobs.infolevel    | Info level       | Unsigned 32-bit integer | Info level                   |
| spoolss.enumjobs.numjobs      | Num jobs         | Unsigned 32-bit integer | Number of jobs to return     |
| spoolss.enumprint             | Data size needed | Unsigned 32-bit         | Buffer size needed           |

| Field                                    | Field Name         | Type                    | Description                               |
|--|--------------------|-------------------------|---|
| erdata.data_needed                       |                    | integer                 | for printerdata data                      |
| spoolss.enumprinterdata.data_offered     | Data size offered  | Unsigned 32-bit integer | Buffer size offered for printerdata data  |
| spoolss.enumprinterdata.enumindex        | Enum index         | Unsigned 32-bit integer | Index for start of enumeration            |
| spoolss.enumprinterdata.value_len        | Value length       | Unsigned 32-bit integer | Size of printerdata value                 |
| spoolss.enumprinterdata.value_needed     | Value size needed  | Unsigned 32-bit integer | Buffer size needed for printerdata value  |
| spoolss.enumprinterdata.value_offered    | Value size offered | Unsigned 32-bit integer | Buffer size offered for printerdata value |
| spoolss.enumprinterdataex.name           | Name               | String                  | Name                                      |
| spoolss.enumprinterdataex.name_len       | Name len           | Unsigned 32-bit integer | Name len                                  |
| spoolss.enumprinterdataex.name_offset    | Name offset        | Unsigned 32-bit integer | Name offset                               |
| spoolss.enumprinterdataex.num_values     | Num values         | Unsigned 32-bit integer | Number of values returned                 |
| spoolss.enumprinterdataex.val_dword.high | DWORD value (high) | Unsigned 16-bit integer | DWORD value (high)                        |
| spoolss.enumprinterdataex.val_dword.low  | DWORD value (low)  | Unsigned 16-bit integer | DWORD value (low)                         |
| spoolss.enumprinterdataex.value_len      | Value len          | Unsigned 32-bit integer | Value len                                 |
| spoolss.enumprinterdataex.value_offset   | Value offset       | Unsigned 32-bit integer | Value offset                              |
| spoolss.enumprinterdataex.value_type     | Value type         | Unsigned 32-bit integer | Value type                                |
| spoolss.enumprinters.flags               | Flags              | Unsigned 32-bit integer | Flags                                     |
| spoolss.enumprint                        | Enum connections   | Boolean                 | Enum connections                          |

| Field                                   | Field Name   | Type                    | Description  |
|---|--------------|-------------------------|--------------|
| ers.flags.enum_connections              |              |                         |              |
| spoolss.enumprinters.flags.enum_default | Enum default | Boolean                 | Enum default |
| spoolss.enumprinters.flags.enum_local   | Enum local   | Boolean                 | Enum local   |
| spoolss.enumprinters.flags.enum_name    | Enum name    | Boolean                 | Enum name    |
| spoolss.enumprinters.flags.enum_network | Enum network | Boolean                 | Enum network |
| spoolss.enumprinters.flags.enum_remote  | Enum remote  | Boolean                 | Enum remote  |
| spoolss.enumprinters.flags.enum_shared  | Enum shared  | Boolean                 | Enum shared  |
| spoolss.form                            | Data         | Unsigned 32-bit integer | Data         |
| spoolss.form.flags                      | Flags        | Unsigned 32-bit integer | Flags        |
| spoolss.form.height                     | Height       | Unsigned 32-bit integer | Height       |
| spoolss.form.horizontal                 | Horizontal   | Unsigned 32-bit integer | Horizontal   |
| spoolss.form.left                       | Left margin  | Unsigned 32-bit integer | Left         |
| spoolss.form.level                      | Level        | Unsigned 32-bit integer | Level        |
| spoolss.form.name                       | Name         | String                  | Name         |
| spoolss.form.top                        | Top          | Unsigned 32-bit integer | Top          |
| spoolss.form.unknown                    | Unknown      | Unsigned 32-bit integer | Unknown      |
| spoolss.form.vertical                   | Vertical     | Unsigned 32-bit integer | Vertical     |
| spoolss.form.width                      | Width        | Unsigned 32-bit integer | Width        |

Appendix A. Ethereal Display Filter Fields

| Field                                | Field Name        | Type                    | Description               |
|--------------------------------------|-------------------|-------------------------|---------------------------|
| spoolss.helpfile                     | Help file         | String                  | Help file                 |
| spoolss.hnd                          | Context handle    | Byte array              | SPOOLSS policy handle     |
| spoolss.job.bytesprinted             | Job bytes printed | Unsigned 32-bit integer | Job bytes printed         |
| spoolss.job.id                       | Job ID            | Unsigned 32-bit integer | Job identification number |
| spoolss.job.pagesprinted             | Job pages printed | Unsigned 32-bit integer | Job pages printed         |
| spoolss.job.position                 | Job position      | Unsigned 32-bit integer | Job position              |
| spoolss.job.priority                 | Job priority      | Unsigned 32-bit integer | Job priority              |
| spoolss.job.size                     | Job size          | Unsigned 32-bit integer | Job size                  |
| spoolss.job.status                   | Job status        | Unsigned 32-bit integer | Job status                |
| spoolss.job.status.blocked           | Blocked           | Boolean                 | Blocked                   |
| spoolss.job.status.deleted           | Deleted           | Boolean                 | Deleted                   |
| spoolss.job.status.deleting          | Deleting          | Boolean                 | Deleting                  |
| spoolss.job.status.error             | Error             | Boolean                 | Error                     |
| spoolss.job.status.offline           | Offline           | Boolean                 | Offline                   |
| spoolss.job.status.paperout          | Paperout          | Boolean                 | Paperout                  |
| spoolss.job.status.paused            | Paused            | Boolean                 | Paused                    |
| spoolss.job.status.printed           | Printed           | Boolean                 | Printed                   |
| spoolss.job.status.printing          | Printing          | Boolean                 | Printing                  |
| spoolss.job.status.spooling          | Spooling          | Boolean                 | Spooling                  |
| spoolss.job.status.user_intervention | User intervention | Boolean                 | User intervention         |

| Field                                | Field Name      | Type                    | Description                         |
|--------------------------------------|-----------------|-------------------------|-------------------------------------|
| spoolss.job.totalbytes               | Job total bytes | Unsigned 32-bit integer | Job total bytes                     |
| spoolss.job.totalpages               | Job total pages | Unsigned 32-bit integer | Job total pages                     |
| spoolss.keybuffer.data               | Key Buffer data | Byte array              | Contents of buffer                  |
| spoolss.keybuffer.size               | Key Buffer size | Unsigned 32-bit integer | Size of buffer                      |
| spoolss.machinename                  | Machine name    | String                  | Machine name                        |
| spoolss.monitorname                  | Monitor name    | String                  | Monitor name                        |
| spoolss.needed                       | Needed          | Unsigned 32-bit integer | Size of buffer required for request |
| spoolss.notify_field                 | Field           | Unsigned 16-bit integer | Field                               |
| spoolss.notify_info.count            | Count           | Unsigned 32-bit integer | Count                               |
| spoolss.notify_info.flags            | Flags           | Unsigned 32-bit integer | Flags                               |
| spoolss.notify_info.version          | Version         | Unsigned 32-bit integer | Version                             |
| spoolss.notify_info_data.buffer      | Buffer          | Unsigned 32-bit integer | Buffer                              |
| spoolss.notify_info_data.buffer.data | Buffer data     | Byte array              | Buffer data                         |
| spoolss.notify_info_data.buffer.len  | Buffer length   | Unsigned 32-bit integer | Buffer length                       |
| spoolss.notify_info_data.bufsize     | Buffer size     | Unsigned 32-bit integer | Buffer size                         |
| spoolss.notify_info_data.count       | Count           | Unsigned 32-bit integer | Count                               |
| spoolss.notify_info_data.jobid       | Job Id          | Unsigned 32-bit integer | Job Id                              |
| spoolss.notify_info_data.type        | Type            | Unsigned 16-bit integer | Type                                |
| spoolss.notify_info_data.value1      | Value1          | Unsigned 32-bit integer | Value1                              |
| spoolss.notify_info_data.value2      | Value2          | Unsigned 32-bit integer | Value2                              |

Appendix A. Ethereal Display Filter Fields

| Field                                | Field Name    | Type                       | Description                                  |
|--------------------------------------|---------------|----------------------------|--|
| _data.value2                         |               | integer                    |  |
| spoolss.notify_opti<br>on.count      | Count         | Unsigned 32-bit<br>integer | Count  |
| spoolss.notify_opti<br>on.reserved1  | Reserved1     | Unsigned 16-bit<br>integer | Reserved1                                    |
| spoolss.notify_opti<br>on.reserved2  | Reserved2     | Unsigned 32-bit<br>integer | Reserved2                                    |
| spoolss.notify_opti<br>on.reserved3  | Reserved3     | Unsigned 32-bit<br>integer | Reserved3                                    |
| spoolss.notify_opti<br>on.type       | Type          | Unsigned 16-bit<br>integer | Type   |
| spoolss.notify_opti<br>on_data.count | Count         | Unsigned 32-bit<br>integer | Count  |
| spoolss.notify_opti<br>ons.count     | Count         | Unsigned 32-bit<br>integer | Count  |
| spoolss.notify_opti<br>ons.flags     | Flags         | Unsigned 32-bit<br>integer | Flags  |
| spoolss.notify_opti<br>ons.version   | Version       | Unsigned 32-bit<br>integer | Version                                      |
| spoolss.notifynam<br>e               | Notify name   | String                     | Notify name                                  |
| spoolss.offered                      | Offered       | Unsigned 32-bit<br>integer | Size of buffer<br>offered in this<br>request |
| spoolss.offset                       | Offset        | Unsigned 32-bit<br>integer | Offset of data                               |
| spoolss.opnum                        | Operation     | Unsigned 16-bit<br>integer | Operation                                    |
| spoolss.outputfile                   | Output file   | String                     | Output File                                  |
| spoolss.parameters                   | Parameters    | String                     | Parameters                                   |
| spoolss.portname                     | Port name     | String                     | Port name                                    |
| spoolss.printer.acti<br>on           | Action        | Unsigned 32-bit<br>integer | Action                                       |
| spoolss.printer.bui<br>ld_version    | Build version | Unsigned 16-bit<br>integer | Build version                                |
| spoolss.printer.c_s<br>etprinter     | Csetprinter   | Unsigned 32-bit<br>integer | Csetprinter                                  |
| spoolss.printer.cha<br>ngeid         | Change id     | Unsigned 32-bit<br>integer | Change id                                    |



| Field                          | Field Name      | Type                    | Description     |
|--------------------------------|-----------------|-------------------------|-----------------|
| spoolss.printer.cjobs          | CJobs           | Unsigned 32-bit integer | CJobs           |
| spoolss.printer.flags          | Flags           | Unsigned 32-bit integer | Flags           |
| spoolss.printer.global_counter | Global counter  | Unsigned 32-bit integer | Global counter  |
| spoolss.printer.guid           | GUID            | String                  | GUID            |
| spoolss.printer.major_version  | Major version   | Unsigned 16-bit integer | Major version   |
| spoolss.printer.printer_errors | Printer errors  | Unsigned 32-bit integer | Printer errors  |
| spoolss.printer.session_ctr    | Session counter | Unsigned 32-bit integer | Sessopm counter |
| spoolss.printer.total_bytes    | Total bytes     | Unsigned 32-bit integer | Total bytes     |
| spoolss.printer.total_jobs     | Total jobs      | Unsigned 32-bit integer | Total jobs      |
| spoolss.printer.total_pages    | Total pages     | Unsigned 32-bit integer | Total pages     |
| spoolss.printer.unknown11      | Unknown 11      | Unsigned 32-bit integer | Unknown 11      |
| spoolss.printer.unknown13      | Unknown 13      | Unsigned 32-bit integer | Unknown 13      |
| spoolss.printer.unknown14      | Unknown 14      | Unsigned 32-bit integer | Unknown 14      |
| spoolss.printer.unknown15      | Unknown 15      | Unsigned 32-bit integer | Unknown 15      |
| spoolss.printer.unknown16      | Unknown 16      | Unsigned 32-bit integer | Unknown 16      |
| spoolss.printer.unknown18      | Unknown 18      | Unsigned 32-bit integer | Unknown 18      |
| spoolss.printer.unknown20      | Unknown 20      | Unsigned 32-bit integer | Unknown 20      |
| spoolss.printer.unknown22      | Unknown 22      | Unsigned 16-bit integer | Unknown 22      |
| spoolss.printer.unknown23      | Unknown 23      | Unsigned 16-bit integer | Unknown 23      |
| spoolss.printer.unknown24      | Unknown 24      | Unsigned 16-bit integer | Unknown 24      |

| Field  | Field Name               | Type                    | Description       |
|--|--------------------------|-------------------------|-------------------|
| spoolss.printer.unknown25                    | Unknown 25               | Unsigned 16-bit integer | Unknown 25        |
| spoolss.printer.unknown26                    | Unknown 26               | Unsigned 16-bit integer | Unknown 26        |
| spoolss.printer.unknown27                    | Unknown 27               | Unsigned 16-bit integer | Unknown 27        |
| spoolss.printer.unknown28                    | Unknown 28               | Unsigned 16-bit integer | Unknown 28        |
| spoolss.printer.unknown29                    | Unknown 29               | Unsigned 16-bit integer | Unknown 29        |
| spoolss.printer.unknown7                     | Unknown 7                | Unsigned 32-bit integer | Unknown 7         |
| spoolss.printer.unknown8                     | Unknown 8                | Unsigned 32-bit integer | Unknown 8         |
| spoolss.printer.unknown9                     | Unknown 9                | Unsigned 32-bit integer | Unknown 9         |
| spoolss.printer_attributes                   | Attributes               | Unsigned 32-bit integer | Attributes        |
| spoolss.printer_attributes.default           | Default (9x/ME only)     | Boolean                 | Default           |
| spoolss.printer_attributes.direct            | Direct                   | Boolean                 | Direct            |
| spoolss.printer_attributes.do_complete_first | Do complete first        | Boolean                 | Do complete first |
| spoolss.printer_attributes.enable_bidi       | Enable bidi (9x/ME only) | Boolean                 | Enable bidi       |
| spoolss.printer_attributes.enable_devq       | Enable devq              | Boolean                 | Enable evq        |
| spoolss.printer_attributes.hidden            | Hidden                   | Boolean                 | Hidden            |
| spoolss.printer_attributes.keep_printed_jobs | Keep printed jobs        | Boolean                 | Keep printed jobs |
| spoolss.printer_attributes.local             | Local                    | Boolean                 | Local             |
| spoolss.printer_attributes.network           | Network                  | Boolean                 | Network           |
| spoolss.printer_attributes.published         | Published                | Boolean                 | Published         |

| Field   | Field Name                   | Type                       | Description         |
|---|------------------------------|----------------------------|---------------------|
| ributes.published                               |                              |                            |                     |
| spoolss.printer_att<br>ributes.queued           | Queued                       | Boolean                    | Queued              |
| spoolss.printer_att<br>ributes.raw_only         | Raw only                     | Boolean                    | Raw only            |
| spoolss.printer_att<br>ributes.shared           | Shared                       | Boolean                    | Shared              |
| spoolss.printer_att<br>ributes.work_offli<br>ne | Work offline<br>(9x/ME only) | Boolean                    | Work offline        |
| spoolss.printer_loc<br>al                       | Printer local                | Unsigned 32-bit<br>integer | Printer local       |
| spoolss.printer_sta<br>tus                      | Status                       | Unsigned 32-bit<br>integer | Status              |
| spoolss.printercom<br>ment                      | Printer comment              | String                     | Printer comment     |
| spoolss.printerdat<br>a                         | Data                         | Unsigned 32-bit<br>integer | Data                |
| spoolss.printerdat<br>a.data                    | Data                         | Byte array                 | Printer data        |
| spoolss.printerdat<br>a.data.dword              | DWORD data                   | Unsigned 32-bit<br>integer | DWORD data          |
| spoolss.printerdat<br>a.data.sz                 | String data                  | String                     | String data         |
| spoolss.printerdat<br>a.key                     | Key                          | String                     | Printer data key    |
| spoolss.printerdat<br>a.size                    | Size                         | Unsigned 32-bit<br>integer | Printer data size   |
| spoolss.printerdat<br>a.type                    | Type                         | Unsigned 32-bit<br>integer | Printer data type   |
| spoolss.printerdat<br>a.val_sz                  | SZ value                     | String                     | SZ value            |
| spoolss.printerdat<br>a.value                   | Value                        | String                     | Printer data value  |
| spoolss.printerdes<br>c                         | Printer description          | String                     | Printer description |
| spoolss.printerloca<br>tion                     | Printer location             | String                     | Printer location    |
| spoolss.printerna<br>me                         | Printer name                 | String                     | Printer name        |

| Field                                   | Field Name       | Type                    | Description              |
|---|------------------|-------------------------|--------------------------|
| spoolss.printprocessor                  | Print processor  | String                  | Print processor          |
| spoolss.rc                              | Return code      | Unsigned 32-bit integer | SPOOLSS return code      |
| spoolss.replyopenprinter.unk0           | Unknown 0        | Unsigned 32-bit integer | Unknown 0                |
| spoolss.replyopenprinter.unk1           | Unknown 1        | Unsigned 32-bit integer | Unknown 1                |
| spoolss.returned                        | Returned         | Unsigned 32-bit integer | Number of items returned |
| spoolss.rffpcnex.flags                  | RFFPCNEX flags   | Unsigned 32-bit integer | RFFPCNEX flags           |
| spoolss.rffpcnex.flags.add_driver       | Add driver       | Boolean                 | Add driver               |
| spoolss.rffpcnex.flags.add_form         | Add form         | Boolean                 | Add form                 |
| spoolss.rffpcnex.flags.add_job          | Add job          | Boolean                 | Add job                  |
| spoolss.rffpcnex.flags.add_port         | Add port         | Boolean                 | Add port                 |
| spoolss.rffpcnex.flags.add_printer      | Add printer      | Boolean                 | Add printer              |
| spoolss.rffpcnex.flags.add_processor    | Add processor    | Boolean                 | Add processor            |
| spoolss.rffpcnex.flags.configure_port   | Configure port   | Boolean                 | Configure port           |
| spoolss.rffpcnex.flags.delete_driver    | Delete driver    | Boolean                 | Delete driver            |
| spoolss.rffpcnex.flags.delete_form      | Delete form      | Boolean                 | Delete form              |
| spoolss.rffpcnex.flags.delete_job       | Delete job       | Boolean                 | Delete job               |
| spoolss.rffpcnex.flags.delete_port      | Delete port      | Boolean                 | Delete port              |
| spoolss.rffpcnex.flags.delete_printer   | Delete printer   | Boolean                 | Delete printer           |
| spoolss.rffpcnex.flags.delete_processor | Delete processor | Boolean                 | Delete processor         |
| spoolss.rffpcnex.flags.failed_printer   | Failed printer   | Boolean                 | Failed printer           |

| Field                                | Field Name           | Type                    | Description                         |
|--------------------------------------|----------------------|-------------------------|-------------------------------------|
| ags.failed_connection_printer        | connection           |                         | connection                          |
| spoolss.rffpcnex.flags.set_driver    | Set driver           | Boolean                 | Set driver                          |
| spoolss.rffpcnex.flags.set_form      | Set form             | Boolean                 | Set form                            |
| spoolss.rffpcnex.flags.set_job       | Set job              | Boolean                 | Set job                             |
| spoolss.rffpcnex.flags.set_printer   | Set printer          | Boolean                 | Set printer                         |
| spoolss.rffpcnex.flags.timeout       | Timeout              | Boolean                 | Timeout                             |
| spoolss.rffpcnex.flags.write_job     | Write job            | Boolean                 | Write job                           |
| spoolss.rffpcnex.options             | Options              | Unsigned 32-bit integer | RFFPCNEX options                    |
| spoolss.routerreplyprinter.changeid  | Change id            | Unsigned 32-bit integer | Change id                           |
| spoolss.routerreplyprinter.condition | Condition            | Unsigned 32-bit integer | Condition                           |
| spoolss.routerreplyprinter.unknown1  | Unknown1             | Unsigned 32-bit integer | Unknown1                            |
| spoolss.rrpcn.changehigh             | Change high          | Unsigned 32-bit integer | Change high                         |
| spoolss.rrpcn.changelow              | Change low           | Unsigned 32-bit integer | Change low                          |
| spoolss.rrpcn.unk0                   | Unknown 0            | Unsigned 32-bit integer | Unknown 0                           |
| spoolss.rrpcn.unk1                   | Unknown 1            | Unsigned 32-bit integer | Unknown 1                           |
| spoolss.servermajorversion           | Server major version | Unsigned 32-bit integer | Server printer driver major version |
| spoolss.serverminorversion           | Server minor version | Unsigned 32-bit integer | Server printer driver minor version |
| spoolss.servername                   | Server name          | String                  | Server name                         |
| spoolss.setjob.cmd                   | Set job command      | Unsigned 32-bit integer | Printer data name                   |

| Field                       | Field Name     | Type                    | Description     |
|-----------------------------|----------------|-------------------------|-----------------|
| spoolss.setpfile            | Separator file | String                  | Separator file  |
| spoolss.setprinter_cmd      | Command        | Unsigned 32-bit integer | Command         |
| spoolss.sharename           | Share name     | String                  | Share name      |
| spoolss.start_time          | Start time     | Unsigned 32-bit integer | Start time      |
| spoolss.textstatus          | Text status    | String                  | Text status     |
| spoolss.time.day            | Day            | Unsigned 32-bit integer | Day             |
| spoolss.time.dow            | Day of week    | Unsigned 32-bit integer | Day of week     |
| spoolss.time.hour           | Hour           | Unsigned 32-bit integer | Hour            |
| spoolss.time.minute         | Minute         | Unsigned 32-bit integer | Minute          |
| spoolss.time.month          | Month          | Unsigned 32-bit integer | Month           |
| spoolss.time.msec           | Millisecond    | Unsigned 32-bit integer | Millisecond     |
| spoolss.time.second         | Second         | Unsigned 32-bit integer | Second          |
| spoolss.time.year           | Year           | Unsigned 32-bit integer | Year            |
| spoolss.userlevel.build     | Build          | Unsigned 32-bit integer | Build           |
| spoolss.userlevel.client    | Client         | String                  | Client          |
| spoolss.userlevel.major     | Major          | Unsigned 32-bit integer | Major           |
| spoolss.userlevel.minor     | Minor          | Unsigned 32-bit integer | Minor           |
| spoolss.userlevel.processor | Processor      | Unsigned 32-bit integer | Processor       |
| spoolss.userlevel.size      | Size           | Unsigned 32-bit integer | Size            |
| spoolss.userlevel.user      | User           | String                  | User            |
| spoolss.username            | User name      | String                  | User name       |
| spoolss.writeprint          | Num written    | Unsigned 32-bit         | Number of bytes |

| Field         | Field Name | Type    | Description |
|---------------|------------|---------|-------------|
| er.numwritten |            | integer | written     |

### Microsoft Telephony API Service (tapi)

Table A-221. Microsoft Telephony API Service (tapi)

| Field               | Field Name     | Type                    | Description  |
|---------------------|----------------|-------------------------|--|
| tapi.hnd            | Context Handle | Byte array              | Context handle   |
| tapi.rc             | Return code    | Unsigned 32-bit integer | TAPI return code   |
| tapi.unknown.bytes  | Unknown bytes  | Byte array              | Unknown bytes. If you know what this is, contact ethereal developers.  |
| tapi.unknown.long   | Unknown long   | Unsigned 32-bit integer | Unknown long. If you know what this is, contact ethereal developers.   |
| tapi.unknown.string | Unknown string | String                  | Unknown string. If you know what this is, contact ethereal developers. |

### Microsoft Windows Browser Protocol (browser)

Table A-222. Microsoft Windows Browser Protocol (browser)

| Field                      | Field Name                  | Type                    | Description                     |
|----------------------------|-----------------------------|-------------------------|---------------------------------|
| browser.backup.count       | Backup List Requested Count | Unsigned 8-bit integer  | Backup list requested count     |
| browser.backup.server      | Backup Server               | String                  | Backup Server Name              |
| browser.backup.token       | Backup Request Token        | Unsigned 32-bit integer | Backup requested/response token |
| browser.browser_to_promote | Browser to Promote          | String                  | Browser to Promote              |
| browser.command            | Command                     | Unsigned 8-bit integer  | Browse command opcode           |
| browser.comment            | Host Comment                | String                  | Server Comment                  |
| browser.election.criteria  | Election Criteria           | Unsigned 32-bit integer | Election Criteria               |

| Field   | Field Name                        | Type                       | Description                             |
|---|-----------------------------------|----------------------------|---|
| browser.election.d<br>esire                   | Election Desire                   | Unsigned 8-bit<br>integer  | Election Desire                         |
| browser.election.d<br>esire.backup            | Backup                            | Boolean                    | Is this a backup<br>server              |
| browser.election.d<br>esire.domain_mast<br>er | Domain Master                     | Boolean                    | Is this a domain<br>master              |
| browser.election.d<br>esire.master            | Master                            | Boolean                    | Is this a master<br>server              |
| browser.election.d<br>esire.nt                | NT                                | Boolean                    | Is this a NT server                     |
| browser.election.d<br>esire.standby           | Standby                           | Boolean                    | Is this a standby<br>server?            |
| browser.election.d<br>esire.wins              | WINS                              | Boolean                    | Is this a WINS<br>server                |
| browser.election.o<br>s                       | Election OS                       | Unsigned 8-bit<br>integer  | Election OS                             |
| browser.election.o<br>s.nts                   | NT Server                         | Boolean                    | Is this a NT<br>Server?                 |
| browser.election.o<br>s.ntw                   | NT Workstation                    | Boolean                    | Is this a NT<br>Workstation?            |
| browser.election.o<br>s.wfw                   | WfW                               | Boolean                    | Is this a WfW<br>host?                  |
| browser.election.re<br>vision                 | Election Revision                 | Unsigned 16-bit<br>integer | Election Revision                       |
| browser.election.v<br>ersion                  | Election Version                  | Unsigned 8-bit<br>integer  | Election Version                        |
| browser.mb_serve<br>r                         | Master Browser<br>Server Name     | String                     | BROWSE Master<br>Browser Server<br>Name |
| browser.os_major                              | OS Major Version                  | Unsigned 8-bit<br>integer  | Operating System<br>Major Version       |
| browser.os_minor                              | OS Minor Version                  | Unsigned 8-bit<br>integer  | Operating System<br>Minor Version       |
| browser.period                                | Update Periodicity                | Unsigned 32-bit<br>integer | Update Periodicity<br>in ms             |
| browser.proto_maj<br>or                       | Browser Protocol<br>Major Version | Unsigned 8-bit<br>integer  | Browser Protocol<br>Major Version       |
| browser.proto_mi<br>nor                       | Browser Protocol<br>Minor Version | Unsigned 8-bit<br>integer  | Browser Protocol<br>Minor Version       |



| <b>Field</b>                              | <b>Field Name</b>      | <b>Type</b>             | <b>Description</b>                  |
|---|------------------------|-------------------------|-------------------------------------|
| browser.response_computer_name            | Response Computer Name | String                  | Response Computer Name              |
| browser.server                            | Server Name            | String                  | BROWSE Server Name                  |
| browser.server_type                       | Server Type            | Unsigned 32-bit integer | Server Type Flags                   |
| browser.server_type.apple                 | Apple                  | Boolean                 | Is This An Apple Server ?           |
| browser.server_type.backup_controller     | Backup Controller      | Boolean                 | Is This A Backup Domain Controller? |
| browser.server_type.browser.backup        | Backup Browser         | Boolean                 | Is This A Backup Browser?           |
| browser.server_type.browser.domain_master | Domain Master Browser  | Boolean                 | Is This A Domain Master Browser?    |
| browser.server_type.browser.master        | Master Browser         | Boolean                 | Is This A Master Browser?           |
| browser.server_type.browser.potential     | Potential Browser      | Boolean                 | Is This A Potential Browser?        |
| browser.server_type.dialin                | Dialin                 | Boolean                 | Is This A Dialin Server?            |
| browser.server_type.domain_controller     | Domain Controller      | Boolean                 | Is This A Domain Controller?        |
| browser.server_type.domainenum            | Domain Enum            | Boolean                 | Is This A Domain Enum request?      |
| browser.server_type.local                 | Local                  | Boolean                 | Is This A Local List Only request?  |
| browser.server_type.member                | Member                 | Boolean                 | Is This A Domain Member Server?     |
| browser.server_type.novell                | Novell                 | Boolean                 | Is This A Novell Server?            |
| browser.server_type.nts                   | NT Server              | Boolean                 | Is This A NT Server?                |
| browser.server_type.ntw                   | NT Workstation         | Boolean                 | Is This A NT Workstation?           |
| browser.server_type.osf                   | OSF                    | Boolean                 | Is This An OSF server ?             |

| Field                           | Field Name   | Type                    | Description                              |
|---------------------------------|--------------|-------------------------|--|
| browser.server_type.print       | Print        | Boolean                 | Is This A Print Server?                  |
| browser.server_type.server      | Server       | Boolean                 | Is This A Server?                        |
| browser.server_type.sql         | SQL          | Boolean                 | Is This A SQL Server?                    |
| browser.server_type.time        | Time Source  | Boolean                 | Is This A Time Source?                   |
| browser.server_type.vms         | VMS          | Boolean                 | Is This A VMS Server?                    |
| browser.server_type.w95         | Windows 95+  | Boolean                 | Is This A Windows 95 or above server?    |
| browser.server_type.wfw         | WfW          | Boolean                 | Is This A Windows For Workgroups Server? |
| browser.server_type.workstation | Workstation  | Boolean                 | Is This A Workstation?                   |
| browser.server_type.xenix       | Xenix        | Boolean                 | Is This A Xenix Server?                  |
| browser.sig                     | Signature    | Unsigned 16-bit integer | Signature Constant                       |
| browser.unused                  | Unused flags | Unsigned 8-bit integer  | Unused/unknown flags                     |
| browser.update_count            | Update Count | Unsigned 8-bit integer  | Browse Update Count                      |
| browser.uptime                  | Uptime       | Unsigned 32-bit integer | Server uptime in ms                      |

### Microsoft Windows Lanman Remote API Protocol (lanman)

Table A-223. Microsoft Windows Lanman Remote API Protocol (lanman)

| Field                  | Field Name                | Type                    | Description                        |
|------------------------|---------------------------|-------------------------|------------------------------------|
| lanman.aux_data_desc   | Auxiliary Data Descriptor | String                  | LANMAN Auxiliary Data Descriptor   |
| lanman.available_bytes | Available Bytes           | Unsigned 16-bit integer | LANMAN Number of Available Bytes   |
| lanman.available_count | Available Entries         | Unsigned 16-bit integer | LANMAN Number of Available Entries |

| Field                     | Field Name                         | Type                    | Description  |
|---------------------------|------------------------------------|-------------------------|--|
| lanman.bad_pw_count       | Bad Password Count                 | Unsigned 16-bit integer | LANMAN Number of incorrect passwords entered since last successful login |
| lanman.code_page          | Code Page                          | Unsigned 16-bit integer | LANMAN Code Page   |
| lanman.comment            | Comment                            | String                  | LANMAN Comment   |
| lanman.computer_name      | Computer Name                      | String                  | LANMAN Computer Name   |
| lanman.continuation_from  | Continuation from message in frame | Unsigned 32-bit integer | This is a LANMAN continuation from the message in the frame in question  |
| lanman.convert            | Convert                            | Unsigned 16-bit integer | LANMAN Convert   |
| lanman.country_code       | Country Code                       | Unsigned 16-bit integer | LANMAN Country Code  |
| lanman.current_time       | Current Date/Time                  | Date/Time stamp         | LANMAN Current date and time, in seconds since 00:00:00, January 1, 1970 |
| lanman.day                | Day                                | Unsigned 8-bit integer  | LANMAN Current day   |
| lanman.duration           | Duration of Session                | Time duration           | LANMAN Number of seconds the user was logged on                          |
| lanman.entry_count        | Entry Count                        | Unsigned 16-bit integer | LANMAN Number of Entries   |
| lanman.enumeration_domain | Enumeration Domain                 | String                  | LANMAN Domain in which to enumerate servers                              |
| lanman.full_name          | Full Name                          | String                  | LANMAN Full Name   |
| lanman.function_code      | Function Code                      | Unsigned 16-bit integer | LANMAN Function Code/Command   |

Appendix A. Ethereal Display Filter Fields

| Field               | Field Name             | Type                    | Description                                       |
|---------------------|------------------------|-------------------------|---|
| lanman.group_name   | Group Name             | String                  | LANMAN Group Name                                 |
| lanman.homedir      | Home Directory         | String                  | LANMAN Home Directory                             |
| lanman.hour         | Hour                   | Unsigned 8-bit integer  | LANMAN Current hour                               |
| lanman.hundredths   | Hundredths of a second | Unsigned 8-bit integer  | LANMAN Current hundredths of a second             |
| lanman.kickoff_time | Kickoff Date/Time      | Date/Time stamp         | LANMAN Date and time when user will be logged off |
| lanman.last_logoff  | Last Logoff Date/Time  | Date/Time stamp         | LANMAN Date and time of last logoff               |
| lanman.last_logon   | Last Logon Date/Time   | Date/Time stamp         | LANMAN Date and time of last logon                |
| lanman.level        | Detail Level           | Unsigned 16-bit integer | LANMAN Detail Level                               |
| lanman.logoff_code  | Logoff Code            | Unsigned 16-bit integer | LANMAN Logoff Code                                |
| lanman.logoff_time  | Logoff Date/Time       | Date/Time stamp         | LANMAN Date and time when user should log off     |
| lanman.logon_code   | Logon Code             | Unsigned 16-bit integer | LANMAN Logon Code                                 |
| lanman.logon_domain | Logon Domain           | String                  | LANMAN Logon Domain                               |
| lanman.logon_hours  | Logon Hours            | Byte array              | LANMAN Logon Hours                                |
| lanman.logon_server | Logon Server           | String                  | LANMAN Logon Server                               |
| lanman.max_storage  | Max Storage            | Unsigned 32-bit integer | LANMAN Max Storage                                |
| lanman.minute       | Minute                 | Unsigned 8-bit integer  | LANMAN Current minute                             |
| lanman.month        | Month                  | Unsigned 8-bit integer  | LANMAN Current month                              |

| Field                       | Field Name            | Type                    | Description  |
|-----------------------------|-----------------------|-------------------------|--|
| lanman.msecs                | Milliseconds          | Unsigned 32-bit integer | LANMAN Milliseconds since arbitrary time in the past (typically boot time) |
| lanman.new_password         | New Password          | Byte array              | LANMAN New Password (encrypted)  |
| lanman.num_logons           | Number of Logons      | Unsigned 16-bit integer | LANMAN Number of Logons  |
| lanman.old_password         | Old Password          | Byte array              | LANMAN Old Password (encrypted)  |
| lanman.operator_privileges  | Operator Privileges   | Unsigned 32-bit integer | LANMAN Operator Privileges   |
| lanman.other_domains        | Other Domains         | String                  | LANMAN Other Domains   |
| lanman.param_desc           | Parameter Descriptor  | String                  | LANMAN Parameter Descriptor  |
| lanman.parameters           | Parameters            | String                  | LANMAN Parameters  |
| lanman.password             | Password              | String                  | LANMAN Password  |
| lanman.password_age         | Password Age          | Time duration           | LANMAN Time since user last changed his/her password                       |
| lanman.password_can_change  | Password Can Change   | Date/Time stamp         | LANMAN Date and time when user can change their password                   |
| lanman.password_must_change | Password Must Change  | Date/Time stamp         | LANMAN Date and time when user must change their password                  |
| lanman.privilege_level      | Privilege Level       | Unsigned 16-bit integer | LANMAN Privilege Level   |
| lanman.recv_buf_len         | Receive Buffer Length | Unsigned 16-bit integer | LANMAN Receive Buffer Length   |
| lanman.reserved             | Reserved              | Unsigned 32-bit integer | LANMAN Reserved  |

| Field                     | Field Name         | Type                    | Description                             |
|---------------------------|--------------------|-------------------------|---|
| lanman.ret_desc           | Return Descriptor  | String                  | LANMAN Return Descriptor                |
| lanman.script_path        | Script Path        | String                  | LANMAN Pathname of user's logon script  |
| lanman.second             | Second             | Unsigned 8-bit integer  | LANMAN Current second                   |
| lanman.send_buf_len       | Send Buffer Length | Unsigned 16-bit integer | LANMAN Send Buffer Length               |
| lanman.server.comment     | Server Comment     | String                  | LANMAN Server Comment                   |
| lanman.server.major       | Major Version      | Unsigned 8-bit integer  | LANMAN Server Major Version             |
| lanman.server.minor       | Minor Version      | Unsigned 8-bit integer  | LANMAN Server Minor Version             |
| lanman.server.name        | Server Name        | String                  | LANMAN Name of Server                   |
| lanman.share.comment      | Share Comment      | String                  | LANMAN Share Comment                    |
| lanman.share.current_uses | Share Current Uses | Unsigned 16-bit integer | LANMAN Current connections to share     |
| lanman.share.max_uses     | Share Max Uses     | Unsigned 16-bit integer | LANMAN Max connections allowed to share |
| lanman.share.name         | Share Name         | String                  | LANMAN Name of Share                    |
| lanman.share.password     | Share Password     | String                  | LANMAN Share Password                   |
| lanman.share.path         | Share Path         | String                  | LANMAN Share Path                       |
| lanman.share.permissions  | Share Permissions  | Unsigned 16-bit integer | LANMAN Permissions on share             |
| lanman.share.type         | Share Type         | Unsigned 16-bit integer | LANMAN Type of Share                    |
| lanman.status             | Status             | Unsigned 16-bit integer | LANMAN Return status                    |
| lanman.timeinterval       | Time Interval      | Unsigned 16-bit integer | LANMAN .0001 second units per           |

| Field                     | Field Name                | Type                    | Description                                     |
|---------------------------|---------------------------|-------------------------|---|
|                           |                           |                         | clock tick                                      |
| lanman.tzoffset           | Time Zone Offset          | Signed 16-bit integer   | LANMAN Offset of time zone from GMT, in minutes |
| lanman.units_per_week     | Units Per Week            | Unsigned 16-bit integer | LANMAN Units Per Week                           |
| lanman.user_comment       | User Comment              | String                  | LANMAN User Comment                             |
| lanman.user_name          | User Name                 | String                  | LANMAN User Name                                |
| lanman.ustruct_size       | Length of UStruct         | Unsigned 16-bit integer | LANMAN UStruct Length                           |
| lanman.weekday            | Weekday                   | Unsigned 8-bit integer  | LANMAN Current day of the week                  |
| lanman.workstation_domain | Workstation Domain        | String                  | LANMAN Workstation Domain                       |
| lanman.workstation_major  | Workstation Major Version | Unsigned 8-bit integer  | LANMAN Workstation Major Version                |
| lanman.workstation_minor  | Workstation Minor Version | Unsigned 8-bit integer  | LANMAN Workstation Minor Version                |
| lanman.workstation_name   | Workstation Name          | String                  | LANMAN Workstation Name                         |
| lanman.workstations       | Workstations              | String                  | LANMAN Workstations                             |
| lanman.year               | Year                      | Unsigned 16-bit integer | LANMAN Current year                             |

### Microsoft Windows Logon Protocol (netlogon)

Table A-224. Microsoft Windows Logon Protocol (netlogon)

| Field              | Field Name     | Type                    | Description        |
|--------------------|----------------|-------------------------|--------------------|
| netlogon.command   | Command        | Unsigned 8-bit integer  | NETLOGON Command   |
| netlogon.date_time | Date/Time      | Unsigned 32-bit integer | NETLOGON Date/Time |
| netlogon.db_count  | DB Count       | Unsigned 32-bit integer | NETLOGON DB Count  |
| netlogon.db_index  | Database Index | Unsigned 32-bit         | NETLOGON           |

Appendix A. Ethereal Display Filter Fields

| Field                      | Field Name          | Type                    | Description                          |
|----------------------------|---------------------|-------------------------|--------------------------------------|
|                            |                     | integer                 | Database Index                       |
| netlogon.domain_name       | Domain Name         | String                  | NETLOGON Domain Name                 |
| netlogon.domain_sid_size   | Domain SID Size     | Unsigned 32-bit integer | NETLOGON Domain SID Size             |
| netlogon.flags.autolock    | Autolock            | Boolean                 | NETLOGON Account Autolock            |
| netlogon.flags.enabled     | Enabled             | Boolean                 | NETLOGON Is This Account Enabled     |
| netlogon.flags.expire      | Expire              | Boolean                 | NETLOGON Will Account Expire         |
| netlogon.flags.homedir     | Homedir             | Boolean                 | NETLOGON Homedir Required            |
| netlogon.flags.interdomain | Interdomain Trust   | Boolean                 | NETLOGON Inter-domain Trust Account  |
| netlogon.flags.mns         | MNS User            | Boolean                 | NETLOGON MNS User Account            |
| netlogon.flags.normal      | Normal User         | Boolean                 | NETLOGON Normal User Account         |
| netlogon.flags.password    | Password            | Boolean                 | NETLOGON Password Required           |
| netlogon.flags.server      | Server Trust        | Boolean                 | NETLOGON Server Trust Account        |
| netlogon.flags.temp_dup    | Temp Duplicate User | Boolean                 | NETLOGON Temp Duplicate User Account |
| netlogon.flags.workstation | Workstation Trust   | Boolean                 | NETLOGON Workstation Trust Account   |
| netlogon.large_serial      | Large Serial Number | Unsigned 64-bit integer | NETLOGON Large Serial Number         |
| netlogon.lm_token          | LM Token            | Unsigned 16-bit integer | NETLOGON LM Token                    |
| netlogon.lmnt_token        | LMNT Token          | Unsigned 16-bit integer | NETLOGON LMNT Token                  |



| Field                          | Field Name                | Type                    | Description                        |
|--------------------------------|---------------------------|-------------------------|------------------------------------|
| netlogon.low_serial            | Low Serial Number         | Unsigned 32-bit integer | NETLOGON Low Serial Number         |
| netlogon.mailslot_name         | Mailslot Name             | String                  | NETLOGON Mailslot Name             |
| netlogon.major_version         | Workstation Major Version | Unsigned 8-bit integer  | NETLOGON Workstation Major Version |
| netlogon.minor_version         | Workstation Minor Version | Unsigned 8-bit integer  | NETLOGON Workstation Minor Version |
| netlogon.nt_date_time          | NT Date/Time              | Date/Time stamp         | NETLOGON NT Date/Time              |
| netlogon.nt_version            | NT Version                | Unsigned 32-bit integer | NETLOGON NT Version                |
| netlogon.os_version            | Workstation OS Version    | Unsigned 8-bit integer  | NETLOGON Workstation OS Version    |
| netlogon.pdc_name              | PDC Name                  | String                  | NETLOGON PDC Name                  |
| netlogon.pulse                 | Pulse                     | Unsigned 32-bit integer | NETLOGON Pulse                     |
| netlogon.random                | Random                    | Unsigned 32-bit integer | NETLOGON Random                    |
| netlogon.request_count         | Request Count             | Unsigned 16-bit integer | NETLOGON Request Count             |
| netlogon.script_name           | Script Name               | String                  | NETLOGON Script Name               |
| netlogon.server_name           | Server Name               | String                  | NETLOGON Server Name               |
| netlogon.unicode_computer_name | Unicode Computer Name     | String                  | NETLOGON Unicode Computer Name     |
| netlogon.unicode_pdc_name      | Unicode PDC Name          | String                  | NETLOGON Unicode PDC Name          |
| netlogon.update                | Update Type               | Unsigned 16-bit integer | NETLOGON Update Type               |
| netlogon.user_name             | User Name                 | String                  | NETLOGON User Name                 |

**Microsoft Workstation Service (wkssvc)**

**Table A-225. Microsoft Workstation Service (wkssvc)**

| Field | Field Name | Type | Description |
|-------|------------|------|-------------|
|       |            |      |             |

**Mobile IP (mip)**

**Table A-226. Mobile IP (mip)**

| Field                | Field Name                 | Type                    | Description                                     |
|----------------------|----------------------------|-------------------------|---|
| mip.auth.auth        | Authenticator              | Byte array              | Authenticator.                                  |
| mip.auth.spi         | SPI                        | Unsigned 32-bit integer | Authentication Header Security Parameter Index. |
| mip.b                | Broadcast Datagrams        | Boolean                 | Broadcast Datagrams requested                   |
| mip.coa              | Care of Address            | IPv4 address            | Care of Address.                                |
| mip.code             | Reply Code                 | Unsigned 8-bit integer  | Mobile IP Reply code.                           |
| mip.d                | Co-located Care-of Address | Boolean                 | MN using Co-located Care-of address             |
| mip.ext.auth.subtype | Gen Auth Ext SubType       | Unsigned 8-bit integer  | Mobile IP Auth Extension Sub Type.              |
| mip.ext.len          | Extension Length           | Unsigned 16-bit integer | Mobile IP Extension Length.                     |
| mip.ext.type         | Extension Type             | Unsigned 8-bit integer  | Mobile IP Extension Type.                       |
| mip.extension        | Extension                  | Byte array              | Extension                                       |
| mip.flags            | Flags                      | Unsigned 8-bit integer  |   |
| mip.g                | GRE                        | Boolean                 | MN wants GRE encapsulation                      |
| mip.haaddr           | Home Agent                 | IPv4 address            | Home agent IP Address.                          |
| mip.homeaddr         | Home Address               | IPv4 address            | Mobile Node's home address.                     |
| mip.ident            | Identification             | Date/Time stamp         | MN Identification.                              |
| mip.life             | Lifetime                   | Unsigned 16-bit integer | Mobile IP Lifetime.                             |
| mip.m                | Minimal Encapsulation      | Boolean                 | MN wants Minimal                                |

| Field    | Field Name            | Type                   | Description                   |
|----------|-----------------------|------------------------|-------------------------------|
|          |                       |                        | encapsulation                 |
| mip.nai  | NAI                   | String                 | NAI                           |
| mip.s    | Simultaneous Bindings | Boolean                | Simultaneous Bindings Allowed |
| mip.t    | Reverse Tunneling     | Boolean                | Reverse tunneling requested   |
| mip.type | Message Type          | Unsigned 8-bit integer | Mobile IP Message type.       |
| mip.v    | Van Jacobson          | Boolean                | Van Jacobson                  |

## Mobile IPv6 (mipv6)

Table A-227. Mobile IPv6 (mipv6)

| Field             | Field Name                            | Type                    | Description                           |
|-------------------|---------------------------------------|-------------------------|---------------------------------------|
| mip6.acoa.acoa    | Alternate care-of address             | IPv6 address            | Alternate Care-of address             |
| mip6.ba.k_flag    | Key Management Compatibility (K) flag | Boolean                 | Key Management Compatibility (K) flag |
| mip6.ba.lifetime  | Lifetime                              | Unsigned 16-bit integer | Lifetime                              |
| mip6.ba.seqnr     | Sequence number                       | Unsigned 16-bit integer | Sequence number                       |
| mip6.ba.status    | Status                                | Unsigned 8-bit integer  | Binding Acknowledgement status        |
| mip6.bad.auth     | Authenticator                         | Byte array              | Care-of nonce index                   |
| mip6.be.haddr     | Home Address                          | IPv6 address            | Home Address                          |
| mip6.be.status    | Status                                | Unsigned 8-bit integer  | Binding Error status                  |
| mip6.bra.interval | Refresh interval                      | Unsigned 16-bit integer | Refresh interval                      |
| mip6.bu.a_flag    | Acknowledge (A) flag                  | Boolean                 | Acknowledge (A) flag                  |
| mip6.bu.h_flag    | Home Registration (H) flag            | Boolean                 | Home Registration (H) flag            |
| mip6.bu.k_flag    | Key Management Compatibility (K) flag | Boolean                 | Key Management Compatibility (K) flag |
| mip6.bu.l_flag    | Link-Local                            | Boolean                 | Home Registration                     |

| Field            | Field Name             | Type                    | Description          |
|------------------|------------------------|-------------------------|----------------------|
|                  | Compatibility (L) flag |                         | (H) flag             |
| mip6.bu.lifetime | Lifetime               | Unsigned 16-bit integer | Lifetime             |
| mip6.bu.seqnr    | Sequence number        | Unsigned 16-bit integer | Sequence number      |
| mip6.cot.cookie  | Care-of Init Cookie    | Unsigned 64-bit integer | Care-of Init Cookie  |
| mip6.cot.nindex  | Care-of Nonce Index    | Unsigned 16-bit integer | Care-of Nonce Index  |
| mip6.cot.token   | Care-of Keygen Token   | Unsigned 64-bit integer | Care-of Keygen Token |
| mip6.coti.cookie | Care-of Init Cookie    | Unsigned 64-bit integer | Care-of Init Cookie  |
| mip6.csum        | Checksum               | Unsigned 16-bit integer | Header Checksum      |
| mip6.hlen        | Header length          | Unsigned 8-bit integer  | Header length        |
| mip6.hot.cookie  | Home Init Cookie       | Unsigned 64-bit integer | Home Init Cookie     |
| mip6.hot.nindex  | Home Nonce Index       | Unsigned 16-bit integer | Home Nonce Index     |
| mip6.hot.token   | Home Keygen Token      | Unsigned 64-bit integer | Home Keygen Token    |
| mip6.hoti.cookie | Home Init Cookie       | Unsigned 64-bit integer | Home Init Cookie     |
| mip6.mhtype      | Mobility Header Type   | Unsigned 8-bit integer  | Mobility Header Type |
| mip6.ni.cni      | Care-of nonce index    | Unsigned 16-bit integer | Care-of nonce index  |
| mip6.ni.hni      | Home nonce index       | Unsigned 16-bit integer | Home nonce index     |
| mip6.proto       | Payload protocol       | Unsigned 8-bit integer  | Payload protocol     |
| mip6.reserved    | Reserved               | Unsigned 8-bit integer  | Reserved             |

### Modbus/TCP (mbtcp)

Table A-228. Modbus/TCP (mbtcp)

| Field | Field Name | Type | Description |
|-------|------------|------|-------------|
|-------|------------|------|-------------|

| Field                | Field Name             | Type                    | Description |
|----------------------|------------------------|-------------------------|-------------|
| modbus_tcp.func_code | function code          | Unsigned 8-bit integer  |             |
| modbus_tcp.len       | length                 | Unsigned 16-bit integer |             |
| modbus_tcp.prot_id   | protocol identifier    | Unsigned 16-bit integer |             |
| modbus_tcp.trans_id  | transaction identifier | Unsigned 16-bit integer |             |
| modbus_tcp.unit_id   | unit identifier        | Unsigned 8-bit integer  |             |

### Mount Service (mount)

Table A-229. Mount Service (mount)

| Field                    | Field Name                        | Type                    | Description                               |
|--------------------------|-----------------------------------|-------------------------|---|
| mount.dump.directory     | Directory                         | String                  | Directory                                 |
| mount.dump.entry         | Mount List Entry                  | No value                | Mount List Entry                          |
| mount.dump.hostname      | Hostname                          | String                  | Hostname                                  |
| mount.export.directory   | Directory                         | String                  | Directory                                 |
| mount.export.entry       | Export List Entry                 | No value                | Export List Entry                         |
| mount.export.group       | Group                             | String                  | Group                                     |
| mount.export.groups      | Groups                            | No value                | Groups                                    |
| mount.export.has_options | Has options                       | Unsigned 32-bit integer | Has options                               |
| mount.export.options     | Options                           | String                  | Options                                   |
| mount.flavor             | Flavor                            | Unsigned 32-bit integer | Flavor                                    |
| mount.flavors            | Flavors                           | Unsigned 32-bit integer | Flavors                                   |
| mount.path               | Path                              | String                  | Path                                      |
| mount.pathconf.link_max  | Maximum number of links to a file | Unsigned 32-bit integer | Maximum number of links allowed to a file |
| mount.pathconf.m         | Reply error/status                | Unsigned 16-bit         | Bit mask with                             |

| Field                                | Field Name                         | Type                    | Description   |
|--------------------------------------|------------------------------------|-------------------------|---|
| ask                                  | bits                               | integer                 | error and status bits   |
| mount.pathconf.mask.chown_restricted | CHOWN_RESTRICTED                   | Boolean                 |   |
| mount.pathconf.mask.error_all        | ERROR_ALL                          | Boolean                 |   |
| mount.pathconf.mask.error_link_max   | ERROR_LINK_MAX                     | Boolean                 |   |
| mount.pathconf.mask.error_max_canon  | ERROR_MAX_CANON                    | Boolean                 |   |
| mount.pathconf.mask.error_max_input  | ERROR_MAX_INPUT                    | Boolean                 |   |
| mount.pathconf.mask.error_name_max   | ERROR_NAME_MAX                     | Boolean                 |   |
| mount.pathconf.mask.error_path_max   | ERROR_PATH_MAX                     | Boolean                 |   |
| mount.pathconf.mask.error_pipe_buf   | ERROR_PIPE_BUF                     | Boolean                 |   |
| mount.pathconf.mask.error_vdisable   | ERROR_VDISABLE                     | Boolean                 |   |
| mount.pathconf.mask.no_trunc         | NO_TRUNC                           | Boolean                 |   |
| mount.pathconf.max_canon             | Maximum terminal input line length | Unsigned 16-bit integer | Max tty input line length                                       |
| mount.pathconf.max_input             | Terminal input buffer size         | Unsigned 16-bit integer | Terminal input buffer size                                      |
| mount.pathconf.name_max              | Maximum file name length           | Unsigned 16-bit integer | Maximum file name length  |
| mount.pathconf.path_max              | Maximum path name length           | Unsigned 16-bit integer | Maximum path name length  |
| mount.pathconf.pipe_buf              | Pipe buffer size                   | Unsigned 16-bit integer | Maximum amount of data that can be written atomically to a pipe |
| mount.pathconf.v                     | VDISABLE                           | Unsigned 8-bit          | Character value to  |

| Field                            | Field Name       | Type                    | Description                          |
|----------------------------------|------------------|-------------------------|--------------------------------------|
| disable_char                     | character        | integer                 | disable a terminal special character |
| mount.procedure_sgi_v1           | SGI V1 procedure | Unsigned 32-bit integer | SGI V1 Procedure                     |
| mount.procedure_v1               | V1 Procedure     | Unsigned 32-bit integer | V1 Procedure                         |
| mount.procedure_v2               | V2 Procedure     | Unsigned 32-bit integer | V2 Procedure                         |
| mount.procedure_v3               | V3 Procedure     | Unsigned 32-bit integer | V3 Procedure                         |
| mount.status                     | Status           | Unsigned 32-bit integer | Status                               |
| mount.statvfs.f_basetype         | Type             | String                  | File system type                     |
| mount.statvfs.f_bavail           | Blocks Available | Unsigned 32-bit integer | Available fragment sized blocks      |
| mount.statvfs.f_bfree            | Blocks Free      | Unsigned 32-bit integer | Free fragment sized blocks           |
| mount.statvfs.f_blocks           | Blocks           | Unsigned 32-bit integer | Total fragment sized blocks          |
| mount.statvfs.f_blocksize        | Block size       | Unsigned 32-bit integer | File system block size               |
| mount.statvfs.f_bavail           | Files Available  | Unsigned 32-bit integer | Available files/inodes               |
| mount.statvfs.f_bfree            | Files Free       | Unsigned 32-bit integer | Free files/inodes                    |
| mount.statvfs.f_files            | Files            | Unsigned 32-bit integer | Total files/inodes                   |
| mount.statvfs.f_flags            | Flags            | Unsigned 32-bit integer | Flags bit-mask                       |
| mount.statvfs.f_flags.st_grpid   | ST_GRPID         | Boolean                 |                                      |
| mount.statvfs.f_flags.st_local   | ST_LOCAL         | Boolean                 |                                      |
| mount.statvfs.f_flags.st_nodev   | ST_NODEV         | Boolean                 |                                      |
| mount.statvfs.f_flags.st_nosuid  | ST_NOSUID        | Boolean                 |                                      |
| mount.statvfs.f_flags.st_notrunc | ST_NOTRUNC       | Boolean                 |                                      |

| Field                               | Field Name                  | Type                    | Description                 |
|-------------------------------------|-----------------------------|-------------------------|-----------------------------|
| g.st_notrunc                        |                             |                         |                             |
| mount.statvfs.f_flags<br>g.st_ronly | ST_RDONLY                   | Boolean                 |                             |
| mount.statvfs.f_frsize              | Fragment size               | Unsigned 32-bit integer | File system fragment size   |
| mount.statvfs.f_fsid                | File system ID              | Unsigned 32-bit integer | File system identifier      |
| mount.statvfs.f_fstypename          | File system specific string | Byte array              | File system specific string |
| mount.statvfs.f_maxnamelen          | Maximum file name length    | Unsigned 32-bit integer | Maximum file name length    |

### MultiProtocol Label Switching Header (mpls)

Table A-230. MultiProtocol Label Switching Header (mpls)

| Field       | Field Name                 | Type                    | Description |
|-------------|----------------------------|-------------------------|-------------|
| mpls.bottom | MPLS Bottom Of Label Stack | Unsigned 8-bit integer  |             |
| mpls.exp    | MPLS Experimental Bits     | Unsigned 8-bit integer  |             |
| mpls.label  | MPLS Label                 | Unsigned 32-bit integer |             |
| mpls.ttl    | MPLS TTL                   | Unsigned 8-bit integer  |             |

### Multicast Router DISCOVERY protocol (mrdisc)

Table A-231. Multicast Router DISCOVERY protocol (mrdisc)

| Field               | Field Name           | Type                    | Description                            |
|---------------------|----------------------|-------------------------|--|
| mrdisc.adv_int      | Advertising Interval | Unsigned 8-bit integer  | MRDISC Advertising Interval in seconds |
| mrdisc.checksum     | Checksum             | Unsigned 16-bit integer | MRDISC Checksum                        |
| mrdisc.checksum_bad | Bad Checksum         | Boolean                 | Bad MRDISC Checksum                    |
| mrdisc.num_opts     | Number Of Options    | Unsigned 16-bit integer | MRDISC Number Of Options               |
| mrdisc.opt_len      | Length               | Unsigned 8-bit integer  | MRDISC Option Length                   |
| mrdisc.option       | Option               | Unsigned 8-bit integer  | MRDISC Option Type                     |



| Field              | Field Name          | Type                    | Description                |
|--------------------|---------------------|-------------------------|----------------------------|
| mrdisc.option_data | Data                | Byte array              | MRDISC Unknown Option Data |
| mrdisc.options     | Options             | No value                | MRDISC Options             |
| mrdisc.query_int   | Query Interval      | Unsigned 16-bit integer | MRDISC Query Interval      |
| mrdisc.rob_var     | Robustness Variable | Unsigned 16-bit integer | MRDISC Robustness Variable |
| mrdisc.type        | Type                | Unsigned 8-bit integer  | MRDISC Packet Type         |

### Multicast Source Discovery Protocol (msdp)

Table A-232. Multicast Source Discovery Protocol (msdp)

| Field                | Field Name    | Type                    | Description                                      |
|----------------------|---------------|-------------------------|--|
| msdp.length          | Length        | Unsigned 16-bit integer | MSDP TLV Length                                  |
| msdp.not.entry_count | Entry Count   | Unsigned 24-bit integer | Entry Count in Notification messages             |
| msdp.not.error       | Error Code    | Unsigned 8-bit integer  | Indicates the type of Notification               |
| msdp.not.error_sub   | Error subode  | Unsigned 8-bit integer  | Error subcode                                    |
| msdp.not.ipv4        | IPv4 address  | IPv4 address            | Group/RP/Source address in Notification messages |
| msdp.not.o           | Open-bit      | Unsigned 8-bit integer  | If clear, the connection will be closed          |
| msdp.not.res         | Reserved      | Unsigned 24-bit integer | Reserved field in Notification messages          |
| msdp.not.sprefix_len | Sprefix len   | Unsigned 8-bit integer  | Source prefix length in Notification messages    |
| msdp.sa.entry_count  | Entry Count   | Unsigned 8-bit integer  | MSDP SA Entry Count                              |
| msdp.sa.group_addr   | Group Address | IPv4 address            | The group address the active source              |

| Field                  | Field Name     | Type                    | Description  |
|------------------------|----------------|-------------------------|--|
|                        |                |                         | has sent data to                                       |
| mstp.sa.reserved       | Reserved       | Unsigned 24-bit integer | Transmitted as zeros and ignored by a receiver         |
| mstp.sa.rp_addr        | RP Address     | IPv4 address            | Active source's RP address                             |
| mstp.sa.sprefix_len    | Sprefix len    | Unsigned 8-bit integer  | The route prefix length associated with source address |
| mstp.sa.src_addr       | Source Address | IPv4 address            | The IP address of the active source                    |
| mstp.sa_req.group_addr | Group Address  | IPv4 address            | The group address the MSDP peer is requesting          |
| mstp.sa_req.res        | Reserved       | Unsigned 8-bit integer  | Transmitted as zeros and ignored by a receiver         |
| mstp.type              | Type           | Unsigned 8-bit integer  | MSDP TLV type  |

## MySQL Protocol (mysql)

Table A-233. MySQL Protocol (mysql)

| Field         | Field Name                      | Type                    | Description        |
|---------------|---------------------------------|-------------------------|--------------------|
| mysql.caps    | Caps                            | Unsigned 16-bit integer | MySQL Capabilities |
| mysql.caps.CP | Can use compression protocol    | Boolean                 |                    |
| mysql.caps.cd | Connect With Database           | Boolean                 |                    |
| mysql.caps.cu | Support the mysql_change_user() | Boolean                 |                    |
| mysql.caps.fr | Found Rows                      | Boolean                 |                    |
| mysql.caps.ia | an Interactive Client           | Boolean                 |                    |
| mysql.caps.ii | Ignore sigpipes                 | Boolean                 |                    |
| mysql.caps.is | Ignore Spaces before (          | Boolean                 |                    |
| mysql.caps.lf | Long Flag                       | Boolean                 |                    |

| Field               | Field Name                       | Type                    | Description         |
|---------------------|----------------------------------|-------------------------|---------------------|
| mysql.caps.li       | Can Use LOAD DATA LOCAL          | Boolean                 |                     |
| mysql.caps.lp       | Long Password                    | Boolean                 |                     |
| mysql.caps.ns       | Dont Allow database.table.column | Boolean                 |                     |
| mysql.caps.ob       | ODBC Client                      | Boolean                 |                     |
| mysql.caps.sl       | Switch to SSL after handshake    | Boolean                 |                     |
| mysql.caps.ta       | Client knows about transactions  | Boolean                 |                     |
| mysql.charset       | Charset                          | Unsigned 8-bit integer  | MySQL Charset       |
| mysql.error_code    | Error Code                       | Unsigned 16-bit integer | MySQL Error CODE    |
| mysql.max_packet    | MAX Packet                       | Unsigned 24-bit integer | MySQL Max packet    |
| mysql.opcode        | Command                          | Unsigned 8-bit integer  | MySQL OPCODE        |
| mysql.packet_length | Packet Length                    | Unsigned 24-bit integer | MySQL packet length |
| mysql.packet_number | Packet Number                    | Unsigned 8-bit integer  | MySQL Packet Number |
| mysql.parameter     | Parameter                        | String                  | Parameter           |
| mysql.password      | Password                         | String                  | Login Password      |
| mysql.payload       | Payload                          | String                  | MySQL Payload       |
| mysql.protocol      | Protocol                         | Unsigned 8-bit integer  | MySQL Protocol      |
| mysql.response_code | Response Code                    | Unsigned 8-bit integer  | MySQL Response Code |
| mysql.salt          | Salt                             | String                  | Salt                |
| mysql.status        | Status                           | Unsigned 16-bit integer | MySQL Status        |
| mysql.thread_id     | Thread ID                        | Unsigned 32-bit integer | MySQL Thread ID     |
| mysql.unused        | Unused                           | String                  | Unused              |
| mysql.user          | Username                         | String                  | Login Username      |
| mysql.version       | Version                          | String                  | MySQL Version       |

**NFSACL (nfsacl)**

Table A-234. NFSACL (nfsacl)

| Field               | Field Name   | Type                    | Description  |
|---------------------|--------------|-------------------------|--------------|
| nfsacl.procedure_v1 | V1 Procedure | Unsigned 32-bit integer | V1 Procedure |
| nfsacl.procedure_v2 | V2 Procedure | Unsigned 32-bit integer | V2 Procedure |
| nfsacl.procedure_v3 | V3 Procedure | Unsigned 32-bit integer | V3 Procedure |

**NFSAUTH (nfsauth)**

Table A-235. NFSAUTH (nfsauth)

| Field                | Field Name   | Type                    | Description  |
|----------------------|--------------|-------------------------|--------------|
| nfsauth.procedure_v1 | V1 Procedure | Unsigned 32-bit integer | V1 Procedure |

**NIS+ (nisplus)**

Table A-236. NIS+ (nisplus)

| Field                     | Field Name  | Type                    | Description               |
|---------------------------|-------------|-------------------------|---------------------------|
| .nisplus.dummy            |             | Byte array              |                           |
| nisplus.access.mask       | access mask | No value                | NIS Access Mask           |
| nisplus.aticks            | aticks      | Unsigned 32-bit integer |                           |
| nisplus.attr              | Attribute   | No value                | Attribute                 |
| nisplus.attr.name         | name        | String                  | Attribute Name            |
| nisplus.attr.val          | val         | Byte array              | Attribute Value           |
| nisplus.attributes        | Attributes  | No value                | List Of Attributes        |
| nisplus.callback.status   | status      | Boolean                 | Status Of Callback Thread |
| nisplus.checkpoint.dticks | dticks      | Unsigned 32-bit integer | Database Ticks            |
| nisplus.checkpoint.status | status      | Unsigned 32-bit integer | Checkpoint Status         |
| nisplus.checkpoint.zticks | zticks      | Unsigned 32-bit integer | Service Ticks             |
| nisplus.cookie            | cookie      | Byte array              | Cookie                    |
| nisplus.cticks            | cticks      | Unsigned 32-bit integer |                           |

| Field   | Field Name        | Type            | Description                         |
|---|-------------------|-----------------|-------------------------------------|
| nisplus.ctime                                 | ctime             | Date/Time stamp | Time Of Creation                    |
| nisplus.directory                             | directory         | No value        | NIS Directory Object                |
| nisplus.directory.<br>mask                    | mask              | No value        | NIS Directory Create/Destroy Rights |
| nisplus.directory.<br>mask.group_create       | GROUP CREATE      | Boolean         | Group Create Flag                   |
| nisplus.directory.<br>mask.group_destr<br>oy  | GROUP DESTROY     | Boolean         | Group Destroy Flag                  |
| nisplus.directory.<br>mask.group_modif<br>y   | GROUP MODIFY      | Boolean         | Group Modify Flag                   |
| nisplus.directory.<br>mask.group_read         | GROUP READ        | Boolean         | Group Read Flag                     |
| nisplus.directory.<br>mask.nobody_crea<br>te  | NOBODY<br>CREATE  | Boolean         | Nobody Create Flag                  |
| nisplus.directory.<br>mask.nobody_dest<br>roy | NOBODY<br>DESTROY | Boolean         | Nobody Destroy Flag                 |
| nisplus.directory.<br>mask.nobody_mo<br>dify  | NOBODY<br>MODIFY  | Boolean         | Nobody Modify Flag                  |
| nisplus.directory.<br>mask.nobody_read        | NOBODY READ       | Boolean         | Nobody Read Flag                    |
| nisplus.directory.<br>mask.owner_creat<br>e   | OWNER CREATE      | Boolean         | Owner Create Flag                   |
| nisplus.directory.<br>mask.owner_destr<br>oy  | OWNER<br>DESTROY  | Boolean         | Owner Destroy Flag                  |
| nisplus.directory.<br>mask.owner_modi<br>fy   | OWNER MODIFY      | Boolean         | Owner Modify Flag                   |
| nisplus.directory.<br>mask.owner_read         | OWNER READ        | Boolean         | Owner Read Flag                     |
| nisplus.directory.<br>mask.world_create       | WORLD CREATE      | Boolean         | World Create Flag                   |
| nisplus.directory.<br>mask.world_destr        | WORLD             | Boolean         | World Destroy                       |

Appendix A. Ethereal Display Filter Fields

| Field                                       | Field Name     | Type                       | Description                                   |
|---|----------------|----------------------------|---|
| oy  | DESTROY        |                            | Flag  |
| nisplus.directory.<br>mask.world_modif<br>y | WORLD MODIFY   | Boolean                    | World Modify<br>Flag                          |
| nisplus.directory.<br>mask.world_read       | WORLD READ     | Boolean                    | World Read Flag                               |
| nisplus.directory.<br>mask_list             | mask list      | No value                   | List Of Directory<br>Create/Destroy<br>Rights |
| nisplus.directory.n<br>ame                  | directory name | String                     | Name Of<br>Directory Being<br>Served          |
| nisplus.directory.tt<br>l                   | ttl            | Unsigned 32-bit<br>integer | Time To Live                                  |
| nisplus.directory.t<br>ype                  | type           | Unsigned 32-bit<br>integer | NIS Type Of<br>Name Service                   |
| nisplus.dticks                              | dticks         | Unsigned 32-bit<br>integer |   |
| nisplus.dump.dir                            | directory      | String                     | Directory To<br>Dump                          |
| nisplus.dump.time                           | time           | Date/Time stamp            | From This<br>Timestamp                        |
| nisplus.endpoint                            | endpoint       | No value                   | Endpoint For This<br>NIS Server               |
| nisplus.endpoint.f<br>amily                 | family         | String                     | Transport Family                              |
| nisplus.endpoint.p<br>roto                  | proto          | String                     | Protocol                                      |
| nisplus.endpoint.u<br>addr                  | addr           | String                     | Address                                       |
| nisplus.endpoints                           | nis endpoints  | No value                   | Endpoints For This<br>NIS Server              |
| nisplus.entry                               | entry          | No value                   | Entry Object                                  |
| nisplus.entry.col                           | column         | No value                   | Entry Column                                  |
| nisplus.entry.cols                          | columns        | No value                   | Entry Columns                                 |
| nisplus.entry.flags                         | flags          | Unsigned 32-bit<br>integer | Entry Col Flags                               |
| nisplus.entry.flags.<br>asn                 | ASN.1          | Boolean                    | Is This Entry<br>ASN.1 Encoded<br>Flag        |

| Field                         | Field Name  | Type                    | Description                       |
|-------------------------------|-------------|-------------------------|-----------------------------------|
| nisplus.entry.flags.binary    | BINARY      | Boolean                 | Is This Entry BINARY Flag         |
| nisplus.entry.flags.encrypted | ENCRYPTED   | Boolean                 | Is This Entry ENCRYPTED Flag      |
| nisplus.entry.flags.modified  | MODIFIED    | Boolean                 | Is This Entry MODIFIED Flag       |
| nisplus.entry.flags.xdr       | XDR         | Boolean                 | Is This Entry XDR Encoded Flag    |
| nisplus.entry.type            | type        | String                  | Entry Type                        |
| nisplus.entry.val             | val         | String                  | Entry Value                       |
| nisplus.fd.dir.data           | data        | Byte array              | Directory Data In XDR Format      |
| nisplus.fd.dirname            | dirname     | String                  | Directory Name                    |
| nisplus.fd.requester          | requester   | String                  | Host Principal Name For Signature |
| nisplus.fd.sig                | signature   | Byte array              | Signature Of The Source           |
| nisplus.group                 | Group       | No value                | Group Object                      |
| nisplus.group.flags           | flags       | Unsigned 32-bit integer | Group Object Flags                |
| nisplus.group.name            | group name  | String                  | Name Of Group Member              |
| nisplus.grps                  | Groups      | No value                | List Of Groups                    |
| nisplus.ib.bufsize            | bufsize     | Unsigned 32-bit integer | Optional First/NextBufSize        |
| nisplus.ib.flags              | flags       | Unsigned 32-bit integer | Information Base Flags            |
| nisplus.key.data              | key data    | Byte array              | Encryption Key                    |
| nisplus.key.type              | type        | Unsigned 32-bit integer | Type Of Key                       |
| nisplus.link                  | link        | No value                | NIS Link Object                   |
| nisplus.log.entries           | log entries | No value                | Log Entries                       |
| nisplus.log.entry             | log entry   | No value                | Log Entry                         |
| nisplus.log.entry.type        | type        | Unsigned 32-bit integer | Type Of Entry In Transaction Log  |
| nisplus.log.principal         | principal   | String                  | Principal Making The Change       |

| Field                   | Field Name               | Type                    | Description                       |
|-------------------------|--------------------------|-------------------------|-----------------------------------|
| nisplus.log.time        | time                     | Date/Time stamp         | Time Of Log Entry                 |
| nisplus.mtime           | mtime                    | Date/Time stamp         | Time Last Modified                |
| nisplus.object          | NIS Object               | No value                | NIS Object                        |
| nisplus.object.domain   | domain                   | String                  | NIS Administrator For This Object |
| nisplus.object.group    | group                    | String                  | NIS Name Of Access Group          |
| nisplus.object.name     | name                     | String                  | NIS Name For This Object          |
| nisplus.object.oid      | Object Identity Verifier | No value                | NIS Object Identity Verifier      |
| nisplus.object.owner    | owner                    | String                  | NIS Name Of Object Owner          |
| nisplus.object.private  | private                  | Byte array              | NIS Private Object                |
| nisplus.object.ttl      | ttl                      | Unsigned 32-bit integer | NIS Time To Live For This Object  |
| nisplus.object.type     | type                     | Unsigned 32-bit integer | NIS Type Of Object                |
| nisplus.ping.dir        | directory                | String                  | Directory That Had The Change     |
| nisplus.ping.time       | time                     | Date/Time stamp         | Timestamp Of The Transaction      |
| nisplus.procedure_v3    | V3 Procedure             | Unsigned 32-bit integer | V3 Procedure                      |
| nisplus.server          | server                   | No value                | NIS Server For This Directory     |
| nisplus.server.name     | name                     | String                  | Name Of NIS Server                |
| nisplus.servers         | nis servers              | No value                | NIS Servers For This Directory    |
| nisplus.status          | status                   | Unsigned 32-bit integer | NIS Status Code                   |
| nisplus.table           | table                    | No value                | Table Object                      |
| nisplus.table.col       | column                   | No value                | Table Column                      |
| nisplus.table.col.flags | flags                    | No value                | Flags For This Column             |
| nisplus.table.col.name  | column name              | String                  | Column Name                       |



| Field                             | Field Name    | Type                    | Description                         |
|-----------------------------------|---------------|-------------------------|-------------------------------------|
| me                                |               |                         |                                     |
| nisplus.table.cols                | columns       | No value                | Table Columns                       |
| nisplus.table.flags.asn           | asn           | Boolean                 | Is This Column ASN.1 Encoded        |
| nisplus.table.flags.binary        | binary        | Boolean                 | Is This Column BINARY               |
| nisplus.table.flags.casesensitive | casesensitive | Boolean                 | Is This Column CASESENSITIVE        |
| nisplus.table.flags.encrypted     | encrypted     | Boolean                 | Is This Column ENCRYPTED            |
| nisplus.table.flags.modified      | modified      | Boolean                 | Is This Column MODIFIED             |
| nisplus.table.flags.searchable    | searchable    | Boolean                 | Is This Column SEARCHABLE           |
| nisplus.table.flags.xdr           | xdr           | Boolean                 | Is This Column XDR Encoded          |
| nisplus.table.maxcol              | max columns   | Unsigned 16-bit integer | Maximum Number Of Columns For Table |
| nisplus.table.path                | path          | String                  | Table Path                          |
| nisplus.table.separator           | separator     | Unsigned 8-bit integer  | Separator Character                 |
| nisplus.table.type                | type          | String                  | Table Type                          |
| nisplus.tag                       | tag           | No value                | Tag                                 |
| nisplus.tag.type                  | type          | Unsigned 32-bit integer | Type Of Statistics Tag              |
| nisplus.tag.value                 | value         | String                  | Value Of Statistics Tag             |
| nisplus.taglist                   | taglist       | No value                | List Of Tags                        |
| nisplus.zticks                    | zticks        | Unsigned 32-bit integer |                                     |

### NIS+ Callback (nispluscb)

Table A-237. NIS+ Callback (nispluscb)

| Field             | Field Name | Type     | Description          |
|-------------------|------------|----------|----------------------|
| nispluscb.entries | entries    | No value | NIS Callback Entries |
| nispluscb.entry   | entry      | No value | NIS Callback Entry   |

| Field                  | Field Name   | Type                    | Description  |
|------------------------|--------------|-------------------------|--------------|
| nisplaycb.procedure_v1 | V1 Procedure | Unsigned 32-bit integer | V1 Procedure |

## NSPI (nspi)

Table A-238. NSPI (nspi)

| Field      | Field Name | Type                    | Description |
|------------|------------|-------------------------|-------------|
| nspi.opnum | Operation  | Unsigned 16-bit integer | Operation   |

## NTLM Secure Service Provider (ntlmssp)

Table A-239. NTLM Secure Service Provider (ntlmssp)

| Field                                   | Field Name           | Type                    | Description |
|---|----------------------|-------------------------|-------------|
| ntlmssp.auth.domain                     | Domain name          | String                  |             |
| ntlmssp.auth.hostname                   | Host name            | String                  |             |
| ntlmssp.auth.lmresponse                 | Lan Manager Response | Byte array              |             |
| ntlmssp.auth.ntresponse                 | NTLM Response        | Byte array              |             |
| ntlmssp.auth.sessionkey                 | Session Key          | Byte array              |             |
| ntlmssp.auth.username                   | User name            | String                  |             |
| ntlmssp.blob.length                     | Length               | Unsigned 16-bit integer |             |
| ntlmssp.blob.maxlen                     | Maxlen               | Unsigned 16-bit integer |             |
| ntlmssp.blob.offset                     | Offset               | Unsigned 32-bit integer |             |
| ntlmssp.challenge.addresslist           | Address List         | No value                |             |
| ntlmssp.challenge.addresslist.domaindns | Domain DNS Name      | String                  |             |
| ntlmssp.challenge.addresslist.domainnb  | Domain NetBIOS Name  | String                  |             |
| ntlmssp.challenge.addresslist.length    | Length               | Unsigned 16-bit integer |             |

| Field                                       | Field Name                            | Type                    | Description        |
|---|---------------------------------------|-------------------------|--------------------|
| ntlmssp.challenge.addresslist.maxlen        | Maxlen                                | Unsigned 16-bit integer |                    |
| ntlmssp.challenge.addresslist.offset        | Offset                                | Unsigned 32-bit integer |                    |
| ntlmssp.challenge.addresslist.serverdns     | Server DNS Name                       | String                  |                    |
| ntlmssp.challenge.addresslist.servername    | Server NetBIOS Name                   | String                  |                    |
| ntlmssp.challenge.domain                    | Domain                                | String                  |                    |
| ntlmssp.decrypted_payload                   | NTLM Decrypted Payload                | Byte array              |                    |
| ntlmssp.identifier                          | NTLMSSP identifier                    | String                  | NTLMSSP Identifier |
| ntlmssp.message_type                        | NTLM Message Type                     | Unsigned 32-bit integer |                    |
| ntlmssp.negotiate.callingworkstation        | Calling workstation name              | String                  |                    |
| ntlmssp.negotiate.callingworkstation.buffer | Calling workstation name buffer       | Unsigned 32-bit integer |                    |
| ntlmssp.negotiate.callingworkstation.maxlen | Calling workstation name max length   | Unsigned 16-bit integer |                    |
| ntlmssp.negotiate.callingworkstation.strlen | Calling workstation name length       | Unsigned 16-bit integer |                    |
| ntlmssp.negotiate.domain                    | Calling workstation domain            | String                  |                    |
| ntlmssp.negotiate.domain.buffer             | Calling workstation domain buffer     | Unsigned 32-bit integer |                    |
| ntlmssp.negotiate.domain.maxlen             | Calling workstation domain max length | Unsigned 16-bit integer |                    |
| ntlmssp.negotiate.domain.strlen             | Calling workstation domain length     | Unsigned 16-bit integer |                    |

Appendix A. Ethereal Display Filter Fields

| Field                                    | Field Name                             | Type                    | Description |
|--|--|-------------------------|-------------|
| ntlmssp.negotiate00000008                | Request<br>0x00000008                  | Boolean                 |             |
| ntlmssp.negotiate00000400                | Negotiate<br>0x00000400                | Boolean                 |             |
| ntlmssp.negotiate00000800                | Negotiate<br>0x00000800                | Boolean                 |             |
| ntlmssp.negotiate128                     | Negotiate 128                          | Boolean                 |             |
| ntlmssp.negotiatealwaysign               | Negotiate Always Sign                  | Boolean                 |             |
| ntlmssp.negotiatechallengeacceptresponse | Negotiate Challenge Accept Response    | Boolean                 |             |
| ntlmssp.negotiatechallengeinitresponse   | Negotiate Challenge Init Response      | Boolean                 |             |
| ntlmssp.negotiatechallengeonntsessionkey | Negotiate Challenge Non NT Session Key | Boolean                 |             |
| ntlmssp.negotiatedatagramstyle           | Negotiate Datagram Style               | Boolean                 |             |
| ntlmssp.negotiatedomainssupplied         | Negotiate Domain Supplied              | Boolean                 |             |
| ntlmssp.negotiateflags                   | Flags                                  | Unsigned 32-bit integer |             |
| ntlmssp.negotiatekeyexchange             | Negotiate Key Exchange                 | Boolean                 |             |
| ntlmssp.negotiatelanmanagerkey           | Negotiate Lan Manager Key              | Boolean                 |             |
| ntlmssp.negotiatenetware                 | Negotiate Netware                      | Boolean                 |             |
| ntlmssp.negotiatent00100000              | Negotiate<br>0x00100000                | Boolean                 |             |
| ntlmssp.negotiatent00200000              | Negotiate<br>0x00200000                | Boolean                 |             |
| ntlmssp.negotiatent00400000              | Negotiate<br>0x00400000                | Boolean                 |             |
| ntlmssp.negotiatent01000000              | Negotiate<br>0x01000000                | Boolean                 |             |
| ntlmssp.negotiatent                      | Negotiate                              | Boolean                 |             |

| Field  | Field Name                           | Type                       | Description |
|--|--------------------------------------|----------------------------|-------------|
| t02000000                                    | 0x02000000                           |                            |             |
| ntlmssp.negotiaten<br>t04000000              | Negotiate<br>0x04000000              | Boolean                    |             |
| ntlmssp.negotiaten<br>t08000000              | Negotiate<br>0x08000000              | Boolean                    |             |
| ntlmssp.negotiaten<br>t10000000              | Negotiate<br>0x10000000              | Boolean                    |             |
| ntlmssp.negotiaten<br>t80000000              | Negotiate<br>0x80000000              | Boolean                    |             |
| ntlmssp.negotiaten<br>tlm                    | Negotiate NTLM<br>key                | Boolean                    |             |
| ntlmssp.negotiaten<br>tlm2                   | Negotiate NTLM2<br>key               | Boolean                    |             |
| ntlmssp.negotiateo<br>em                     | Negotiate OEM                        | Boolean                    |             |
| ntlmssp.negotiates<br>eal                    | Negotiate Seal                       | Boolean                    |             |
| ntlmssp.negotiates<br>ign                    | Negotiate Sign                       | Boolean                    |             |
| ntlmssp.negotiatet<br>argetinfo              | Negotiate Target<br>Info             | Boolean                    |             |
| ntlmssp.negotiatet<br>hislocalcall           | Negotiate This is<br>Local Call      | Boolean                    |             |
| ntlmssp.negotiateu<br>nicode                 | Negotiate<br>UNICODE                 | Boolean                    |             |
| ntlmssp.negotiate<br>workstationsuppli<br>ed | Negotiate<br>Workstation<br>Supplied | Boolean                    |             |
| ntlmssp.ntlmchalle<br>nge                    | NTLM Challenge                       | Byte array                 |             |
| ntlmssp.requesttar<br>get                    | Request Target                       | Boolean                    |             |
| ntlmssp.reserved                             | Reserved                             | Byte array                 |             |
| ntlmssp.string.len<br>gth                    | Length                               | Unsigned 16-bit<br>integer |             |
| ntlmssp.string.ma<br>xlen                    | Maxlen                               | Unsigned 16-bit<br>integer |             |
| ntlmssp.string.off<br>set                    | Offset                               | Unsigned 32-bit<br>integer |             |

| Field                 | Field Name               | Type                    | Description      |
|-----------------------|--------------------------|-------------------------|------------------|
| ntlmssp.verf          | NTLMSSP Verifier         | No value                | NTLMSSP Verifier |
| ntlmssp.verf.body     | Verifier Body            | Byte array              |                  |
| ntlmssp.verf.crc32    | Verifier CRC32           | Unsigned 32-bit integer |                  |
| ntlmssp.verf.sequence | Verifier Sequence Number | Unsigned 32-bit integer |                  |
| ntlmssp.verf.unknown1 | Unknown 1                | Unsigned 32-bit integer |                  |
| ntlmssp.verf.vers     | Version Number           | Unsigned 32-bit integer |                  |

### Name Binding Protocol (nbp)

Table A-240. Name Binding Protocol (nbp)

| Field      | Field Name     | Type                    | Description    |
|------------|----------------|-------------------------|----------------|
| nbp.count  | Count          | Unsigned 8-bit integer  | Count          |
| nbp.enum   | Enumerator     | Unsigned 8-bit integer  | Enumerator     |
| nbp.info   | Info           | Unsigned 8-bit integer  | Info           |
| nbp.net    | Network        | Unsigned 16-bit integer | Network        |
| nbp.node   | Node           | Unsigned 8-bit integer  | Node           |
| nbp.object | Object         | String                  | Object         |
| nbp.op     | Operation      | Unsigned 8-bit integer  | Operation      |
| nbp.port   | Port           | Unsigned 8-bit integer  | Port           |
| nbp.tid    | Transaction ID | Unsigned 8-bit integer  | Transaction ID |
| nbp.type   | Type           | String                  | Type           |
| nbp.zone   | Zone           | String                  | Zone           |

### Name Management Protocol over IPX (nmpi)

Table A-241. Name Management Protocol over IPX (nmpi)

| Field | Field Name | Type | Description |
|-------|------------|------|-------------|
|       |            |      |             |

### NetBIOS (netbios)

Table A-242. NetBIOS (netbios)

| Field                             | Field Name                           | Type                    | Description  |
|-----------------------------------|--------------------------------------|-------------------------|--|
| netbios.ack                       | Acknowledge                          | Boolean                 |  |
| netbios.ack_expected              | Acknowledge expected                 | Boolean                 |  |
| netbios.ack_with_data             | Acknowledge with data                | Boolean                 |  |
| netbios.call_name_type            | Caller's Name Type                   | Unsigned 8-bit integer  |  |
| netbios.command                   | Command                              | Unsigned 8-bit integer  |  |
| netbios.data1                     | DATA1 value                          | Unsigned 8-bit integer  |  |
| netbios.data2                     | DATA2 value                          | Unsigned 16-bit integer |  |
| netbios.fragment                  | NetBIOS Fragment                     |                         | NetBIOS Fragment                                       |
| netbios.fragment.error            | Defragmentation error                |                         | Defragmentation error due to illegal fragments         |
| netbios.fragment.multipletails    | Multiple tail fragments found        | Boolean                 | Several tails were found when defragmenting the packet |
| netbios.fragment.overlap          | Fragment overlap                     | Boolean                 | Fragment overlaps with other fragments                 |
| netbios.fragment.overlap.conflict | Conflicting data in fragment overlap | Boolean                 | Overlapping fragments contained conflicting data       |
| netbios.fragment.too longfragment | Fragment too long                    | Boolean                 | Fragment contained data past end of packet             |
| netbios.fragments                 | NetBIOS Fragments                    | No value                | NetBIOS Fragments                                      |
| netbios.hdr_len                   | Header Length                        | Unsigned 16-bit integer |  |
| netbios.largest_frame             | Largest Frame                        | Unsigned 8-bit integer  |  |
| netbios.local_session             | Local Session No.                    | Unsigned 8-bit integer  |  |
| netbios.max_data_                 | Maximum data                         | Unsigned 16-bit         |  |

| Field                           | Field Name                    | Type                    | Description |
|---------------------------------|-------------------------------|-------------------------|-------------|
| recv_size                       | receive size                  | integer                 |             |
| netbios.name_type               | Name type                     | Unsigned 16-bit integer |             |
| netbios.nb_name                 | NetBIOS Name                  | String                  |             |
| netbios.nb_name_type            | NetBIOS Name Type             | Unsigned 8-bit integer  |             |
| netbios.num_data_bytes_accepted | Number of data bytes accepted | Unsigned 16-bit integer |             |
| netbios.recv_continue_req       | RECEIVE_CONTINUE requested    | Boolean                 |             |
| netbios.remote_session          | Remote Session No.            | Unsigned 8-bit integer  |             |
| netbios.resp_corrl              | Response Correlator           | Unsigned 16-bit integer |             |
| netbios.send_no_ack             | Handle SEND.NO.ACK            | Boolean                 |             |
| netbios.status                  | Status                        | Unsigned 8-bit integer  |             |
| netbios.status_buffer_len       | Length of status buffer       | Unsigned 16-bit integer |             |
| netbios.termination_indicator   | Termination indicator         | Unsigned 16-bit integer |             |
| netbios.version                 | NetBIOS Version               | Boolean                 |             |
| netbios.xmit_corrl              | Transmit Correlator           | Unsigned 16-bit integer |             |

### NetBIOS Datagram Service (nbdgm)

Table A-243. NetBIOS Datagram Service (nbdgm)

| Field           | Field Name             | Type                    | Description                   |
|-----------------|------------------------|-------------------------|-------------------------------|
| nbdgm.dgram_id  | Datagram ID            | Unsigned 16-bit integer | Datagram identifier           |
| nbdgm.first     | This is first fragment | Boolean                 | TRUE if first fragment        |
| nbdgm.next      | More fragments follow  | Boolean                 | TRUE if more fragments follow |
| nbdgm.node_type | Node Type              | Unsigned 8-bit integer  | Node type                     |
| nbdgm.src_ip    | Source IP              | IPv4 address            | Source IPv4 address           |



| Field          | Field Name   | Type                    | Description        |
|----------------|--------------|-------------------------|--------------------|
| nbdgm.src.port | Source Port  | Unsigned 16-bit integer | Source port        |
| nbdgm.type     | Message Type | Unsigned 8-bit integer  | NBDGM message type |

### NetBIOS Name Service (nbns)

Table A-244. NetBIOS Name Service (nbns)

| Field                    | Field Name          | Type                    | Description                                   |
|--------------------------|---------------------|-------------------------|---|
| nbns.count.add_rr        | Additional RRs      | Unsigned 16-bit integer | Number of additional records in packet        |
| nbns.count.answers       | Answer RRs          | Unsigned 16-bit integer | Number of answers in packet                   |
| nbns.count.auth_rr       | Authority RRs       | Unsigned 16-bit integer | Number of authoritative records in packet     |
| nbns.count.queries       | Questions           | Unsigned 16-bit integer | Number of queries in packet                   |
| nbns.flags               | Flags               | Unsigned 16-bit integer |   |
| nbns.flags.authoritative | Authoritative       | Boolean                 | Is the server is an authority for the domain? |
| nbns.flags.broadcast     | Broadcast           | Boolean                 | Is this a broadcast packet?                   |
| nbns.flags.opcode        | Opcode              | Unsigned 16-bit integer | Operation code                                |
| nbns.flags.rcode         | Reply code          | Unsigned 16-bit integer | Reply code                                    |
| nbns.flags.recavail      | Recursion available | Boolean                 | Can the server do recursive queries?          |
| nbns.flags.recdesired    | Recursion desired   | Boolean                 | Do query recursively?                         |
| nbns.flags.response      | Response            | Boolean                 | Is the message a response?                    |
| nbns.flags.truncated     | Truncated           | Boolean                 | Is the message truncated?                     |
| nbns.id                  | Transaction ID      | Unsigned 16-bit integer | Identification of transaction                 |

### NetBIOS Session Service (nbss)

**Table A-245. NetBIOS Session Service (nbss)**

| Field      | Field Name   | Type                   | Description        |
|------------|--------------|------------------------|--------------------|
| nbss.flags | Flags        | Unsigned 8-bit integer | NBSS message flags |
| nbss.type  | Message Type | Unsigned 8-bit integer | NBSS message type  |

**NetBIOS over IPX (nbipx)**

**Table A-246. NetBIOS over IPX (nbipx)**

| Field | Field Name | Type | Description |
|-------|------------|------|-------------|
|       |            |      |             |

**NetWare Core Protocol (ncp)**

**Table A-247. NetWare Core Protocol (ncp)**

| Field                              | Field Name  | Type                    | Description |
|------------------------------------|---|-------------------------|-------------|
| ncp.Service_type                   | Service Type  | Unsigned 16-bit integer |             |
| ncp.abort_q_flag                   | Abort Queue Flag  | Unsigned 8-bit integer  |             |
| ncp.abs_min_time_since_file_delete | Absolute Minimum Time Since File Delete                     | Unsigned 32-bit integer |             |
| ncp.acc_mode_compat                | Compatibility Mode  | Boolean                 |             |
| ncp.acc_mode_deny_read             | Deny Read Access  | Boolean                 |             |
| ncp.acc_mode_deny_write            | Deny Write Access   | Boolean                 |             |
| ncp.acc_mode_read                  | Read Access   | Boolean                 |             |
| ncp.acc_mode_write                 | Write Access  | Boolean                 |             |
| ncp.acc_priv_create                | Create Privileges (files only)                              | Boolean                 |             |
| ncp.acc_priv_delete                | Delete Privileges (files only)                              | Boolean                 |             |
| ncp.acc_priv_modify                | Modify File Status Flags Privileges (files and directories) | Boolean                 |             |
| ncp.acc_priv_open                  | Open Privileges (files only)                                | Boolean                 |             |

| <b>Field</b>               | <b>Field Name</b>   | <b>Type</b> | <b>Description</b> |
|----------------------------|---|-------------|--------------------|
| nep.acc_priv_parent        | Parental Privileges (directories only for creating, deleting, and renaming) | Boolean     |                    |
| nep.acc_priv_read          | Read Privileges (files only)  | Boolean     |                    |
| nep.acc_priv_search        | Search Privileges (directories only)  | Boolean     |                    |
| nep.acc_priv_write         | Write Privileges (files only)   | Boolean     |                    |
| nep.acc_rights1_create     | Create Rights   | Boolean     |                    |
| nep.acc_rights1_delete     | Delete Rights   | Boolean     |                    |
| nep.acc_rights1_modify     | Modify Rights   | Boolean     |                    |
| nep.acc_rights1_open       | Open Rights   | Boolean     |                    |
| nep.acc_rights1_parent     | Parental Rights   | Boolean     |                    |
| nep.acc_rights1_read       | Read Rights   | Boolean     |                    |
| nep.acc_rights1_search     | Search Rights   | Boolean     |                    |
| nep.acc_rights1_supervisor | Supervisor Access Rights  | Boolean     |                    |
| nep.acc_rights1_write      | Write Rights  | Boolean     |                    |
| nep.acc_rights_create      | Create Rights   | Boolean     |                    |
| nep.acc_rights_delete      | Delete Rights   | Boolean     |                    |
| nep.acc_rights_modify      | Modify Rights   | Boolean     |                    |
| nep.acc_rights_open        | Open Rights   | Boolean     |                    |
| nep.acc_rights_parent      | Parental Rights   | Boolean     |                    |
| nep.acc_rights_read        | Read Rights   | Boolean     |                    |

Appendix A. Ethereal Display Filter Fields

| Field                       | Field Name                        | Type                    | Description                         |
|-----------------------------|-----------------------------------|-------------------------|-------------------------------------|
| d                           |                                   |                         |                                     |
| ncp.acc_rights_search       | Search Rights                     | Boolean                 |                                     |
| ncp.acc_rights_write        | Write Rights                      | Boolean                 |                                     |
| ncp.accel_cache_node_write  | Accelerate Cache Node Write Count | Unsigned 32-bit integer |                                     |
| ncp.accepted_max_size       | Accepted Max Size                 | Unsigned 16-bit integer |                                     |
| ncp.access_control          | Access Control                    | Unsigned 8-bit integer  |                                     |
| ncp.access_date             | Access Date                       | Unsigned 16-bit integer |                                     |
| ncp.access_mode             | Access Mode                       | Unsigned 8-bit integer  |                                     |
| ncp.access_privileges       | Access Privileges                 | Unsigned 8-bit integer  |                                     |
| ncp.access_rights_mask      | Access Rights                     | Unsigned 8-bit integer  |                                     |
| ncp.access_rights_mask_word | Access Rights                     | Unsigned 16-bit integer |                                     |
| ncp.account_balance         | Account Balance                   | Unsigned 32-bit integer |                                     |
| ncp.acct_version            | Acct Version                      | Unsigned 8-bit integer  |                                     |
| ncp.ack_seqno               | ACK Sequence Number               | Unsigned 16-bit integer | Next expected burst sequence number |
| ncp.act_flag_create         | Create                            | Boolean                 |                                     |
| ncp.act_flag_open           | Open                              | Boolean                 |                                     |
| ncp.act_flag_replace        | Replace                           | Boolean                 |                                     |
| ncp.action_flag             | Action Flag                       | Unsigned 8-bit integer  |                                     |
| ncp.active_connection_list  | Active Connection List            | String                  |                                     |
| ncp.active_indexed_files    | Active Indexed Files              | Unsigned 16-bit integer |                                     |
| ncp.actual_max_bits         | Actual Max                        | Unsigned 16-bit         |                                     |

| Field                                 | Field Name                                     | Type                    | Description |
|---------------------------------------|--|-------------------------|-------------|
| ndery_objects                         | Bindery Objects                                | integer                 |             |
| ncp.actual_max_indexed_files          | Actual Max Indexed Files                       | Unsigned 16-bit integer |             |
| ncp.actual_max_open_files             | Actual Max Open Files                          | Unsigned 16-bit integer |             |
| ncp.actual_max_sim_trans              | Actual Max Simultaneous Transactions           | Unsigned 16-bit integer |             |
| ncp.actual_max_used_directory_entries | Actual Max Used Directory Entries              | Unsigned 16-bit integer |             |
| ncp.actual_max_used_routing_buffers   | Actual Max Used Routing Buffers                | Unsigned 16-bit integer |             |
| ncp.actual_response_count             | Actual Response Count                          | Unsigned 16-bit integer |             |
| ncp.add_nm_spc_and_vol                | Add Name Space and Volume                      | String                  |             |
| ncp.address                           | Address  |                         |             |
| ncp.aes_event_count                   | AES Event Count                                | Unsigned 32-bit integer |             |
| ncp.afp_entry_id                      | AFP Entry ID                                   | Unsigned 32-bit integer |             |
| ncp.alloc_avail_bytes                 | Bytes Available for Allocation                 | Unsigned 32-bit integer |             |
| ncp.alloc_blk                         | Allocate Block Count                           | Unsigned 32-bit integer |             |
| ncp.alloc_blk_already_wait            | Allocate Block Already Waiting                 | Unsigned 32-bit integer |             |
| ncp.alloc_blk_frm_avail               | Allocate Block From Available Count            | Unsigned 32-bit integer |             |
| ncp.alloc_blk_frm_lru                 | Allocate Block From LRU Count                  | Unsigned 32-bit integer |             |
| ncp.alloc_blk_i_had_to_wait           | Allocate Block I Had To Wait Count             | Unsigned 32-bit integer |             |
| ncp.alloc_blk_i_had_to_wait_for       | Allocate Block I Had To Wait For Someone Count | Unsigned 32-bit integer |             |
| ncp.alloc_free_cou                    | Reclaimable Free                               | Unsigned 32-bit         |             |

Appendix A. Ethereal Display Filter Fields

| Field                                     | Field Name                              | Type                    | Description |
|---|---|-------------------------|-------------|
| nt  | Bytes                                   | integer                 |             |
| ncp.alloc_waiting                         | Allocate Waiting Count                  | Unsigned 32-bit integer |             |
| ncp.allocate_mode                         | Allocate Mode                           | Unsigned 16-bit integer |             |
| ncp.allocation_block_size                 | Allocation Block Size                   | Unsigned 32-bit integer |             |
| ncp.already_doing_realloc                 | Already Doing Re-Allocate Count         | Unsigned 32-bit integer |             |
| ncp.application_number                    | Application Number                      | Unsigned 16-bit integer |             |
| ncp.archived_date                         | Archived Date                           | Unsigned 16-bit integer |             |
| ncp.archived_time                         | Archived Time                           | Unsigned 16-bit integer |             |
| ncp.archiver_id                           | Archiver ID                             | Unsigned 32-bit integer |             |
| ncp.associated_name_space                 | Associated Name Space                   | Unsigned 8-bit integer  |             |
| ncp.async_internal_disk_get               | Async Internal Disk Get Count           | Unsigned 32-bit integer |             |
| ncp.async_internal_disk_get_need_to_alloc | Async Internal Disk Get Need To Alloc   | Unsigned 32-bit integer |             |
| ncp.async_internal_disk_get_someone_beat  | Async Internal Disk Get Someone Beat Me | Unsigned 32-bit integer |             |
| ncp.async_read_error                      | Async Read Error Count                  | Unsigned 32-bit integer |             |
| ncp.att_def16_archive                     | Archive                                 | Boolean                 |             |
| ncp.att_def16_execute                     | Execute                                 | Boolean                 |             |
| ncp.att_def16_hidden                      | Hidden                                  | Boolean                 |             |
| ncp.att_def16_read_audit                  | Read Audit                              | Boolean                 |             |
| ncp.att_def16_read_only                   | Read Only                               | Boolean                 |             |
| ncp.att_def16_shareable                   | Shareable                               | Boolean                 |             |

| Field                     | Field Name     | Type    | Description |
|---------------------------|----------------|---------|-------------|
| ncp.att_def16_sub_only    | Subdirectory   | Boolean |             |
| ncp.att_def16_system      | System         | Boolean |             |
| ncp.att_def16_transaction | Transactional  | Boolean |             |
| ncp.att_def16_write_audit | Write Audit    | Boolean |             |
| ncp.att_def32_archive     | Archive        | Boolean |             |
| ncp.att_def32_execute     | Execute        | Boolean |             |
| ncp.att_def32_hidden      | Hidden         | Boolean |             |
| ncp.att_def32_read_audit  | Read Audit     | Boolean |             |
| ncp.att_def32_ro          | Read Only      | Boolean |             |
| ncp.att_def32_shareable   | Shareable      | Boolean |             |
| ncp.att_def32_sub_only    | Subdirectory   | Boolean |             |
| ncp.att_def32_system      | System         | Boolean |             |
| ncp.att_def32_transaction | Transactional  | Boolean |             |
| ncp.att_def32_write_audit | Write Audit    | Boolean |             |
| ncp.att_def_archive       | Archive        | Boolean |             |
| ncp.att_def_comp          | Compressed     | Boolean |             |
| ncp.att_def_copyinhibit   | Copy Inhibit   | Boolean |             |
| ncp.att_def_deleteinhibit | Delete Inhibit | Boolean |             |
| ncp.att_def_execute       | Execute        | Boolean |             |
| ncp.att_def_hidden        | Hidden         | Boolean |             |
| ncp.att_def_immediate     | Immediate      | Boolean |             |

Appendix A. Ethereal Display Filter Fields

| Field                              | Field Name                     | Type                    | Description |
|------------------------------------|--------------------------------|-------------------------|-------------|
| mp                                 | Compress                       |                         |             |
| ncp.att_def_purge                  | Purge                          | Boolean                 |             |
| ncp.att_def_reinhibit              | Rename Inhibit                 | Boolean                 |             |
| ncp.att_def_ro                     | Read Only                      | Boolean                 |             |
| ncp.att_def_shareable              | Shareable                      | Boolean                 |             |
| ncp.att_def_subonly                | Subdirectory                   | Boolean                 |             |
| ncp.att_def_system                 | System                         | Boolean                 |             |
| ncp.attach_during_processing       | Attach During Processing       | Unsigned 16-bit integer |             |
| ncp.attach_while_processing_attach | Attach While Processing Attach | Unsigned 16-bit integer |             |
| ncp.attached_indexed_files         | Attached Indexed Files         | Unsigned 8-bit integer  |             |
| ncp.attr_def                       | Attributes                     | Unsigned 8-bit integer  |             |
| ncp.attr_def_16                    | Attributes                     | Unsigned 16-bit integer |             |
| ncp.attr_def_32                    | Attributes                     | Unsigned 32-bit integer |             |
| ncp.attribute_valid_flag           | Attribute Valid Flag           | Unsigned 32-bit integer |             |
| ncp.attributes                     | Attributes                     | Unsigned 32-bit integer |             |
| ncp.audit_enable_flag              | Auditing Enabled Flag          | Unsigned 16-bit integer |             |
| ncp.audit_file_max_size            | Audit File Maximum Size        | Unsigned 32-bit integer |             |
| ncp.audit_file_size                | Audit File Size                | Unsigned 32-bit integer |             |
| ncp.audit_file_size_threshold      | Audit File Size Threshold      | Unsigned 32-bit integer |             |
| ncp.audit_file_version_date        | Audit File Version Date        | Unsigned 16-bit integer |             |
| ncp.audit_flag                     | Audit Flag                     | Unsigned 8-bit integer  |             |



| Field                            | Field Name                   | Type                    | Description |
|----------------------------------|------------------------------|-------------------------|-------------|
| ncp.audit_handle                 | Audit File Handle            | Unsigned 32-bit integer |             |
| ncp.audit_id                     | Audit ID                     | Unsigned 32-bit integer |             |
| ncp.audit_id_type                | Audit ID Type                | Unsigned 16-bit integer |             |
| ncp.audit_record_count           | Audit Record Count           | Unsigned 32-bit integer |             |
| ncp.audit_ver_date               | Auditing Version Date        | Unsigned 16-bit integer |             |
| ncp.auditing_flags               | Auditing Flags               | Unsigned 32-bit integer |             |
| ncp.avail_space                  | Available Space              | Unsigned 32-bit integer |             |
| ncp.available_blocks             | Available Blocks             | Unsigned 32-bit integer |             |
| ncp.available_clusters           | Available Clusters           | Unsigned 16-bit integer |             |
| ncp.available_dir_entries        | Available Directory Entries  | Unsigned 32-bit integer |             |
| ncp.available_directory_slots    | Available Directory Slots    | Unsigned 16-bit integer |             |
| ncp.available_indexed_files      | Available Indexed Files      | Unsigned 16-bit integer |             |
| ncp.background_aged_writes       | Background Aged Writes       | Unsigned 32-bit integer |             |
| ncp.background_dirty_writes      | Background Dirty Writes      | Unsigned 32-bit integer |             |
| ncp.bad_logical_connection_count | Bad Logical Connection Count | Unsigned 16-bit integer |             |
| ncp.banner_name                  | Banner Name                  | String                  |             |
| ncp.base_directory_id            | Base Directory ID            | Unsigned 32-bit integer |             |
| ncp.being_aborted                | Being Aborted Count          | Unsigned 32-bit integer |             |
| ncp.being_processed              | Being Processed Count        | Unsigned 32-bit integer |             |
| ncp.big_forged_packet            | Big Forged Packet Count      | Unsigned 32-bit integer |             |

Appendix A. Ethereal Display Filter Fields

| Field                             | Field Name                             | Type                    | Description |
|-----------------------------------|--|-------------------------|-------------|
| ncp.big_invalid_packet            | Big Invalid Packet Count               | Unsigned 32-bit integer |             |
| ncp.big_invalid_slot              | Big Invalid Slot Count                 | Unsigned 32-bit integer |             |
| ncp.big_read_being_torn_down      | Big Read Being Torn Down Count         | Unsigned 32-bit integer |             |
| ncp.big_read_do_it_over           | Big Read Do It Over Count              | Unsigned 32-bit integer |             |
| ncp.big_read_invalid_message      | Big Read Invalid Message Number Count  | Unsigned 32-bit integer |             |
| ncp.big_read_no_data_avail        | Big Read No Data Available Count       | Unsigned 32-bit integer |             |
| ncp.big_read_physical_read_err    | Big Read Physical Read Error Count     | Unsigned 32-bit integer |             |
| ncp.big_read_trying_to_read       | Big Read Trying To Read Too Much Count | Unsigned 32-bit integer |             |
| ncp.big_repeat_the_file_read      | Big Repeat the File Read Count         | Unsigned 32-bit integer |             |
| ncp.big_return_abort_message      | Big Return Abort Message Count         | Unsigned 32-bit integer |             |
| ncp.big_send_extra_cc_count       | Big Send Extra CC Count                | Unsigned 32-bit integer |             |
| ncp.big_still_transmitting        | Big Still Transmitting Count           | Unsigned 32-bit integer |             |
| ncp.big_write_being_abort         | Big Write Being Aborted Count          | Unsigned 32-bit integer |             |
| ncp.big_write_being_torn_down     | Big Write Being Torn Down Count        | Unsigned 32-bit integer |             |
| ncp.big_write_invalid_message_num | Big Write Invalid Message Number Count | Unsigned 32-bit integer |             |
| ncp.bindery_context               | Bindery Context                        | String                  |             |
| ncp.bit10acflags                  | Write Managed                          | Boolean                 |             |
| ncp.bit10cflags                   | Not Defined                            | Boolean                 |             |
| ncp.bit10eflags                   | Temporary Reference                    | Boolean                 |             |

| <b>Field</b>             | <b>Field Name</b> | <b>Type</b> | <b>Description</b> |
|--------------------------|-------------------|-------------|--------------------|
| ncp.bit10infoflagsh      | Not Defined       | Boolean     |                    |
| ncp.bit10infoflagsl      | Revision Count    | Boolean     |                    |
| ncp.bit10l1flagsh        | Not Defined       | Boolean     |                    |
| ncp.bit10l1flagsl        | Not Defined       | Boolean     |                    |
| ncp.bit10lflags          | Not Defined       | Boolean     |                    |
| ncp.bit10nflags          | Not Defined       | Boolean     |                    |
| ncp.bit10outflags        | Not Defined       | Boolean     |                    |
| ncp.bit10pingflags1      | Not Defined       | Boolean     |                    |
| ncp.bit10pingflags2      | Not Defined       | Boolean     |                    |
| ncp.bit10pingpflag<br>s1 | Not Defined       | Boolean     |                    |
| ncp.bit10pingvflag<br>s1 | Not Defined       | Boolean     |                    |
| ncp.bit10rflags          | Not Defined       | Boolean     |                    |
| ncp.bit10siflags         | Not Defined       | Boolean     |                    |
| ncp.bit10vflags          | Not Defined       | Boolean     |                    |
| ncp.bit11acflags         | Per Replica       | Boolean     |                    |
| ncp.bit11cflags          | Not Defined       | Boolean     |                    |
| ncp.bit11eflags          | Audited           | Boolean     |                    |
| ncp.bit11infoflagsh      | Not Defined       | Boolean     |                    |
| ncp.bit11infoflagsl      | Replica Type      | Boolean     |                    |
| ncp.bit11l1flagsh        | Not Defined       | Boolean     |                    |
| ncp.bit11l1flagsl        | Not Defined       | Boolean     |                    |
| ncp.bit11lflags          | Not Defined       | Boolean     |                    |
| ncp.bit11nflags          | Not Defined       | Boolean     |                    |
| ncp.bit11outflags        | Not Defined       | Boolean     |                    |
| ncp.bit11pingflags1      | Not Defined       | Boolean     |                    |
| ncp.bit11pingflags2      | Not Defined       | Boolean     |                    |
| ncp.bit11pingpflag<br>s1 | Not Defined       | Boolean     |                    |
| ncp.bit11pingvflag       | Not Defined       | Boolean     |                    |

Appendix A. Ethereal Display Filter Fields

| Field                  | Field Name                     | Type    | Description |
|------------------------|--------------------------------|---------|-------------|
| s1                     |                                |         |             |
| ncp.bit11rflags        | Not Defined                    | Boolean |             |
| ncp.bit11siflags       | Not Defined                    | Boolean |             |
| ncp.bit11vflags        | Not Defined                    | Boolean |             |
| ncp.bit12acflags       | Never Schedule Synchronization | Boolean |             |
| ncp.bit12cflags        | Not Defined                    | Boolean |             |
| ncp.bit12eflags        | Entry Not Present              | Boolean |             |
| ncp.bit12infoflagshs   | Not Defined                    | Boolean |             |
| ncp.bit12infoflagsl    | Base Class                     | Boolean |             |
| ncp.bit12l1flagsh      | Not Defined                    | Boolean |             |
| ncp.bit12l1flagsl      | Not Defined                    | Boolean |             |
| ncp.bit12lflags        | Not Defined                    | Boolean |             |
| ncp.bit12nflags        | Not Defined                    | Boolean |             |
| ncp.bit12outflags      | Not Defined                    | Boolean |             |
| ncp.bit12pingflagsh1   | Not Defined                    | Boolean |             |
| ncp.bit12pingflagsh2   | Not Defined                    | Boolean |             |
| ncp.bit12pingpflagshs1 | Not Defined                    | Boolean |             |
| ncp.bit12pingvflagshs1 | Not Defined                    | Boolean |             |
| ncp.bit12rflags        | Not Defined                    | Boolean |             |
| ncp.bit12siflags       | Not Defined                    | Boolean |             |
| ncp.bit12vflags        | Not Defined                    | Boolean |             |
| ncp.bit13acflags       | Operational                    | Boolean |             |
| ncp.bit13cflags        | Not Defined                    | Boolean |             |
| ncp.bit13eflags        | Entry Verify CTS               | Boolean |             |
| ncp.bit13infoflagsh    | Not Defined                    | Boolean |             |
| ncp.bit13infoflagsl    | Relative Distinguished Name    | Boolean |             |
| ncp.bit13l1flagsh      | Not Defined                    | Boolean |             |
| ncp.bit13l1flagsl      | Not Defined                    | Boolean |             |

| Field                    | Field Name            | Type    | Description |
|--------------------------|-----------------------|---------|-------------|
| ncp.bit13lflags          | Not Defined           | Boolean |             |
| ncp.bit13nflags          | Not Defined           | Boolean |             |
| ncp.bit13outflags        | Not Defined           | Boolean |             |
| ncp.bit13pingflags<br>1  | Not Defined           | Boolean |             |
| ncp.bit13pingflags<br>2  | Not Defined           | Boolean |             |
| ncp.bit13pingpflag<br>s1 | Not Defined           | Boolean |             |
| ncp.bit13pingvflag<br>s1 | Not Defined           | Boolean |             |
| ncp.bit13rflags          | Not Defined           | Boolean |             |
| ncp.bit13siflags         | Not Defined           | Boolean |             |
| ncp.bit13vflags          | Not Defined           | Boolean |             |
| ncp.bit14acflags         | Not Defined           | Boolean |             |
| ncp.bit14cflags          | Not Defined           | Boolean |             |
| ncp.bit14eflags          | Entry Damaged         | Boolean |             |
| ncp.bit14infoflagsh      | Not Defined           | Boolean |             |
| ncp.bit14infoflagsl      | Distinguished<br>Name | Boolean |             |
| ncp.bit14l1flagsh        | Not Defined           | Boolean |             |
| ncp.bit14l1flagsl        | Not Defined           | Boolean |             |
| ncp.bit14lflags          | Not Defined           | Boolean |             |
| ncp.bit14nflags          | Prefer Referrals      | Boolean |             |
| ncp.bit14outflags        | Not Defined           | Boolean |             |
| ncp.bit14pingflags<br>1  | Not Defined           | Boolean |             |
| ncp.bit14pingflags<br>2  | Not Defined           | Boolean |             |
| ncp.bit14pingpflag<br>s1 | Not Defined           | Boolean |             |
| ncp.bit14pingvflag<br>s1 | Not Defined           | Boolean |             |
| ncp.bit14rflags          | Not Defined           | Boolean |             |
| ncp.bit14siflags         | Not Defined           | Boolean |             |
| ncp.bit14vflags          | Not Defined           | Boolean |             |

Appendix A. Ethereal Display Filter Fields

| Field                | Field Name                | Type    | Description |
|----------------------|---------------------------|---------|-------------|
| ncp.bit15acflags     | Not Defined               | Boolean |             |
| ncp.bit15cflags      | Not Defined               | Boolean |             |
| ncp.bit15infoflagsh  | Not Defined               | Boolean |             |
| ncp.bit15infoflagsl  | Root Distinguished Name   | Boolean |             |
| ncp.bit15l1flagsh    | Not Defined               | Boolean |             |
| ncp.bit15l1flagsl    | Not Defined               | Boolean |             |
| ncp.bit15lflags      | Not Defined               | Boolean |             |
| ncp.bit15nflags      | Prefer Only Referrals     | Boolean |             |
| ncp.bit15outflags    | Not Defined               | Boolean |             |
| ncp.bit15pingflags1  | Not Defined               | Boolean |             |
| ncp.bit15pingflags2  | Not Defined               | Boolean |             |
| ncp.bit15pingpflags1 | Not Defined               | Boolean |             |
| ncp.bit15pingvflags1 | Not Defined               | Boolean |             |
| ncp.bit15rflags      | Not Defined               | Boolean |             |
| ncp.bit15siflags     | Not Defined               | Boolean |             |
| ncp.bit15vflags      | Not Defined               | Boolean |             |
| ncp.bit16acflags     | Not Defined               | Boolean |             |
| ncp.bit16cflags      | Not Defined               | Boolean |             |
| ncp.bit16infoflagsh  | Not Defined               | Boolean |             |
| ncp.bit16infoflagsl  | Parent Distinguished Name | Boolean |             |
| ncp.bit16l1flagsh    | Not Defined               | Boolean |             |
| ncp.bit16l1flagsl    | Not Defined               | Boolean |             |
| ncp.bit16lflags      | Not Defined               | Boolean |             |
| ncp.bit16nflags      | Not Defined               | Boolean |             |
| ncp.bit16outflags    | Not Defined               | Boolean |             |
| ncp.bit16pingflags1  | Not Defined               | Boolean |             |

| Field                | Field Name               | Type    | Description |
|----------------------|--------------------------|---------|-------------|
| ncp.bit16pingflags2  | Not Defined              | Boolean |             |
| ncp.bit16pingpflags1 | Not Defined              | Boolean |             |
| ncp.bit16pingvflags1 | Not Defined              | Boolean |             |
| ncp.bit16rflags      | Not Defined              | Boolean |             |
| ncp.bit16siflags     | Not Defined              | Boolean |             |
| ncp.bit16vflags      | Not Defined              | Boolean |             |
| ncp.bit1acflags      | Single Valued            | Boolean |             |
| ncp.bit1cflags       | Ambiguous Containment    | Boolean |             |
| ncp.bit1eflags       | Alias Entry              | Boolean |             |
| ncp.bit1infoflagsh   | Purge Time               | Boolean |             |
| ncp.bit1infoflagsl   | Output Flags             | Boolean |             |
| ncp.bit1l1flagsh     | Not Defined              | Boolean |             |
| ncp.bit1l1flagsl     | Output Flags             | Boolean |             |
| ncp.bit1lflags       | List Typeless            | Boolean |             |
| ncp.bit1nflags       | Entry ID                 | Boolean |             |
| ncp.bit1outflags     | Output Flags             | Boolean |             |
| ncp.bit1pingflags1   | Supported Fields         | Boolean |             |
| ncp.bit1pingflags2   | Sap Name                 | Boolean |             |
| ncp.bit1pingpflags1  | Root Most Master Replica | Boolean |             |
| ncp.bit1pingvflags1  | Checksum                 | Boolean |             |
| ncp.bit1rflags       | Typeless                 | Boolean |             |
| ncp.bit1siflags      | Names                    | Boolean |             |
| ncp.bit1vflags       | Naming                   | Boolean |             |
| ncp.bit2acflags      | Sized                    | Boolean |             |
| ncp.bit2cflags       | Ambiguous Naming         | Boolean |             |
| ncp.bit2eflags       | Partition Root           | Boolean |             |
| ncp.bit2infoflagsh   | Dereference Base Class   | Boolean |             |

Appendix A. Ethereal Display Filter Fields

| Field               | Field Name                         | Type    | Description |
|---------------------|------------------------------------|---------|-------------|
| ncp.bit2infoflagsl  | Entry ID                           | Boolean |             |
| ncp.bit2l1flagsh    | Not Defined                        | Boolean |             |
| ncp.bit2l1flagsl    | Entry ID                           | Boolean |             |
| ncp.bit2lflags      | List Containers                    | Boolean |             |
| ncp.bit2nflags      | Readable                           | Boolean |             |
| ncp.bit2outflags    | Entry ID                           | Boolean |             |
| ncp.bit2pingflags1  | Depth                              | Boolean |             |
| ncp.bit2pingflags2  | Tree Name                          | Boolean |             |
| ncp.bit2pingpflags1 | Time Synchronized                  | Boolean |             |
| ncp.bit2pingvflags1 | CRC32                              | Boolean |             |
| ncp.bit2rflags      | Slashed                            | Boolean |             |
| ncp.bit2siflags     | Names and Values                   | Boolean |             |
| ncp.bit2vflags      | Base Class                         | Boolean |             |
| ncp.bit3acflags     | Non-Removable                      | Boolean |             |
| ncp.bit3cflags      | Class Definition Cannot be Removed | Boolean |             |
| ncp.bit3eflags      | Container Entry                    | Boolean |             |
| ncp.bit3infoflagsh  | Not Defined                        | Boolean |             |
| ncp.bit3infoflagsl  | Entry Flags                        | Boolean |             |
| ncp.bit3l1flagsh    | Not Defined                        | Boolean |             |
| ncp.bit3l1flagsl    | Replica State                      | Boolean |             |
| ncp.bit3lflags      | List Slashed                       | Boolean |             |
| ncp.bit3nflags      | Writeable                          | Boolean |             |
| ncp.bit3outflags    | Replica State                      | Boolean |             |
| ncp.bit3pingflags1  | Revision                           | Boolean |             |
| ncp.bit3pingflags2  | OS Name                            | Boolean |             |
| ncp.bit3pingpflags1 | Not Defined                        | Boolean |             |
| ncp.bit3pingvflags1 | Not Defined                        | Boolean |             |
| ncp.bit3rflags      | Dotted                             | Boolean |             |
| ncp.bit3siflags     | Effective Privileges               | Boolean |             |



| Field               | Field Name             | Type    | Description |
|---------------------|------------------------|---------|-------------|
| ncp.bit3vflags      | Present                | Boolean |             |
| ncp.bit4acflags     | Read Only              | Boolean |             |
| ncp.bit4cflags      | Effective Class        | Boolean |             |
| ncp.bit4eflags      | Container Alias        | Boolean |             |
| ncp.bit4infoflagsh  | Not Defined            | Boolean |             |
| ncp.bit4infoflagsl  | Subordinate Count      | Boolean |             |
| ncp.bit4l1flagsh    | Not Defined            | Boolean |             |
| ncp.bit4l1flagsl    | Modification Timestamp | Boolean |             |
| ncp.bit4lflags      | List Dotted            | Boolean |             |
| ncp.bit4nflags      | Master                 | Boolean |             |
| ncp.bit4outflags    | Modification Timestamp | Boolean |             |
| ncp.bit4pingflags1  | Flags                  | Boolean |             |
| ncp.bit4pingflags2  | Hardware Name          | Boolean |             |
| ncp.bit4pingpflags1 | Not Defined            | Boolean |             |
| ncp.bit4pingvflags1 | Not Defined            | Boolean |             |
| ncp.bit4rflags      | Tuned                  | Boolean |             |
| ncp.bit4siflags     | Value Info             | Boolean |             |
| ncp.bit4vflags      | Value Damaged          | Boolean |             |
| ncp.bit5acflags     | Hidden                 | Boolean |             |
| ncp.bit5cflags      | Container Class        | Boolean |             |
| ncp.bit5eflags      | Matches List Filter    | Boolean |             |
| ncp.bit5infoflagsh  | Not Defined            | Boolean |             |
| ncp.bit5infoflagsl  | Modification Time      | Boolean |             |
| ncp.bit5l1flagsh    | Not Defined            | Boolean |             |
| ncp.bit5l1flagsl    | Purge Time             | Boolean |             |
| ncp.bit5lflags      | Dereference Alias      | Boolean |             |
| ncp.bit5nflags      | Create ID              | Boolean |             |
| ncp.bit5outflags    | Purge Time             | Boolean |             |
| ncp.bit5pingflags1  | Verification Flags     | Boolean |             |
| ncp.bit5pingflags2  | Vendor Name            | Boolean |             |

Appendix A. Ethereal Display Filter Fields

| Field               | Field Name             | Type    | Description |
|---------------------|------------------------|---------|-------------|
| ncp.bit5pingpflags1 | Not Defined            | Boolean |             |
| ncp.bit5pingvflags1 | Not Defined            | Boolean |             |
| ncp.bit5rflags      | Not Defined            | Boolean |             |
| ncp.bit5siflags     | Abbreviated Value      | Boolean |             |
| ncp.bit5vflags      | Not Defined            | Boolean |             |
| ncp.bit6acflags     | String                 | Boolean |             |
| ncp.bit6cflags      | Not Defined            | Boolean |             |
| ncp.bit6eflags      | Reference Entry        | Boolean |             |
| ncp.bit6infoflagsh  | Not Defined            | Boolean |             |
| ncp.bit6infoflagsl  | Modification Timestamp | Boolean |             |
| ncp.bit6l1flagsh    | Not Defined            | Boolean |             |
| ncp.bit6l1flagsl    | Local Partition ID     | Boolean |             |
| ncp.bit6lflags      | List All Containers    | Boolean |             |
| ncp.bit6nflags      | Walk Tree              | Boolean |             |
| ncp.bit6outflags    | Local Partition ID     | Boolean |             |
| ncp.bit6pingflags1  | Letter Version         | Boolean |             |
| ncp.bit6pingflags2  | Not Defined            | Boolean |             |
| ncp.bit6pingpflags1 | Not Defined            | Boolean |             |
| ncp.bit6pingvflags1 | Not Defined            | Boolean |             |
| ncp.bit6rflags      | Not Defined            | Boolean |             |
| ncp.bit6siflags     | Not Defined            | Boolean |             |
| ncp.bit6vflags      | Not Defined            | Boolean |             |
| ncp.bit7acflags     | Synchronize Immediate  | Boolean |             |
| ncp.bit7cflags      | Not Defined            | Boolean |             |
| ncp.bit7eflags      | 40x Reference Entry    | Boolean |             |
| ncp.bit7infoflagsh  | Not Defined            | Boolean |             |
| ncp.bit7infoflagsl  | Creation Timestamp     | Boolean |             |

| Field               | Field Name         | Type    | Description |
|---------------------|--------------------|---------|-------------|
| ncp.bit7l1flagsh    | Not Defined        | Boolean |             |
| ncp.bit7l1flagsl    | Distinguished Name | Boolean |             |
| ncp.bit7lflags      | List Obsolete      | Boolean |             |
| ncp.bit7nflags      | Dereference Alias  | Boolean |             |
| ncp.bit7outflags    | Distinguished Name | Boolean |             |
| ncp.bit7pingflags1  | OS Version         | Boolean |             |
| ncp.bit7pingflags2  | Not Defined        | Boolean |             |
| ncp.bit7pingpflags1 | Not Defined        | Boolean |             |
| ncp.bit7pingvflags1 | Not Defined        | Boolean |             |
| ncp.bit7rflags      | Not Defined        | Boolean |             |
| ncp.bit7siflags     | Not Defined        | Boolean |             |
| ncp.bit7vflags      | Not Defined        | Boolean |             |
| ncp.bit8acflags     | Public Read        | Boolean |             |
| ncp.bit8cflags      | Not Defined        | Boolean |             |
| ncp.bit8eflags      | Back Linked        | Boolean |             |
| ncp.bit8infoflagsh  | Not Defined        | Boolean |             |
| ncp.bit8infoflagsl  | Partition Root ID  | Boolean |             |
| ncp.bit8l1flagsh    | Not Defined        | Boolean |             |
| ncp.bit8l1flagsl    | Replica Type       | Boolean |             |
| ncp.bit8lflags      | List Tuned Output  | Boolean |             |
| ncp.bit8nflags      | Not Defined        | Boolean |             |
| ncp.bit8outflags    | Replica Type       | Boolean |             |
| ncp.bit8pingflags1  | License Flags      | Boolean |             |
| ncp.bit8pingflags2  | Not Defined        | Boolean |             |
| ncp.bit8pingpflags1 | Not Defined        | Boolean |             |
| ncp.bit8pingvflags1 | Not Defined        | Boolean |             |
| ncp.bit8rflags      | Not Defined        | Boolean |             |
| ncp.bit8siflags     | Not Defined        | Boolean |             |
| ncp.bit8vflags      | Not Defined        | Boolean |             |

Appendix A. Ethereal Display Filter Fields

| Field                     | Field Name              | Type                    | Description |
|---------------------------|-------------------------|-------------------------|-------------|
| ncp.bit9acflags           | Server Read             | Boolean                 |             |
| ncp.bit9cflags            | Not Defined             | Boolean                 |             |
| ncp.bit9eflags            | New Entry               | Boolean                 |             |
| ncp.bit9infoflagsh        | Not Defined             | Boolean                 |             |
| ncp.bit9infoflagsl        | Parent ID               | Boolean                 |             |
| ncp.bit9l1flagsh          | Not Defined             | Boolean                 |             |
| ncp.bit9l1flagsl          | Partition Busy          | Boolean                 |             |
| ncp.bit9lflags            | List External Reference | Boolean                 |             |
| ncp.bit9nflags            | Not Defined             | Boolean                 |             |
| ncp.bit9outflags          | Partition Busy          | Boolean                 |             |
| ncp.bit9pingflags1        | DS Time                 | Boolean                 |             |
| ncp.bit9pingflags2        | Not Defined             | Boolean                 |             |
| ncp.bit9pingpflags1       | Not Defined             | Boolean                 |             |
| ncp.bit9pingvflags1       | Not Defined             | Boolean                 |             |
| ncp.bit9rflags            | Not Defined             | Boolean                 |             |
| ncp.bit9siflags           | Expanded Class          | Boolean                 |             |
| ncp.bit9vflags            | Not Defined             | Boolean                 |             |
| ncp.bit_map               | Bit Map                 | Byte array              |             |
| ncp.block_number          | Block Number            | Unsigned 32-bit integer |             |
| ncp.block_size            | Block Size              | Unsigned 16-bit integer |             |
| ncp.block_size_in_sectors | Block Size in Sectors   | Unsigned 32-bit integer |             |
| ncp.board_installed       | Board Installed         | Unsigned 8-bit integer  |             |
| ncp.board_number          | Board Number            | Unsigned 32-bit integer |             |
| ncp.board_numbers         | Board Numbers           | Unsigned 32-bit integer |             |
| ncp.buffer_size           | Buffer Size             | Unsigned 16-bit integer |             |
| ncp.bumped_out_           | Bumped Out Of           | Unsigned 32-bit         |             |

| Field                              | Field Name                       | Type                    | Description                                 |
|------------------------------------|----------------------------------|-------------------------|---|
| of_order                           | Order Write Count                | integer                 |   |
| ncp.burst_len                      | Burst Length                     | Unsigned 32-bit integer | Total length of data in this burst          |
| ncp.burst_seqno                    | Burst Sequence Number            | Unsigned 16-bit integer | Sequence number of this packet in the burst |
| ncp.bus_string                     | Bus String                       | String                  |   |
| ncp.bus_type                       | Bus Type                         | Unsigned 8-bit integer  |   |
| ncp.bytes_actually_transferred     | Bytes Actually Transferred       | Unsigned 32-bit integer |   |
| ncp.bytes_read                     | Bytes Read                       | String                  |   |
| ncp.bytes_to_copy                  | Bytes to Copy                    | Unsigned 32-bit integer |   |
| ncp.bytes_written                  | Bytes Written                    | String                  |   |
| ncp.cache_allocations              | Cache Allocations                | Unsigned 32-bit integer |   |
| ncp.cache_block_scrapped           | Cache Block Scrapped             | Unsigned 16-bit integer |   |
| ncp.cache_buffer_count             | Cache Buffer Count               | Unsigned 16-bit integer |   |
| ncp.cache_buffer_size              | Cache Buffer Size                | Unsigned 16-bit integer |   |
| ncp.cache_byte_to_block            | Cache Byte To Block Shift Factor | Unsigned 32-bit integer |   |
| ncp.cache_dirty_block_thresh       | Cache Dirty Block Threshold      | Unsigned 32-bit integer |   |
| ncp.cache_dirty_wait_time          | Cache Dirty Wait Time            | Unsigned 32-bit integer |   |
| ncp.cache_full_write_requests      | Cache Full Write Requests        | Unsigned 32-bit integer |   |
| ncp.cache_get_requests             | Cache Get Requests               | Unsigned 32-bit integer |   |
| ncp.cache_hit_on_unavailable_block | Cache Hit On Unavailable Block   | Unsigned 16-bit integer |   |
| ncp.cache_hits                     | Cache Hits                       | Unsigned 32-bit integer |   |
| ncp.cache_max_concur_writes        | Cache Maximum Concurrent Writes  | Unsigned 32-bit integer |   |

Appendix A. Ethereal Display Filter Fields

| Field                                 | Field Name                               | Type                    | Description |
|---------------------------------------|--|-------------------------|-------------|
| ncp.cache_misses                      | Cache Misses                             | Unsigned 32-bit integer |             |
| ncp.cache_partial_write_requests      | Cache Partial Write Requests             | Unsigned 32-bit integer |             |
| ncp.cache_read_requests               | Cache Read Requests                      | Unsigned 32-bit integer |             |
| ncp.cache_used_while_check            | Cache Used While Checking                | Unsigned 32-bit integer |             |
| ncp.cache_write_requests              | Cache Write Requests                     | Unsigned 32-bit integer |             |
| ncp.category_name                     | Category Name                            | String                  |             |
| ncp.cc_file_handle                    | File Handle                              | Unsigned 32-bit integer |             |
| ncp.cc_function                       | OP-Lock Flag                             | Unsigned 8-bit integer  |             |
| ncp.cfg_max_simultaneous_transactions | Configured Max Simultaneous Transactions | Unsigned 16-bit integer |             |
| ncp.change_bits                       | Change Bits                              | Unsigned 16-bit integer |             |
| ncp.change_bits_access_date           | Access Date                              | Boolean                 |             |
| ncp.change_bits_archive_date          | Archive Date                             | Boolean                 |             |
| ncp.change_bits_archiver_id           | Archiver ID                              | Boolean                 |             |
| ncp.change_bits_archive_time          | Archive Time                             | Boolean                 |             |
| ncp.change_bits_creation_date         | Creation Date                            | Boolean                 |             |
| ncp.change_bits_creation_time         | Creation Time                            | Boolean                 |             |
| ncp.change_bits_file_attributes       | File Attributes                          | Boolean                 |             |
| ncp.change_bits_maximum_access_mask   | Maximum Access Mask                      | Boolean                 |             |
| ncp.change_bits_maximum_space         | Maximum Space                            | Boolean                 |             |
| ncp.change_bits_modify_name           | Modify Name                              | Boolean                 |             |

| Field                             | Field Name                    | Type                    | Description |
|-----------------------------------|-------------------------------|-------------------------|-------------|
| odify                             |                               |                         |             |
| npc.change_bits_owner             | Owner ID                      | Boolean                 |             |
| npc.change_bits_update            | Update Date                   | Boolean                 |             |
| npc.change_bits_update_id         | Update ID                     | Boolean                 |             |
| npc.change_bits_update_time       | Update Time                   | Boolean                 |             |
| npc.channel_state                 | Channel State                 | Unsigned 8-bit integer  |             |
| npc.channel_synchronization_state | Channel Synchronization State | Unsigned 8-bit integer  |             |
| npc.charge_amount                 | Charge Amount                 | Unsigned 32-bit integer |             |
| npc.charge_information            | Charge Information            | Unsigned 32-bit integer |             |
| npc.checksum_error_count          | Checksum Error Count          | Unsigned 32-bit integer |             |
| npc.checksumming                  | Checksumming                  | Boolean                 |             |
| npc.client_completion_flag        | Completion Flag               | Unsigned 16-bit integer |             |
| npc.client_id_number              | Client ID Number              | Unsigned 32-bit integer |             |
| npc.client_list                   | Client List                   | Unsigned 32-bit integer |             |
| npc.client_list_count             | Client List Count             | Unsigned 16-bit integer |             |
| npc.client_list_length            | Client List Length            | Unsigned 8-bit integer  |             |
| npc.client_name                   | Client Name                   | String                  |             |
| npc.client_record_area            | Client Record Area            | String                  |             |
| npc.client_station                | Client Station                | Unsigned 8-bit integer  |             |
| npc.client_station_long           | Client Station                | Unsigned 32-bit integer |             |
| npc.client_task_number            | Client Task                   | Unsigned 8-bit          |             |

Appendix A. Ethereal Display Filter Fields

| Field                              | Field Name                             | Type                    | Description |
|------------------------------------|--|-------------------------|-------------|
| mber                               | Number                                 | integer                 |             |
| npc.client_task_number_long        | Client Task Number                     | Unsigned 32-bit integer |             |
| npc.cluster_count                  | Cluster Count                          | Unsigned 16-bit integer |             |
| npc.clusters_used_by_directories   | Clusters Used by Directories           | Unsigned 32-bit integer |             |
| npc.clusters_used_by_extended_dirs | Clusters Used by Extended Directories  | Unsigned 32-bit integer |             |
| npc.clusters_used_by_fat           | Clusters Used by FAT                   | Unsigned 32-bit integer |             |
| npc.cmd_flags_advanced             | Advanced                               | Boolean                 |             |
| npc.cmd_flags_hidden               | Hidden                                 | Boolean                 |             |
| npc.cmd_flags_later                | Restart Server Required to Take Effect | Boolean                 |             |
| npc.cmd_flags_secure               | Console Secured                        | Boolean                 |             |
| npc.cmd_flags_startup_only         | Startup.ncf Only                       | Boolean                 |             |
| npc.cmpbyteincount                 | Compress Byte In Count                 | Unsigned 32-bit integer |             |
| npc.cmpbyteoutcount                | Compress Byte Out Count                | Unsigned 32-bit integer |             |
| npc.cmphibyteincnt                 | Compress High Byte In Count            | Unsigned 32-bit integer |             |
| npc.cmphibyteoutcnt                | Compress High Byte Out Count           | Unsigned 32-bit integer |             |
| npc.cmphitickcnt                   | Compress High Tick Count               | Unsigned 32-bit integer |             |
| npc.cmphitickhigh                  | Compress High Tick                     | Unsigned 32-bit integer |             |
| npc.co_proc_string                 | CoProcessor String                     | String                  |             |
| npc.co_processor_flag              | CoProcessor Present Flag               | Unsigned 32-bit integer |             |
| npc.com_cnts                       | Communication Counters                 | Unsigned 16-bit integer |             |



| Field                                   | Field Name                          | Type                    | Description |
|---|-------------------------------------|-------------------------|-------------|
| ncp.comment                             | Comment                             | String                  |             |
| ncp.comment_type                        | Comment Type                        | Unsigned 16-bit integer |             |
| ncp.complete_signatures                 | Complete Signatures                 | Boolean                 |             |
| ncp.completion_code                     | Completion Code                     | Unsigned 8-bit integer  |             |
| ncp.compress_volume                     | Volume Compression                  | Unsigned 32-bit integer |             |
| ncp.compressed_data_streams_count       | Compressed Data Streams Count       | Unsigned 32-bit integer |             |
| ncp.compressed_limbo_data_streams_count | Compressed Limbo Data Streams Count | Unsigned 32-bit integer |             |
| ncp.compressed_sectors                  | Compressed Sectors                  | Unsigned 32-bit integer |             |
| ncp.compression_ios_limit               | Compression IOs Limit               | Unsigned 32-bit integer |             |
| ncp.compression_lower_limit             | Compression Lower Limit             | Unsigned 32-bit integer |             |
| ncp.compression_stage                   | Compression Stage                   | Unsigned 32-bit integer |             |
| ncp.config_major_vn                     | Configuration Major Version Number  | Unsigned 8-bit integer  |             |
| ncp.config_minor_vn                     | Configuration Minor Version Number  | Unsigned 8-bit integer  |             |
| ncp.configuration_description           | Configuration Description           | String                  |             |
| ncp.configuration_text                  | Configuration Text                  | String                  |             |
| ncp.configured_max_bindery_objects      | Configured Max Bindery Objects      | Unsigned 16-bit integer |             |
| ncp.configured_max_open_files           | Configured Max Open Files           | Unsigned 16-bit integer |             |
| ncp.configured_max_routing_buffers      | Configured Max Routing Buffers      | Unsigned 16-bit integer |             |
| ncp.conn_being_aborted                  | Connection Being Aborted Count      | Unsigned 32-bit integer |             |

Appendix A. Ethereal Display Filter Fields

| Field                         | Field Name                    | Type                    | Description |
|-------------------------------|-------------------------------|-------------------------|-------------|
| ncp.conn_ctrl_bits            | Connection Control            | Unsigned 8-bit integer  |             |
| ncp.conn_list                 | Connection List               | Unsigned 32-bit integer |             |
| ncp.conn_list_count           | Connection List Count         | Unsigned 32-bit integer |             |
| ncp.conn_list_len             | Connection List Length        | Unsigned 8-bit integer  |             |
| ncp.conn_number_byte          | Connection Number             | Unsigned 8-bit integer  |             |
| ncp.conn_number_word          | Connection Number             | Unsigned 16-bit integer |             |
| ncp.connected_lan             | LAN Adapter                   | Unsigned 32-bit integer |             |
| ncp.connection                | Connection Number             | Unsigned 16-bit integer |             |
| ncp.connection_list           | Connection List               | Unsigned 32-bit integer |             |
| ncp.connection_number         | Connection Number             | Unsigned 32-bit integer |             |
| ncp.connection_number_list    | Connection Number List        | String                  |             |
| ncp.connection_service_type   | Connection Service Type       | Unsigned 8-bit integer  |             |
| ncp.connection_status         | Connection Status             | Unsigned 8-bit integer  |             |
| ncp.connection_type           | Connection Type               | Unsigned 8-bit integer  |             |
| ncp.connections_in_use        | Connections In Use            | Unsigned 16-bit integer |             |
| ncp.connections_max_used      | Connections Max Used          | Unsigned 16-bit integer |             |
| ncp.connections_supported_max | Connections Supported Max     | Unsigned 16-bit integer |             |
| ncp.control_being_torn_down   | Control Being Torn Down Count | Unsigned 32-bit integer |             |
| ncp.control_code              | Control Code                  | Unsigned 8-bit integer  |             |
| ncp.control_flags             | Control Flags                 | Unsigned 8-bit integer  |             |

| Field                              | Field Name                           | Type                    | Description |
|------------------------------------|--------------------------------------|-------------------------|-------------|
| ncp.control_invalid_message_number | Control Invalid Message Number Count | Unsigned 32-bit integer |             |
| ncp.controller_drive_number        | Controller Drive Number              | Unsigned 8-bit integer  |             |
| ncp.controller_number              | Controller Number                    | Unsigned 8-bit integer  |             |
| ncp.controller_type                | Controller Type                      | Unsigned 8-bit integer  |             |
| ncp.cookie_1                       | Cookie 1                             | Unsigned 32-bit integer |             |
| ncp.cookie_2                       | Cookie 2                             | Unsigned 32-bit integer |             |
| ncp.copies                         | Copies                               | Unsigned 8-bit integer  |             |
| ncp.copyright                      | Copyright                            | String                  |             |
| ncp.counter_mask                   | Counter Mask                         | Unsigned 8-bit integer  |             |
| ncp.cpu_number                     | CPU Number                           | Unsigned 32-bit integer |             |
| ncp.cpu_string                     | CPU String                           | String                  |             |
| ncp.cpu_type                       | CPU Type                             | Unsigned 8-bit integer  |             |
| ncp.creation_date                  | Creation Date                        | Unsigned 16-bit integer |             |
| ncp.creation_time                  | Creation Time                        | Unsigned 16-bit integer |             |
| ncp.creator_id                     | Creator ID                           | Unsigned 32-bit integer |             |
| ncp.creator_name_space_number      | Creator Name Space Number            | Unsigned 8-bit integer  |             |
| ncp.credit_limit                   | Credit Limit                         | Unsigned 32-bit integer |             |
| ncp.ctl_bad_ack_frag_list          | Control Bad ACK Fragment List Count  | Unsigned 32-bit integer |             |
| ncp.ctl_no_data_read               | Control No Data Read Count           | Unsigned 32-bit integer |             |
| ncp.ctrl_flags                     | Control Flags                        | Unsigned 16-bit integer |             |

Appendix A. Ethereal Display Filter Fields

| Field                              | Field Name                               | Type                    | Description |
|------------------------------------|--|-------------------------|-------------|
| ncp.cur_blk_being_dcompress        | Current Block Being Decompressed         | Unsigned 32-bit integer |             |
| ncp.cur_comp_blks                  | Current Compression Blocks               | Unsigned 32-bit integer |             |
| ncp.cur_initial_blks               | Current Initial Blocks                   | Unsigned 32-bit integer |             |
| ncp.cur_inter_blks                 | Current Intermediate Blocks              | Unsigned 32-bit integer |             |
| ncp.cur_num_of_r_tags              | Current Number of Resource Tags          | Unsigned 32-bit integer |             |
| ncp.curr_num_cache_buff            | Current Number Of Cache Buffers          | Unsigned 32-bit integer |             |
| ncp.curr_ref_id                    | Current Reference ID                     | Unsigned 16-bit integer |             |
| ncp.current_changed_fats           | Current Changed FAT Entries              | Unsigned 16-bit integer |             |
| ncp.current_entries                | Current Entries                          | Unsigned 32-bit integer |             |
| ncp.current_form_type              | Current Form Type                        | Unsigned 8-bit integer  |             |
| ncp.current_lfs_counters           | Current LFS Counters                     | Unsigned 32-bit integer |             |
| ncp.current_open_files             | Current Open Files                       | Unsigned 16-bit integer |             |
| ncp.current_server_time            | Time Elapsed Since Server Was Brought Up | Unsigned 32-bit integer |             |
| ncp.current_servers                | Current Servers                          | Unsigned 32-bit integer |             |
| ncp.current_space                  | Current Space                            | Unsigned 32-bit integer |             |
| ncp.current_trans_count            | Current Transaction Count                | Unsigned 32-bit integer |             |
| ncp.current_used_bindery_objects   | Current Used Bindery Objects             | Unsigned 16-bit integer |             |
| ncp.currently_used_routing_buffers | Currently Used Routing Buffers           | Unsigned 16-bit integer |             |

| Field                       | Field Name                      | Type                    | Description                         |
|-----------------------------|---------------------------------|-------------------------|-------------------------------------|
| ncp.custom_cnts             | Custom Counters                 | Unsigned 32-bit integer |                                     |
| ncp.custom_count            | Custom Count                    | Unsigned 32-bit integer |                                     |
| ncp.custom_counters         | Custom Counters                 | Unsigned 32-bit integer |                                     |
| ncp.custom_string           | Custom String                   | String                  |                                     |
| ncp.custom_var_value        | Custom Variable Value           | Unsigned 32-bit integer |                                     |
| ncp.data                    | Data                            | String                  |                                     |
| ncp.data_bytes              | Data Bytes                      | Unsigned 16-bit integer | Number of data bytes in this packet |
| ncp.data_fork_first_fat     | Data Fork First FAT Entry       | Unsigned 32-bit integer |                                     |
| ncp.data_fork_len           | Data Fork Len                   | Unsigned 32-bit integer |                                     |
| ncp.data_fork_size          | Data Fork Size                  | Unsigned 32-bit integer |                                     |
| ncp.data_offset             | Data Offset                     | Unsigned 32-bit integer | Offset of this packet in the burst  |
| ncp.data_size               | Data Size                       | Unsigned 32-bit integer |                                     |
| ncp.data_stream             | Data Stream                     | Unsigned 8-bit integer  |                                     |
| ncp.data_stream_name        | Data Stream Name                | String                  |                                     |
| ncp.data_stream_number      | Data Stream Number              | Unsigned 8-bit integer  |                                     |
| ncp.data_stream_size        | Size                            | Unsigned 32-bit integer |                                     |
| ncp.data_stream_space_alloc | Space Allocated for Data Stream | Unsigned 32-bit integer |                                     |
| ncp.data_streams_count      | Data Streams Count              | Unsigned 32-bit integer |                                     |
| ncp.dc_dirty_wait_time      | DC Dirty Wait Time              | Unsigned 32-bit integer |                                     |
| ncp.dc_double_read_flag     | DC Double Read Flag             | Unsigned 32-bit integer |                                     |
| ncp.dc_max_concu            | DC Maximum                      | Unsigned 32-bit         |                                     |

Appendix A. Ethereal Display Filter Fields

| Field                            | Field Name                           | Type                    | Description   |
|----------------------------------|--------------------------------------|-------------------------|---|
| rrent_writes                     | Concurrent Writes                    | integer                 |   |
| ncp.dc_min_non_ref_time          | DC Minimum Non-Referenced Time       | Unsigned 32-bit integer |   |
| ncp.dc_wait_time_before_new_buff | DC Wait Time Before New Buffer       | Unsigned 32-bit integer |   |
| ncp.dead_mirror_table            | Dead Mirror Table                    | Byte array              |   |
| ncp.dealloc_being_proc           | De-Allocate Being Processed Count    | Unsigned 32-bit integer |   |
| ncp.dealloc_forged_packet        | De-Allocate Forged Packet Count      | Unsigned 32-bit integer |   |
| ncp.dealloc_invalid_slot         | De-Allocate Invalid Slot Count       | Unsigned 32-bit integer |   |
| ncp.dealloc_still_transmit       | De-Allocate Still Transmitting Count | Unsigned 32-bit integer |   |
| ncp.decbyteincout                | DeCompress Byte In Count             | Unsigned 32-bit integer |   |
| ncp.decbyteoutcnt                | DeCompress Byte Out Count            | Unsigned 32-bit integer |   |
| ncp.decphibyteincnt              | DeCompress High Byte In Count        | Unsigned 32-bit integer |   |
| ncp.decphibyteoutcnt             | DeCompress High Byte Out Count       | Unsigned 32-bit integer |   |
| ncp.decphitickcnt                | DeCompress High Tick Count           | Unsigned 32-bit integer |   |
| ncp.decphitickhigh               | DeCompress High Tick                 | Unsigned 32-bit integer |   |
| ncp.defined_data_streams         | Defined Data Streams                 | Unsigned 8-bit integer  |   |
| ncp.defined_name_spaces          | Defined Name Spaces                  | Unsigned 8-bit integer  |   |
| ncp.delay_time                   | Delay Time                           | Unsigned 32-bit integer | Delay time between consecutive packet sends (100 us increments) |
| ncp.delete_existing_file_flag    | Delete Existing File Flag            | Unsigned 8-bit integer  |   |

| <b>Field</b>                         | <b>Field Name</b>                | <b>Type</b>             | <b>Description</b> |
|--------------------------------------|----------------------------------|-------------------------|--------------------|
| ncp.delete_id                        | Deleted ID                       | Unsigned 32-bit integer |                    |
| ncp.deleted_date                     | Deleted Date                     | Unsigned 16-bit integer |                    |
| ncp.deleted_file_time                | Deleted File Time                | Unsigned 32-bit integer |                    |
| ncp.deleted_time                     | Deleted Time                     | Unsigned 16-bit integer |                    |
| ncp.deny_read_count                  | Deny Read Count                  | Unsigned 16-bit integer |                    |
| ncp.deny_write_count                 | Deny Write Count                 | Unsigned 16-bit integer |                    |
| ncp.description_string               | Description                      | String                  |                    |
| ncp.desired_access_rights            | Desired Access Rights            | Unsigned 16-bit integer |                    |
| ncp.desired_response_count           | Desired Response Count           | Unsigned 16-bit integer |                    |
| ncp.dest_component_count             | Destination Path Component Count | Unsigned 8-bit integer  |                    |
| ncp.dest_dir_handle                  | Destination Directory Handle     | Unsigned 8-bit integer  |                    |
| ncp.dest_name_space                  | Destination Name Space           | Unsigned 8-bit integer  |                    |
| ncp.dest_path                        | Destination Path                 | String                  |                    |
| ncp.detach_during_processing         | Detach During Processing         | Unsigned 16-bit integer |                    |
| ncp.detach_for_bad_connection_number | Detach For Bad Connection Number | Unsigned 16-bit integer |                    |
| ncp.dir_base                         | Directory Base                   | Unsigned 32-bit integer |                    |
| ncp.dir_count                        | Directory Count                  | Unsigned 16-bit integer |                    |
| ncp.dir_handle                       | Directory Handle                 | Unsigned 8-bit integer  |                    |
| ncp.dir_handle_long                  | Directory Handle                 | Unsigned 32-bit integer |                    |
| ncp.dir_handle_name                  | Handle Name                      | Unsigned 8-bit integer  |                    |

Appendix A. Ethereal Display Filter Fields

| Field                            | Field Name                   | Type                    | Description |
|----------------------------------|------------------------------|-------------------------|-------------|
| ncp.directory_access_rights      | Directory Access Rights      | Unsigned 8-bit integer  |             |
| ncp.directory_attributes         | Directory Attributes         | Unsigned 8-bit integer  |             |
| ncp.directory_entry_number       | Directory Entry Number       | Unsigned 32-bit integer |             |
| ncp.directory_entry_number_word  | Directory Entry Number       | Unsigned 16-bit integer |             |
| ncp.directory_id                 | Directory ID                 | Unsigned 16-bit integer |             |
| ncp.directory_name               | Directory Name               | String                  |             |
| ncp.directory_name_14            | Directory Name               | String                  |             |
| ncp.directory_name_len           | Directory Name Length        | Unsigned 8-bit integer  |             |
| ncp.directory_number             | Directory Number             | Unsigned 32-bit integer |             |
| ncp.directory_path               | Directory Path               | String                  |             |
| ncp.directory_services_object_id | Directory Services Object ID | Unsigned 32-bit integer |             |
| ncp.directory_stamp              | Directory Stamp (0xD1D1)     | Unsigned 16-bit integer |             |
| ncp.dirty_cache_buffers          | Dirty Cache Buffers          | Unsigned 16-bit integer |             |
| ncp.disable_broadcasts           | Disable Broadcasts           | Boolean                 |             |
| ncp.disable_personal_broadcasts  | Disable Personal Broadcasts  | Boolean                 |             |
| ncp.disable_watchdog_messages    | Disable Watchdog Message     | Boolean                 |             |
| ncp.disk_channel_number          | Disk Channel Number          | Unsigned 8-bit integer  |             |
| ncp.disk_channel_table           | Disk Channel Table           | Unsigned 8-bit integer  |             |
| ncp.disk_space_limit             | Disk Space Limit             | Unsigned 32-bit integer |             |
| ncp.dm_flags                     | DM Flags                     | Unsigned 8-bit integer  |             |



| Field                          | Field Name                  | Type                    | Description |
|--------------------------------|-----------------------------|-------------------------|-------------|
| ncp.dm_info_entries            | DM Info Entries             | Unsigned 32-bit integer |             |
| ncp.dm_info_level              | DM Info Level               | Unsigned 8-bit integer  |             |
| ncp.dm_major_version           | DM Major Version            | Unsigned 32-bit integer |             |
| ncp.dm_minor_version           | DM Minor Version            | Unsigned 32-bit integer |             |
| ncp.dm_present_flag            | Data Migration Present Flag | Unsigned 8-bit integer  |             |
| ncp.dma_channels_used          | DMA Channels Used           | Unsigned 32-bit integer |             |
| ncp.dos_directory_base         | DOS Directory Base          | Unsigned 32-bit integer |             |
| ncp.dos_directory_entry        | DOS Directory Entry         | Unsigned 32-bit integer |             |
| ncp.dos_directory_entry_number | DOS Directory Entry Number  | Unsigned 32-bit integer |             |
| ncp.dos_file_attributes        | DOS File Attributes         | Unsigned 8-bit integer  |             |
| ncp.dos_parent_directory_entry | DOS Parent Directory Entry  | Unsigned 32-bit integer |             |
| ncp.dos_sequence               | DOS Sequence                | Unsigned 32-bit integer |             |
| ncp.drive_cylinders            | Drive Cylinders             | Unsigned 16-bit integer |             |
| ncp.drive_definition_string    | Drive Definition            | String                  |             |
| ncp.drive_heads                | Drive Heads                 | Unsigned 8-bit integer  |             |
| ncp.drive_mapping_table        | Drive Mapping Table         | Byte array              |             |
| ncp.drive_mirror_table         | Drive Mirror Table          | Byte array              |             |
| ncp.drive_removable_flag       | Drive Removable Flag        | Unsigned 8-bit integer  |             |
| ncp.drive_size                 | Drive Size                  | Unsigned 32-bit integer |             |
| ncp.driver_board_name          | Driver Board Name           | String                  |             |

Appendix A. Ethereal Display Filter Fields

| Field                              | Field Name                            | Type                    | Description                                   |
|------------------------------------|---------------------------------------|-------------------------|---|
| ncp.driver_log_name                | Driver Logical Name                   | String                  |   |
| ncp.driver_short_name              | Driver Short Name                     | String                  |   |
| ncp.dsired_acc_rights_compat       | Compatibility                         | Boolean                 |   |
| ncp.dsired_acc_rights_del_file_cls | Delete File Close                     | Boolean                 |   |
| ncp.dsired_acc_rights_deny_r       | Deny Read                             | Boolean                 |   |
| ncp.dsired_acc_rights_deny_w       | Deny Write                            | Boolean                 |   |
| ncp.dsired_acc_rights_read_o       | Read Only                             | Boolean                 |   |
| ncp.dsired_acc_rights_w_thru       | File Write Through                    | Boolean                 |   |
| ncp.dsired_acc_rights_write_o      | Write Only                            | Boolean                 |   |
| ncp.dst_connection                 | Destination Connection ID             | Unsigned 32-bit integer | The server's connection identification number |
| ncp.dst_ea_flags                   | Destination EA Flags                  | Unsigned 16-bit integer |   |
| ncp.dst_ns_indicator               | Destination Name Space Indicator      | Unsigned 16-bit integer |   |
| ncp.dst_queue_id                   | Destination Queue ID                  | Unsigned 32-bit integer |   |
| ncp.dup_is_being_sent              | Duplicate Is Being Sent Already Count | Unsigned 32-bit integer |   |
| ncp.duplicate_replies_sent         | Duplicate Replies Sent                | Unsigned 16-bit integer |   |
| ncp.dyn_mem_struct_cur             | Current Used Dynamic Space            | Unsigned 32-bit integer |   |
| ncp.dyn_mem_struct_max             | Max Used Dynamic Space                | Unsigned 32-bit integer |   |
| ncp.dyn_mem_struct_total           | Total Dynamic Space                   | Unsigned 32-bit integer |   |
| ncp.ea_access_flag                 | EA Access Flag                        | Unsigned 16-bit         |   |

| Field                                     | Field Name   | Type                    | Description |
|---|--|-------------------------|-------------|
|   |  | integer                 |             |
| ncp.ea_bytes_written                      | Bytes Written                                      | Unsigned 32-bit integer |             |
| ncp.ea_count                              | Count  | Unsigned 32-bit integer |             |
| ncp.ea_data_size                          | Data Size  | Unsigned 32-bit integer |             |
| ncp.ea_data_size_duplicated               | Data Size Duplicated                               | Unsigned 32-bit integer |             |
| ncp.ea_deep_freeze                        | Deep Freeze  | Boolean                 |             |
| ncp.ea_delete_privileges                  | Delete Privileges                                  | Boolean                 |             |
| ncp.ea_duplicate_count                    | Duplicate Count                                    | Unsigned 32-bit integer |             |
| ncp.ea_error_codes                        | EA Error Codes                                     | Unsigned 16-bit integer |             |
| ncp.ea_flags                              | EA Flags   | Unsigned 16-bit integer |             |
| ncp.ea_handle                             | EA Handle  | Unsigned 32-bit integer |             |
| ncp.ea_handle_or_netware_handle_or_volume | ECHandle or NetWare Handle or Volume (see EAFlags) | Unsigned 32-bit integer |             |
| ncp.ea_header_being_enlarged              | Header Being Enlarged                              | Boolean                 |             |
| ncp.ea_in_progress                        | In Progress  | Boolean                 |             |
| ncp.ea_key                                | EA Key   | String                  |             |
| ncp.ea_key_size                           | Key Size   | Unsigned 32-bit integer |             |
| ncp.ea_key_size_duplicated                | Key Size Duplicated                                | Unsigned 32-bit integer |             |
| ncp.ea_need_bit_flag                      | EA Need Bit Flag                                   | Boolean                 |             |
| ncp.ea_new_tally_used                     | New Tally Used                                     | Boolean                 |             |
| ncp.ea_permanent_memory                   | Permanent Memory                                   | Boolean                 |             |

Appendix A. Ethereal Display Filter Fields

| Field                         | Field Name          | Type                    | Description |
|-------------------------------|---------------------|-------------------------|-------------|
| ncp.ea_read_privileges        | Read Privileges     | Boolean                 |             |
| ncp.ea_score_card_present     | Score Card Present  | Boolean                 |             |
| ncp.ea_system_ea_only         | System EA Only      | Boolean                 |             |
| ncp.ea_tally_need_update      | Tally Need Update   | Boolean                 |             |
| ncp.ea_value                  | EA Value            | String                  |             |
| ncp.ea_value_length           | Value Length        | Unsigned 16-bit integer |             |
| ncp.ea_value_rep              | EA Value            | String                  |             |
| ncp.ea_write_in_progress      | Write In Progress   | Boolean                 |             |
| ncp.ea_write_privileges       | Write Privileges    | Boolean                 |             |
| ncp.ecb_cxl_fails             | ECB Cancel Failures | Unsigned 32-bit integer |             |
| ncp.echo_socket               | Echo Socket         | Unsigned 16-bit integer |             |
| ncp.effective_rights          | Effective Rights    | Unsigned 8-bit integer  |             |
| ncp.effective_rights_create   | Create Rights       | Boolean                 |             |
| ncp.effective_rights_delete   | Delete Rights       | Boolean                 |             |
| ncp.effective_rights_modify   | Modify Rights       | Boolean                 |             |
| ncp.effective_rights_open     | Open Rights         | Boolean                 |             |
| ncp.effective_rights_parental | Parental Rights     | Boolean                 |             |
| ncp.effective_rights_read     | Read Rights         | Boolean                 |             |
| ncp.effective_rights_search   | Search Rights       | Boolean                 |             |
| ncp.effective_rights_write    | Write Rights        | Boolean                 |             |
| ncp.enable_brdcas             | Enable Broadcasts   | Boolean                 |             |

| Field                        | Field Name                   | Type                    | Description |
|------------------------------|------------------------------|-------------------------|-------------|
| ts                           |                              |                         |             |
| ncp.enable_personal_brdcasts | Enable Personal Broadcasts   | Boolean                 |             |
| ncp.enable_wdog_messages     | Enable Watchdog Message      | Boolean                 |             |
| ncp.encryption               | Encryption                   | Boolean                 |             |
| ncp.enqueueued_send_cnt      | Enqueued Send Count          | Unsigned 32-bit integer |             |
| ncp.enum_info_account        | Accounting Information       | Boolean                 |             |
| ncp.enum_info_auth           | Authentication Information   | Boolean                 |             |
| ncp.enum_info_lock           | Lock Information             | Boolean                 |             |
| ncp.enum_info_mask           | Return Information Mask      | Unsigned 8-bit integer  |             |
| ncp.enum_info_name           | Name Information             | Boolean                 |             |
| ncp.enum_info_print          | Print Information            | Boolean                 |             |
| ncp.enum_info_stats          | Statistical Information      | Boolean                 |             |
| ncp.enum_info_time           | Time Information             | Boolean                 |             |
| ncp.enum_info_transport      | Transport Information        | Boolean                 |             |
| ncp.err_doing_async_read     | Error Doing Async Read Count | Unsigned 32-bit integer |             |
| ncp.error_read_last_fat      | Error Reading Last FAT Count | Unsigned 32-bit integer |             |
| ncp.event_offset             | Event Offset                 | Byte array              |             |
| ncp.event_time               | Event Time                   | Unsigned 32-bit integer |             |
| ncp.exc_nds_ver              | Exclude NDS Version          | Unsigned 32-bit integer |             |
| ncp.expiration_time          | Expiration Time              | Unsigned 32-bit integer |             |
| ncp.ext_info                 | Extended Return Information  | Unsigned 16-bit integer |             |

Appendix A. Ethereal Display Filter Fields

| Field                                | Field Name   | Type                    | Description |
|--------------------------------------|--|-------------------------|-------------|
| nep.ext_info_64_bit_fs               | 64 Bit File Sizes                                      | Boolean                 |             |
| nep.ext_info_access                  | Last Access  | Boolean                 |             |
| nep.ext_info_dos_name                | DOS Name   | Boolean                 |             |
| nep.ext_info_effective               | Effective  | Boolean                 |             |
| nep.ext_info_flush                   | Flush  | Boolean                 |             |
| nep.ext_info_mac_date                | MAC Date   | Boolean                 |             |
| nep.ext_info_mac_finder              | MAC Finder   | Boolean                 |             |
| nep.ext_info_newstyle                | New Style  | Boolean                 |             |
| nep.ext_info_parental                | Parental   | Boolean                 |             |
| nep.ext_info_sibling                 | Sibling  | Boolean                 |             |
| nep.ext_info_update                  | Update   | Boolean                 |             |
| nep.ext_router_active_flag           | External Router Active Flag                            | Boolean                 |             |
| nep.extended_attribute_extants_used  | Extended Attribute Extants Used                        | Unsigned 32-bit integer |             |
| nep.extended_attributes_defined      | Extended Attributes Defined                            | Unsigned 32-bit integer |             |
| nep.extra_extra_use_count_node_count | Errors allocating an additional use count node for TTS | Unsigned 32-bit integer |             |
| nep.extra_use_count_node_count       | Errors allocating a use count node for TTS             | Unsigned 32-bit integer |             |
| nep.failed_alloc_req                 | Failed Alloc Request Count                             | Unsigned 32-bit integer |             |
| nep.fat_moved                        | Number of times the OS has move the location of FAT    | Unsigned 32-bit integer |             |
| nep.fat_scan_error                   | FAT Scan Errors  | Unsigned 16-bit         |             |

| Field                      | Field Name   | Type                    | Description |
|----------------------------|--|-------------------------|-------------|
| s                          |  | integer                 |             |
| ncp.fat_write_err          | Number of write errors in both original and mirrored copies of FAT | Unsigned 32-bit integer |             |
| ncp.fat_write_errors       | FAT Write Errors   | Unsigned 16-bit integer |             |
| ncp.fatal_fat_write_errors | Fatal FAT Write Errors   | Unsigned 16-bit integer |             |
| ncp.fields_len_table       | Fields Len Table   | Byte array              |             |
| ncp.file_count             | File Count   | Unsigned 16-bit integer |             |
| ncp.file_date              | File Date  | Unsigned 16-bit integer |             |
| ncp.file_dir_win           | File/Dir Window  | Unsigned 16-bit integer |             |
| ncp.file_execute_type      | File Execute Type  | Unsigned 8-bit integer  |             |
| ncp.file_ext_attr          | File Extended Attributes   | Unsigned 8-bit integer  |             |
| ncp.file_flags             | File Flags   | Unsigned 32-bit integer |             |
| ncp.file_handle            | File Handle  | Byte array              |             |
| ncp.file_limbo             | File Limbo   | Unsigned 32-bit integer |             |
| ncp.file_list_count        | File List Count  | Unsigned 32-bit integer |             |
| ncp.file_lock_count        | File Lock Count  | Unsigned 16-bit integer |             |
| ncp.file_mode              | File Mode  | Unsigned 8-bit integer  |             |
| ncp.file_name              | Filename   | String                  |             |
| ncp.file_name_12           | Filename   | String                  |             |
| ncp.file_name_14           | Filename   | String                  |             |
| ncp.file_name_len          | Filename Length  | Unsigned 8-bit integer  |             |
| ncp.file_offset            | File Offset  | Unsigned 32-bit         |             |

Appendix A. Ethereal Display Filter Fields

| Field                         | Field Name                       | Type                    | Description |
|-------------------------------|----------------------------------|-------------------------|-------------|
|                               |                                  | integer                 |             |
| ncp.file_path                 | File Path                        | String                  |             |
| ncp.file_size                 | File Size                        | Unsigned 32-bit integer |             |
| ncp.file_system_id            | File System ID                   | Unsigned 8-bit integer  |             |
| ncp.file_time                 | File Time                        | Unsigned 16-bit integer |             |
| ncp.file_write_flags          | File Write Flags                 | Unsigned 8-bit integer  |             |
| ncp.file_write_state          | File Write State                 | Unsigned 8-bit integer  |             |
| ncp.filler                    | Filler                           | Unsigned 8-bit integer  |             |
| ncp.finder_attr               | Finder Info Attributes           | Unsigned 16-bit integer |             |
| ncp.finder_attr_bundle        | Object Has Bundle                | Boolean                 |             |
| ncp.finder_attr_desktop       | Object on Desktop                | Boolean                 |             |
| ncp.finder_attr_invisible     | Object is Invisible              | Boolean                 |             |
| ncp.first_packet_isnt_a_write | First Packet Isn't A Write Count | Unsigned 32-bit integer |             |
| ncp.fixed_bit_mask            | Fixed Bit Mask                   | Unsigned 32-bit integer |             |
| ncp.fixed_bits_defined        | Fixed Bits Defined               | Unsigned 16-bit integer |             |
| ncp.flag_bits                 | Flag Bits                        | Unsigned 8-bit integer  |             |
| ncp.flags                     | Flags                            | Unsigned 8-bit integer  |             |
| ncp.flags_def                 | Flags                            | Unsigned 16-bit integer |             |
| ncp.flush_time                | Flush Time                       | Unsigned 32-bit integer |             |
| ncp.folder_flag               | Folder Flag                      | Unsigned 8-bit integer  |             |
| ncp.force_flag                | Force Server Down                | Unsigned 8-bit          |             |



| Field                        | Field Name                 | Type                    | Description |
|------------------------------|----------------------------|-------------------------|-------------|
|                              | Flag                       | integer                 |             |
| ncp.forged_detached_requests | Forged Detached Requests   | Unsigned 16-bit integer |             |
| ncp.forged_packet            | Forged Packet Count        | Unsigned 32-bit integer |             |
| ncp.fork_count               | Fork Count                 | Unsigned 8-bit integer  |             |
| ncp.fork_indicator           | Fork Indicator             | Unsigned 8-bit integer  |             |
| ncp.form_type                | Form Type                  | Unsigned 16-bit integer |             |
| ncp.form_type_count          | Form Types Count           | Unsigned 32-bit integer |             |
| ncp.found_some_mem           | Found Some Memory          | Unsigned 32-bit integer |             |
| ncp.fractional_time          | Fractional Time in Seconds | Unsigned 32-bit integer |             |
| ncp.fragger_handle           | Fragment Handle            | Unsigned 32-bit integer |             |
| ncp.fragger_hndl             | Fragment Handle            | Unsigned 16-bit integer |             |
| ncp.fragment_write_occurred  | Fragment Write Occurred    | Unsigned 16-bit integer |             |
| ncp.free_blocks              | Free Blocks                | Unsigned 32-bit integer |             |
| ncp.free_directory_entries   | Free Directory Entries     | Unsigned 16-bit integer |             |
| ncp.freeable_limbo_sectors   | Freeable Limbo Sectors     | Unsigned 32-bit integer |             |
| ncp.freed_clusters           | Freed Clusters             | Unsigned 32-bit integer |             |
| ncp.fs_engine_flag           | FS Engine Flag             | Boolean                 |             |
| ncp.full_name                | Full Name                  | String                  |             |
| ncp.func                     | Function                   | Unsigned 8-bit integer  |             |
| ncp.generic_block_size       | Block Size                 | Unsigned 32-bit integer |             |
| ncp.generic_capacity         | Capacity                   | Unsigned 32-bit integer |             |

Appendix A. Ethereal Display Filter Fields

| Field                      | Field Name                | Type                    | Description |
|----------------------------|---------------------------|-------------------------|-------------|
| ncp.generic_cartridge_type | Cartridge Type            | Unsigned 32-bit integer |             |
| ncp.generic_child_count    | Child Count               | Unsigned 32-bit integer |             |
| ncp.generic_ctl_mask       | Control Mask              | Unsigned 32-bit integer |             |
| ncp.generic_func_mask      | Function Mask             | Unsigned 32-bit integer |             |
| ncp.generic_ident_time     | Identification Time       | Unsigned 32-bit integer |             |
| ncp.generic_ident_type     | Identification Type       | Unsigned 32-bit integer |             |
| ncp.generic_label          | Label                     | String                  |             |
| ncp.generic_media_slot     | Media Slot                | Unsigned 32-bit integer |             |
| ncp.generic_media_type     | Media Type                | Unsigned 32-bit integer |             |
| ncp.generic_name           | Name                      | String                  |             |
| ncp.generic_object_uniq_id | Unique Object ID          | Unsigned 32-bit integer |             |
| ncp.generic_parent_count   | Parent Count              | Unsigned 32-bit integer |             |
| ncp.generic_pref_unit_size | Preferred Unit Size       | Unsigned 32-bit integer |             |
| ncp.generic_sib_count      | Sibling Count             | Unsigned 32-bit integer |             |
| ncp.generic_spec_info_sz   | Specific Information Size | Unsigned 32-bit integer |             |
| ncp.generic_status         | Status                    | Unsigned 32-bit integer |             |
| ncp.generic_type           | Type                      | Unsigned 32-bit integer |             |
| ncp.generic_unit_size      | Unit Size                 | Unsigned 32-bit integer |             |
| ncp.get_ecb_buf            | Get ECB Buffers           | Unsigned 32-bit integer |             |
| ncp.get_ecb_fails          | Get ECB Failures          | Unsigned 32-bit integer |             |
| ncp.get_set_flag           | Get Set Flag              | Unsigned 8-bit          |             |

| Field                          | Field Name                      | Type                    | Description |
|--------------------------------|---------------------------------|-------------------------|-------------|
|                                |                                 | integer                 |             |
| ncp.guid                       | GUID                            | Byte array              |             |
| ncp.had_an_out_of_order        | Had An Out Of Order Write Count | Unsigned 32-bit integer |             |
| ncp.handle_flag                | Handle Flag                     | Unsigned 8-bit integer  |             |
| ncp.handle_info_level          | Handle Info Level               | Unsigned 8-bit integer  |             |
| ncp.hardware_rx_mismatch_count | Hardware Receive Mismatch Count | Unsigned 32-bit integer |             |
| ncp.held_bytes_read            | Held Bytes Read                 | Byte array              |             |
| ncp.held_bytes_wrote           | Held Bytes Written              | Byte array              |             |
| ncp.held_conn_time             | Held Connect Time in Minutes    | Unsigned 32-bit integer |             |
| ncp.hold_amount                | Hold Amount                     | Unsigned 32-bit integer |             |
| ncp.hold_cancel_amount         | Hold Cancel Amount              | Unsigned 32-bit integer |             |
| ncp.hold_time                  | Hold Time                       | Unsigned 32-bit integer |             |
| ncp.holder_id                  | Holder ID                       | Unsigned 32-bit integer |             |
| ncp.hops_to_net                | Hop Count                       | Unsigned 16-bit integer |             |
| ncp.horiz_location             | Horizontal Location             | Unsigned 16-bit integer |             |
| ncp.host_address               | Host Address                    | Byte array              |             |
| ncp.hot_fix_blocks_available   | Hot Fix Blocks Available        | Unsigned 16-bit integer |             |
| ncp.hot_fix_disabled           | Hot Fix Disabled                | Unsigned 8-bit integer  |             |
| ncp.hot_fix_table_size         | Hot Fix Table Size              | Unsigned 16-bit integer |             |
| ncp.hot_fix_table_start        | Hot Fix Table Start             | Unsigned 32-bit integer |             |
| ncp.huge_bit_mask              | Huge Bit Mask                   | Unsigned 32-bit integer |             |

Appendix A. Ethereal Display Filter Fields

| Field                                     | Field Name                                       | Type                    | Description |
|---|--|-------------------------|-------------|
| ncp.huge_bits_defined                     | Huge Bits Defined                                | Unsigned 16-bit integer |             |
| ncp.huge_data                             | Huge Data  | String                  |             |
| ncp.huge_data_used                        | Huge Data Used                                   | Unsigned 32-bit integer |             |
| ncp.huge_state_info                       | Huge State Info                                  | Byte array              |             |
| ncp.i_ran_out_someone_else_did_it_0       | I Ran Out Someone Else Did It Count 0            | Unsigned 32-bit integer |             |
| ncp.i_ran_out_someone_else_did_it_1       | I Ran Out Someone Else Did It Count 1            | Unsigned 32-bit integer |             |
| ncp.i_ran_out_someone_else_did_it_2       | I Ran Out Someone Else Did It Count 2            | Unsigned 32-bit integer |             |
| ncp.id_get_no_read_no_wait                | ID Get No Read No Wait Count                     | Unsigned 32-bit integer |             |
| ncp.id_get_no_read_no_wait_alloc          | ID Get No Read No Wait Allocate Count            | Unsigned 32-bit integer |             |
| ncp.id_get_no_read_no_wait_buffer         | ID Get No Read No Wait No Buffer Count           | Unsigned 32-bit integer |             |
| ncp.id_get_no_read_no_wait_no_alloc       | ID Get No Read No Wait No Alloc Count            | Unsigned 32-bit integer |             |
| ncp.id_get_no_read_no_wait_no_alloc_alloc | ID Get No Read No Wait No Alloc Allocate Count   | Unsigned 32-bit integer |             |
| ncp.id_get_no_read_no_wait_no_alloc_sema  | ID Get No Read No Wait No Alloc Semaphored Count | Unsigned 32-bit integer |             |
| ncp.id_get_no_read_no_wait_sema           | ID Get No Read No Wait Semaphored Count          | Unsigned 32-bit integer |             |
| ncp.identification_number                 | Identification Number                            | Unsigned 32-bit integer |             |
| ncp.ignored_rx_packets                    | Ignored Receive Packets                          | Unsigned 32-bit integer |             |

| Field                                   | Field Name                          | Type                    | Description |
|---|-------------------------------------|-------------------------|-------------|
| ncp.in_use                              | Bytes in Use                        | Unsigned 32-bit integer |             |
| ncp.inc_nds_ver                         | Include NDS Version                 | Unsigned 32-bit integer |             |
| ncp.incoming_packet_discarded_no_dgroup | Incoming Packet Discarded No DGroup | Unsigned 16-bit integer |             |
| ncp.index_number                        | Index Number                        | Unsigned 8-bit integer  |             |
| ncp.info_count                          | Info Count                          | Unsigned 16-bit integer |             |
| ncp.info_flags                          | Info Flags                          | Unsigned 32-bit integer |             |
| ncp.info_flags_all_attr                 | All Attributes                      | Boolean                 |             |
| ncp.info_flags_all_dirbase_num          | All Directory Base Numbers          | Boolean                 |             |
| ncp.info_flags_dos_attr                 | DOS Attributes                      | Boolean                 |             |
| ncp.info_flags_dos_time                 | DOS Time                            | Boolean                 |             |
| ncp.info_flags_ds_sizes                 | Data Stream Sizes                   | Boolean                 |             |
| ncp.info_flags_ea_present               | EA Present Flag                     | Boolean                 |             |
| ncp.info_flags_effect_rights            | Effective Rights                    | Boolean                 |             |
| ncp.info_flags_flags                    | Return Object Flags                 | Boolean                 |             |
| ncp.info_flags_flush_time               | Flush Time                          | Boolean                 |             |
| ncp.info_flags_ids                      | ID's                                | Boolean                 |             |
| ncp.info_flags_mac_finder               | Mac Finder Information              | Boolean                 |             |
| ncp.info_flags_mac_time                 | Mac Time                            | Boolean                 |             |
| ncp.info_flags_max_access_mask          | Maximum Access Mask                 | Boolean                 |             |
| ncp.info_flags_name                     | Return Object Name                  | Boolean                 |             |

Appendix A. Ethereal Display Filter Fields

| Field                            | Field Name                | Type                    | Description |
|----------------------------------|---------------------------|-------------------------|-------------|
| ncp.info_flags_ns_attr           | Name Space Attributes     | Boolean                 |             |
| ncp.info_flags_parent_base_id    | Parent Base ID            | Boolean                 |             |
| ncp.info_flags_refcount          | Reference Count           | Boolean                 |             |
| ncp.info_flags_security          | Return Object Security    | Boolean                 |             |
| ncp.info_flags_sibling_cnt       | Sibling Count             | Boolean                 |             |
| ncp.info_flags_type              | Return Object Type        | Boolean                 |             |
| ncp.info_level_num               | Information Level Number  | Unsigned 8-bit integer  |             |
| ncp.info_mask                    | Information Mask          | Unsigned 32-bit integer |             |
| ncp.info_mask_creator_name_space | Creator Name Space & Name | Boolean                 |             |
| ncp.info_mask_dosname            | DOS Name                  | Boolean                 |             |
| ncp.info_mask_name               | Name                      | Boolean                 |             |
| ncp.inh_revoke_create            | Create Rights             | Boolean                 |             |
| ncp.inh_revoke_delete            | Delete Rights             | Boolean                 |             |
| ncp.inh_revoke_modify            | Modify Rights             | Boolean                 |             |
| ncp.inh_revoke_open              | Open Rights               | Boolean                 |             |
| ncp.inh_revoke_parent            | Change Access             | Boolean                 |             |
| ncp.inh_revoke_read              | Read Rights               | Boolean                 |             |
| ncp.inh_revoke_search            | See Files Flag            | Boolean                 |             |
| ncp.inh_revoke_supervisor        | Supervisor                | Boolean                 |             |
| ncp.inh_revoke_write             | Write Rights              | Boolean                 |             |

| Field                              | Field Name                               | Type                    | Description |
|------------------------------------|--|-------------------------|-------------|
| nep.inh_rights_create              | Create Rights                            | Boolean                 |             |
| nep.inh_rights_delete              | Delete Rights                            | Boolean                 |             |
| nep.inh_rights_modify              | Modify Rights                            | Boolean                 |             |
| nep.inh_rights_open                | Open Rights                              | Boolean                 |             |
| nep.inh_rights_parent              | Change Access                            | Boolean                 |             |
| nep.inh_rights_read                | Read Rights                              | Boolean                 |             |
| nep.inh_rights_search              | See Files Flag                           | Boolean                 |             |
| nep.inh_rights_supervisor          | Supervisor                               | Boolean                 |             |
| nep.inh_rights_write               | Write Rights                             | Boolean                 |             |
| nep.inheritance_revoke_mask        | Revoke Rights Mask                       | Unsigned 16-bit integer |             |
| nep.inherited_rights_mask          | Inherited Rights Mask                    | Unsigned 16-bit integer |             |
| nep.initial_semaphore_value        | Initial Semaphore Value                  | Unsigned 8-bit integer  |             |
| nep.inspect_size                   | Inspect Size                             | Unsigned 32-bit integer |             |
| nep.internet_bridge_version        | Internet Bridge Version                  | Unsigned 8-bit integer  |             |
| nep.internl_dsk_get                | Internal Disk Get Count                  | Unsigned 32-bit integer |             |
| nep.internl_dsk_get_need_to_alloc  | Internal Disk Get Need To Allocate Count | Unsigned 32-bit integer |             |
| nep.internl_dsk_get_no_read        | Internal Disk Get No Read Count          | Unsigned 32-bit integer |             |
| nep.internl_dsk_get_no_read_alloc  | Internal Disk Get No Read Allocate Count | Unsigned 32-bit integer |             |
| nep.internl_dsk_get_no_read_someon | Internal Disk Get No Read Someone        | Unsigned 32-bit integer |             |

Appendix A. Ethereal Display Filter Fields

| Field                              | Field Name                                       | Type                    | Description |
|------------------------------------|--|-------------------------|-------------|
| e_beat                             | Beat Me Count                                    |                         |             |
| ncp.internl_dsk_get_no_wait        | Internal Disk Get No Wait Count                  | Unsigned 32-bit integer |             |
| ncp.internl_dsk_get_no_wait_need   | Internal Disk Get No Wait Need To Allocate Count | Unsigned 32-bit integer |             |
| ncp.internl_dsk_get_no_wait_no_blk | Internal Disk Get No Wait No Block Count         | Unsigned 32-bit integer |             |
| ncp.internl_dsk_get_part_read      | Internal Disk Get Partial Read Count             | Unsigned 32-bit integer |             |
| ncp.internl_dsk_get_read_err       | Internal Disk Get Read Error Count               | Unsigned 32-bit integer |             |
| ncp.internl_dsk_get_someone_beat   | Internal Disk Get Someone Beat My Count          | Unsigned 32-bit integer |             |
| ncp.internl_dsk_write              | Internal Disk Write Count                        | Unsigned 32-bit integer |             |
| ncp.internl_dsk_write_alloc        | Internal Disk Write Allocate Count               | Unsigned 32-bit integer |             |
| ncp.internl_dsk_write_someone_beat | Internal Disk Write Someone Beat Me Count        | Unsigned 32-bit integer |             |
| ncp.interrupt_numbers_used         | Interrupt Numbers Used                           | Unsigned 32-bit integer |             |
| ncp.invalid_control_req            | Invalid Control Request Count                    | Unsigned 32-bit integer |             |
| ncp.invalid_request_type           | Invalid Request Type Count                       | Unsigned 32-bit integer |             |
| ncp.invalid_sequence_number        | Invalid Sequence Number Count                    | Unsigned 32-bit integer |             |
| ncp.invalid_slot                   | Invalid Slot Count                               | Unsigned 32-bit integer |             |
| ncp.io_addresses_used              | IO Addresses Used                                | Byte array              |             |
| ncp.io_engine_flag                 | IO Engine Flag                                   | Boolean                 |             |
| ncp.io_error_count                 | IO Error Count                                   | Unsigned 16-bit integer |             |
| ncp.io_flag                        | IO Flag  | Unsigned 32-bit integer |             |



| Field                       | Field Name                      | Type                    | Description |
|-----------------------------|---------------------------------|-------------------------|-------------|
| ncp.ip.length               | NCP over IP length              | Unsigned 32-bit integer |             |
| ncp.ip.packetsig            | NCP over IP Packet Signature    | Byte array              |             |
| ncp.ip.replybufsize         | NCP over IP Reply Buffer Size   | Unsigned 32-bit integer |             |
| ncp.ip.signature            | NCP over IP signature           | Unsigned 32-bit integer |             |
| ncp.ip.version              | NCP over IP Version             | Unsigned 32-bit integer |             |
| ncp.ipref                   | Address Referral                | IPv4 address            |             |
| ncp.ipx_aes_event           | IPX AES Event Count             | Unsigned 32-bit integer |             |
| ncp.ipx_ecb_cancel_fail     | IPX ECB Cancel Fail Count       | Unsigned 16-bit integer |             |
| ncp.ipx_get_ecb_fail        | IPX Get ECB Fail Count          | Unsigned 32-bit integer |             |
| ncp.ipx_get_ecb_req         | IPX Get ECB Request Count       | Unsigned 32-bit integer |             |
| ncp.ipx_get_lcl_target_fail | IPX Get Local Target Fail Count | Unsigned 16-bit integer |             |
| ncp.ipx_listen_ecb          | IPX Listen ECB Count            | Unsigned 32-bit integer |             |
| ncp.ipx_malform_pkt         | IPX Malformed Packet Count      | Unsigned 16-bit integer |             |
| ncp.ipx_max_conf_sock       | IPX Max Configured Socket Count | Unsigned 16-bit integer |             |
| ncp.ipx_max_open_sock       | IPX Max Open Socket Count       | Unsigned 16-bit integer |             |
| ncp.ipx_not_my_network      | IPX Not My Network              | Unsigned 16-bit integer |             |
| ncp.ipx_open_sock_fail      | IPX Open Socket Fail Count      | Unsigned 16-bit integer |             |
| ncp.ipx_postponed_aes       | IPX Postponed AES Count         | Unsigned 16-bit integer |             |
| ncp.ipx_send_pkt            | IPX Send Packet Count           | Unsigned 32-bit integer |             |
| ncp.items_changed           | Items Changed                   | Unsigned 32-bit integer |             |

Appendix A. Ethereal Display Filter Fields

| Field                          | Field Name        | Type                    | Description |
|--------------------------------|-------------------|-------------------------|-------------|
| ncp.items_checked              | Items Checked     | Unsigned 32-bit integer |             |
| ncp.items_count                | Items Count       | Unsigned 32-bit integer |             |
| ncp.items_in_list              | Items in List     | Unsigned 32-bit integer |             |
| ncp.items_in_packet            | Items in Packet   | Unsigned 32-bit integer |             |
| ncp.job_control1_file_open     | File Open         | Boolean                 |             |
| ncp.job_control1_job_recovery  | Job Recovery      | Boolean                 |             |
| ncp.job_control1_operator_hold | Operator Hold     | Boolean                 |             |
| ncp.job_control1_resevice      | ReService Job     | Boolean                 |             |
| ncp.job_control1_user_hold     | User Hold         | Boolean                 |             |
| ncp.job_control_file_open      | File Open         | Boolean                 |             |
| ncp.job_control_flags          | Job Control Flags | Unsigned 8-bit integer  |             |
| ncp.job_control_flags_word     | Job Control Flags | Unsigned 16-bit integer |             |
| ncp.job_control_job_recovery   | Job Recovery      | Boolean                 |             |
| ncp.job_control_operator_hold  | Operator Hold     | Boolean                 |             |
| ncp.job_control_resevice       | ReService Job     | Boolean                 |             |
| ncp.job_control_user_hold      | User Hold         | Boolean                 |             |
| ncp.job_count                  | Job Count         | Unsigned 32-bit integer |             |
| ncp.job_file_handle            | Job File Handle   | Byte array              |             |
| ncp.job_file_handle_long       | Job File Handle   | Unsigned 32-bit integer |             |
| ncp.job_file_name              | Job File Name     | String                  |             |

| Field                             | Field Name                 | Type                    | Description |
|-----------------------------------|----------------------------|-------------------------|-------------|
| ncp.job_number                    | Job Number                 | Unsigned 16-bit integer |             |
| ncp.job_number_list               | Job Number List            | Unsigned 32-bit integer |             |
| ncp.job_number_long               | Job Number                 | Unsigned 32-bit integer |             |
| ncp.job_position                  | Job Position               | Unsigned 8-bit integer  |             |
| ncp.job_position_word             | Job Position               | Unsigned 16-bit integer |             |
| ncp.job_type                      | Job Type                   | Unsigned 16-bit integer |             |
| ncp.lan_driver_number             | LAN Driver Number          | Unsigned 8-bit integer  |             |
| ncp.lan_drv_bd_instance           | LAN Driver Board Instance  | Unsigned 16-bit integer |             |
| ncp.lan_drv_bd_number             | LAN Driver Board Number    | Unsigned 16-bit integer |             |
| ncp.lan_drv_card_id               | LAN Driver Card ID         | Unsigned 16-bit integer |             |
| ncp.lan_drv_card_name             | LAN Driver Card Name       | String                  |             |
| ncp.lan_drv_dma_usage1            | Primary DMA Channel        | Unsigned 8-bit integer  |             |
| ncp.lan_drv_dma_usage2            | Secondary DMA Channel      | Unsigned 8-bit integer  |             |
| ncp.lan_drv_flags                 | LAN Driver Flags           | Unsigned 16-bit integer |             |
| ncp.lan_drv_interrupt1            | Primary Interrupt Vector   | Unsigned 8-bit integer  |             |
| ncp.lan_drv_interrupt2            | Secondary Interrupt Vector | Unsigned 8-bit integer  |             |
| ncp.lan_drv_io_ports_and_ranges_1 | Primary Base I/O Port      | Unsigned 16-bit integer |             |
| ncp.lan_drv_io_ports_and_ranges_2 | Number of I/O Ports        | Unsigned 16-bit integer |             |
| ncp.lan_drv_io_ports_and_ranges_3 | Secondary Base I/O Port    | Unsigned 16-bit integer |             |
| ncp.lan_drv_io_ports_and_ranges_4 | Number of I/O Ports        | Unsigned 16-bit integer |             |

Appendix A. Ethereal Display Filter Fields

| Field                    | Field Name                      | Type                    | Description |
|--------------------------|---------------------------------|-------------------------|-------------|
| ncp.lan_drv_io_reserved  | LAN Driver IO Reserved          | Byte array              |             |
| ncp.lan_drv_line_speed   | LAN Driver Line Speed           | Unsigned 16-bit integer |             |
| ncp.lan_drv_link         | LAN Driver Link                 | Unsigned 32-bit integer |             |
| ncp.lan_drv_logical_name | LAN Driver Logical Name         | Byte array              |             |
| ncp.lan_drv_major_ver    | LAN Driver Major Version        | Unsigned 8-bit integer  |             |
| ncp.lan_drv_max_rcv_size | LAN Driver Maximum Receive Size | Unsigned 32-bit integer |             |
| ncp.lan_drv_max_size     | LAN Driver Maximum Size         | Unsigned 32-bit integer |             |
| ncp.lan_drv_media_id     | LAN Driver Media ID             | Unsigned 16-bit integer |             |
| ncp.lan_drv_mem_decode_0 | LAN Driver Memory Decode 0      | Unsigned 32-bit integer |             |
| ncp.lan_drv_mem_decode_1 | LAN Driver Memory Decode 1      | Unsigned 32-bit integer |             |
| ncp.lan_drv_mem_length_0 | LAN Driver Memory Length 0      | Unsigned 16-bit integer |             |
| ncp.lan_drv_mem_length_1 | LAN Driver Memory Length 1      | Unsigned 16-bit integer |             |
| ncp.lan_drv_minor_ver    | LAN Driver Minor Version        | Unsigned 8-bit integer  |             |
| ncp.lan_drv_rcv_size     | LAN Driver Receive Size         | Unsigned 32-bit integer |             |
| ncp.lan_drv_reserved     | LAN Driver Reserved             | Unsigned 16-bit integer |             |
| ncp.lan_drv_share        | LAN Driver Sharing Flags        | Unsigned 16-bit integer |             |
| ncp.lan_drv_slot         | LAN Driver Slot                 | Unsigned 16-bit integer |             |
| ncp.lan_drv_snd_retries  | LAN Driver Send Retries         | Unsigned 16-bit integer |             |
| ncp.lan_drv_src_route    | LAN Driver Source Routing       | Unsigned 32-bit integer |             |
| ncp.lan_drv_trans        | LAN Driver                      | Unsigned 16-bit         |             |

| Field                           | Field Name                               | Type                    | Description |
|---------------------------------|--|-------------------------|-------------|
| _time                           | Transport Time                           | integer                 |             |
| ncp.lan_dvr_cfg_major_vrs       | LAN Driver Config - Major Version        | Unsigned 8-bit integer  |             |
| ncp.lan_dvr_cfg_minor_vrs       | LAN Driver Config - Minor Version        | Unsigned 8-bit integer  |             |
| ncp.lan_dvr_mode_flags          | LAN Driver Mode Flags                    | Unsigned 8-bit integer  |             |
| ncp.lan_dvr_node_addr           | LAN Driver Node Address                  | Byte array              |             |
| ncp.large_internet_packets      | Large Internet Packets (LIP) Disabled    | Boolean                 |             |
| ncp.last_access_date            | Last Accessed Date                       | Unsigned 16-bit integer |             |
| ncp.last_access_time            | Last Accessed Time                       | Unsigned 16-bit integer |             |
| ncp.last_garbage_collect        | Last Garbage Collection                  | Unsigned 32-bit integer |             |
| ncp.last_instance               | Last Instance                            | Unsigned 32-bit integer |             |
| ncp.last_record_seen            | Last Record Seen                         | Unsigned 16-bit integer |             |
| ncp.last_search_index           | Search Index                             | Unsigned 16-bit integer |             |
| ncp.last_seen                   | Last Seen                                | Unsigned 32-bit integer |             |
| ncp.last_sequence_number        | Sequence Number                          | Unsigned 16-bit integer |             |
| ncp.last_time_rx_buff_was_alloc | Last Time a Receive Buffer was Allocated | Unsigned 32-bit integer |             |
| ncp.length                      | Packet Length                            | Unsigned 16-bit integer |             |
| ncp.level                       | Level                                    | Unsigned 8-bit integer  |             |
| ncp.lfs_counters                | LFS Counters                             | Unsigned 32-bit integer |             |
| ncp.limb_count                  | Limb Count                               | Unsigned 32-bit integer |             |

Appendix A. Ethereal Display Filter Fields

| Field                        | Field Name                 | Type                    | Description |
|------------------------------|----------------------------|-------------------------|-------------|
| ncp.limbo_data_streams_count | Limbo Data Streams Count   | Unsigned 32-bit integer |             |
| ncp.limbo_used               | Limbo Used                 | Unsigned 32-bit integer |             |
| ncp.lip_echo                 | Large Internet Packet Echo | String                  |             |
| ncp.loaded_name_spaces       | Loaded Name Spaces         | Unsigned 8-bit integer  |             |
| ncp.local_connection_id      | Local Connection ID        | Unsigned 32-bit integer |             |
| ncp.local_login_info_code    | Local Login Info Code      | Unsigned 8-bit integer  |             |
| ncp.local_max_packet_size    | Local Max Packet Size      | Unsigned 32-bit integer |             |
| ncp.local_max_recv_size      | Local Max Recv Size        | Unsigned 32-bit integer |             |
| ncp.local_max_send_size      | Local Max Send Size        | Unsigned 32-bit integer |             |
| ncp.local_target_socket      | Local Target Socket        | Unsigned 32-bit integer |             |
| ncp.lock_area_len            | Lock Area Length           | Unsigned 32-bit integer |             |
| ncp.lock_areas_start_offset  | Lock Areas Start Offset    | Unsigned 32-bit integer |             |
| ncp.lock_flag                | Lock Flag                  | Unsigned 8-bit integer  |             |
| ncp.lock_name                | Lock Name                  | String                  |             |
| ncp.lock_status              | Lock Status                | Unsigned 8-bit integer  |             |
| ncp.lock_timeout             | Lock Timeout               | Unsigned 16-bit integer |             |
| ncp.lock_type                | Lock Type                  | Unsigned 8-bit integer  |             |
| ncp.locked                   | Locked Flag                | Unsigned 8-bit integer  |             |
| ncp.log_file_flag_high       | Log File Flag (byte 2)     | Unsigned 8-bit integer  |             |
| ncp.log_file_flag_low        | Log File Flag              | Unsigned 8-bit integer  |             |

| Field                         | Field Name                | Type                    | Description |
|-------------------------------|---------------------------|-------------------------|-------------|
| ncp.log_flag_call_back        | Call Back Requested       | Boolean                 |             |
| ncp.log_flag_lock_file        | Lock File Immediately     | Boolean                 |             |
| ncp.log_ttl_rx_pkts           | Total Received Packets    | Unsigned 32-bit integer |             |
| ncp.log_ttl_tx_pkts           | Total Transmitted Packets | Unsigned 32-bit integer |             |
| ncp.logged_count              | Logged Count              | Unsigned 16-bit integer |             |
| ncp.logged_object_id          | Logged in Object ID       | Unsigned 32-bit integer |             |
| ncp.logical_connection_number | Logical Connection Number | Unsigned 16-bit integer |             |
| ncp.logical_drive_count       | Logical Drive Count       | Unsigned 8-bit integer  |             |
| ncp.logical_drive_number      | Logical Drive Number      | Unsigned 8-bit integer  |             |
| ncp.logical_lock_threshold    | LogicalLockThresh old     | Unsigned 8-bit integer  |             |
| ncp.logical_record_name       | Logical Record Name       | String                  |             |
| ncp.login_expiration_time     | Login Expiration Time     | Unsigned 32-bit integer |             |
| ncp.login_key                 | Login Key                 | Byte array              |             |
| ncp.login_name                | Login Name                | String                  |             |
| ncp.long_name                 | Long Name                 | String                  |             |
| ncp.lru_block_was_dirty       | LRU Block Was Dirty       | Unsigned 16-bit integer |             |
| ncp.lru_sit_time              | LRU Sitting Time          | Unsigned 32-bit integer |             |
| ncp.mac_attr                  | Attributes                | Unsigned 16-bit integer |             |
| ncp.mac_attr_archive          | Archive                   | Boolean                 |             |
| ncp.mac_attr_execute_only     | Execute Only              | Boolean                 |             |
| ncp.mac_attr_hidden           | Hidden                    | Boolean                 |             |

Appendix A. Ethereal Display Filter Fields

| Field                       | Field Name              | Type                    | Description |
|-----------------------------|-------------------------|-------------------------|-------------|
| en                          |                         |                         |             |
| ncp.mac_attr_index          | Index                   | Boolean                 |             |
| ncp.mac_attr_read           | Read Audit              | Boolean                 |             |
| ncp.mac_attr_readonly       | Read Only               | Boolean                 |             |
| ncp.mac_attr_share          | Shareable File          | Boolean                 |             |
| ncp.mac_attr_searchmode1    | Search Mode             | Boolean                 |             |
| ncp.mac_attr_searchmode2    | Search Mode             | Boolean                 |             |
| ncp.mac_attr_searchmode3    | Search Mode             | Boolean                 |             |
| ncp.mac_attr_subdirectory   | Subdirectory            | Boolean                 |             |
| ncp.mac_attr_system         | System                  | Boolean                 |             |
| ncp.mac_attr_transaction    | Transaction             | Boolean                 |             |
| ncp.mac_attr_writeaudit     | Write Audit             | Boolean                 |             |
| ncp.mac_backup_date         | Mac Backup Date         | Unsigned 16-bit integer |             |
| ncp.mac_backup_time         | Mac Backup Time         | Unsigned 16-bit integer |             |
| ncp.mac_base_directory_id   | Mac Base Directory ID   | Unsigned 32-bit integer |             |
| ncp.mac_create_date         | Mac Create Date         | Unsigned 16-bit integer |             |
| ncp.mac_create_time         | Mac Create Time         | Unsigned 16-bit integer |             |
| ncp.mac_destination_base_id | Mac Destination Base ID | Unsigned 32-bit integer |             |
| ncp.mac_finder_info         | Mac Finder Information  | Byte array              |             |
| ncp.mac_last_seen_id        | Mac Last Seen ID        | Unsigned 32-bit integer |             |



| Field                         | Field Name                                | Type                    | Description |
|-------------------------------|---|-------------------------|-------------|
| ncp.mac_root_ids              | MAC Root IDs                              | Unsigned 32-bit integer |             |
| ncp.mac_source_base_id        | Mac Source Base ID                        | Unsigned 32-bit integer |             |
| ncp.major_version             | Major Version                             | Unsigned 32-bit integer |             |
| ncp.map_hash_node_count       | Map Hash Node Count                       | Unsigned 32-bit integer |             |
| ncp.max_byte_cnt              | Maximum Byte Count                        | Unsigned 32-bit integer |             |
| ncp.max_bytes                 | Maximum Number of Bytes                   | Unsigned 16-bit integer |             |
| ncp.max_data_streams          | Maximum Data Streams                      | Unsigned 32-bit integer |             |
| ncp.max_dir_depth             | Maximum Directory Depth                   | Unsigned 32-bit integer |             |
| ncp.max_dirty_time            | Maximum Dirty Time                        | Unsigned 32-bit integer |             |
| ncp.max_num_of_conn           | Maximum Number of Connections             | Unsigned 32-bit integer |             |
| ncp.max_num_of_dir_cache_buff | Maximum Number Of Directory Cache Buffers | Unsigned 32-bit integer |             |
| ncp.max_num_of_lans           | Maximum Number Of LAN's                   | Unsigned 32-bit integer |             |
| ncp.max_num_of_media_types    | Maximum Number of Media Types             | Unsigned 32-bit integer |             |
| ncp.max_num_of_medias         | Maximum Number Of Media's                 | Unsigned 32-bit integer |             |
| ncp.max_num_of_nme_sps        | Maximum Number Of Name Spaces             | Unsigned 32-bit integer |             |
| ncp.max_num_of_protocols      | Maximum Number of Protocols               | Unsigned 32-bit integer |             |
| ncp.max_num_of_spool_pr       | Maximum Number Of Spool                   | Unsigned 32-bit integer |             |

Appendix A. Ethereal Display Filter Fields

| Field                       | Field Name                          | Type                    | Description |
|-----------------------------|-------------------------------------|-------------------------|-------------|
|                             | Printers                            |                         |             |
| ncp.max_num_of_stacks       | Maximum Number Of Stacks            | Unsigned 32-bit integer |             |
| ncp.max_num_of_users        | Maximum Number Of Users             | Unsigned 32-bit integer |             |
| ncp.max_num_of_vol          | Maximum Number of Volumes           | Unsigned 32-bit integer |             |
| ncp.max_phy_packet_size     | Maximum Physical Packet Size        | Unsigned 32-bit integer |             |
| ncp.max_space               | Maximum Space                       | Unsigned 16-bit integer |             |
| ncp.maxspace                | Maximum Space                       | Unsigned 32-bit integer |             |
| ncp.may_had_out_of_order    | Maybe Had Out Of Order Writes Count | Unsigned 32-bit integer |             |
| ncp.media_list              | Media List                          | Unsigned 32-bit integer |             |
| ncp.media_list_count        | Media List Count                    | Unsigned 32-bit integer |             |
| ncp.media_name              | Media Name                          | String                  |             |
| ncp.media_number            | Media Number                        | Unsigned 32-bit integer |             |
| ncp.media_object_type       | Object Type                         | Unsigned 8-bit integer  |             |
| ncp.member_name             | Member Name                         | String                  |             |
| ncp.member_type             | Member Type                         | Unsigned 16-bit integer |             |
| ncp.message_language        | NLM Language                        | Unsigned 32-bit integer |             |
| ncp.migrated_files          | Migrated Files                      | Unsigned 32-bit integer |             |
| ncp.migrated_sectors        | Migrated Sectors                    | Unsigned 32-bit integer |             |
| ncp.min_cache_report_thresh | Minimum Cache Report Threshold      | Unsigned 32-bit integer |             |
| ncp.min_nds_version         | Minimum NDS Version                 | Unsigned 32-bit integer |             |

| Field                           | Field Name                                | Type                    | Description                          |
|---------------------------------|---|-------------------------|--------------------------------------|
| ncp.min_num_of_cache_buff       | Minimum Number Of Cache Buffers           | Unsigned 32-bit integer |                                      |
| ncp.min_num_of_dir_cache_buff   | Minimum Number Of Directory Cache Buffers | Unsigned 32-bit integer |                                      |
| ncp.min_time_since_file_delete  | Minimum Time Since File Delete            | Unsigned 32-bit integer |                                      |
| ncp.minor_version               | Minor Version                             | Unsigned 32-bit integer |                                      |
| ncp.missing_data_count          | Missing Data Count                        | Unsigned 16-bit integer | Number of bytes of missing data      |
| ncp.missing_data_offset         | Missing Data Offset                       | Unsigned 32-bit integer | Offset of beginning of missing data  |
| ncp.missing_fragment_list_count | Missing Fragment List Count               | Unsigned 16-bit integer | Number of missing fragments reported |
| ncp.mixed_mode_path_flag        | Mixed Mode Path Flag                      | Unsigned 8-bit integer  |                                      |
| ncp.modified_counter            | Modified Counter                          | Unsigned 32-bit integer |                                      |
| ncp.modified_date               | Modified Date                             | Unsigned 16-bit integer |                                      |
| ncp.modified_time               | Modified Time                             | Unsigned 16-bit integer |                                      |
| ncp.modifier_id                 | Modifier ID                               | Unsigned 32-bit integer |                                      |
| ncp.modify_dos_create           | Creator ID                                | Boolean                 |                                      |
| ncp.modify_dos_delete           | Archive Date                              | Boolean                 |                                      |
| ncp.modify_dos_info_mask        | Modify DOS Info Mask                      | Unsigned 16-bit integer |                                      |
| ncp.modify_dos_inheritance      | Inheritance                               | Boolean                 |                                      |
| ncp.modify_dos_last_access      | Last Access                               | Boolean                 |                                      |
| ncp.modify_dos_max_space        | Maximum Space                             | Boolean                 |                                      |
| ncp.modify_dos_modify_date      | Modify Date                               | Boolean                 |                                      |

Appendix A. Ethereal Display Filter Fields

| Field                         | Field Name                       | Type                    | Description |
|-------------------------------|----------------------------------|-------------------------|-------------|
| mdate                         |                                  |                         |             |
| ncp.modify_dos_mid            | Modifier ID                      | Boolean                 |             |
| ncp.modify_dos_mtime          | Modify Time                      | Boolean                 |             |
| ncp.modify_dos_open           | Creation Time                    | Boolean                 |             |
| ncp.modify_dos_parent         | Archive Time                     | Boolean                 |             |
| ncp.modify_dos_read           | Attributes                       | Boolean                 |             |
| ncp.modify_dos_search         | Archiver ID                      | Boolean                 |             |
| ncp.modify_dos_write          | Creation Date                    | Boolean                 |             |
| ncp.more_flag                 | More Flag                        | Unsigned 8-bit integer  |             |
| ncp.more_properties           | More Properties                  | Unsigned 8-bit integer  |             |
| ncp.move_cache_node           | Move Cache Node Count            | Unsigned 32-bit integer |             |
| ncp.move_cache_node_from_avai | Move Cache Node From Avail Count | Unsigned 32-bit integer |             |
| ncp.moved_the_ack_bit_dn      | Moved The ACK Bit Down Count     | Unsigned 32-bit integer |             |
| ncp.mv_string                 | Attribute Name                   | String                  |             |
| ncp.name                      | Name                             | String                  |             |
| ncp.name12                    | Name                             | String                  |             |
| ncp.name_len                  | Name Space Length                | Unsigned 8-bit integer  |             |
| ncp.name_length               | Name Length                      | Unsigned 8-bit integer  |             |
| ncp.name_list                 | Name List                        | Unsigned 32-bit integer |             |
| ncp.name_space                | Name Space                       | Unsigned 8-bit integer  |             |
| ncp.name_space_name           | Name Space Name                  | String                  |             |
| ncp.name_type                 | nameType                         | Unsigned 32-bit         |             |

| Field                             | Field Name   | Type                    | Description            |
|-----------------------------------|--|-------------------------|------------------------|
|                                   |  | integer                 |                        |
| ncp.ncompletion_code              | Completion Code  | Unsigned 32-bit integer |                        |
| ncp.ncp_data_size                 | NCP Data Size  | Unsigned 32-bit integer |                        |
| ncp.ncp_extension_major_version   | NCP Extension Major Version                            | Unsigned 8-bit integer  |                        |
| ncp.ncp_extension_minor_version   | NCP Extension Minor Version                            | Unsigned 8-bit integer  |                        |
| ncp.ncp_extension_name            | NCP Extension Name                                     | String                  |                        |
| ncp.ncp_extension_number          | NCP Extension Number                                   | Unsigned 32-bit integer |                        |
| ncp.ncp_extension_numbers         | NCP Extension Numbers                                  | Unsigned 32-bit integer |                        |
| ncp.ncp_extension_revision_number | NCP Extension Revision Number                          | Unsigned 8-bit integer  |                        |
| ncp.ncp_peak_stations_in_use      | Peak Number of Connections since Server was brought up | Unsigned 32-bit integer |                        |
| ncp.ncp_stations_in_use           | Number of Workstations Connected to Server             | Unsigned 32-bit integer |                        |
| ncp.ndirty_blocks                 | Number of Dirty Blocks                                 | Unsigned 32-bit integer |                        |
| ncp.nds_aclflags                  | Attribute Constraint Flags                             | Unsigned 32-bit integer |                        |
| ncp.nds_acl_add                   | Access Control Lists to Add                            | Unsigned 32-bit integer |                        |
| ncp.nds_acl_del                   | Access Control Lists to Delete                         | Unsigned 32-bit integer |                        |
| ncp.nds_all_attr                  | All Attributes   | Unsigned 32-bit integer | Return all Attributes? |
| ncp.nds_asn1                      | ASN.1 ID   | Byte array              |                        |
| ncp.nds_attr_add                  | Attribute to Add                                       | Unsigned 32-bit integer |                        |
| ncp.nds_attr_del                  | Attribute to Delete                                    | Unsigned 32-bit integer |                        |

Appendix A. Ethereal Display Filter Fields

| Field                            | Field Name               | Type                    | Description |
|----------------------------------|--------------------------|-------------------------|-------------|
| ncp.nds_attribute_dn             | Attribute Name           | String                  |             |
| ncp.nds_attributes               | Attributes               | Unsigned 32-bit integer |             |
| ncp.nds_base                     | Base Class               | String                  |             |
| ncp.nds_base_classes             | Base Class               | String                  |             |
| ncp.nds_bit1                     | Typeless                 | Boolean                 |             |
| ncp.nds_bit10                    | Not Defined              | Boolean                 |             |
| ncp.nds_bit11                    | Not Defined              | Boolean                 |             |
| ncp.nds_bit12                    | Not Defined              | Boolean                 |             |
| ncp.nds_bit13                    | Not Defined              | Boolean                 |             |
| ncp.nds_bit14                    | Not Defined              | Boolean                 |             |
| ncp.nds_bit15                    | Not Defined              | Boolean                 |             |
| ncp.nds_bit16                    | Not Defined              | Boolean                 |             |
| ncp.nds_bit2                     | All Containers           | Boolean                 |             |
| ncp.nds_bit3                     | Slashed                  | Boolean                 |             |
| ncp.nds_bit4                     | Dotted                   | Boolean                 |             |
| ncp.nds_bit5                     | Tuned                    | Boolean                 |             |
| ncp.nds_bit6                     | Not Defined              | Boolean                 |             |
| ncp.nds_bit7                     | Not Defined              | Boolean                 |             |
| ncp.nds_bit8                     | Not Defined              | Boolean                 |             |
| ncp.nds_bit9                     | Not Defined              | Boolean                 |             |
| ncp.nds_cflags                   | Class Flags              | Unsigned 32-bit integer |             |
| ncp.nds_child_partition_id       | Child Partition Root ID  | Unsigned 32-bit integer |             |
| ncp.nds_class_definition_type    | Class Definition Type    | String                  |             |
| ncp.nds_class_filter             | Class Filter             | String                  |             |
| ncp.nds_classes                  | Classes                  | Unsigned 32-bit integer |             |
| ncp.nds_communications_transport | Communications Transport | Unsigned 32-bit integer |             |
| ncp.nds_compare_results          | Compare Results          | String                  |             |

| Field                | Field Name                   | Type                    | Description |
|----------------------|------------------------------|-------------------------|-------------|
| results              |                              |                         |             |
| ncp.nds_crc          | CRC                          | Unsigned 32-bit integer |             |
| ncp.nds_delim        | Delimiter                    | String                  |             |
| ncp.nds_depth        | Distance object is from Root | Unsigned 32-bit integer |             |
| ncp.nds_deref_base   | Dereference Base Class       | String                  |             |
| ncp.nds_ds_time      | DS Time                      | Unsigned 32-bit integer |             |
| ncp.nds_eflags       | Entry Flags                  | Unsigned 32-bit integer |             |
| ncp.nds_eid          | NDS EID                      | Unsigned 32-bit integer |             |
| ncp.nds_entry_info   | Entry Information            | Unsigned 32-bit integer |             |
| ncp.nds_es           | Input Entry Specifier        | Unsigned 32-bit integer |             |
| ncp.nds_es_rdn_count | RDN Count                    | Unsigned 32-bit integer |             |
| ncp.nds_es_seconds   | Seconds                      | Unsigned 32-bit integer |             |
| ncp.nds_es_type      | Entry Specifier Type         | String                  |             |
| ncp.nds_es_value     | Entry Specifier Value        | Unsigned 32-bit integer |             |
| ncp.nds_event_num    | Event Number                 | Unsigned 16-bit integer |             |
| ncp.nds_file_handle  | File Handle                  | Unsigned 32-bit integer |             |
| ncp.nds_file_size    | File Size                    | Unsigned 32-bit integer |             |
| ncp.nds_flags        | NDS Return Flags             | Unsigned 32-bit integer |             |
| ncp.nds_info_type    | Info Type                    | String                  |             |
| ncp.nds_iteration    | Iteration Handle             | Unsigned 32-bit integer |             |
| ncp.nds_keep         | Delete Original RDN          | Boolean                 |             |

Appendix A. Ethereal Display Filter Fields

| Field                     | Field Name                         | Type                    | Description |
|---------------------------|------------------------------------|-------------------------|-------------|
| ncp.nds_letter_ver        | Letter Version                     | Unsigned 32-bit integer |             |
| ncp.nds_lic_flags         | License Flags                      | Unsigned 32-bit integer |             |
| ncp.nds_local_partition   | Local Partition ID                 | Unsigned 32-bit integer |             |
| ncp.nds_lower             | Lower Limit Value                  | Unsigned 32-bit integer |             |
| ncp.nds_master_part_id    | Master Partition Root ID           | Unsigned 32-bit integer |             |
| ncp.nds_name              | Name                               | String                  |             |
| ncp.nds_name_filter       | Name Filter                        | String                  |             |
| ncp.nds_name_type         | Name Type                          | String                  |             |
| ncp.nds_nested_output_es  | Nested Output Entry Specifier Type | Unsigned 32-bit integer |             |
| ncp.nds_new_part_id       | New Partition Root ID              | Unsigned 32-bit integer |             |
| ncp.nds_new_rdn           | New Relative Distinguished Name    | String                  |             |
| ncp.nds_nflags            | Flags                              | Unsigned 32-bit integer |             |
| ncp.nds_num_objects       | Number of Objects to Search        | Unsigned 32-bit integer |             |
| ncp.nds_number_of_changes | Number of Attribute Changes        | Unsigned 32-bit integer |             |
| ncp.nds_os_ver            | OS Version                         | Unsigned 32-bit integer |             |
| ncp.nds_out_delimiter     | Output Delimiter                   | String                  |             |
| ncp.nds_out_es            | Output Entry Specifier             | Unsigned 32-bit integer |             |
| ncp.nds_out_es_type       | Output Entry Specifier Type        | Unsigned 32-bit integer |             |
| ncp.nds_parent            | Parent ID                          | Unsigned 32-bit integer |             |
| ncp.nds_parent_d          | Parent                             | String                  |             |



| Field                                 | Field Name                  | Type                    | Description |
|---------------------------------------|-----------------------------|-------------------------|-------------|
| n                                     | Distinguished Name          |                         |             |
| ncp.nds_partition_busy                | Partition Busy              | Boolean                 |             |
| ncp.nds_partition_root_id             | Partition Root ID           | Unsigned 32-bit integer |             |
| ncp.nds_ping_version                  | Ping Version                | Unsigned 32-bit integer |             |
| ncp.nds_privileges                    | Privileges                  | Unsigned 32-bit integer |             |
| ncp.nds_purge                         | Purge Time                  | Unsigned 32-bit integer |             |
| ncp.nds_rdn                           | RDN                         | String                  |             |
| ncp.nds_referrals                     | Referrals                   | Unsigned 32-bit integer |             |
| ncp.nds_relative_dn                   | Relative Distinguished Name | String                  |             |
| ncp.nds_replica_num                   | Replica Number              | Unsigned 16-bit integer |             |
| ncp.nds_replicas                      | Replicas                    | Unsigned 32-bit integer |             |
| ncp.nds_reply_buf                     | NDS Reply Buffer Size       | Unsigned 32-bit integer |             |
| ncp.nds_req_flags                     | Request Flags               | Unsigned 32-bit integer |             |
| ncp.nds_request_flags                 | NDS Request Flags           | Unsigned 16-bit integer |             |
| ncp.nds_request_flags_alias_ref       | Alias Referral              | Boolean                 |             |
| ncp.nds_request_flags_dn_ref          | Down Referral               | Boolean                 |             |
| ncp.nds_request_flags_local_entry     | Local Entry                 | Boolean                 |             |
| ncp.nds_request_flags_no_such_entry   | No Such Entry               | Boolean                 |             |
| ncp.nds_request_flags_output          | Output Fields               | Boolean                 |             |
| ncp.nds_request_flags_reply_data_size | Reply Data Size             | Boolean                 |             |

Appendix A. Ethereal Display Filter Fields

| Field                               | Field Name              | Type                    | Description         |
|-------------------------------------|-------------------------|-------------------------|---------------------|
| e                                   |                         |                         |                     |
| ncp.nds_request_flags_req_cnt       | Request Count           | Boolean                 |                     |
| ncp.nds_request_flags_req_data_size | Request Data Size       | Boolean                 |                     |
| ncp.nds_request_flags_trans_ref     | Transport Referral      | Boolean                 |                     |
| ncp.nds_request_flags_trans_ref2    | Transport Referral      | Boolean                 |                     |
| ncp.nds_request_flags_type_ref      | Type Referral           | Boolean                 |                     |
| ncp.nds_request_flags_up_ref        | Up Referral             | Boolean                 |                     |
| ncp.nds_result_flags                | Result Flags            | Unsigned 32-bit integer |                     |
| ncp.nds_return_all_classes          | All Classes             | String                  | Return all Classes? |
| ncp.nds_rev_count                   | Revision Count          | Unsigned 32-bit integer |                     |
| ncp.nds_rflags                      | Request Flags           | Unsigned 16-bit integer |                     |
| ncp.nds_root_dn                     | Root Distinguished Name | String                  |                     |
| ncp.nds_root_name                   | Root Most Object Name   | String                  |                     |
| ncp.nds_scope                       | Scope                   | Unsigned 32-bit integer |                     |
| ncp.nds_search_scope                | Search Scope            | String                  |                     |
| ncp.nds_status                      | NDS Status              | Unsigned 32-bit integer |                     |
| ncp.nds_stream_flags                | Streams Flags           | Unsigned 32-bit integer |                     |
| ncp.nds_stream_name                 | Stream Name             | String                  |                     |
| ncp.nds_super                       | Super Class             | String                  |                     |
| ncp.nds_syntax                      | Attribute Syntax        | String                  |                     |
| ncp.nds_tags                        | Tags                    | String                  |                     |

| Field                  | Field Name                 | Type                          | Description |
|------------------------|----------------------------|-------------------------------|-------------|
| ncp.nds_target_dn      | Target Server Name         | String                        |             |
| ncp.nds_time_delay     | Time Delay                 | Unsigned 32-bit integer       |             |
| ncp.nds_time_filter    | Time Filter                | Unsigned 32-bit integer       |             |
| ncp.nds_tree_name      | Tree Name                  | String                        |             |
| ncp.nds_tree_transport | Tree Walker Transport      | Unsigned 32-bit integer       |             |
| ncp.nds_trustee_dn     | Trustee Distinguished Name | String                        |             |
| ncp.nds_upper          | Upper Limit Value          | Unsigned 32-bit integer       |             |
| ncp.nds_ver            | NDS Version                | Unsigned 32-bit integer       |             |
| ncp.nds_version        | NDS Version                | Unsigned 32-bit integer       |             |
| ncp.nds_vflags         | Value Flags                | Unsigned 32-bit integer       |             |
| ncp.nds_vlength        | Value Length               | Unsigned 32-bit integer       |             |
| ncp.ndsdepth           | Distance from Root         | Unsigned 32-bit integer       |             |
| ncp.ndsflag            | Flags                      | Unsigned 32-bit integer       |             |
| ncp.ndsflags           | Flags                      | Unsigned 32-bit integer       |             |
| ncp.ndsfrag            | NDS Fragment Handle        | Unsigned 32-bit integer       |             |
| ncp.ndsfragsize        | NDS Fragment Size          | Unsigned 32-bit integer       |             |
| ncp.ndsmessagesize     | Message Size               | Unsigned 32-bit integer       |             |
| ncp.ndsnet             | Network                    | IPX network or server name    |             |
| ncp.ndsnode            | Node                       | 6-byte Hardware (MAC) Address |             |
| ncp.ndsport            | Port                       | Unsigned 16-bit               |             |

Appendix A. Ethereal Display Filter Fields

| Field                                | Field Name                       | Type                    | Description |
|--------------------------------------|----------------------------------|-------------------------|-------------|
|                                      |                                  | integer                 |             |
| ncp.ndsreplyerror                    | NDS Error                        | Unsigned 32-bit integer |             |
| ncp.ndsrev                           | NDS Revision                     | Unsigned 32-bit integer |             |
| ncp.ndssocket                        | Socket                           | Unsigned 16-bit integer |             |
| ncp.ndsverb                          | NDS Verb                         | Unsigned 8-bit integer  |             |
| ncp.net_id_number                    | Net ID Number                    | Unsigned 32-bit integer |             |
| ncp.net_status                       | Network Status                   | Unsigned 16-bit integer |             |
| ncp.netbios_broadcast_was_propogated | NetBIOS Broadcast Was Propogated | Unsigned 32-bit integer |             |
| ncp.netbios_propogated               | NetBIOS Propagated Count         | Unsigned 32-bit integer |             |
| ncp.netware_access_handle            | NetWare Access Handle            | Byte array              |             |
| ncp.network_address                  | Network Address                  | Unsigned 32-bit integer |             |
| ncp.network_node_address             | Network Node Address             | Byte array              |             |
| ncp.network_number                   | Network Number                   | Unsigned 32-bit integer |             |
| ncp.network_socket                   | Network Socket                   | Unsigned 16-bit integer |             |
| ncp.new_access_rights_create         | Create                           | Boolean                 |             |
| ncp.new_access_rights_delete         | Delete                           | Boolean                 |             |
| ncp.new_access_rights_mask           | New Access Rights                | Unsigned 16-bit integer |             |
| ncp.new_access_rights_modify         | Modify                           | Boolean                 |             |
| ncp.new_access_rights_open           | Open                             | Boolean                 |             |
| ncp.new_access_rights_parental       | Parental                         | Boolean                 |             |

| Field                            | Field Name            | Type                    | Description |
|----------------------------------|-----------------------|-------------------------|-------------|
| nep.new_access_rights_read       | Read                  | Boolean                 |             |
| nep.new_access_rights_search     | Search                | Boolean                 |             |
| nep.new_access_rights_supervisor | Supervisor            | Boolean                 |             |
| nep.new_access_rights_write      | Write                 | Boolean                 |             |
| nep.new_directory_id             | New Directory ID      | Unsigned 32-bit integer |             |
| nep.new_ea_handle                | New EA Handle         | Unsigned 32-bit integer |             |
| nep.new_file_name                | New File Name         | String                  |             |
| nep.new_file_name_len            | New File Name         | String                  |             |
| nep.new_file_size                | New File Size         | Unsigned 32-bit integer |             |
| nep.new_object_name              | New Object Name       | String                  |             |
| nep.new_password                 | New Password          | String                  |             |
| nep.new_path                     | New Path              | String                  |             |
| nep.new_position                 | New Position          | Unsigned 8-bit integer  |             |
| nep.next_cnt_block               | Next Count Block      | Unsigned 32-bit integer |             |
| nep.next_huge_state_info         | Next Huge State Info  | Byte array              |             |
| nep.next_limb_scan_num           | Next Limb Scan Number | Unsigned 32-bit integer |             |
| nep.next_object_id               | Next Object ID        | Unsigned 32-bit integer |             |
| nep.next_record                  | Next Record           | Unsigned 32-bit integer |             |
| nep.next_request_record          | Next Request Record   | Unsigned 16-bit integer |             |
| nep.next_search_index            | Next Search Index     | Unsigned 16-bit integer |             |

Appendix A. Ethereal Display Filter Fields

| Field                      | Field Name                     | Type                    | Description |
|----------------------------|--------------------------------|-------------------------|-------------|
| ncp.next_search_number     | Next Search Number             | Unsigned 16-bit integer |             |
| ncp.next_starting_number   | Next Starting Number           | Unsigned 32-bit integer |             |
| ncp.next_trustee_entry     | Next Trustee Entry             | Unsigned 32-bit integer |             |
| ncp.next_volume_number     | Next Volume Number             | Unsigned 32-bit integer |             |
| ncp.nlm_count              | NLM Count                      | Unsigned 32-bit integer |             |
| ncp.nlm_flags              | Flags                          | Unsigned 8-bit integer  |             |
| ncp.nlm_flags_multiple     | Can Load Multiple Times        | Boolean                 |             |
| ncp.nlm_flags_pseudo       | PseudoPreemption               | Boolean                 |             |
| ncp.nlm_flags_reentrant    | ReEntrant                      | Boolean                 |             |
| ncp.nlm_flags_synchronize  | Synchronize Start              | Boolean                 |             |
| ncp.nlm_load_options       | NLM Load Options               | Unsigned 32-bit integer |             |
| ncp.nlm_name_stringz       | NLM Name                       | String                  |             |
| ncp.nlm_number             | NLM Number                     | Unsigned 32-bit integer |             |
| ncp.nlm_numbers            | NLM Numbers                    | Unsigned 32-bit integer |             |
| ncp.nlm_start_number       | NLM Start Number               | Unsigned 32-bit integer |             |
| ncp.nlm_type               | NLM Type                       | Unsigned 8-bit integer  |             |
| ncp.nlm_in_list            | NLM's in List                  | Unsigned 32-bit integer |             |
| ncp.no_avail_connections   | No Available Connections Count | Unsigned 32-bit integer |             |
| ncp.no_ecb_available_count | No ECB Available Count         | Unsigned 32-bit integer |             |
| ncp.no_mem_for_s           | No Memory For                  | Unsigned 32-bit         |             |

| Field                                    | Field Name                               | Type                    | Description |
|--|--|-------------------------|-------------|
| tation                                   | Station Control Count                    | integer                 |             |
| ncp.no_more_memory_avail                 | No More Memory Available Count           | Unsigned 32-bit integer |             |
| ncp.no_receive_buffer                    | No Receive Buffers                       | Unsigned 16-bit integer |             |
| ncp.no_space_for_service                 | No Space For Service                     | Unsigned 16-bit integer |             |
| ncp.node                                 | Node                                     | Byte array              |             |
| ncp.node_flags                           | Node Flags                               | Unsigned 32-bit integer |             |
| ncp.non_ded_flag                         | Non Dedicated Flag                       | Boolean                 |             |
| ncp.non_freeable_avail_sub_alloc_sectors | Non Freeable Available Sub Alloc Sectors | Unsigned 32-bit integer |             |
| ncp.non_freeable_limbo_sectors           | Non Freeable Limbo Sectors               | Unsigned 32-bit integer |             |
| ncp.not_my_network                       | Not My Network                           | Unsigned 16-bit integer |             |
| ncp.not_supported_mask                   | Bit Counter Supported                    | Boolean                 |             |
| ncp.not_usable_sub_alloc_sectors         | Not Usable Sub Alloc Sectors             | Unsigned 32-bit integer |             |
| ncp.not_yet_purgeable_blocks             | Not Yet Purgeable Blocks                 | Unsigned 32-bit integer |             |
| ncp.ns_info_mask                         | Names Space Info Mask                    | Unsigned 16-bit integer |             |
| ncp.ns_info_mask_acc_date                | Access Date                              | Boolean                 |             |
| ncp.ns_info_mask_adate                   | Archive Date                             | Boolean                 |             |
| ncp.ns_info_mask_aid                     | Archiver ID                              | Boolean                 |             |
| ncp.ns_info_mask_atime                   | Archive Time                             | Boolean                 |             |
| ncp.ns_info_mask_cdate                   | Creation Date                            | Boolean                 |             |
| ncp.ns_info_mask_ctime                   | Creation Time                            | Boolean                 |             |

Appendix A. Ethereal Display Filter Fields

| Field                          | Field Name                          | Type                    | Description |
|--------------------------------|-------------------------------------|-------------------------|-------------|
| ncp.ns_info_mask_fatt          | File Attributes                     | Boolean                 |             |
| ncp.ns_info_mask_max_acc_mask  | Inheritance                         | Boolean                 |             |
| ncp.ns_info_mask_max_space     | Maximum Space                       | Boolean                 |             |
| ncp.ns_info_mask_modify        | Modify Name                         | Boolean                 |             |
| ncp.ns_info_mask_owner         | Owner ID                            | Boolean                 |             |
| ncp.ns_info_mask_update        | Update Date                         | Boolean                 |             |
| ncp.ns_info_mask_uid           | Update ID                           | Boolean                 |             |
| ncp.ns_info_mask_utime         | Update Time                         | Boolean                 |             |
| ncp.ns_specific_info           | Name Space Specific Info            | String                  |             |
| ncp.num_bytes                  | Number of Bytes                     | Unsigned 16-bit integer |             |
| ncp.num_dir_cache_buff         | Number Of Directory Cache Buffers   | Unsigned 32-bit integer |             |
| ncp.num_of_allocs              | Number of Allocations               | Unsigned 32-bit integer |             |
| ncp.num_of_cache_check_no_wait | Number Of Cache Check No Wait       | Unsigned 32-bit integer |             |
| ncp.num_of_cache_checks        | Number Of Cache Checks              | Unsigned 32-bit integer |             |
| ncp.num_of_cache_dirty_checks  | Number Of Cache Dirty Checks        | Unsigned 32-bit integer |             |
| ncp.num_of_cache_hits          | Number Of Cache Hits                | Unsigned 32-bit integer |             |
| ncp.num_of_cache_hits_no_wait  | Number Of Cache Hits No Wait        | Unsigned 32-bit integer |             |
| ncp.num_of_cc_in_pkt           | Number of Custom Counters in Packet | Unsigned 32-bit integer |             |
| ncp.num_of_checks              | Number of Checks                    | Unsigned 32-bit integer |             |



| Field                              | Field Name   | Type                    | Description |
|------------------------------------|--|-------------------------|-------------|
| nep.num_of_dir_cache_buff          | Number Of Directory Cache Buffers                  | Unsigned 32-bit integer |             |
| nep.num_of_dirty_cache_checks      | Number Of Dirty Cache Checks                       | Unsigned 32-bit integer |             |
| nep.num_of_entries                 | Number of Entries                                  | Unsigned 32-bit integer |             |
| nep.num_of_files_migrated          | Number Of Files Migrated                           | Unsigned 32-bit integer |             |
| nep.num_of_garb_coll               | Number of Garbage Collections                      | Unsigned 32-bit integer |             |
| nep.num_of_nep_reqs                | Number of NCP Requests since Server was brought up | Unsigned 32-bit integer |             |
| nep.num_of_ref_publics             | Number of Referenced Public Symbols                | Unsigned 32-bit integer |             |
| nep.num_of_segments                | Number of Segments                                 | Unsigned 32-bit integer |             |
| nep.number_of_attributes           | Number of Attributes                               | Unsigned 32-bit integer |             |
| nep.number_of_cpus                 | Number of CPU's                                    | Unsigned 32-bit integer |             |
| nep.number_of_data_streams         | Number of Data Streams                             | Unsigned 16-bit integer |             |
| nep.number_of_dynamic_memory_areas | Number Of Dynamic Memory Areas                     | Unsigned 16-bit integer |             |
| nep.number_of_entries              | Number of Entries                                  | Unsigned 8-bit integer  |             |
| nep.number_of_locks                | Number of Locks                                    | Unsigned 8-bit integer  |             |
| nep.number_of_minutes_to_delay     | Number of Minutes to Delay                         | Unsigned 32-bit integer |             |
| nep.number_of_nep_extensions       | Number Of NCP Extensions                           | Unsigned 32-bit integer |             |
| nep.number_of_name_spaces_loaded   | Number Of Name Spaces Loaded                       | Unsigned 16-bit integer |             |
| nep.number_of_pr                   | Number of  | Unsigned 8-bit          |             |

Appendix A. Ethereal Display Filter Fields

| Field                               | Field Name                     | Type                       | Description |
|-------------------------------------|--------------------------------|----------------------------|-------------|
| otocols                             | Protocols                      | integer                    |             |
| ncp.number_of_re<br>cords           | Number of<br>Records           | Unsigned 16-bit<br>integer |             |
| ncp.number_of_se<br>maphores        | Number Of<br>Semaphores        | Unsigned 16-bit<br>integer |             |
| ncp.number_of_se<br>rvice_processes | Number Of<br>Service Processes | Unsigned 8-bit<br>integer  |             |
| ncp.number_of_set<br>_categories    | Number Of Set<br>Categories    | Unsigned 32-bit<br>integer |             |
| ncp.number_of_s<br>ms               | Number Of<br>Storage Medias    | Unsigned 32-bit<br>integer |             |
| ncp.number_of_st<br>ations          | Number of<br>Stations          | Unsigned 8-bit<br>integer  |             |
| ncp.nxt_search_nu<br>m              | Next Search<br>Number          | Unsigned 32-bit<br>integer |             |
| ncp.o_c_ret_flags                   | Open Create<br>Return Flags    | Unsigned 8-bit<br>integer  |             |
| ncp.object_count                    | Object Count                   | Unsigned 32-bit<br>integer |             |
| ncp.object_flags                    | Object Flags                   | Unsigned 8-bit<br>integer  |             |
| ncp.object_has_pr<br>operites       | Object Has<br>Properties       | Unsigned 8-bit<br>integer  |             |
| ncp.object_id                       | Object ID                      | Unsigned 32-bit<br>integer |             |
| ncp.object_id_cou<br>nt             | Object ID Count                | Unsigned 16-bit<br>integer |             |
| ncp.object_id_info                  | Object Information             | Unsigned 32-bit<br>integer |             |
| ncp.object_info_rt<br>n_count       | Object Information<br>Count    | Unsigned 32-bit<br>integer |             |
| ncp.object_name                     | Object Name                    | String                     |             |
| ncp.object_name_l<br>en             | Object Name                    | String                     |             |
| ncp.object_name_s<br>tringz         | Object Name                    | String                     |             |
| ncp.object_number                   | Object Number                  | Unsigned 32-bit<br>integer |             |
| ncp.object_security                 | Object Security                | Unsigned 8-bit             |             |

| Field                                | Field Name  | Type                    | Description |
|--------------------------------------|---|-------------------------|-------------|
|                                      |   | integer                 |             |
| ncp.object_type                      | Object Type   | Unsigned 16-bit integer |             |
| ncp.old_file_name                    | Old File Name   | Byte array              |             |
| ncp.old_file_size                    | Old File Size   | Unsigned 32-bit integer |             |
| ncp.oldest_deleted_file_age_in_ticks | Oldest Deleted File Age in Ticks                                    | Unsigned 32-bit integer |             |
| ncp.open_count                       | Open Count  | Unsigned 16-bit integer |             |
| ncp.open_create_action               | Open Create Action  | Unsigned 8-bit integer  |             |
| ncp.open_create_action_compressed    | Compressed  | Boolean                 |             |
| ncp.open_create_action_created       | Created   | Boolean                 |             |
| ncp.open_create_action_opened        | Opened  | Boolean                 |             |
| ncp.open_create_action_read_only     | Read Only   | Boolean                 |             |
| ncp.open_create_action_replaced      | Replaced  | Boolean                 |             |
| ncp.open_create_mode                 | Open Create Mode  | Unsigned 8-bit integer  |             |
| ncp.open_create_mode_create          | Create new file or subdirectory (file or subdirectory cannot exist) | Boolean                 |             |
| ncp.open_create_mode_open            | Open existing file (file must exist)                                | Boolean                 |             |
| ncp.open_create_mode_oplock          | Open Callback (Op-Lock)   | Boolean                 |             |
| ncp.open_create_mode_replace         | Replace existing file   | Boolean                 |             |
| ncp.open_for_read_count              | Open For Read Count   | Unsigned 16-bit integer |             |
| ncp.open_for_write_count             | Open For Write Count  | Unsigned 16-bit integer |             |
| ncp.open_rights                      | Open Rights   | Unsigned 8-bit integer  |             |

Appendix A. Ethereal Display Filter Fields

| Field   | Field Name                                | Type                    | Description |
|---|---|-------------------------|-------------|
| ncp.open_rights_compat                        | Compatibility                             | Boolean                 |             |
| ncp.open_rights_deny_read                     | Deny Read                                 | Boolean                 |             |
| ncp.open_rights_deny_write                    | Deny Write                                | Boolean                 |             |
| ncp.open_rights_read_only                     | Read Only                                 | Boolean                 |             |
| ncp.open_rights_write_only                    | Write Only                                | Boolean                 |             |
| ncp.open_rights_write_thru                    | Write Through                             | Boolean                 |             |
| ncp.oplock_flag                               | Oplock Flag                               | Unsigned 8-bit integer  |             |
| ncp.oplock_handle                             | File Handle                               | Unsigned 16-bit integer |             |
| ncp.option_number                             | Option Number                             | Unsigned 8-bit integer  |             |
| ncp.orig_num_cache_buff                       | Original Number Of Cache Buffers          | Unsigned 32-bit integer |             |
| ncp.original_size                             | Original Size                             | Unsigned 32-bit integer |             |
| ncp.os_language_id                            | OS Language ID                            | Unsigned 8-bit integer  |             |
| ncp.os_major_version                          | OS Major Version                          | Unsigned 8-bit integer  |             |
| ncp.os_minor_version                          | OS Minor Version                          | Unsigned 8-bit integer  |             |
| ncp.os_revision                               | OS Revision                               | Unsigned 8-bit integer  |             |
| ncp.other_file_fork_fat                       | Other File Fork FAT Entry                 | Unsigned 32-bit integer |             |
| ncp.other_file_fork_size                      | Other File Fork Size                      | Unsigned 32-bit integer |             |
| ncp.outgoing_packet_discarded_no_turbo_buffer | Outgoing Packet Discarded No Turbo Buffer | Unsigned 16-bit integer |             |
| ncp.outstanding_compression_ios               | Outstanding Compression IOs               | Unsigned 32-bit integer |             |
| ncp.outstanding_ios                           | Outstanding IOs                           | Unsigned 32-bit         |             |

| Field                                  | Field Name                         | Type                    | Description                               |
|--|------------------------------------|-------------------------|---|
| os                                     |                                    | integer                 |   |
| ncp.p1type                             | NDS Parameter Type                 | Unsigned 8-bit integer  |   |
| ncp.packet_rs_too_small_count          | Receive Packet Too Small Count     | Unsigned 32-bit integer |   |
| ncp.packet_rx_misc_error_count         | Receive Packet Misc Error Count    | Unsigned 32-bit integer |   |
| ncp.packet_rx_overflow_count           | Receive Packet Overflow Count      | Unsigned 32-bit integer |   |
| ncp.packet_rx_too_big_count            | Receive Packet Too Big Count       | Unsigned 32-bit integer |   |
| ncp.packet_seqno                       | Packet Sequence Number             | Unsigned 32-bit integer | Sequence number of this packet in a burst |
| ncp.packet_tx_misc_error_count         | Transmit Packet Misc Error Count   | Unsigned 32-bit integer |   |
| ncp.packet_tx_too_big_count            | Transmit Packet Too Big Count      | Unsigned 32-bit integer |   |
| ncp.packet_tx_too_small_count          | Transmit Packet Too Small Count    | Unsigned 32-bit integer |   |
| ncp.packets_discarded_by_hop_count     | Packets Discarded By Hop Count     | Unsigned 16-bit integer |   |
| ncp.packets_discarded_unknown_net      | Packets Discarded Unknown Net      | Unsigned 16-bit integer |   |
| ncp.packets_from_invalid_connection    | Packets From Invalid Connection    | Unsigned 16-bit integer |   |
| ncp.packets_received_during_processing | Packets Received During Processing | Unsigned 16-bit integer |   |
| ncp.packets_with_bad_request_type      | Packets With Bad Request Type      | Unsigned 16-bit integer |   |
| ncp.packets_with_bad_sequence_number   | Packets With Bad Sequence Number   | Unsigned 16-bit integer |   |
| ncp.page_table_owner_flag              | Page Table Owner                   | Unsigned 32-bit integer |   |
| ncp.parent_base_id                     | Parent Base ID                     | Unsigned 32-bit integer |   |
| ncp.parent_directory                   | Parent Directory                   | Unsigned 32-bit         |   |

Appendix A. Ethereal Display Filter Fields

| Field                              | Field Name                            | Type                    | Description |
|------------------------------------|---------------------------------------|-------------------------|-------------|
| ry_base                            | Base                                  | integer                 |             |
| ncp.parent_dos_directory_base      | Parent DOS Directory Base             | Unsigned 32-bit integer |             |
| ncp.parent_id                      | Parent ID                             | Unsigned 32-bit integer |             |
| ncp.parent_object_number           | Parent Object Number                  | Unsigned 32-bit integer |             |
| ncp.password                       | Password                              | String                  |             |
| ncp.path                           | Path                                  | String                  |             |
| ncp.path_and_name                  | Path and Name                         | String                  |             |
| ncp.path_base                      | Path Base                             | Unsigned 8-bit integer  |             |
| ncp.path_component_count           | Path Component Count                  | Unsigned 16-bit integer |             |
| ncp.path_component_size            | Path Component Size                   | Unsigned 16-bit integer |             |
| ncp.path_cookie_flags              | Path Cookie Flags                     | Unsigned 16-bit integer |             |
| ncp.path_count                     | Path Count                            | Unsigned 8-bit integer  |             |
| ncp.pending_io_commands            | Pending IO Commands                   | Unsigned 16-bit integer |             |
| ncp.percent_of_volume_used_by_dirs | Percent Of Volume Used By Directories | Unsigned 32-bit integer |             |
| ncp.physical_disk_channel          | Physical Disk Channel                 | Unsigned 8-bit integer  |             |
| ncp.physical_disk_number           | Physical Disk Number                  | Unsigned 8-bit integer  |             |
| ncp.physical_drive_count           | Physical Drive Count                  | Unsigned 8-bit integer  |             |
| ncp.physical_drive_type            | Physical Drive Type                   | Unsigned 8-bit integer  |             |
| ncp.physical_lock_threshold        | Physical Lock Threshold               | Unsigned 8-bit integer  |             |
| ncp.physical_read_errors           | Physical Read Errors                  | Unsigned 16-bit integer |             |
| ncp.physical_read                  | Physical Read                         | Unsigned 32-bit         |             |

| Field                               | Field Name                            | Type                    | Description |
|-------------------------------------|---------------------------------------|-------------------------|-------------|
| _requests                           | Requests                              | integer                 |             |
| ncp.physical_write_errors           | Physical Write Errors                 | Unsigned 16-bit integer |             |
| ncp.physical_write_requests         | Physical Write Requests               | Unsigned 32-bit integer |             |
| ncp.ping_version                    | NDS Version                           | Unsigned 16-bit integer |             |
| ncp.poll_abort_count                | Poller Aborted The Connection Count   | Unsigned 32-bit integer |             |
| ncp.poll_rem_old_out_of_order       | Poller Removed Old Out Of Order Count | Unsigned 32-bit integer |             |
| ncp.positive_acknowledges_sent      | Positive Acknowledges Sent            | Unsigned 16-bit integer |             |
| ncp.post_poned_events               | Postponed Events                      | Unsigned 32-bit integer |             |
| ncp.pre_compressed_sectors          | Precompressed Sectors                 | Unsigned 32-bit integer |             |
| ncp.previous_control_packet         | Previous Control Packet Count         | Unsigned 32-bit integer |             |
| ncp.previous_record                 | Previous Record                       | Unsigned 32-bit integer |             |
| ncp.primary_entry                   | Primary Entry                         | Unsigned 32-bit integer |             |
| ncp.print_flags                     | Print Flags                           | Unsigned 8-bit integer  |             |
| ncp.print_flags_banner              | Print Banner Page                     | Boolean                 |             |
| ncp.print_flags_create              | Create                                | Boolean                 |             |
| ncp.print_flags_delete_spool        | Delete Spool File after Printing      | Boolean                 |             |
| ncp.print_flags_expand_tabs         | Expand Tabs in the File               | Boolean                 |             |
| ncp.print_flags_suppress_form_feeds | Suppress Form Feeds                   | Boolean                 |             |
| ncp.print_server_version            | Print Server Version                  | Unsigned 8-bit integer  |             |
| ncp.print_to_file_flag              | Print to File Flag                    | Boolean                 |             |

Appendix A. Ethereal Display Filter Fields

| Field                          | Field Name                 | Type                    | Description |
|--------------------------------|----------------------------|-------------------------|-------------|
| ag                             |                            |                         |             |
| ncp.printer_halted             | Printer Halted             | Unsigned 8-bit integer  |             |
| ncp.printer_offline            | Printer Off-Line           | Unsigned 8-bit integer  |             |
| ncp.priority                   | Priority                   | Unsigned 32-bit integer |             |
| ncp.privileges                 | Login Privileges           | Unsigned 32-bit integer |             |
| ncp.pro_dos_info               | Pro DOS Info               | Byte array              |             |
| ncp.processor_type             | Processor Type             | Unsigned 8-bit integer  |             |
| ncp.product_major_version      | Product Major Version      | Unsigned 16-bit integer |             |
| ncp.product_minor_version      | Product Minor Version      | Unsigned 16-bit integer |             |
| ncp.product_revision_version   | Product Revision Version   | Unsigned 8-bit integer  |             |
| ncp.projected_compression_size | Projected Compression Size | Unsigned 32-bit integer |             |
| ncp.property_data              | Property Data              | Byte array              |             |
| ncp.property_has_more_segments | Property Has More Segments | Unsigned 8-bit integer  |             |
| ncp.property_name              | Property Name              | String                  |             |
| ncp.property_name_16           | Property Name              | String                  |             |
| ncp.property_segment           | Property Segment           | Unsigned 8-bit integer  |             |
| ncp.property_type              | Property Type              | Unsigned 8-bit integer  |             |
| ncp.property_value             | Property Value             | String                  |             |
| ncp.proposed_max_size          | Proposed Max Size          | Unsigned 16-bit integer |             |
| ncp.protocol_board_num         | Protocol Board Number      | Unsigned 32-bit integer |             |
| ncp.protocol_flags             | Protocol Flags             | Unsigned 32-bit integer |             |



| Field                        | Field Name  | Type                    | Description |
|------------------------------|---|-------------------------|-------------|
| ncp.protocol_id              | Protocol ID   | Byte array              |             |
| ncp.protocol_name            | Protocol Name                                       | String                  |             |
| ncp.protocol_number          | Protocol Number                                     | Unsigned 16-bit integer |             |
| ncp.purge_c_code             | Purge Completion Code                               | Unsigned 32-bit integer |             |
| ncp.purge_count              | Purge Count   | Unsigned 32-bit integer |             |
| ncp.purge_flags              | Purge Flags   | Unsigned 16-bit integer |             |
| ncp.purge_list               | Purge List  | Unsigned 32-bit integer |             |
| ncp.purgeable_blocks         | Purgeable Blocks                                    | Unsigned 32-bit integer |             |
| ncp.qms_version              | QMS Version   | Unsigned 8-bit integer  |             |
| ncp.queue_id                 | Queue ID  | Unsigned 32-bit integer |             |
| ncp.queue_name               | Queue Name  | String                  |             |
| ncp.queue_start_position     | Queue Start Position                                | Unsigned 32-bit integer |             |
| ncp.queue_status             | Queue Status  | Unsigned 8-bit integer  |             |
| ncp.queue_status_new_jobs    | Operator does not want to add jobs to the queue     | Boolean                 |             |
| ncp.queue_status_pserver     | Operator does not want additional servers attaching | Boolean                 |             |
| ncp.queue_status_svc_jobs    | Operator does not want servers to service jobs      | Boolean                 |             |
| ncp.queue_type               | Queue Type  | Unsigned 16-bit integer |             |
| ncp.r_tag_num                | Resource Tag Number                                 | Unsigned 32-bit integer |             |
| ncp.re_mirror_current_offset | ReMirror Current Offset                             | Unsigned 32-bit integer |             |
| ncp.re_mirror_drive          | ReMirror Drive                                      | Unsigned 8-bit          |             |

Appendix A. Ethereal Display Filter Fields

| Field                          | Field Name                           | Type                    | Description |
|--------------------------------|--------------------------------------|-------------------------|-------------|
| ve_number                      | Number                               | integer                 |             |
| ncp.read_beyond_write          | Read Beyond Write                    | Unsigned 16-bit integer |             |
| ncp.read_exist_block           | Read Existing Block Count            | Unsigned 32-bit integer |             |
| ncp.read_exist_part_read       | Read Existing Partial Read Count     | Unsigned 32-bit integer |             |
| ncp.read_exist_read_err        | Read Existing Read Error Count       | Unsigned 32-bit integer |             |
| ncp.read_exist_write_wait      | Read Existing Write Wait Count       | Unsigned 32-bit integer |             |
| ncp.realloc_slot               | Re-Allocate Slot Count               | Unsigned 32-bit integer |             |
| ncp.realloc_slot_came_too_soon | Re-Allocate Slot Came Too Soon Count | Unsigned 32-bit integer |             |
| ncp.rec_lock_count             | Record Lock Count                    | Unsigned 16-bit integer |             |
| ncp.record_end                 | Record End                           | Unsigned 32-bit integer |             |
| ncp.record_in_use              | Record in Use                        | Unsigned 16-bit integer |             |
| ncp.record_start               | Record Start                         | Unsigned 32-bit integer |             |
| ncp.redirected_printer         | Redirected Printer                   | Unsigned 8-bit integer  |             |
| ncp.reexecute_request          | Re-Execute Request Count             | Unsigned 32-bit integer |             |
| ncp.ref_addcount               | Address Count                        | Unsigned 32-bit integer |             |
| ncp.ref_rec                    | Referral Record                      | Unsigned 32-bit integer |             |
| ncp.reference_count            | Reference Count                      | Unsigned 32-bit integer |             |
| ncp.relations_count            | Relations Count                      | Unsigned 16-bit integer |             |
| ncp.rem_cache_node             | Remove Cache Node Count              | Unsigned 32-bit integer |             |
| ncp.rem_cache_node_from_avail  | Remove Cache Node From Avail         | Unsigned 32-bit integer |             |

| Field                             | Field Name   | Type                    | Description |
|-----------------------------------|--|-------------------------|-------------|
|                                   | Count  |                         |             |
| ncp.remote_max_packet_size        | Remote Max Packet Size   | Unsigned 32-bit integer |             |
| ncp.remote_target_id              | Remote Target ID   | Unsigned 32-bit integer |             |
| ncp.removable_flag                | Removable Flag   | Unsigned 16-bit integer |             |
| ncp.remove_open_rights            | Remove Open Rights   | Unsigned 8-bit integer  |             |
| ncp.remove_open_rights_comp       | Compatibility  | Boolean                 |             |
| ncp.remove_open_rights_dr         | Deny Read  | Boolean                 |             |
| ncp.remove_open_rights_dw         | Deny Write   | Boolean                 |             |
| ncp.remove_open_rights_ro         | Read Only  | Boolean                 |             |
| ncp.remove_open_rights_wo         | Write Only   | Boolean                 |             |
| ncp.remove_open_rights_write_thru | Write Through  | Boolean                 |             |
| ncp.rename_flag                   | Rename Flag  | Unsigned 8-bit integer  |             |
| ncp.rename_flag_comp              | Compatability allows files that are marked read only to be opened with read/write access | Boolean                 |             |
| ncp.rename_flag_no                | Name Only renames only the specified name space entry name                               | Boolean                 |             |
| ncp.rename_flag_ren               | Rename to Myself allows file to be renamed to it's original name                         | Boolean                 |             |
| ncp.replies_cancelled             | Replies Cancelled  | Unsigned 16-bit integer |             |
| ncp.reply_cancelled               | Reply Canceled Count   | Unsigned 32-bit integer |             |

Appendix A. Ethereal Display Filter Fields

| Field                              | Field Name                          | Type                    | Description |
|------------------------------------|-------------------------------------|-------------------------|-------------|
| ncp.reply_queue_job_numbers        | Reply Queue Job Numbers             | Unsigned 32-bit integer |             |
| ncp.req_frame_num                  | Response to Request in Frame Number |                         |             |
| ncp.request_bit_map                | Request Bit Map                     | Unsigned 16-bit integer |             |
| ncp.request_bit_map_ratt           | Return Attributes                   | Boolean                 |             |
| ncp.request_bit_map_ret_acc_date   | Access Date                         | Boolean                 |             |
| ncp.request_bit_map_ret_acc_priv   | Access Privileges                   | Boolean                 |             |
| ncp.request_bit_map_ret_afp_ent    | AFP Entry ID                        | Boolean                 |             |
| ncp.request_bit_map_ret_afp_parent | AFP Parent Entry ID                 | Boolean                 |             |
| ncp.request_bit_map_ret_bak_date   | Backup Date&Time                    | Boolean                 |             |
| ncp.request_bit_map_ret_cr_date    | Creation Date                       | Boolean                 |             |
| ncp.request_bit_map_ret_data_fork  | Data Fork Length                    | Boolean                 |             |
| ncp.request_bit_map_ret_finder     | Finder Info                         | Boolean                 |             |
| ncp.request_bit_map_ret_long_nm    | Long Name                           | Boolean                 |             |
| ncp.request_bit_map_ret_mod_date   | Modify Date&Time                    | Boolean                 |             |
| ncp.request_bit_map_ret_num_off    | Number of Offspring                 | Boolean                 |             |
| ncp.request_bit_map_ret_owner      | Owner ID                            | Boolean                 |             |
| ncp.request_bit_map_ret_res_fork   | Resource Fork Length                | Boolean                 |             |
| ncp.request_bit_map_ret_short      | Short Name                          | Boolean                 |             |
| ncp.request_code                   | Request Code                        | Unsigned 8-bit integer  |             |
| ncp.requests_repro                 | Requests                            | Unsigned 16-bit         |             |

| Field                            | Field Name                                 | Type                    | Description |
|----------------------------------|--|-------------------------|-------------|
| processed                        | Reprocessed                                | integer                 |             |
| ncp.reserved                     | Reserved                                   | Unsigned 8-bit integer  |             |
| ncp.reserved10                   | Reserved                                   | Byte array              |             |
| ncp.reserved12                   | Reserved                                   | Byte array              |             |
| ncp.reserved120                  | Reserved                                   | Byte array              |             |
| ncp.reserved16                   | Reserved                                   | Byte array              |             |
| ncp.reserved2                    | Reserved                                   | Byte array              |             |
| ncp.reserved20                   | Reserved                                   | Byte array              |             |
| ncp.reserved28                   | Reserved                                   | Byte array              |             |
| ncp.reserved3                    | Reserved                                   | Byte array              |             |
| ncp.reserved36                   | Reserved                                   | Byte array              |             |
| ncp.reserved4                    | Reserved                                   | Byte array              |             |
| ncp.reserved44                   | Reserved                                   | Byte array              |             |
| ncp.reserved48                   | Reserved                                   | Byte array              |             |
| ncp.reserved51                   | Reserved                                   | Byte array              |             |
| ncp.reserved56                   | Reserved                                   | Byte array              |             |
| ncp.reserved6                    | Reserved                                   | Byte array              |             |
| ncp.reserved64                   | Reserved                                   | Byte array              |             |
| ncp.reserved8                    | Reserved                                   | Byte array              |             |
| ncp.reserved_or_directory_number | Reserved or Directory Number (see EAFlags) | Unsigned 32-bit integer |             |
| ncp.resource_count               | Resource Count                             | Unsigned 32-bit integer |             |
| ncp.resource_fork_len            | Resource Fork Length                       | Unsigned 32-bit integer |             |
| ncp.resource_fork_size           | Resource Fork Size                         | Unsigned 32-bit integer |             |
| ncp.resource_name                | Resource Name                              | String                  |             |
| ncp.resource_sig                 | Resource Signature                         | String                  |             |
| ncp.restore_time                 | Restore Time                               | Unsigned 32-bit integer |             |
| ncp.restriction                  | Disk Space                                 | Unsigned 32-bit         |             |

Appendix A. Ethereal Display Filter Fields

| Field                     | Field Name                               | Type                    | Description |
|---------------------------|--|-------------------------|-------------|
|                           | Restriction                              | integer                 |             |
| ncp.restrictions_enforced | Disk Restrictions Enforce Flag           | Unsigned 8-bit integer  |             |
| ncp.ret_info_mask         | Return Information                       | Unsigned 16-bit integer |             |
| ncp.ret_info_mask_actual  | Return Actual Information                | Boolean                 |             |
| ncp.ret_info_mask_alloc   | Return Allocation Space Information      | Boolean                 |             |
| ncp.ret_info_mask_arch    | Return Archive Information               | Boolean                 |             |
| ncp.ret_info_mask_attr    | Return Attribute Information             | Boolean                 |             |
| ncp.ret_info_mask_create  | Return Creation Information              | Boolean                 |             |
| ncp.ret_info_mask_dir     | Return Directory Information             | Boolean                 |             |
| ncp.ret_info_mask_eattr   | Return Extended Attributes Information   | Boolean                 |             |
| ncp.ret_info_mask_fname   | Return File Name Information             | Boolean                 |             |
| ncp.ret_info_mask_id      | Return ID Information                    | Boolean                 |             |
| ncp.ret_info_mask_logical | Return Logical Information               | Boolean                 |             |
| ncp.ret_info_mask_mod     | Return Modify Information                | Boolean                 |             |
| ncp.ret_info_mask_ns      | Return Name Space Information            | Boolean                 |             |
| ncp.ret_info_mask_ns_attr | Return Name Space Attributes Information | Boolean                 |             |
| ncp.ret_info_mask_rights  | Return Rights Information                | Boolean                 |             |
| ncp.ret_info_mask_size    | Return Size Information                  | Boolean                 |             |
| ncp.ret_info_mask_tspace  | Return Total Space Information           | Boolean                 |             |
| ncp.retry_tx_count        | Transmit Retry                           | Unsigned 32-bit         |             |

| Field                         | Field Name               | Type                    | Description |
|-------------------------------|--------------------------|-------------------------|-------------|
|                               | Count                    | integer                 |             |
| ncp.return_info_count         | Return Information Count | Unsigned 32-bit integer |             |
| ncp.returned_list_count       | Returned List Count      | Unsigned 32-bit integer |             |
| ncp.rev_query_flag            | Revoke Rights Query Flag | Unsigned 8-bit integer  |             |
| ncp.revent                    | Event                    | Unsigned 16-bit integer |             |
| ncp.revision                  | Revision                 | Unsigned 32-bit integer |             |
| ncp.revision_number           | Revision                 | Unsigned 8-bit integer  |             |
| ncp.rights_grant_mask         | Grant Rights             | Unsigned 8-bit integer  |             |
| ncp.rights_grant_mask_create  | Create                   | Boolean                 |             |
| ncp.rights_grant_mask_del     | Delete                   | Boolean                 |             |
| ncp.rights_grant_mask_mod     | Modify                   | Boolean                 |             |
| ncp.rights_grant_mask_open    | Open                     | Boolean                 |             |
| ncp.rights_grant_mask_parent  | Parental                 | Boolean                 |             |
| ncp.rights_grant_mask_read    | Read                     | Boolean                 |             |
| ncp.rights_grant_mask_search  | Search                   | Boolean                 |             |
| ncp.rights_grant_mask_write   | Write                    | Boolean                 |             |
| ncp.rights_revoke_mask        | Revoke Rights            | Unsigned 8-bit integer  |             |
| ncp.rights_revoke_mask_create | Create                   | Boolean                 |             |
| ncp.rights_revoke_mask_del    | Delete                   | Boolean                 |             |
| ncp.rights_revoke_mask_mod    | Modify                   | Boolean                 |             |

Appendix A. Ethereal Display Filter Fields

| Field                         | Field Name                        | Type                    | Description |
|-------------------------------|-----------------------------------|-------------------------|-------------|
| ncp.rights_revoke_mask_open   | Open                              | Boolean                 |             |
| ncp.rights_revoke_mask_parent | Parental                          | Boolean                 |             |
| ncp.rights_revoke_mask_read   | Read                              | Boolean                 |             |
| ncp.rights_revoke_mask_search | Search                            | Boolean                 |             |
| ncp.rights_revoke_mask_write  | Write                             | Boolean                 |             |
| ncp.rip_socket_number         | RIP Socket Number                 | Unsigned 16-bit integer |             |
| ncp.rnum                      | Replica Number                    | Unsigned 16-bit integer |             |
| ncp.route_hops                | Hop Count                         | Unsigned 16-bit integer |             |
| ncp.route_time                | Route Time                        | Unsigned 16-bit integer |             |
| ncp.router_dn_flag            | Router Down Flag                  | Boolean                 |             |
| ncp.rpc_c_code                | RPC Completion Code               | Unsigned 16-bit integer |             |
| ncp.rpy_nearest_server_flag   | Reply to Nearest Server Flag      | Boolean                 |             |
| ncp.rstate                    | Replica State                     | String                  |             |
| ncp.rtype                     | Replica Type                      | String                  |             |
| ncp.rx_buffer_size            | Receive Buffer Size               | Unsigned 32-bit integer |             |
| ncp.rx_buffers                | Receive Buffers                   | Unsigned 32-bit integer |             |
| ncp.rx_buffers_75             | Receive Buffers Warning Level     | Unsigned 32-bit integer |             |
| ncp.rx_buffers_checked_out    | Receive Buffers Checked Out Count | Unsigned 32-bit integer |             |
| ncp.s_day                     | Day                               | Unsigned 8-bit integer  |             |
| ncp.s_day_of_week             | Day of Week                       | Unsigned 8-bit integer  |             |
| ncp.s_hour                    | Hour                              | Unsigned 8-bit          |             |



| Field                             | Field Name                         | Type                    | Description |
|-----------------------------------|------------------------------------|-------------------------|-------------|
|                                   |                                    | integer                 |             |
| ncp.s_m_info                      | Storage Media Information          | Unsigned 8-bit integer  |             |
| ncp.s_minute                      | Minutes                            | Unsigned 8-bit integer  |             |
| ncp.s_module_name                 | Storage Module Name                | String                  |             |
| ncp.s_month                       | Month                              | Unsigned 8-bit integer  |             |
| ncp.s_second                      | Seconds                            | Unsigned 8-bit integer  |             |
| ncp.salvageable_file_entry_number | Salvageable File Entry Number      | Unsigned 32-bit integer |             |
| ncp.sap_socket_number             | SAP Socket Number                  | Unsigned 16-bit integer |             |
| ncp.sattr                         | Search Attributes                  | Unsigned 8-bit integer  |             |
| ncp.sattr_archive                 | Archive                            | Boolean                 |             |
| ncp.sattr_execute_confirm         | Execute Confirm                    | Boolean                 |             |
| ncp.sattr_exonly                  | Execute-Only Files Allowed         | Boolean                 |             |
| ncp.sattr_hid                     | Hidden Files Allowed               | Boolean                 |             |
| ncp.sattr_ronly                   | Read-Only Files Allowed            | Boolean                 |             |
| ncp.sattr_shareable               | Shareable                          | Boolean                 |             |
| ncp.sattr_sub                     | Subdirectories Only                | Boolean                 |             |
| ncp.sattr_sys                     | System Files Allowed               | Boolean                 |             |
| ncp.saved_an_out_of_order_packet  | Saved An Out Of Order Packet Count | Unsigned 32-bit integer |             |
| ncp.scan_items                    | Number of Items returned from Scan | Unsigned 32-bit integer |             |
| ncp.search_att_archive            | Archive                            | Boolean                 |             |

Appendix A. Ethereal Display Filter Fields

| Field                          | Field Name                | Type                    | Description |
|--------------------------------|---------------------------|-------------------------|-------------|
| ncp.search_att_execute_confirm | Execute Confirm           | Boolean                 |             |
| ncp.search_att_execute_only    | Execute-Only              | Boolean                 |             |
| ncp.search_att_hidden          | Hidden Files Allowed      | Boolean                 |             |
| ncp.search_att_low             | Search Attributes         | Unsigned 16-bit integer |             |
| ncp.search_att_read_only       | Read-Only                 | Boolean                 |             |
| ncp.search_att_shareable       | Shareable                 | Boolean                 |             |
| ncp.search_att_sub             | Subdirectories Only       | Boolean                 |             |
| ncp.search_att_system          | System                    | Boolean                 |             |
| ncp.search_attr_all_files      | All Files and Directories | Boolean                 |             |
| ncp.search_bit_map             | Search Bit Map            | Unsigned 8-bit integer  |             |
| ncp.search_bit_map_files       | Files                     | Boolean                 |             |
| ncp.search_bit_map_hidden      | Hidden                    | Boolean                 |             |
| ncp.search_bit_map_sub         | Subdirectory              | Boolean                 |             |
| ncp.search_bit_map_sys         | System                    | Boolean                 |             |
| ncp.search_connection_number   | Search Connection Number  | Unsigned 32-bit integer |             |
| ncp.search_instance            | Search Instance           | Unsigned 32-bit integer |             |
| ncp.search_number              | Search Number             | Unsigned 32-bit integer |             |
| ncp.search_pattern             | Search Pattern            | String                  |             |
| ncp.search_sequence            | Search Sequence           | Byte array              |             |
| ncp.search_sequence_word       | Search Sequence           | Unsigned 16-bit integer |             |

| Field                            | Field Name                        | Type                    | Description |
|----------------------------------|-----------------------------------|-------------------------|-------------|
| nep.sec_rel_to_y2k               | Seconds Relative to the Year 2000 | Unsigned 32-bit integer |             |
| nep.sector_size                  | Sector Size                       | Unsigned 32-bit integer |             |
| nep.sectors_per_block            | Sectors Per Block                 | Unsigned 8-bit integer  |             |
| nep.sectors_per_cluster          | Sectors Per Cluster               | Unsigned 16-bit integer |             |
| nep.sectors_per_cluster_long     | Sectors Per Cluster               | Unsigned 32-bit integer |             |
| nep.sectors_per_track            | Sectors Per Track                 | Unsigned 8-bit integer  |             |
| nep.security_equiv_list          | Security Equivalent List          | String                  |             |
| nep.security_flag                | Security Flag                     | Unsigned 8-bit integer  |             |
| nep.security_restriction_version | Security Restriction Version      | Unsigned 8-bit integer  |             |
| nep.semaphore_handle             | Semaphore Handle                  | Unsigned 32-bit integer |             |
| nep.semaphore_name               | Semaphore Name                    | String                  |             |
| nep.semaphore_name_len           | Semaphore Name Len                | Unsigned 8-bit integer  |             |
| nep.semaphore_open_count         | Semaphore Open Count              | Unsigned 8-bit integer  |             |
| nep.semaphore_share_count        | Semaphore Share Count             | Unsigned 8-bit integer  |             |
| nep.semaphore_time_out           | Semaphore Time Out                | Unsigned 16-bit integer |             |
| nep.semaphore_value              | Semaphore Value                   | Unsigned 16-bit integer |             |
| nep.send_hold_off_message        | Send Hold Off Message Count       | Unsigned 32-bit integer |             |
| nep.send_status                  | Send Status                       | Unsigned 8-bit integer  |             |
| nep.sent_a_dup_reply             | Sent A Duplicate Reply Count      | Unsigned 32-bit integer |             |
| nep.sent_pos_ack                 | Sent Positive Acknowledge         | Unsigned 32-bit integer |             |

Appendix A. Ethereal Display Filter Fields

| Field                      | Field Name               | Type                    | Description |
|----------------------------|--------------------------|-------------------------|-------------|
|                            | Count                    |                         |             |
| ncp.seq                    | Sequence Number          | Unsigned 8-bit integer  |             |
| ncp.sequence_byte          | Sequence                 | Unsigned 8-bit integer  |             |
| ncp.sequence_number        | Sequence Number          | Unsigned 32-bit integer |             |
| ncp.server_addresses       | Server Address           | Byte array              |             |
| ncp.server_app_number      | Server App Number        | Unsigned 16-bit integer |             |
| ncp.server_id_list         | Server ID List           | Unsigned 32-bit integer |             |
| ncp.server_id_number       | Server ID                | Unsigned 32-bit integer |             |
| ncp.server_info_flags      | Server Information Flags | Unsigned 16-bit integer |             |
| ncp.server_list_flags      | Server List Flags        | Unsigned 32-bit integer |             |
| ncp.server_name            | Server Name              | String                  |             |
| ncp.server_name_len        | Server Name              | String                  |             |
| ncp.server_name_stringz    | Server Name              | String                  |             |
| ncp.server_network_address | Server Network Address   | Byte array              |             |
| ncp.server_node            | Server Node              | Byte array              |             |
| ncp.server_serial_number   | Server Serial Number     | Unsigned 32-bit integer |             |
| ncp.server_station         | Server Station           | Unsigned 8-bit integer  |             |
| ncp.server_station_list    | Server Station List      | Unsigned 8-bit integer  |             |
| ncp.server_station_long    | Server Station           | Unsigned 32-bit integer |             |
| ncp.server_status_record   | Server Status Record     | String                  |             |
| ncp.server_task_number     | Server Task Number       | Unsigned 8-bit integer  |             |

| Field                             | Field Name                     | Type                    | Description |
|-----------------------------------|--------------------------------|-------------------------|-------------|
| ncp.server_task_number_long       | Server Task Number             | Unsigned 32-bit integer |             |
| ncp.server_type                   | Server Type                    | Unsigned 16-bit integer |             |
| ncp.server_utilization            | Server Utilization             | Unsigned 32-bit integer |             |
| ncp.server_utilization_percentage | Server Utilization Percentage  | Unsigned 8-bit integer  |             |
| ncp.set_cmd_category              | Set Command Category           | Unsigned 8-bit integer  |             |
| ncp.set_cmd_flags                 | Set Command Flags              | Unsigned 8-bit integer  |             |
| ncp.set_cmd_name                  | Set Command Name               | String                  |             |
| ncp.set_cmd_type                  | Set Command Type               | Unsigned 8-bit integer  |             |
| ncp.set_cmd_value_num             | Set Command Value              | Unsigned 32-bit integer |             |
| ncp.set_cmd_value_string          | Set Command Value              | String                  |             |
| ncp.set_parm_name                 | Set Parameter Name             | String                  |             |
| ncp.sft_error_table               | SFT Error Table                | Byte array              |             |
| ncp.sft_support_level             | SFT Support Level              | Unsigned 8-bit integer  |             |
| ncp.shareable_lock_count          | Shareable Lock Count           | Unsigned 16-bit integer |             |
| ncp.shared_memory_addresses       | Shared Memory Addresses        | Byte array              |             |
| ncp.short_name                    | Short Name                     | String                  |             |
| ncp.short_stack_name              | Short Stack Name               | String                  |             |
| ncp.shouldnt_be_ack_here          | Shouldn't Be ACKing Here Count | Unsigned 32-bit integer |             |
| ncp.sibling_count                 | Sibling Count                  | Unsigned 32-bit integer |             |
| ncp.signature                     | Signature                      | Boolean                 |             |
| ncp.slot                          | Slot                           | Unsigned 8-bit          |             |

Appendix A. Ethereal Display Filter Fields

| Field                             | Field Name                         | Type                    | Description |
|-----------------------------------|------------------------------------|-------------------------|-------------|
|                                   |                                    | integer                 |             |
| ncp.sm_info_size                  | Storage Module Information Size    | Unsigned 32-bit integer |             |
| ncp.smids                         | Storage Media ID's                 | Unsigned 32-bit integer |             |
| ncp.software_description          | Software Description               | String                  |             |
| ncp.software_driver_type          | Software Driver Type               | Unsigned 8-bit integer  |             |
| ncp.software_major_version_number | Software Major Version Number      | Unsigned 8-bit integer  |             |
| ncp.software_minor_version_number | Software Minor Version Number      | Unsigned 8-bit integer  |             |
| ncp.someone_else_did_it_0         | Someone Else Did It Count 0        | Unsigned 32-bit integer |             |
| ncp.someone_else_did_it_1         | Someone Else Did It Count 1        | Unsigned 32-bit integer |             |
| ncp.someone_else_did_it_2         | Someone Else Did It Count 2        | Unsigned 32-bit integer |             |
| ncp.someone_else_using_this_file  | Someone Else Using This File Count | Unsigned 32-bit integer |             |
| ncp.source_component_count        | Source Path Component Count        | Unsigned 8-bit integer  |             |
| ncp.source_dir_handle             | Source Directory Handle            | Unsigned 8-bit integer  |             |
| ncp.source_originate_time         | Source Originate Time              | Byte array              |             |
| ncp.source_path                   | Source Path                        | String                  |             |
| ncp.source_return_time            | Source Return Time                 | Byte array              |             |
| ncp.space_migrated                | Space Migrated                     | Unsigned 32-bit integer |             |
| ncp.space_restriction_node_count  | Space Restriction Node Count       | Unsigned 32-bit integer |             |
| ncp.space_used                    | Space Used                         | Unsigned 32-bit integer |             |
| ncp.spx_abort_connection          | SPX Aborted Connection             | Unsigned 16-bit integer |             |

| Field                     | Field Name                              | Type                    | Description  |
|---------------------------|---|-------------------------|--|
| ncp.spx_bad_in_pkt        | SPX Bad In Packet Count                 | Unsigned 16-bit integer |  |
| ncp.spx_bad_listen        | SPX Bad Listen Count                    | Unsigned 16-bit integer |  |
| ncp.spx_bad_send          | SPX Bad Send Count                      | Unsigned 16-bit integer |  |
| ncp.spx_est_conn_fail     | SPX Establish Connection Fail           | Unsigned 16-bit integer |  |
| ncp.spx_est_conn_req      | SPX Establish Connection Requests       | Unsigned 16-bit integer |  |
| ncp.spx_incoming_pkt      | SPX Incoming Packet Count               | Unsigned 32-bit integer |  |
| ncp.spx_listen_conn_fail  | SPX Listen Connect Fail                 | Unsigned 16-bit integer |  |
| ncp.spx_listen_conn_req   | SPX Listen Connect Request              | Unsigned 16-bit integer |  |
| ncp.spx_listen_pkt        | SPX Listen Packet Count                 | Unsigned 32-bit integer |  |
| ncp.spx_max_conn          | SPX Max Connections Count               | Unsigned 16-bit integer |  |
| ncp.spx_max_used_conn     | SPX Max Used Connections                | Unsigned 16-bit integer |  |
| ncp.spx_no_session_listen | SPX No Session Listen ECB Count         | Unsigned 16-bit integer |  |
| ncp.spx_send              | SPX Send Count                          | Unsigned 32-bit integer |  |
| ncp.spx_send_fail         | SPX Send Fail Count                     | Unsigned 16-bit integer |  |
| ncp.spx_supp_pkt          | SPX Suppressed Packet Count             | Unsigned 16-bit integer |  |
| ncp.spx_watch_dog         | SPX Watch Dog Destination Session Count | Unsigned 16-bit integer |  |
| ncp.spx_window_choke      | SPX Window Choke Count                  | Unsigned 32-bit integer |  |
| ncp.src_connection        | Source Connection ID                    | Unsigned 32-bit integer | The workstation's connection identification number |

Appendix A. Ethereal Display Filter Fields

| Field                        | Field Name                     | Type                    | Description |
|------------------------------|--------------------------------|-------------------------|-------------|
| nep.src_name_space           | Source Name Space              | Unsigned 8-bit integer  |             |
| nep.stack_count              | Stack Count                    | Unsigned 32-bit integer |             |
| nep.stack_full_name_str      | Stack Full Name                | String                  |             |
| nep.stack_major_version      | Stack Major Version Number     | Unsigned 8-bit integer  |             |
| nep.stack_minor_version      | Stack Minor Version Number     | Unsigned 8-bit integer  |             |
| nep.stack_number             | Stack Number                   | Unsigned 32-bit integer |             |
| nep.stack_short_name         | Stack Short Name               | String                  |             |
| nep.start_connection_number  | Starting Connection Number     | Unsigned 32-bit integer |             |
| nep.start_number             | Start Number                   | Unsigned 32-bit integer |             |
| nep.start_number_flag        | Start Number Flag              | Unsigned 16-bit integer |             |
| nep.start_search_number      | Start Search Number            | Unsigned 16-bit integer |             |
| nep.start_station_error      | Start Station Error Count      | Unsigned 32-bit integer |             |
| nep.start_volume_number      | Starting Volume Number         | Unsigned 32-bit integer |             |
| nep.starting_block           | Starting Block                 | Unsigned 16-bit integer |             |
| nep.starting_number          | Starting Number                | Unsigned 32-bit integer |             |
| nep.stat_major_version       | Statistics Table Major Version | Unsigned 8-bit integer  |             |
| nep.stat_minor_version       | Statistics Table Minor Version | Unsigned 8-bit integer  |             |
| nep.stat_table_major_version | Statistics Table Major Version | Unsigned 8-bit integer  |             |
| nep.stat_table_minor_version | Statistics Table Minor Version | Unsigned 8-bit integer  |             |
| nep.station_list             | Station List                   | Unsigned 32-bit         |             |



| Field                           | Field Name                         | Type                    | Description   |
|---------------------------------|------------------------------------|-------------------------|---------------|
|                                 |                                    | integer                 |               |
| ncp.station_number              | Station Number                     | Byte array              |               |
| ncp.status                      | Status                             | Unsigned 16-bit integer |               |
| ncp.status_flag_bits            | Status Flag                        | Unsigned 32-bit integer |               |
| ncp.status_flag_bits_audit      | Audit                              | Boolean                 |               |
| ncp.status_flag_bits_comp       | Compression                        | Boolean                 |               |
| ncp.status_flag_bits_im_purge   | Immediate Purge                    | Boolean                 |               |
| ncp.status_flag_bits_migrate    | Migration                          | Boolean                 |               |
| ncp.status_flag_bits_nss        | NSS Volume                         | Boolean                 |               |
| ncp.status_flag_bits_ro         | Read Only                          | Boolean                 |               |
| ncp.status_flag_bits_suballoc   | Sub Allocation                     | Boolean                 |               |
| ncp.still_doing_the_last_req    | Still Doing The Last Request Count | Unsigned 32-bit integer |               |
| ncp.still_transmitting          | Still Transmitting Count           | Unsigned 32-bit integer |               |
| ncp.stream_type                 | Stream Type                        | Unsigned 8-bit integer  | Type of burst |
| ncp.sub_alloc_clusters          | Sub Alloc Clusters                 | Unsigned 32-bit integer |               |
| ncp.sub_alloc_freeable_clusters | Sub Alloc Freeable Clusters        | Unsigned 32-bit integer |               |
| ncp.sub_count                   | Subordinate Count                  | Unsigned 32-bit integer |               |
| ncp.sub_directory               | Subdirectory                       | Unsigned 32-bit integer |               |
| ncp.subfunc                     | SubFunction                        | Unsigned 8-bit integer  |               |
| ncp.suggested_file_size         | Suggested File Size                | Unsigned 32-bit integer |               |

| Field                        | Field Name               | Type                    | Description                           |
|------------------------------|--------------------------|-------------------------|---------------------------------------|
| ncp.support_module_id        | Support Module ID        | Unsigned 32-bit integer |                                       |
| ncp.synch_name               | Synch Name               | String                  |                                       |
| ncp.system_flags             | System Flags             | Unsigned 8-bit integer  |                                       |
| ncp.system_flags.abt         | ABT                      | Boolean                 | Is this an abort request?             |
| ncp.system_flags.eob         | EOB                      | Boolean                 | Is this the last packet of the burst? |
| ncp.system_flags.sys         | SYS                      | Boolean                 | Is this a system packet?              |
| ncp.system_interval_marker   | System Interval Marker   | Unsigned 32-bit integer |                                       |
| ncp.tab_size                 | Tab Size                 | Unsigned 8-bit integer  |                                       |
| ncp.target_client_list       | Target Client List       | Unsigned 8-bit integer  |                                       |
| ncp.target_connection_number | Target Connection Number | Unsigned 16-bit integer |                                       |
| ncp.target_dir_handle        | Target Directory Handle  | Unsigned 8-bit integer  |                                       |
| ncp.target_entry_id          | Target Entry ID          | Unsigned 32-bit integer |                                       |
| ncp.target_execution_time    | Target Execution Time    | Byte array              |                                       |
| ncp.target_file_handle       | Target File Handle       | Byte array              |                                       |
| ncp.target_file_offset       | Target File Offset       | Unsigned 32-bit integer |                                       |
| ncp.target_message           | Message                  | String                  |                                       |
| ncp.target_ptr               | Target Printer           | Unsigned 8-bit integer  |                                       |
| ncp.target_receive_time      | Target Receive Time      | Byte array              |                                       |
| ncp.target_server_id_number  | Target Server ID Number  | Unsigned 32-bit integer |                                       |
| ncp.target_transmit_time     | Target Transmit Time     | Byte array              |                                       |

| Field                           | Field Name                           | Type                    | Description                                  |
|---------------------------------|--------------------------------------|-------------------------|--|
| ncp.task                        | Task Number                          | Unsigned 8-bit integer  |  |
| ncp.task_num_byte               | Task Number                          | Unsigned 8-bit integer  |  |
| ncp.task_number_word            | Task Number                          | Unsigned 16-bit integer |  |
| ncp.tcpref                      | Address Referral                     | IPv4 address            |  |
| ncp.text_job_description        | Text Job Description                 | String                  |  |
| ncp.thrashing_count             | Thrashing Count                      | Unsigned 16-bit integer |  |
| ncp.time                        | Time from Request                    | Time duration           | Time between request and response in seconds |
| ncp.time_to_net                 | Time To Net                          | Unsigned 16-bit integer |  |
| ncp.timeout_limit               | Timeout Limit                        | Unsigned 16-bit integer |  |
| ncp.timesync_status_active      | Time Synchronization is Active       | Boolean                 |  |
| ncp.timesync_status_ext_sync    | External Clock Status                | Boolean                 |  |
| ncp.timesync_status_external    | External Time Synchronization Active | Boolean                 |  |
| ncp.timesync_status_flags       | Timesync Status                      | Unsigned 32-bit integer |  |
| ncp.timesync_status_net_sync    | Time is Synchronized to the Network  | Boolean                 |  |
| ncp.timesync_status_server_type | Time Server Type                     | Unsigned 32-bit integer |  |
| ncp.timesync_status_sync        | Time is Synchronized                 | Boolean                 |  |
| ncp.too_many_ack_frag           | Too Many ACK Fragments Count         | Unsigned 32-bit integer |  |
| ncp.too_many_hops               | Too Many Hops                        | Unsigned 16-bit integer |  |
| ncp.total_blks_to_              | Total Blocks To                      | Unsigned 32-bit         |  |

| Field                                | Field Name                       | Type                    | Description |
|--------------------------------------|----------------------------------|-------------------------|-------------|
| dcompress                            | Decompress                       | integer                 |             |
| ncp.total_blocks                     | Total Blocks                     | Unsigned 32-bit integer |             |
| ncp.total_cache_writes               | Total Cache Writes               | Unsigned 32-bit integer |             |
| ncp.total_changed_fats               | Total Changed FAT Entries        | Unsigned 32-bit integer |             |
| ncp.total_cnt_blocks                 | Total Count Blocks               | Unsigned 32-bit integer |             |
| ncp.total_common_cnts                | Total Common Counts              | Unsigned 32-bit integer |             |
| ncp.total_dir_entries                | Total Directory Entries          | Unsigned 32-bit integer |             |
| ncp.total_directory_slots            | Total Directory Slots            | Unsigned 16-bit integer |             |
| ncp.total_extended_directory_extants | Total Extended Directory Extants | Unsigned 32-bit integer |             |
| ncp.total_file_service_packets       | Total File Service Packets       | Unsigned 32-bit integer |             |
| ncp.total_files_opened               | Total Files Opened               | Unsigned 32-bit integer |             |
| ncp.total_lfs_counters               | Total LFS Counters               | Unsigned 32-bit integer |             |
| ncp.total_offspring                  | Total Offspring                  | Unsigned 16-bit integer |             |
| ncp.total_other_packets              | Total Other Packets              | Unsigned 32-bit integer |             |
| ncp.total_queue_jobs                 | Total Queue Jobs                 | Unsigned 32-bit integer |             |
| ncp.total_read_requests              | Total Read Requests              | Unsigned 32-bit integer |             |
| ncp.total_request                    | Total Requests                   | Unsigned 32-bit integer |             |
| ncp.total_request_packets            | Total Request Packets            | Unsigned 32-bit integer |             |
| ncp.total_routed_packets             | Total Routed Packets             | Unsigned 32-bit integer |             |
| ncp.total_rx_packet_count            | Total Receive Packet Count       | Unsigned 32-bit integer |             |
| ncp.total_rx_packets                 | Total Receive                    | Unsigned 32-bit         |             |

| Field                                    | Field Name                         | Type                    | Description |
|--|------------------------------------|-------------------------|-------------|
| ts                                       | Packets                            | integer                 |             |
| ncp.total_rx_pkts                        | Total Receive Packets              | Unsigned 32-bit integer |             |
| ncp.total_server_memory                  | Total Server Memory                | Unsigned 16-bit integer |             |
| ncp.total_stream_size_struct_space_alloc | Total Data Stream Disk Space Alloc | Unsigned 32-bit integer |             |
| ncp.total_trans_backed_out               | Total Transactions Backed Out      | Unsigned 32-bit integer |             |
| ncp.total_trans_performed                | Total Transactions Performed       | Unsigned 32-bit integer |             |
| ncp.total_tx_packet_count                | Total Transmit Packet Count        | Unsigned 32-bit integer |             |
| ncp.total_tx_packets                     | Total Transmit Packets             | Unsigned 32-bit integer |             |
| ncp.total_tx_pkts                        | Total Transmit Packets             | Unsigned 32-bit integer |             |
| ncp.total_unfilled_backout_requests      | Total Unfilled Backout Requests    | Unsigned 16-bit integer |             |
| ncp.total_volume_clusters                | Total Volume Clusters              | Unsigned 16-bit integer |             |
| ncp.total_write_requests                 | Total Write Requests               | Unsigned 32-bit integer |             |
| ncp.total_write_transactions_performed   | Total Write Transactions Performed | Unsigned 32-bit integer |             |
| ncp.track_on_flag                        | Track On Flag                      | Boolean                 |             |
| ncp.transaction_disk_space               | Transaction Disk Space             | Unsigned 16-bit integer |             |
| ncp.transaction_fat_allocations          | Transaction FAT Allocations        | Unsigned 32-bit integer |             |
| ncp.transaction_file_size_changes        | Transaction File Size Changes      | Unsigned 32-bit integer |             |
| ncp.transaction_files_truncated          | Transaction Files Truncated        | Unsigned 32-bit integer |             |
| ncp.transaction_number                   | Transaction Number                 | Unsigned 32-bit integer |             |
| ncp.transaction_tracking_enabled         | Transaction Tracking Enabled       | Unsigned 8-bit integer  |             |

Appendix A. Ethereal Display Filter Fields

| Field                              | Field Name                     | Type                    | Description |
|------------------------------------|--------------------------------|-------------------------|-------------|
| ncp.transaction_tracking_supported | Transaction Tracking Supported | Unsigned 8-bit integer  |             |
| ncp.transaction_volume_number      | Transaction Volume Number      | Unsigned 16-bit integer |             |
| ncp.transport_address              | Transport Address              |                         |             |
| ncp.transport_type                 | Communications Type            | Unsigned 8-bit integer  |             |
| ncp.trustee_id_set                 | Trustee ID                     | Unsigned 32-bit integer |             |
| ncp.trustee_list_node_count        | Trustee List Node Count        | Unsigned 32-bit integer |             |
| ncp.trustee_rights_create          | Create                         | Boolean                 |             |
| ncp.trustee_rights_del             | Delete                         | Boolean                 |             |
| ncp.trustee_rights_low             | Trustee Rights                 | Unsigned 16-bit integer |             |
| ncp.trustee_rights_modify          | Modify                         | Boolean                 |             |
| ncp.trustee_rights_open            | Open                           | Boolean                 |             |
| ncp.trustee_rights_parent          | Parental                       | Boolean                 |             |
| ncp.trustee_rights_read            | Read                           | Boolean                 |             |
| ncp.trustee_rights_search          | Search                         | Boolean                 |             |
| ncp.trustee_rights_super           | Supervisor                     | Boolean                 |             |
| ncp.trustee_rights_write           | Write                          | Boolean                 |             |
| ncp.trustee_set_number             | Trustee Set Number             | Unsigned 8-bit integer  |             |
| ncp.try_to_write_too_much          | Trying To Write Too Much Count | Unsigned 32-bit integer |             |
| ncp.ttl_comp_blks                  | Total Compression Blocks       | Unsigned 32-bit integer |             |
| ncp.ttl_ds_disk_sp                 | Total Streams                  | Unsigned 32-bit         |             |

| Field                             | Field Name                    | Type                    | Description      |
|-----------------------------------|-------------------------------|-------------------------|------------------|
| ace_alloc                         | Space Allocated               | integer                 |                  |
| ncp.ttl_eas                       | Total EA's                    | Unsigned 32-bit integer |                  |
| ncp.ttl_eas_data_size             | Total EA's Data Size          | Unsigned 32-bit integer |                  |
| ncp.ttl_eas_key_size              | Total EA's Key Size           | Unsigned 32-bit integer |                  |
| ncp.ttl_inter_blks                | Total Intermediate Blocks     | Unsigned 32-bit integer |                  |
| ncp.ttl_migrated_size             | Total Migrated Size           | Unsigned 32-bit integer |                  |
| ncp.ttl_num_of_rtags              | Total Number of Resource Tags | Unsigned 32-bit integer |                  |
| ncp.ttl_num_of_set_cmds           | Total Number of Set Commands  | Unsigned 32-bit integer |                  |
| ncp.ttl_pkts_routed               | Total Packets Routed          | Unsigned 32-bit integer |                  |
| ncp.ttl_pkts_srvcd                | Total Packets Serviced        | Unsigned 32-bit integer |                  |
| ncp.ttl_values_length             | Total Values Length           | Unsigned 32-bit integer |                  |
| ncp.ttl_write_data_size           | Total Write Data Size         | Unsigned 32-bit integer |                  |
| ncp.tts_flag                      | Transaction Tracking Flag     | Unsigned 16-bit integer |                  |
| ncp.tts_level                     | TTS Level                     | Unsigned 8-bit integer  |                  |
| ncp.turbo_fat_build_failed        | Turbo FAT Build Failed Count  | Unsigned 32-bit integer |                  |
| ncp.turbo_used_for_file_service   | Turbo Used For File Service   | Unsigned 16-bit integer |                  |
| ncp.type                          | Type                          | Unsigned 16-bit integer | NCP message type |
| ncp.udpref                        | Address Referral              | IPv4 address            |                  |
| ncp.uint32value                   | NDS Value                     | Unsigned 32-bit integer |                  |
| ncp.un_claimed_packets            | Unclaimed Packets             | Unsigned 32-bit integer |                  |
| ncp.un_compressable_data_streams_ | Uncompressable Data Streams   | Unsigned 32-bit         |                  |

Appendix A. Ethereal Display Filter Fields

| Field                                  | Field Name                        | Type                    | Description |
|--|-----------------------------------|-------------------------|-------------|
| count                                  | Count                             | integer                 |             |
| ncp.un_used                            | Unused                            | Unsigned 8-bit integer  |             |
| ncp.un_used_directory_entries          | Unused Directory Entries          | Unsigned 32-bit integer |             |
| ncp.un_used_extended_directory_extants | Unused Extended Directory Extants | Unsigned 32-bit integer |             |
| ncp.unclaimed_packets                  | Unclaimed Packets                 | Unsigned 32-bit integer |             |
| ncp.undefined_28                       | Undefined                         | Byte array              |             |
| ncp.undefined_8                        | Undefined                         | Byte array              |             |
| ncp.unique_id                          | Unique ID                         | Unsigned 8-bit integer  |             |
| ncp.unknown_network                    | Unknown Network                   | Unsigned 16-bit integer |             |
| ncp.unused_disk_blocks                 | Unused Disk Blocks                | Unsigned 32-bit integer |             |
| ncp.update_date                        | Update Date                       | Unsigned 16-bit integer |             |
| ncp.update_id                          | Update ID                         | Unsigned 32-bit integer |             |
| ncp.update_time                        | Update Time                       | Unsigned 16-bit integer |             |
| ncp.used_blocks                        | Used Blocks                       | Unsigned 32-bit integer |             |
| ncp.used_space                         | Used Space                        | Unsigned 32-bit integer |             |
| ncp.user_id                            | User ID                           | Unsigned 32-bit integer |             |
| ncp.user_info_audit_conn               | Audit Connection Recorded         | Boolean                 |             |
| ncp.user_info_audited                  | Audited                           | Boolean                 |             |
| ncp.user_info_being_abort              | Being Aborted                     | Boolean                 |             |
| ncp.user_info_bindery                  | Bindery Connection                | Boolean                 |             |
| ncp.user_info_dsa                      | DS Audit Connection               | Boolean                 |             |



| Field                       | Field Name              | Type                    | Description |
|-----------------------------|-------------------------|-------------------------|-------------|
| udit_conn                   | Recorded                |                         |             |
| ncp.user_info_held_req      | Held Requests           | Unsigned 32-bit integer |             |
| ncp.user_info_int_login     | Internal Login          | Boolean                 |             |
| ncp.user_info_logged_in     | Logged In               | Boolean                 |             |
| ncp.user_info_logout        | Logout in Progress      | Boolean                 |             |
| ncp.user_info_mac_station   | MAC Station             | Boolean                 |             |
| ncp.user_info_needs_sec     | Needs Security Change   | Boolean                 |             |
| ncp.user_info_temp_authen   | Temporary Authenticated | Boolean                 |             |
| ncp.user_info_ttl_bytes_rd  | Total Bytes Read        | Byte array              |             |
| ncp.user_info_ttl_bytes_wrt | Total Bytes Written     | Byte array              |             |
| ncp.user_info_use_count     | Use Count               | Unsigned 16-bit integer |             |
| ncp.user_login_authorized   | Login Status            | Unsigned 8-bit integer  |             |
| ncp.user_name               | User Name               | String                  |             |
| ncp.user_name_16            | User Name               | String                  |             |
| ncp.uts_time_in_seconds     | UTC Time in Seconds     | Unsigned 32-bit integer |             |
| ncp.valid_bfrs_reused       | Valid Buffers Reused    | Unsigned 32-bit integer |             |
| ncp.value_available         | Value Available         | Unsigned 8-bit integer  |             |
| ncp.value_bytes             | Bytes                   | Byte array              |             |
| ncp.value_string            | Value                   | String                  |             |
| ncp.vap_version             | VAP Version             | Unsigned 8-bit integer  |             |
| ncp.variable_bit_mask       | Variable Bit Mask       | Unsigned 32-bit integer |             |
| ncp.variable_bits_defined   | Variable Bits Defined   | Unsigned 16-bit integer |             |

Appendix A. Ethereal Display Filter Fields

| Field                         | Field Name                      | Type                    | Description |
|-------------------------------|---------------------------------|-------------------------|-------------|
| ncp.vconsole_rev              | Console Revision                | Unsigned 8-bit integer  |             |
| ncp.vconsole_ver              | Console Version                 | Unsigned 8-bit integer  |             |
| ncp.verb                      | Verb                            | Unsigned 32-bit integer |             |
| ncp.verb_data                 | Verb Data                       | Unsigned 8-bit integer  |             |
| ncp.version                   | Version                         | Unsigned 32-bit integer |             |
| ncp.version_number            | Version                         | Unsigned 8-bit integer  |             |
| ncp.vert_location             | Vertical Location               | Unsigned 16-bit integer |             |
| ncp.virtual_console_version   | Virtual Console Version         | Unsigned 8-bit integer  |             |
| ncp.vol_info_reply_len        | Volume Information Reply Length | Unsigned 16-bit integer |             |
| ncp.volume_active_count       | Volume Active Count             | Unsigned 32-bit integer |             |
| ncp.volume_cached_flag        | Volume Cached Flag              | Unsigned 8-bit integer  |             |
| ncp.volume_hashed_flag        | Volume Hashed Flag              | Unsigned 8-bit integer  |             |
| ncp.volume_id                 | Volume ID                       | Unsigned 32-bit integer |             |
| ncp.volume_last_modified_date | Volume Last Modified Date       | Unsigned 16-bit integer |             |
| ncp.volume_last_modified_time | Volume Last Modified Time       | Unsigned 16-bit integer |             |
| ncp.volume_mounted_flag       | Volume Mounted Flag             | Unsigned 8-bit integer  |             |
| ncp.volume_name               | Volume Name                     | String                  |             |
| ncp.volume_name_len           | Volume Name                     | String                  |             |
| ncp.volume_name_stringz       | Volume Name                     | String                  |             |
| ncp.volume_number             | Volume Number                   | Unsigned 8-bit integer  |             |

| Field                            | Field Name                            | Type                    | Description |
|----------------------------------|---------------------------------------|-------------------------|-------------|
| ncp.volume_number_long           | Volume Number                         | Unsigned 32-bit integer |             |
| ncp.volume_reference_count       | Volume Reference Count                | Unsigned 32-bit integer |             |
| ncp.volume_removable_flag        | Volume Removable Flag                 | Unsigned 8-bit integer  |             |
| ncp.volume_request_flags         | Volume Request Flags                  | Unsigned 16-bit integer |             |
| ncp.volume_segment_dev_num       | Volume Segment Device Number          | Unsigned 32-bit integer |             |
| ncp.volume_segment_offset        | Volume Segment Offset                 | Unsigned 32-bit integer |             |
| ncp.volume_segment_size          | Volume Segment Size                   | Unsigned 32-bit integer |             |
| ncp.volume_size_in_clusters      | Volume Size in Clusters               | Unsigned 32-bit integer |             |
| ncp.volume_type                  | Volume Type                           | Unsigned 16-bit integer |             |
| ncp.volume_use_count             | Volume Use Count                      | Unsigned 32-bit integer |             |
| ncp.volumes_supported_max        | Volumes Supported Max                 | Unsigned 16-bit integer |             |
| ncp.wait_node                    | Wait Node Count                       | Unsigned 32-bit integer |             |
| ncp.wait_node_alloc_fail         | Wait Node Alloc Failure Count         | Unsigned 32-bit integer |             |
| ncp.wait_on_sema                 | Wait On Semaphore Count               | Unsigned 32-bit integer |             |
| ncp.wait_till_dirty_blocks_dec   | Wait Till Dirty Blocks Decrease Count | Unsigned 32-bit integer |             |
| ncp.wait_time                    | Wait Time                             | Unsigned 32-bit integer |             |
| ncp.wasted_server_memory         | Wasted Server Memory                  | Unsigned 16-bit integer |             |
| ncp.write_curr_trans             | Write Currently Transmitting Count    | Unsigned 32-bit integer |             |
| ncp.write_didnt_need_but_req_ack | Write Didn't Need But Requested       | Unsigned 32-bit integer |             |

Appendix A. Ethereal Display Filter Fields

| Field                                  | Field Name                                  | Type                    | Description |
|--|---|-------------------------|-------------|
|  | ACK Count                                   |                         |             |
| ncp.write_didnt_need_this_frag         | Write Didn't Need This Fragment Count       | Unsigned 32-bit integer |             |
| ncp.write_dup_req                      | Write Duplicate Request Count               | Unsigned 32-bit integer |             |
| ncp.write_err                          | Write Error Count                           | Unsigned 32-bit integer |             |
| ncp.write_got_ack0                     | Write Got An ACK Count 0                    | Unsigned 32-bit integer |             |
| ncp.write_got_ack1                     | Write Got An ACK Count 1                    | Unsigned 32-bit integer |             |
| ncp.write_held_off                     | Write Held Off Count                        | Unsigned 32-bit integer |             |
| ncp.write_held_off_with_dup            | Write Held Off With Duplicate Request       | Unsigned 32-bit integer |             |
| ncp.write_inconsistent_packet_len      | Write Inconsistent Packet Lengths Count     | Unsigned 32-bit integer |             |
| ncp.write_out_of_mem_for_control_nodes | Write Out Of Memory For Control Nodes Count | Unsigned 32-bit integer |             |
| ncp.write_timeout                      | Write Time Out Count                        | Unsigned 32-bit integer |             |
| ncp.write_too_many_buf_check           | Write Too Many Buffers Checked Out Count    | Unsigned 32-bit integer |             |
| ncp.write_trashed_dup_req              | Write Trashed Duplicate Request Count       | Unsigned 32-bit integer |             |
| ncp.write_trashed_packet               | Write Trashed Packet Count                  | Unsigned 32-bit integer |             |
| ncp.wrt_blk_cnt                        | Write Block Count                           | Unsigned 32-bit integer |             |
| ncp.wrt_entire_block                   | Write Entire Block Count                    | Unsigned 32-bit integer |             |
| ncp.year                               | Year  | Unsigned 8-bit integer  |             |
| ncp.zero_ack_frag                      | Zero ACK                                    | Unsigned 32-bit         |             |

| Field | Field Name     | Type    | Description |
|-------|----------------|---------|-------------|
|       | Fragment Count | integer |             |

## Network Data Management Protocol (ndmp)

Table A-248. Network Data Management Protocol (ndmp)

| Field                   | Field Name      | Type                    | Description                                |
|-------------------------|-----------------|-------------------------|--|
| ndmp.addr.ip            | IP Address      | IPv4 address            | IP Address                                 |
| ndmp.addr.ipc           | IPC             | Byte array              | IPC identifier                             |
| ndmp.addr.loop_id       | Loop ID         | Unsigned 32-bit integer | FCAL Loop ID                               |
| ndmp.addr.tcp_port      | TCP Port        | Unsigned 32-bit integer | TCP Port                                   |
| ndmp.addr_type          | Addr Type       | Unsigned 32-bit integer | Address Type                               |
| ndmp.addr_types         | Addr Types      | No value                | List Of Address Types                      |
| ndmp.auth.challenge     | Challenge       | Byte array              | Authentication Challenge                   |
| ndmp.auth.digest        | Digest          | Byte array              | Authentication Digest                      |
| ndmp.auth.id            | ID              | String                  | ID of client authenticating                |
| ndmp.auth.password      | Password        | String                  | Password of client authenticating          |
| ndmp.auth.types         | Auth types      | No value                | Auth types                                 |
| ndmp.auth_type          | Auth Type       | Unsigned 32-bit integer | Authentication Type                        |
| ndmp.bu.destination_dir | Destination Dir | String                  | Destination directory to restore backup to |
| ndmp.bu.new_name        | New Name        | String                  | New Name                                   |
| ndmp.bu.operation       | Operation       | Unsigned 32-bit integer | BU Operation                               |
| ndmp.bu.original_path   | Original Path   | String                  | Original path where backup was created     |
| ndmp.bu.other_name      | Other Name      | String                  | Other Name                                 |
| ndmp.butype.default_env | Default Env     | No value                | Default Env's for this Butype Info         |

| Field                      | Field Name         | Type                    | Description                                     |
|----------------------------|--------------------|-------------------------|---|
| ndmp.butype.env.name       | Name               | String                  | Name for this env-variable                      |
| ndmp.butype.env.value      | Value              | String                  | Value for this env-variable                     |
| ndmp.butype.info           | Butype Info        | No value                | Butype Info                                     |
| ndmp.butype.name           | Butype Name        | String                  | Name of Butype                                  |
| ndmp.bytes_left_to_read    | Bytes left to read | Unsigned 64-bit integer | Number of bytes left to be read from the device |
| ndmp.connected             | Connected          | Unsigned 32-bit integer | Status of connection                            |
| ndmp.connected.reason      | Reason             | String                  | Textual description of the connection status    |
| ndmp.count                 | Count              | Unsigned 32-bit integer | Number of bytes/objects/operations              |
| ndmp.data                  | Data               | Byte array              | Data written/read                               |
| ndmp.data.bytes_processed  | Bytes Processed    | Unsigned 64-bit integer | Number of bytes processed                       |
| ndmp.data.est_bytes_remain | Est Bytes Remain   | Unsigned 64-bit integer | Estimated number of bytes remaining             |
| ndmp.data.est_time_remain  | Est Time Remain    | Time duration           | Estimated time remaining                        |
| ndmp.data.halted           | Halted Reason      | Unsigned 32-bit integer | Data halted reason                              |
| ndmp.data.state            | State              | Unsigned 32-bit integer | Data state                                      |
| ndmp.data.written          | Data Written       | Unsigned 64-bit integer | Number of data bytes written                    |
| ndmp.dirs                  | Dirs               | No value                | List of directories                             |
| ndmp.error                 | Error              | Unsigned 32-bit integer | Error code for this NDMP PDU                    |
| ndmp.execute_cdb.cdb_len   | CDB length         | Unsigned 32-bit integer | Length of CDB                                   |
| ndmp.execute_cdb.datain    | Data in            | Byte array              | Data transferred from the SCSI device           |
| ndmp.execute_cdb           | Data in length     | Unsigned 32-bit         | Expected length of                              |

| Field                               | Field Name        | Type                    | Description                               |
|-------------------------------------|-------------------|-------------------------|---|
| .datain_len                         |                   | integer                 | data bytes to read                        |
| ndmp.execute_cdb<br>.dataout        | Data out          | Byte array              | Data to be transferred to the SCSI device |
| ndmp.execute_cdb<br>.dataout_len    | Data out length   | Unsigned 32-bit integer | Number of bytes transferred to the device |
| ndmp.execute_cdb<br>.flags.data_in  | DATA_IN           | Boolean                 | DATA_IN                                   |
| ndmp.execute_cdb<br>.flags.data_out | DATA_OUT          | Boolean                 | DATA_OUT                                  |
| ndmp.execute_cdb<br>.sns_len        | Sense data length | Unsigned 32-bit integer | Length of sense data                      |
| ndmp.execute_cdb<br>.status         | Status            | Unsigned 8-bit integer  | SCSI status                               |
| ndmp.execute_cdb<br>.timeout        | Timeout           | Unsigned 32-bit integer | Reselect timeout, in milliseconds         |
| ndmp.file                           | File              | String                  | Name of File                              |
| ndmp.file.atime                     | atime             | Date/Time stamp         | Timestamp for atime for this file         |
| ndmp.file.ctime                     | ctime             | Date/Time stamp         | Timestamp for ctime for this file         |
| ndmp.file.fattr                     | Fattr             | Unsigned 32-bit integer | Mode for UNIX, fattr for NT               |
| ndmp.file.fh_info                   | FH Info           | Unsigned 64-bit integer | FH Info used for direct access            |
| ndmp.file.fs_type                   | File FS Type      | Unsigned 32-bit integer | Type of file permissions (UNIX or NT)     |
| ndmp.file.group                     | Group             | Unsigned 32-bit integer | GID for UNIX, NA for NT                   |
| ndmp.file.links                     | Links             | Unsigned 32-bit integer | Number of links to this file              |
| ndmp.file.mtime                     | mtime             | Date/Time stamp         | Timestamp for mtime for this file         |
| ndmp.file.names                     | File Names        | No value                | List of file names                        |
| ndmp.file.node                      | Node              | Unsigned 64-bit integer | Node used for direct access               |
| ndmp.file.owner                     | Owner             | Unsigned 32-bit integer | UID for UNIX, owner for NT                |

| Field                   | Field Name      | Type                    | Description                          |
|-------------------------|-----------------|-------------------------|--------------------------------------|
| ndmp.file.parent        | Parent          | Unsigned 64-bit integer | Parent node(directory) for this node |
| ndmp.file.size          | Size            | Unsigned 64-bit integer | File Size                            |
| ndmp.file.stats         | File Stats      | No value                | List of file stats                   |
| ndmp.file.type          | File Type       | Unsigned 32-bit integer | Type of file                         |
| ndmp.files              | Files           | No value                | List of files                        |
| ndmp.fs.avail_size      | Avail Size      | Unsigned 64-bit integer | Total available size on FS           |
| ndmp.fs.env             | Env variables   | No value                | Environment variables for FS         |
| ndmp.fs.env.name        | Name            | String                  | Name for this env-variable           |
| ndmp.fs.env.value       | Value           | String                  | Value for this env-variable          |
| ndmp.fs.info            | FS Info         | No value                | FS Info                              |
| ndmp.fs.logical_device  | Logical Device  | String                  | Name of logical device               |
| ndmp.fs.physical_device | Physical Device | String                  | Name of physical device              |
| ndmp.fs.status          | Status          | String                  | Status for this FS                   |
| ndmp.fs.total_inodes    | Total Inodes    | Unsigned 64-bit integer | Total number of inodes on FS         |
| ndmp.fs.total_size      | Total Size      | Unsigned 64-bit integer | Total size of FS                     |
| ndmp.fs.type            | Type            | String                  | Type of FS                           |
| ndmp.fs.used_inodes     | Used Inodes     | Unsigned 64-bit integer | Number of used inodes on FS          |
| ndmp.fs.used_size       | Used Size       | Unsigned 64-bit integer | Total used size of FS                |
| ndmp.halt               | Halt            | Unsigned 32-bit integer | Reason why it halted                 |
| ndmp.halt.reason        | Reason          | String                  | Textual reason for why it halted     |
| ndmp.header             | NDMP Header     | No value                | NDMP Header                          |
| ndmp.hostid             | HostID          | String                  | HostID                               |



| Field                | Field Name     | Type                    | Description                                  |
|----------------------|----------------|-------------------------|--|
| ndmp.hostname        | Hostname       | String                  | Hostname                                     |
| ndmp.log.message     | Message        | String                  | Log entry                                    |
| ndmp.log.message.id  | Message ID     | Unsigned 32-bit integer | ID of this log entry                         |
| ndmp.log.type        | Type           | Unsigned 32-bit integer | Type of log entry                            |
| ndmp.mover.mode      | Mode           | Unsigned 32-bit integer | Mover Mode                                   |
| ndmp.mover.pause     | Pause          | Unsigned 32-bit integer | Reason why the mover paused                  |
| ndmp.mover.state     | State          | Unsigned 32-bit integer | State of the selected mover                  |
| ndmp.msg             | Message        | Unsigned 32-bit integer | Type of NDMP PDU                             |
| ndmp.msg_type        | Type           | Unsigned 32-bit integer | Is this a Request or Response?               |
| ndmp.nlist           | Nlist          | No value                | List of names                                |
| ndmp.nodes           | Nodes          | No value                | List of nodes                                |
| ndmp.os.type         | OS Type        | String                  | OS Type                                      |
| ndmp.os.version      | OS Version     | String                  | OS Version                                   |
| ndmp.record.num      | Record Num     | Unsigned 32-bit integer | Number of records                            |
| ndmp.record.size     | Record Size    | Unsigned 32-bit integer | Record size in bytes                         |
| ndmp.reply_sequence  | Reply Sequence | Unsigned 32-bit integer | Reply Sequence number for NDMP PDU           |
| ndmp.resid_count     | Resid Count    | Unsigned 32-bit integer | Number of remaining bytes/objects/operations |
| ndmp.scsi.controller | Controller     | Unsigned 32-bit integer | Target Controller                            |
| ndmp.scsi.device     | Device         | String                  | Name of SCSI Device                          |
| ndmp.scsi.id         | ID             | Unsigned 32-bit integer | Target ID                                    |
| ndmp.scsi.info       | SCSI Info      | No value                | SCSI Info                                    |
| ndmp.scsi.lun        | LUN            | Unsigned 32-bit         | Target LUN                                   |

| Field                        | Field Name        | Type                    | Description                     |
|------------------------------|-------------------|-------------------------|---------------------------------|
|                              |                   | integer                 |                                 |
| ndmp.scsi.model              | Model             | String                  | Model of the SCSI device        |
| ndmp.seek.position           | Seek Position     | Unsigned 64-bit integer | Current seek position on device |
| ndmp.sequence                | Sequence          | Unsigned 32-bit integer | Sequence number for NDMP PDU    |
| ndmp.server.product          | Product           | String                  | Name of product                 |
| ndmp.server.revision         | Revision          | String                  | Revision of this product        |
| ndmp.server.vendor           | Vendor            | String                  | Name of vendor                  |
| ndmp.tape.cap.name           | Name              | String                  | Name for this env-variable      |
| ndmp.tape.cap.value          | Value             | String                  | Value for this env-variable     |
| ndmp.tape.capability         | Tape Capabilities | No value                | Tape Capabilities               |
| ndmp.tape.dev_cap            | Device Capability | No value                | Tape Device Capability          |
| ndmp.tape.device             | Device            | String                  | Name of TAPE Device             |
| ndmp.tape.info               | Tape Info         | No value                | Tape Info                       |
| ndmp.tape.model              | Model             | String                  | Model of the TAPE drive         |
| ndmp.tape.mtio.op            | Operation         | Unsigned 32-bit integer | MTIO Operation                  |
| ndmp.tape.open_mode          | Mode              | Unsigned 32-bit integer | Mode to open tape in            |
| ndmp.tape.status.block_no    | block_no          | Unsigned 32-bit integer | block_no                        |
| ndmp.tape.status.block_size  | block_size        | Unsigned 32-bit integer | block_size                      |
| ndmp.tape.status.file_num    | file_num          | Unsigned 32-bit integer | file_num                        |
| ndmp.tape.status.partition   | partition         | Unsigned 32-bit integer | partition                       |
| ndmp.tape.status.soft_errors | soft_errors       | Unsigned 32-bit         | soft_errors                     |

| Field                         | Field Name    | Type                    | Description                 |
|-------------------------------|---------------|-------------------------|-----------------------------|
| oft_errors                    |               | integer                 |                             |
| ndmp.tape.status.space_remain | space_remain  | Unsigned 64-bit integer | space_remain                |
| ndmp.tape.status.total_space  | total_space   | Unsigned 64-bit integer | total_space                 |
| ndmp.timestamp                | Time          | Date/Time stamp         | Timestamp for this NDMP PDU |
| ndmp.version                  | Version       | Unsigned 32-bit integer | Version of NDMP protocol    |
| ndmp.window.length            | Window Length | Unsigned 64-bit integer | Size of window in bytes     |
| ndmp.window.offset            | Window Offset | Unsigned 64-bit integer | Offset to window in bytes   |

## Network File System (nfs)

Table A-249. Network File System (nfs)

| Field               | Field Name      | Type                    | Description                |
|---------------------|-----------------|-------------------------|----------------------------|
| nfs.ace             | ace             | String                  | Access Control Entry       |
| nfs.aceflag4        | aceflag         | Unsigned 32-bit integer | nfs.aceflag4               |
| nfs.acemask4        | acemask         | Unsigned 32-bit integer | nfs.acemask4               |
| nfs.acetype4        | acetype         | Unsigned 32-bit integer | nfs.acetype4               |
| nfs.acl             | ACL             | No value                | Access Control List        |
| nfs.atime           | atime           | Date/Time stamp         | Access Time                |
| nfs.atime.nsec      | nano seconds    | Unsigned 32-bit integer | Access Time, Nano-seconds  |
| nfs.atime.sec       | seconds         | Unsigned 32-bit integer | Access Time, Seconds       |
| nfs.atime.usec      | micro seconds   | Unsigned 32-bit integer | Access Time, Micro-seconds |
| nfs.attr            | mand_attr       | Unsigned 32-bit integer | Mandatory Attribute        |
| nfs.bytes_per_block | bytes_per_block | Unsigned 32-bit integer | nfs.bytes_per_block        |
| nfs.call.operation  | Opcode          | Unsigned 32-bit integer | Opcode                     |

Appendix A. Ethereal Display Filter Fields

| Field                  | Field Name     | Type                    | Description                  |
|------------------------|----------------|-------------------------|------------------------------|
| nfs.callback.ident     | callback_ident | Unsigned 32-bit integer | Callback Identifier          |
| nfs.cb_location        | cb_location    | Unsigned 32-bit integer | nfs.cb_location              |
| nfs.cb_program         | cb_program     | Unsigned 32-bit integer | nfs.cb_program               |
| nfs.change_info.atomic | Atomic         | Boolean                 | Atomic                       |
| nfs.changeid4          | changeid       | Unsigned 64-bit integer | nfs.changeid4                |
| nfs.changeid4.after    | changeid       | Unsigned 64-bit integer | nfs.changeid4.after          |
| nfs.changeid4.before   | changeid       | Unsigned 64-bit integer | nfs.changeid4.before         |
| nfs.clientid           | clientid       | Unsigned 64-bit integer | Client ID                    |
| nfs.cookie3            | cookie         | Unsigned 64-bit integer | nfs.cookie3                  |
| nfs.cookie4            | cookie         | Unsigned 64-bit integer | nfs.cookie4                  |
| nfs.cookieverf4        | cookieverf     | Unsigned 64-bit integer | nfs.cookieverf4              |
| nfs.count3             | count          | Unsigned 32-bit integer | nfs.count3                   |
| nfs.count3_dircount    | dircount       | Unsigned 32-bit integer | nfs.count3_dircount          |
| nfs.count3_maxcount    | maxcount       | Unsigned 32-bit integer | nfs.count3_maxcount          |
| nfs.count4             | count          | Unsigned 32-bit integer | nfs.count4                   |
| nfs.createmode         | Create Mode    | Unsigned 32-bit integer | Create Mode                  |
| nfs.ctime              | ctime          | Date/Time stamp         | Creation Time                |
| nfs.ctime.nsec         | nano seconds   | Unsigned 32-bit integer | Creation Time, Nano-seconds  |
| nfs.ctime.sec          | seconds        | Unsigned 32-bit integer | Creation Time, Seconds       |
| nfs.ctime.usec         | micro seconds  | Unsigned 32-bit integer | Creation Time, Micro-seconds |

| <b>Field</b>         | <b>Field Name</b> | <b>Type</b>             | <b>Description</b>       |
|----------------------|-------------------|-------------------------|--------------------------|
| nfs.data             | Data              | Byte array              | Data                     |
| nfs.delegate_stateid | delegate_stateid  | Unsigned 64-bit integer | nfs.delegate_stateid     |
| nfs.delegate_type    | delegate_type     | Unsigned 32-bit integer | nfs.delegate_type        |
| nfs.dircount         | dircount          | Unsigned 32-bit integer | nfs.dircount             |
| nfs.dirlist4.eof     | eof               | Boolean                 | nfs.dirlist4.eof         |
| nfs.dtime            | time delta        | Time duration           | Time Delta               |
| nfs.dtime.nsec       | nano seconds      | Unsigned 32-bit integer | Time Delta, Nano-seconds |
| nfs.dtime.sec        | seconds           | Unsigned 32-bit integer | Time Delta, Seconds      |
| nfs.eof              | eof               | Unsigned 32-bit integer | nfs.eof                  |
| nfs.fattr.blocks     | blocks            | Unsigned 32-bit integer | nfs.fattr.blocks         |
| nfs.fattr.blocksize  | blocksize         | Unsigned 32-bit integer | nfs.fattr.blocksize      |
| nfs.fattr.fileid     | fileid            | Unsigned 32-bit integer | nfs.fattr.fileid         |
| nfs.fattr.fsid       | fsid              | Unsigned 32-bit integer | nfs.fattr.fsid           |
| nfs.fattr.gid        | gid               | Unsigned 32-bit integer | nfs.fattr.gid            |
| nfs.fattr.nlink      | nlink             | Unsigned 32-bit integer | nfs.fattr.nlink          |
| nfs.fattr.rdev       | rdev              | Unsigned 32-bit integer | nfs.fattr.rdev           |
| nfs.fattr.size       | size              | Unsigned 32-bit integer | nfs.fattr.size           |
| nfs.fattr.type       | type              | Unsigned 32-bit integer | nfs.fattr.type           |
| nfs.fattr.uid        | uid               | Unsigned 32-bit integer | nfs.fattr.uid            |
| nfs.fattr3.fileid    | fileid            | Unsigned 64-bit integer | nfs.fattr3.fileid        |
| nfs.fattr3.fsid      | fsid              | Unsigned 64-bit integer | nfs.fattr3.fsid          |

| Field                  | Field Name  | Type                    | Description            |
|------------------------|-------------|-------------------------|------------------------|
| nfs.fattr3.gid         | gid         | Unsigned 32-bit integer | nfs.fattr3.gid         |
| nfs.fattr3.nlink       | nlink       | Unsigned 32-bit integer | nfs.fattr3.nlink       |
| nfs.fattr3.rdev        | rdev        | Unsigned 32-bit integer | nfs.fattr3.rdev        |
| nfs.fattr3.size        | size        | Unsigned 64-bit integer | nfs.fattr3.size        |
| nfs.fattr3.type        | Type        | Unsigned 32-bit integer | nfs.fattr3.type        |
| nfs.fattr3.uid         | uid         | Unsigned 32-bit integer | nfs.fattr3.uid         |
| nfs.fattr3.used        | used        | Unsigned 64-bit integer | nfs.fattr3.used        |
| nfs.fattr4.aclsupport  | aclsupport  | Unsigned 32-bit integer | nfs.fattr4.aclsupport  |
| nfs.fattr4.attr_vals   | attr_vals   | Byte array              | attr_vals              |
| nfs.fattr4.fileid      | fileid      | Unsigned 64-bit integer | nfs.fattr4.fileid      |
| nfs.fattr4.files_avail | files_avail | Unsigned 64-bit integer | nfs.fattr4.files_avail |
| nfs.fattr4.files_free  | files_free  | Unsigned 64-bit integer | nfs.fattr4.files_free  |
| nfs.fattr4.files_total | files_total | Unsigned 64-bit integer | nfs.fattr4.files_total |
| nfs.fattr4.lease_time  | lease_time  | Unsigned 32-bit integer | nfs.fattr4.lease_time  |
| nfs.fattr4.maxfilesize | maxfilesize | Unsigned 64-bit integer | nfs.fattr4.maxfilesize |
| nfs.fattr4.maxlink     | maxlink     | Unsigned 32-bit integer | nfs.fattr4.maxlink     |
| nfs.fattr4.maxname     | maxname     | Unsigned 32-bit integer | nfs.fattr4.maxname     |
| nfs.fattr4.maxread     | maxread     | Unsigned 64-bit integer | nfs.fattr4.maxread     |
| nfs.fattr4.maxwrite    | maxwrite    | Unsigned 64-bit integer | nfs.fattr4.maxwrite    |
| nfs.fattr4.numlinks    | numlinks    | Unsigned 32-bit integer | nfs.fattr4.numlinks    |

| <b>Field</b>                | <b>Field Name</b>       | <b>Type</b>             | <b>Description</b>          |
|-----------------------------|-------------------------|-------------------------|-----------------------------|
| nfs.fattr4.quota_hard       | quota_hard              | Unsigned 64-bit integer | nfs.fattr4.quota_hard       |
| nfs.fattr4.quota_soft       | quota_soft              | Unsigned 64-bit integer | nfs.fattr4.quota_soft       |
| nfs.fattr4.quota_used       | quota_used              | Unsigned 64-bit integer | nfs.fattr4.quota_used       |
| nfs.fattr4.size             | size                    | Unsigned 64-bit integer | nfs.fattr4.size             |
| nfs.fattr4.space_available  | space_avail             | Unsigned 64-bit integer | nfs.fattr4.space_available  |
| nfs.fattr4.space_free       | space_free              | Unsigned 64-bit integer | nfs.fattr4.space_free       |
| nfs.fattr4.space_total      | space_total             | Unsigned 64-bit integer | nfs.fattr4.space_total      |
| nfs.fattr4.space_used       | space_used              | Unsigned 64-bit integer | nfs.fattr4.space_used       |
| nfs.fattr4_archive          | fattr4_archive          | Boolean                 | nfs.fattr4_archive          |
| nfs.fattr4_cansettime       | fattr4_cansettime       | Boolean                 | nfs.fattr4_cansettime       |
| nfs.fattr4_case_insensitive | fattr4_case_insensitive | Boolean                 | nfs.fattr4_case_insensitive |
| nfs.fattr4_case_preserving  | fattr4_case_preserving  | Boolean                 | nfs.fattr4_case_preserving  |
| nfs.fattr4_chown_restricted | fattr4_chown_restricted | Boolean                 | nfs.fattr4_chown_restricted |
| nfs.fattr4_hidden           | fattr4_hidden           | Boolean                 | nfs.fattr4_hidden           |
| nfs.fattr4_homogeneous      | fattr4_homogeneous      | Boolean                 | nfs.fattr4_homogeneous      |
| nfs.fattr4_link_support     | fattr4_link_support     | Boolean                 | nfs.fattr4_link_support     |
| nfs.fattr4_mimetype         | fattr4_mimetype         | String                  | nfs.fattr4_mimetype         |
| nfs.fattr4_named_attr       | fattr4_named_attr       | Boolean                 | nfs.fattr4_named_attr       |
| nfs.fattr4_no_trunc         | fattr4_no_trunc         | Boolean                 | nfs.fattr4_no_trunc         |
| nfs.fattr4_owner            | fattr4_owner            | String                  | nfs.fattr4_owner            |
| nfs.fattr4_owner_group      | fattr4_owner_group      | String                  | nfs.fattr4_owner_group      |
| nfs.fattr4_symlink          | fattr4_symlink          | Boolean                 | nfs.fattr4_symlink          |

| Field                     | Field Name            | Type                    | Description               |
|---------------------------|-----------------------|-------------------------|---------------------------|
| _support                  | pport                 |                         | _support                  |
| nfs.fattr4_system         | fattr4_system         | Boolean                 | nfs.fattr4_system         |
| nfs.fattr4_unique_handles | fattr4_unique_handles | Boolean                 | nfs.fattr4_unique_handles |
| nfs.fh.auth_type          | auth_type             | Unsigned 8-bit integer  | authentication type       |
| nfs.fh.dentry             | dentry                | Unsigned 32-bit integer | dentry (cookie)           |
| nfs.fh.dev                | device                | Unsigned 32-bit integer | device                    |
| nfs.fh.dirinode           | directory inode       | Unsigned 32-bit integer | directory inode           |
| nfs.fh.fileid_type        | fileid_type           | Unsigned 8-bit integer  | file ID type              |
| nfs.fh.fn                 | file number           | Unsigned 32-bit integer | file number               |
| nfs.fh.fn.generation      | generation            | Unsigned 32-bit integer | file number generation    |
| nfs.fh.fn.inode           | inode                 | Unsigned 32-bit integer | file number inode         |
| nfs.fh.fn.len             | length                | Unsigned 32-bit integer | file number length        |
| nfs.fh.fsid.inode         | inode                 | Unsigned 32-bit integer | file system inode         |
| nfs.fh.fsid.major         | major                 | Unsigned 32-bit integer | major file system ID      |
| nfs.fh.fsid.minor         | minor                 | Unsigned 32-bit integer | minor file system ID      |
| nfs.fh.fsid_type          | fsid_type             | Unsigned 8-bit integer  | file system ID type       |
| nfs.fh.fstype             | file system type      | Unsigned 32-bit integer | file system type          |
| nfs.fh.hash               | hash                  | Unsigned 32-bit integer | file handle hash          |
| nfs.fh.hp.len             | length                | Unsigned 32-bit integer | hash path length          |
| nfs.fh.length             | length                | Unsigned 32-bit integer | file handle length        |
| nfs.fh.pinode             | pseudo inode          | Unsigned 32-bit         | pseudo inode              |



| Field                  | Field Name           | Type                    | Description                     |
|------------------------|----------------------|-------------------------|---------------------------------|
|                        |                      | integer                 |                                 |
| nfs.fh.version         | version              | Unsigned 8-bit integer  | file handle layout version      |
| nfs.fh.xdev            | exported device      | Unsigned 32-bit integer | exported device                 |
| nfs.fh.xfn             | exported file number | Unsigned 32-bit integer | exported file number            |
| nfs.fh.xfn.generation  | generation           | Unsigned 32-bit integer | exported file number generation |
| nfs.fh.xfn.inode       | exported inode       | Unsigned 32-bit integer | exported file number inode      |
| nfs.fh.xfn.len         | length               | Unsigned 32-bit integer | exported file number length     |
| nfs.fh.xfsid.major     | exported major       | Unsigned 32-bit integer | exported major file system ID   |
| nfs.fh.xfsid.minor     | exported minor       | Unsigned 32-bit integer | exported minor file system ID   |
| nfs.filesize           | filesize             | Unsigned 64-bit integer | nfs.filesize                    |
| nfs.fsid4.major        | fsid4.major          | Unsigned 64-bit integer | nfs.nfstime4.fsid4.major        |
| nfs.fsid4.minor        | fsid4.minor          | Unsigned 64-bit integer | nfs.fsid4.minor                 |
| nfs.fsinfo.dtpref      | dtpref               | Unsigned 32-bit integer | Preferred REaddir request       |
| nfs.fsinfo.maxfilesize | maxfilesize          | Unsigned 64-bit integer | Maximum file size               |
| nfs.fsinfo.properties  | Properties           | Unsigned 32-bit integer | File System Properties          |
| nfs.fsinfo.rtmax       | rtmax                | Unsigned 32-bit integer | maximum READ request            |
| nfs.fsinfo.rtmult      | rtmult               | Unsigned 32-bit integer | Suggested READ multiple         |
| nfs.fsinfo.rtpref      | rtpref               | Unsigned 32-bit integer | Preferred READ request size     |
| nfs.fsinfo.wtmax       | wtmax                | Unsigned 32-bit integer | Maximum WRITE request size      |
| nfs.fsinfo.wtmult      | wtmult               | Unsigned 32-bit integer | Suggested WRITE multiple        |

| Field                          | Field Name                | Type                    | Description  |
|--------------------------------|---------------------------|-------------------------|--|
| nfs.fsinfo.wtwpref             | wtwpref                   | Unsigned 32-bit integer | Preferred WRITE request size                         |
| nfs.fsstat.invarsec            | invarsec                  | Unsigned 32-bit integer | probable number of seconds of file system invariance |
| nfs.fsstat3_resok.a bytes      | Available free bytes      | Unsigned 64-bit integer | Available free bytes                                 |
| nfs.fsstat3_resok.af files     | Available free file slots | Unsigned 64-bit integer | Available free file slots                            |
| nfs.fsstat3_resok.fb bytes     | Free bytes                | Unsigned 64-bit integer | Free bytes   |
| nfs.fsstat3_resok.ff files     | Free file slots           | Unsigned 64-bit integer | Free file slots                                      |
| nfs.fsstat3_resok.tb bytes     | Total bytes               | Unsigned 64-bit integer | Total bytes  |
| nfs.fsstat3_resok.tf files     | Total file slots          | Unsigned 64-bit integer | Total file slots                                     |
| nfs.full_name                  | Full Name                 | String                  | Full Name  |
| nfs.gid3                       | gid                       | Unsigned 32-bit integer | nfs.gid3   |
| nfs.length4                    | length                    | Unsigned 64-bit integer | nfs.length4  |
| nfs.lock.locker.new_lock_owner | new lock owner?           | Boolean                 | nfs.lock.locker.new_lock_owner                       |
| nfs.lock.reclaim               | reclaim?                  | Boolean                 | nfs.lock.reclaim                                     |
| nfs.lock_owner4                | owner                     | Byte array              | owner  |
| nfs.lock_seqid                 | lock_seqid                | Unsigned 32-bit integer | Lock Sequence ID                                     |
| nfs.locktype4                  | locktype                  | Unsigned 32-bit integer | nfs.locktype4  |
| nfs.maxcount                   | maxcount                  | Unsigned 32-bit integer | nfs.maxcount   |
| nfs.minorversion               | minorversion              | Unsigned 32-bit integer | nfs.minorversion                                     |
| nfs.mtime                      | mtime                     | Date/Time stamp         | Modify Time  |
| nfs.mtime.nsec                 | nano seconds              | Unsigned 32-bit integer | Modify Time, Nano-seconds                            |
| nfs.mtime.sec                  | seconds                   | Unsigned 32-bit integer | Modify Seconds                                       |

| Field                         | Field Name           | Type                    | Description                             |
|-------------------------------|----------------------|-------------------------|---|
| nfs.mtime.usec                | micro seconds        | Unsigned 32-bit integer | Modify Time, Micro-seconds              |
| nfs.name                      | Name                 | String                  | Name                                    |
| nfs.nfs_client_id4.id         | id                   | Byte array              | nfs.nfs_client_id4.id                   |
| nfs.nfs_ftype4                | nfs_ftype4           | Unsigned 32-bit integer | nfs.nfs_ftype4                          |
| nfs.nfstime4.nseconds         | nseconds             | Unsigned 32-bit integer | nfs.nfstime4.nseconds                   |
| nfs.nfstime4.seconds          | seconds              | Unsigned 64-bit integer | nfs.nfstime4.seconds                    |
| nfs.num_blocks                | num_blocks           | Unsigned 32-bit integer | nfs.num_blocks                          |
| nfs.offset3                   | offset               | Unsigned 64-bit integer | nfs.offset3                             |
| nfs.offset4                   | offset               | Unsigned 64-bit integer | nfs.offset4                             |
| nfs.open.claim_type           | Claim Type           | Unsigned 32-bit integer | Claim Type                              |
| nfs.open.delegation_type      | Delegation Type      | Unsigned 32-bit integer | Delegation Type                         |
| nfs.open.limit_by             | Space Limit          | Unsigned 32-bit integer | Limit By                                |
| nfs.open.opentype             | Open Type            | Unsigned 32-bit integer | Open Type                               |
| nfs.open4.share_access        | share_access         | Unsigned 32-bit integer | Share Access                            |
| nfs.open4.share_deny          | share_deny           | Unsigned 32-bit integer | Share Deny                              |
| nfs.open_owner4               | owner                | Byte array              | owner                                   |
| nfs.openattr4.createdir       | attribute dir create | Boolean                 | nfs.openattr4.createdir                 |
| nfs.pathconf.case_insensitive | case_insensitive     | Boolean                 | file names are treated case insensitive |
| nfs.pathconf.case_preserving  | case_preserving      | Boolean                 | file name cases are preserved           |
| nfs.pathconf.chown_restricted | chown_restricted     | Boolean                 | chown is restricted to root             |

| Field                     | Field Name   | Type                    | Description                  |
|---------------------------|--------------|-------------------------|------------------------------|
| nfs.pathconf.linkmax      | linkmax      | Unsigned 32-bit integer | Maximum number of hard links |
| nfs.pathconf.name_max     | name_max     | Unsigned 32-bit integer | Maximum file name length     |
| nfs.pathconf.no_trunc     | no_trunc     | Boolean                 | No long file name truncation |
| nfs.pathname.component    | Filename     | String                  | Pathname component           |
| nfs.procedure_v2          | V2 Procedure | Unsigned 32-bit integer | V2 Procedure                 |
| nfs.procedure_v3          | V3 Procedure | Unsigned 32-bit integer | V3 Procedure                 |
| nfs.procedure_v4          | V4 Procedure | Unsigned 32-bit integer | V4 Procedure                 |
| nfs.r_addr                | r_addr       | Byte array              | r_addr                       |
| nfs.r_netid               | r_netid      | Byte array              | r_netid                      |
| nfs.read.count            | Count        | Unsigned 32-bit integer | Read Count                   |
| nfs.read.eof              | EOF          | Boolean                 | EOF                          |
| nfs.read.offset           | Offset       | Unsigned 32-bit integer | Read Offset                  |
| nfs.read.totalcount       | Total Count  | Unsigned 32-bit integer | Total Count (obsolete)       |
| nfs.readdir.cookie        | Cookie       | Unsigned 32-bit integer | Directory Cookie             |
| nfs.readdir.count         | Count        | Unsigned 32-bit integer | Directory Count              |
| nfs.readdir.entry         | Entry        | No value                | Directory Entry              |
| nfs.readdir.entry.cookie  | Cookie       | Unsigned 32-bit integer | Directory Cookie             |
| nfs.readdir.entry.fileid  | File ID      | Unsigned 32-bit integer | File ID                      |
| nfs.readdir.entry.name    | Name         | String                  | Name                         |
| nfs.readdir.entry3.cookie | Cookie       | Unsigned 64-bit integer | Directory Cookie             |
| nfs.readdir.entry3.fileid | File ID      | Unsigned 64-bit integer | File ID                      |
| nfs.readdir.entry3.name   | Name         | String                  | Name                         |

| Field                                       | Field Name  | Type                    | Description        |
|---|-------------|-------------------------|--------------------|
| name  |             |                         |                    |
| nfs.readdir.eof                             | EOF         | Unsigned 32-bit integer | EOF                |
| nfs.readdirplus.entry.cookie                | Cookie      | Unsigned 64-bit integer | Directory Cookie   |
| nfs.readdirplus.entry.fileid                | File ID     | Unsigned 64-bit integer | Name               |
| nfs.readdirplus.entry.name                  | Name        | String                  | Name               |
| nfs.readlink.data                           | Data        | String                  | Symbolic Link Data |
| nfs.recall                                  | EOF         | Boolean                 | Recall             |
| nfs.recall4                                 | recall      | Boolean                 | nfs.recall4        |
| nfs.reclaim4                                | reclaim     | Boolean                 | Reclaim            |
| nfs.reply.operation                         | Opcode      | Unsigned 32-bit integer | Opcode             |
| nfs.secinfo.flavor                          | flavor      | Unsigned 32-bit integer | nfs.secinfo.flavor |
| nfs.secinfo.flavor_info.rpcsec_gss_info.oid | oid         | Byte array              | oid                |
| nfs.secinfo.flavor_info.rpcsec_gss_info.qop | qop         | Unsigned 32-bit integer | qop                |
| nfs.secinfo.rpcsec_gss_info.service         | service     | Unsigned 32-bit integer | service            |
| nfs.seqid                                   | seqid       | Unsigned 32-bit integer | Sequence ID        |
| nfs.server                                  | server      | String                  | nfs.server         |
| nfs.set_it                                  | set_it      | Unsigned 32-bit integer | How To Set Time    |
| nfs.set_size3.size                          | size        | Unsigned 64-bit integer | nfs.set_size3.size |
| nfs.specdata1                               | specdata1   | Unsigned 32-bit integer | nfs.specdata1      |
| nfs.specdata2                               | specdata2   | Unsigned 32-bit integer | nfs.specdata2      |
| nfs.stable_how4                             | stable_how4 | Unsigned 32-bit integer | nfs.stable_how4    |

Appendix A. *Ethereal Display Filter Fields*

| Field                 | Field Name       | Type                    | Description                    |
|-----------------------|------------------|-------------------------|--------------------------------|
| nfs.stateid4          | stateid          | Unsigned 64-bit integer | nfs.stateid4                   |
| nfs.stateid4.other    | Data             | Byte array              | Data                           |
| nfs.statfs.bavail     | Available Blocks | Unsigned 32-bit integer | Available Blocks               |
| nfs.statfs.bfree      | Free Blocks      | Unsigned 32-bit integer | Free Blocks                    |
| nfs.statfs.blocks     | Total Blocks     | Unsigned 32-bit integer | Total Blocks                   |
| nfs.statfs.bsize      | Block Size       | Unsigned 32-bit integer | Block Size                     |
| nfs.statfs.tsize      | Transfer Size    | Unsigned 32-bit integer | Transfer Size                  |
| nfs.status            | Status           | Unsigned 32-bit integer | Reply status                   |
| nfs.status2           | Status           | Unsigned 32-bit integer | Reply status                   |
| nfs.symlink.linktext  | Name             | String                  | Symbolic link contents         |
| nfs.symlink.to        | To               | String                  | Symbolic link destination name |
| nfs.tag               | Tag              | String                  | Tag                            |
| nfs.type              | Type             | Unsigned 32-bit integer | File Type                      |
| nfs.uid3              | uid              | Unsigned 32-bit integer | nfs.uid3                       |
| nfs.verifier4         | verifier         | Unsigned 64-bit integer | nfs.verifier4                  |
| nfs.wcc_attr.size     | size             | Unsigned 64-bit integer | nfs.wcc_attr.size              |
| nfs.who               | who              | String                  | nfs.who                        |
| nfs.write.beginoffset | Begin Offset     | Unsigned 32-bit integer | Begin offset (obsolete)        |
| nfs.write.committed   | Committed        | Unsigned 32-bit integer | Committed                      |
| nfs.write.offset      | Offset           | Unsigned 32-bit integer | Offset                         |
| nfs.write.stable      | Stable           | Unsigned 32-bit integer | Stable                         |

| Field                | Field Name  | Type                    | Description            |
|----------------------|-------------|-------------------------|------------------------|
| nfs.write.totalcount | Total Count | Unsigned 32-bit integer | Total Count (obsolete) |

## Network Lock Manager Protocol (nlm)

Table A-250. Network Lock Manager Protocol (nlm)

| Field                | Field Name     | Type                    | Description  |
|----------------------|----------------|-------------------------|--|
| nlm.block            | block          | Boolean                 | block  |
| nlm.cookie           | cookie         | Byte array              | cookie   |
| nlm.exclusive        | exclusive      | Boolean                 | exclusive  |
| nlm.holder           | holder         | No value                | holder   |
| nlm.lock             | lock           | No value                | lock   |
| nlm.lock.caller_name | caller_name    | String                  | caller_name  |
| nlm.lock.l_len       | l_len          | Unsigned 64-bit integer | l_len  |
| nlm.lock.l_offset    | l_offset       | Unsigned 64-bit integer | l_offset   |
| nlm.lock.owner       | owner          | Byte array              | owner  |
| nlm.lock.svid        | svid           | Unsigned 32-bit integer | svid   |
| nlm.msg_in           | Request MSG in | Unsigned 32-bit integer | The RES packet is a response to the MSG in this packet |
| nlm.procedure_v1     | V1 Procedure   | Unsigned 32-bit integer | V1 Procedure   |
| nlm.procedure_v2     | V2 Procedure   | Unsigned 32-bit integer | V2 Procedure   |
| nlm.procedure_v3     | V3 Procedure   | Unsigned 32-bit integer | V3 Procedure   |
| nlm.procedure_v4     | V4 Procedure   | Unsigned 32-bit integer | V4 Procedure   |
| nlm.reclaim          | reclaim        | Boolean                 | reclaim  |
| nlm.res_in           | Reply RES in   | Unsigned 32-bit integer | The response to this MSG packet is in this packet      |
| nlm.sequence         | sequence       | Signed 32-bit integer   | sequence   |
| nlm.share            | share          | No value                | share  |

| Field              | Field Name        | Type                    | Description  |
|--------------------|-------------------|-------------------------|--|
| nlm.share.access   | access            | Unsigned 32-bit integer | access   |
| nlm.share.mode     | mode              | Unsigned 32-bit integer | mode   |
| nlm.share.name     | name              | String                  | name   |
| nlm.stat           | stat              | Unsigned 32-bit integer | stat   |
| nlm.state          | state             | Unsigned 32-bit integer | STATD state  |
| nlm.test_stat      | test_stat         | No value                | test_stat  |
| nlm.test_stat.stat | stat              | Unsigned 32-bit integer | stat   |
| nlm.time           | Time from request | Time duration           | Time between Request and Reply for async NLM calls |

### Network News Transfer Protocol (nntp)

Table A-251. Network News Transfer Protocol (nntp)

| Field         | Field Name | Type    | Description           |
|---------------|------------|---------|-----------------------|
| nntp.request  | Request    | Boolean | TRUE if NNTP request  |
| nntp.response | Response   | Boolean | TRUE if NNTP response |

### Network Status Monitor CallBack Protocol (statnotify)

Table A-252. Network Status Monitor CallBack Protocol (statnotify)

| Field                   | Field Name   | Type                    | Description                      |
|-------------------------|--------------|-------------------------|----------------------------------|
| statnotify.name         | Name         | String                  | Name of client that changed      |
| statnotify.priv         | Priv         | Byte array              | Client supplied opaque data      |
| statnotify.procedure_v1 | V1 Procedure | Unsigned 32-bit integer | V1 Procedure                     |
| statnotify.state        | State        | Unsigned 32-bit integer | New state of client that changed |

### Network Status Monitor Protocol (stat)

Table A-253. Network Status Monitor Protocol (stat)

| Field | Field Name | Type | Description |
|-------|------------|------|-------------|
|-------|------------|------|-------------|



| Field               | Field Name      | Type                    | Description                         |
|---------------------|-----------------|-------------------------|-------------------------------------|
| stat.mon            | Monitor         | No value                | Monitor Host                        |
| stat.mon_id.name    | Monitor ID Name | String                  | Monitor ID Name                     |
| stat.my_id          | My ID           | No value                | My_ID structure                     |
| stat.my_id.hostname | Hostname        | String                  | My_ID Host to callback              |
| stat.my_id.proc     | Procedure       | Unsigned 32-bit integer | My_ID Procedure to callback         |
| stat.my_id.prog     | Program         | Unsigned 32-bit integer | My_ID Program to callback           |
| stat.my_id.vers     | Version         | Unsigned 32-bit integer | My_ID Version of callback           |
| stat.name           | Name            | String                  | Name                                |
| stat.priv           | Priv            | Byte array              | Private client supplied opaque data |
| stat.procedure_v1   | V1 Procedure    | Unsigned 32-bit integer | V1 Procedure                        |
| stat.stat_chge      | Status Change   | No value                | Status Change structure             |
| stat.stat_res       | Status Result   | No value                | Status Result                       |
| stat.stat_res.res   | Result          | Unsigned 32-bit integer | Result                              |
| stat.stat_res.state | State           | Unsigned 32-bit integer | State                               |
| stat.state          | State           | Unsigned 32-bit integer | State of local NSM                  |

## Network Time Protocol (ntp)

Table A-254. Network Time Protocol (ntp)

| Field          | Field Name     | Type                   | Description               |
|----------------|----------------|------------------------|---------------------------|
| ntp.flags      | Flags          | Unsigned 8-bit integer | Flags (Leap/Version/Mode) |
| ntp.flags.li   | Leap Indicator | Unsigned 8-bit integer | Leap Indicator            |
| ntp.flags.mode | Mode           | Unsigned 8-bit integer | Mode                      |
| ntp.flags.vn   | Version number | Unsigned 8-bit integer | Version number            |

| Field              | Field Name                  | Type                            | Description                 |
|--------------------|-----------------------------|---------------------------------|-----------------------------|
| ntp.keyid          | Key ID                      | Byte array                      | Key ID                      |
| ntp.mac            | Message Authentication Code | Byte array                      | Message Authentication Code |
| ntp.org            | Originate Time Stamp        | Byte array                      | Originate Time Stamp        |
| ntp.ppoll          | Peer Polling Interval       | Unsigned 8-bit integer          | Peer Polling Interval       |
| ntp.precision      | Peer Clock Precision        | Unsigned 8-bit integer          | Peer Clock Precision        |
| ntp.rec            | Receive Time Stamp          | Byte array                      | Receive Time Stamp          |
| ntp.refid          | Reference Clock ID          | Byte array                      | Reference Clock ID          |
| ntp.reftime        | Reference Clock Update Time | Byte array                      | Reference Clock Update Time |
| ntp.rootdelay      | Root Delay                  | Double-precision floating point | Root Delay                  |
| ntp.rootdispersion | Clock Dispersion            | Double-precision floating point | Clock Dispersion            |
| ntp.stratum        | Peer Clock Stratum          | Unsigned 8-bit integer          | Peer Clock Stratum          |
| ntp.xmt            | Transmit Time Stamp         | Byte array                      | Transmit Time Stamp         |

### Novell Distributed Print System (ndps)

Table A-255. Novell Distributed Print System (ndps)

| Field               | Field Name      | Type                    | Description     |
|---------------------|-----------------|-------------------------|-----------------|
| ndps.add_bytes      | Address Bytes   |                         | Address Bytes   |
| ndps.attribue_value | Value           | Unsigned 32-bit integer | Value           |
| ndps.auth_null      | Auth Null       | Byte array              | Auth Null       |
| ndps.connection     | Connection      | Unsigned 16-bit integer | Connection      |
| ndps.context        | Printer Name    | String                  | Printer Name    |
| ndps.cred_type      | Credential Type | Unsigned 32-bit integer | Credential Type |
| ndps.error_val      | Return Status   | Unsigned 32-bit integer | Return Status   |
| ndps.ext_error      | Extended Return | Unsigned 32-bit         | Extended Return |

| Field                             | Field Name           | Type                    | Description          |
|-----------------------------------|----------------------|-------------------------|----------------------|
|                                   | Status               | integer                 | Status               |
| ndps.items                        | Number of Items      | Unsigned 32-bit integer | Number of Items      |
| ndps.lower_range                  | Lower Range          | Unsigned 32-bit integer | Lower Range          |
| ndps.lower_range_n64              | Lower Range          | Byte array              | Lower Range          |
| ndps.n64                          | Value                | Byte array              | Value                |
| ndps.ndps_abort                   | Abort?               | Boolean                 | Abort?               |
| ndps.ndps_addresses               | Address              | Unsigned 32-bit integer | Address              |
| ndps.ndps_addresses_type          | Address Type         | Unsigned 32-bit integer | Address Type         |
| ndps.ndps_attribute_boolean       | Value?               | Boolean                 | Value?               |
| ndps.ndps_attribute_type          | Attribute Type       | Unsigned 32-bit integer | Attribute Type       |
| ndps.ndps_cardinal_name_or_oid    | Cardinal Name or OID | Unsigned 32-bit integer | Cardinal Name or OID |
| ndps.ndps_cardinal_or_oid         | Cardinal or OID      | Unsigned 32-bit integer | Cardinal or OID      |
| ndps.ndps_dimension_flag          | Dimension Flag       | Unsigned 32-bit integer | Dimension Flag       |
| ndps.ndps_dimension_value_type    | Dimension Value Type | Unsigned 32-bit integer | Dimension Value Type |
| ndps.ndps_document_number         | Document Number      | Unsigned 32-bit integer | Document Number      |
| ndps.ndps_edge_value              | Edge Value           | Unsigned 32-bit integer | Edge Value           |
| ndps.ndps_event_object_identifier | Event Object Type    | Unsigned 32-bit integer | Event Object Type    |
| ndps.ndps_event_type              | Event Type           | Unsigned 32-bit integer | Event Type           |
| ndps.ndps_integer_or_oid          | Integer or OID       | Unsigned 32-bit integer | Integer or OID       |
| ndps.ndps_item_count              | Number of Items      | Unsigned 32-bit integer | Number of Items      |
| ndps.ndps_language_id             | Language ID          | Unsigned 32-bit integer | Language ID          |

| Field                     | Field Name              | Type                    | Description             |
|---------------------------|-------------------------|-------------------------|-------------------------|
| ndps.ndps_lib_error       | Lib Error               | Unsigned 32-bit integer | Lib Error               |
| ndps.ndps_loc_object_name | Local Object Name       | String                  | Local Object Name       |
| ndps.ndps_location_value  | Location Value Type     | Unsigned 32-bit integer | Location Value Type     |
| ndps.ndps_nameorid        | Name or ID Type         | Unsigned 32-bit integer | Name or ID Type         |
| ndps.ndps_object_name     | Object Name             | String                  | Object Name             |
| ndps.ndps_other_error     | Other Error             | Unsigned 32-bit integer | Other Error             |
| ndps.ndps_other_error_2   | Other Error 2           | Unsigned 32-bit integer | Other Error 2           |
| ndps.ndps_persistence     | Persistence             | Unsigned 32-bit integer | Persistence             |
| ndps.ndps_printer_name    | Printer Name            | String                  | Printer Name            |
| ndps.ndps_profile_id      | Profile ID              | Unsigned 32-bit integer | Profile ID              |
| ndps.ndps_qual            | Qualifier               | Unsigned 32-bit integer | Qualifier               |
| ndps.ndps_qual_name_type  | Qualified Name Type     | Unsigned 32-bit integer | Qualified Name Type     |
| ndps.ndps_realization     | Realization Type        | Unsigned 32-bit integer | Realization Type        |
| ndps.ndps_session         | Session                 | Unsigned 32-bit integer | Session                 |
| ndps.ndps_xydim_value     | XY Dimension Value Type | Unsigned 32-bit integer | XY Dimension Value Type |
| ndps.object               | Object ID               | Unsigned 32-bit integer | Object ID               |
| ndps.octet_string         | Octet String            |                         | Octet String            |
| ndps.pa_name              | Trustee Name            | String                  | Trustee Name            |
| ndps.packet_type          | Packet Type             | Unsigned 32-bit integer | Packet Type             |
| ndps.rbuffer              | Connection              | Unsigned 32-bit integer | Connection              |
| ndps.record_length        | Record Length           | Unsigned 16-bit         | Record Length           |

| Field                    | Field Name              | Type                    | Description             |
|--------------------------|-------------------------|-------------------------|-------------------------|
| h                        |                         | integer                 |                         |
| ndps.record_mark         | Record Mark             | Unsigned 16-bit integer | Record Mark             |
| ndps.rpc_acc             | RPC Accept or Deny      | Unsigned 32-bit integer | RPC Accept or Deny      |
| ndps.rpc_acc_prob        | Access Problem          | Unsigned 32-bit integer | Access Problem          |
| ndps.rpc_acc_res         | RPC Accept Results      | Unsigned 32-bit integer | RPC Accept Results      |
| ndps.rpc_acc_stat        | RPC Accept Status       | Unsigned 32-bit integer | RPC Accept Status       |
| ndps.rpc_attr_prob       | Attribute Problem       | Unsigned 32-bit integer | Attribute Problem       |
| ndps.rpc_doc_acc_prob    | Document Access Problem | Unsigned 32-bit integer | Document Access Problem |
| ndps.rpc_obj_id_type     | Object ID Type          | Unsigned 32-bit integer | Object ID Type          |
| ndps.rpc_oid_struct_size | OID Struct Size         | Unsigned 32-bit integer | OID Struct Size         |
| ndps.rpc_print_prob      | Printer Problem         | Unsigned 32-bit integer | Printer Problem         |
| ndps.rpc_prob_type       | Problem Type            | Unsigned 32-bit integer | Problem Type            |
| ndps.rpc_rej_stat        | RPC Reject Status       | Unsigned 32-bit integer | RPC Reject Status       |
| ndps.rpc_sec_prob        | Security Problem        | Unsigned 32-bit integer | Security Problem        |
| ndps.rpc_sel_prob        | Selection Problem       | Unsigned 32-bit integer | Selection Problem       |
| ndps.rpc_serv_prob       | Service Problem         | Unsigned 32-bit integer | Service Problem         |
| ndps.rpc_update_prob     | Update Problem          | Unsigned 32-bit integer | Update Problem          |
| ndps.rpc_version         | RPC Version             | Unsigned 32-bit integer | RPC Version             |
| ndps.sbuffer             | Server                  | Unsigned 32-bit integer | Server                  |
| ndps.scope               | Scope                   | Unsigned 32-bit integer | Scope                   |

| Field                  | Field Name          | Type                    | Description         |
|------------------------|---------------------|-------------------------|---------------------|
| ndps.server_name       | Server Name         | String                  | Server Name         |
| ndps.tree              | Tree                | String                  | Tree                |
| ndps.upper_range       | Upper Range         | Unsigned 32-bit integer | Upper Range         |
| ndps.upper_range_n64   | Upper Range         | Byte array              | Upper Range         |
| ndps.xdimension_n64    | X Dimension         | Byte array              | X Dimension         |
| ndps.xid               | Exchange ID         | Unsigned 32-bit integer | Exchange ID         |
| ndps.xmax_n64          | Maximum X Dimension | Byte array              | Maximum X Dimension |
| ndps.xmin_n64          | Minimum X Dimension | Byte array              | Minimum X Dimension |
| ndps.ymax_n64          | Maximum Y Dimension | Byte array              | Maximum Y Dimension |
| ndps.ymin_n64          | Minimum Y Dimension | Byte array              | Minimum Y Dimension |
| spx.ndps_error         | NDPS Error          | Unsigned 32-bit integer | NDPS Error          |
| spx.ndps_func_broker   | Broker Program      | Unsigned 32-bit integer | Broker Program      |
| spx.ndps_func_delivery | Delivery Program    | Unsigned 32-bit integer | Delivery Program    |
| spx.ndps_func_notify   | Notify Program      | Unsigned 32-bit integer | Notify Program      |
| spx.ndps_func_print    | Print Program       | Unsigned 32-bit integer | Print Program       |
| spx.ndps_func_registry | Registry Program    | Unsigned 32-bit integer | Registry Program    |
| spx.ndps_func_resman   | ResMan Program      | Unsigned 32-bit integer | ResMan Program      |
| spx.ndps_program       | NDPS Program Number | Unsigned 32-bit integer | NDPS Program Number |
| spx.ndps_version       | Program Version     | Unsigned 32-bit integer | Program Version     |

**Null/Loopback (null)**

Table A-256. Null/Loopback (null)

| Field       | Field Name | Type                    | Description |
|-------------|------------|-------------------------|-------------|
| null.family | Family     | Unsigned 32-bit integer |             |
| null.type   | Type       | Unsigned 16-bit integer |             |

**Open Shortest Path First (ospf)**

Table A-257. Open Shortest Path First (ospf)

| Field                     | Field Name                      | Type                    | Description |
|---------------------------|---------------------------------|-------------------------|-------------|
| ospf.advrouter            | Advertising Router              | IPv4 address            |             |
| ospf.lsa                  | Link-State Advertisement Type   | Unsigned 8-bit integer  |             |
| ospf.lsa.asbr             | Summary LSA (ASBR)              | Boolean                 |             |
| ospf.lsa.asext            | AS-External LSA (ASBR)          | Boolean                 |             |
| ospf.lsa.attr             | External Attributes LSA         | Boolean                 |             |
| ospf.lsa.member           | Group Membership LSA            | Boolean                 |             |
| ospf.lsa.mpls             | MPLS Traffic Engineering LSA    | Boolean                 |             |
| ospf.lsa.network          | Network LSA                     | Boolean                 |             |
| ospf.lsa.nssa             | NSSA AS-External LSA            | Boolean                 |             |
| ospf.lsa.opaque           | Opaque LSA                      | Boolean                 |             |
| ospf.lsa.router           | Router LSA                      | Boolean                 |             |
| ospf.lsa.summary          | Summary LSA (IP Network)        | Boolean                 |             |
| ospf.lsid_opaque_type     | Link State ID Opaque Type       | Unsigned 8-bit integer  |             |
| ospf.lsid_te_lsa_instance | Link State ID TE-LSA Instance   | Unsigned 16-bit integer |             |
| ospf.mpls.linkid          | MPLS/TE Link ID                 | IPv4 address            |             |
| ospf.mpls.local_addr      | MPLS/TE Local Interface Address | IPv4 address            |             |
| ospf.mpls.local_id        | MPLS/TE Local                   | Unsigned 32-bit         |             |

| Field                 | Field Name                       | Type                    | Description |
|-----------------------|----------------------------------|-------------------------|-------------|
|                       | Interface Index                  | integer                 |             |
| ospf.mpls.remote_addr | MPLS/TE Remote Interface Address | IPv4 address            |             |
| ospf.mpls.remote_id   | MPLS/TE Remote Interface Index   | Unsigned 32-bit integer |             |
| ospf.mpls.routerid    | MPLS/TE Router ID                | IPv4 address            |             |
| ospf.msg              | Message Type                     | Unsigned 8-bit integer  |             |
| ospf.msg.dbdesc       | Database Description             | Boolean                 |             |
| ospf.msg.hello        | Hello                            | Boolean                 |             |
| ospf.msg.lsack        | Link State Adv Acknowledgement   | Boolean                 |             |
| ospf.msg.lsreq        | Link State Adv Request           | Boolean                 |             |
| ospf.msg.lsupdate     | Link State Adv Update            | Boolean                 |             |
| ospf.srcrouter        | Source OSPF Router               | IPv4 address            |             |

### OpenBSD Encapsulating device (enc)

Table A-258. OpenBSD Encapsulating device (enc)

| Field     | Field Name     | Type                    | Description              |
|-----------|----------------|-------------------------|--------------------------|
| enc.af    | Address Family | Unsigned 32-bit integer | Protocol (IPv4 vs IPv6)  |
| enc.flags | Flags          | Unsigned 32-bit integer | ENC flags                |
| enc.spi   | SPI            | Unsigned 32-bit integer | Security Parameter Index |

### OpenBSD Packet Filter log file (pflog)

Table A-259. OpenBSD Packet Filter log file (pflog)

| Field        | Field Name     | Type                    | Description                           |
|--------------|----------------|-------------------------|---------------------------------------|
| pflog.action | Action         | Unsigned 16-bit integer | Action taken by PF on the packet      |
| pflog.af     | Address Family | Unsigned 32-bit integer | Protocol (IPv4 vs IPv6)               |
| pflog.dir    | Direction      | Unsigned 16-bit integer | Direction of packet in stack (inbound |



| Field        | Field Name  | Type                    | Description                       |
|--------------|-------------|-------------------------|-----------------------------------|
|              |             |                         | versus outbound)                  |
| pflog.ifname | Interface   | String                  | Interface                         |
| pflog.reason | Reason      | Unsigned 16-bit integer | Reason for logging the packet     |
| pflog.rnr    | Rule Number | Signed 16-bit integer   | Last matched firewall rule number |

## PC NFS (pcnfsd)

Table A-260. PC NFS (pcnfsd)

| Field                        | Field Name            | Type                    | Description                     |
|------------------------------|-----------------------|-------------------------|---------------------------------|
| pcnfsd.auth.client           | Authentication Client | String                  | Authentication Client           |
| pcnfsd.auth.ident.clear      | Clear Ident           | String                  | Authentication Clear Ident      |
| pcnfsd.auth.ident.obscure    | Obscure Ident         | String                  | Authentication Obscure Ident    |
| pcnfsd.auth.password.clear   | Clear Password        | String                  | Authentication Clear Password   |
| pcnfsd.auth.password.obscure | Obscure Password      | String                  | Authentication Obscure Password |
| pcnfsd.comment               | Comment               | String                  | Comment                         |
| pcnfsd.def_umask             | def_umask             | Signed 32-bit integer   | def_umask                       |
| pcnfsd.gid                   | Group ID              | Unsigned 32-bit integer | Group ID                        |
| pcnfsd.gids.count            | Group ID Count        | Unsigned 32-bit integer | Group ID Count                  |
| pcnfsd.homedir               | Home Directory        | String                  | Home Directory                  |
| pcnfsd.procedure_v1          | V1 Procedure          | Unsigned 32-bit integer | V1 Procedure                    |
| pcnfsd.procedure_v2          | V2 Procedure          | Unsigned 32-bit integer | V2 Procedure                    |
| pcnfsd.status                | Reply Status          | Unsigned 32-bit integer | Status                          |
| pcnfsd.uid                   | User ID               | Unsigned 32-bit integer | User ID                         |
| pcnfsd.username              | User name             | String                  | pcnfsd.username                 |

## PPP Bandwidth Allocation Control Protocol (baccp)

Table A-261. PPP Bandwidth Allocation Control Protocol (bapc)

| Field | Field Name | Type | Description |
|-------|------------|------|-------------|
|       |            |      |             |

**PPP Bandwidth Allocation Protocol (bap)**

Table A-262. PPP Bandwidth Allocation Protocol (bap)

| Field | Field Name | Type | Description |
|-------|------------|------|-------------|
|       |            |      |             |

**PPP CDP Control Protocol (cdpcp)**

Table A-263. PPP CDP Control Protocol (cdpcp)

| Field | Field Name | Type | Description |
|-------|------------|------|-------------|
|       |            |      |             |

**PPP Callback Control Protocol (cbcp)**

Table A-264. PPP Callback Control Protocol (cbcp)

| Field | Field Name | Type | Description |
|-------|------------|------|-------------|
|       |            |      |             |

**PPP Challenge Handshake Authentication Protocol (chap)**

Table A-265. PPP Challenge Handshake Authentication Protocol (chap)

| Field | Field Name | Type | Description |
|-------|------------|------|-------------|
|       |            |      |             |

**PPP Compressed Datagram (comp\_data)**

Table A-266. PPP Compressed Datagram (comp\_data)

| Field | Field Name | Type | Description |
|-------|------------|------|-------------|
|       |            |      |             |

**PPP Compression Control Protocol (ccp)**

Table A-267. PPP Compression Control Protocol (ccp)

| Field | Field Name | Type | Description |
|-------|------------|------|-------------|
|       |            |      |             |

**PPP IP Control Protocol (ipcp)**

Table A-268. PPP IP Control Protocol (ipcp)

| Field | Field Name | Type | Description |
|-------|------------|------|-------------|
|       |            |      |             |

**PPP IPv6 Control Protocol (ipv6cp)**

Table A-269. PPP IPv6 Control Protocol (ipv6cp)

| Field | Field Name | Type | Description |
|-------|------------|------|-------------|
|       |            |      |             |

**PPP Link Control Protocol (lcp)**

Table A-270. PPP Link Control Protocol (lcp)

| Field | Field Name | Type | Description |
|-------|------------|------|-------------|
|       |            |      |             |

**PPP MPLS Control Protocol (mplscp)**

Table A-271. PPP MPLS Control Protocol (mplscp)

| Field | Field Name | Type | Description |
|-------|------------|------|-------------|
|       |            |      |             |

**PPP Multilink Protocol (mp)**

Table A-272. PPP Multilink Protocol (mp)

| Field    | Field Name      | Type                    | Description |
|----------|-----------------|-------------------------|-------------|
| mp.first | First fragment  | Boolean                 |             |
| mp.last  | Last fragment   | Boolean                 |             |
| mp.seq   | Sequence number | Unsigned 24-bit integer |             |

**PPP Multiplexing (pppmux)**

Table A-273. PPP Multiplexing (pppmux)

| Field | Field Name | Type | Description |
|-------|------------|------|-------------|
|       |            |      |             |

**PPP Password Authentication Protocol (pap)**

Table A-274. PPP Password Authentication Protocol (pap)

| Field | Field Name | Type | Description |
|-------|------------|------|-------------|
|       |            |      |             |

**PPP VJ Compression (vj)**

Table A-275. PPP VJ Compression (vj)

| Field            | Field Name         | Type                    | Description                              |
|------------------|--------------------|-------------------------|--|
| vj.ack_delta     | Ack delta          | Unsigned 16-bit integer | Delta for acknowledgment sequence number |
| vj.change_mask   | Change mask        | Unsigned 8-bit integer  |  |
| vj.change_mask_a | Ack number changed | Boolean                 | Acknowledgement sequence number changed  |
| vj.change_mask_c | Connection changed | Boolean                 | Connection number changed                |

| Field                | Field Name              | Type                    | Description                           |
|----------------------|-------------------------|-------------------------|---------------------------------------|
| vj.change_mask_i     | IP ID change != 1       | Boolean                 | IP ID changed by a value other than 1 |
| vj.change_mask_p     | Push bit set            | Boolean                 | TCP PSH flag set                      |
| vj.change_mask_s     | Sequence number changed | Boolean                 | Sequence number changed               |
| vj.change_mask_u     | Urgent pointer set      | Boolean                 | Urgent pointer set                    |
| vj.change_mask_w     | Window changed          | Boolean                 | TCP window changed                    |
| vj.connection_number | Connection number       | Unsigned 8-bit integer  | Connection number                     |
| vj.ip_id_delta       | IP ID delta             | Unsigned 16-bit integer | Delta for IP ID                       |
| vj.seq_delta         | Sequence delta          | Unsigned 16-bit integer | Delta for sequence number             |
| vj.tcp_cksum         | TCP checksum            | Unsigned 16-bit integer | TCP checksum                          |
| vj.urp               | Urgent pointer          | Unsigned 16-bit integer | Urgent pointer                        |
| vj.win_delta         | Window delta            | Signed 16-bit integer   | Delta for window                      |

### PPP-over-Ethernet Discovery (pppoed)

Table A-276. PPP-over-Ethernet Discovery (pppoed)

| Field | Field Name | Type | Description |
|-------|------------|------|-------------|
|       |            |      |             |

### PPP-over-Ethernet Session (pppoes)

Table A-277. PPP-over-Ethernet Session (pppoes)

| Field | Field Name | Type | Description |
|-------|------------|------|-------------|
|       |            |      |             |

### PPPMux Control Protocol (pppmuxcp)

Table A-278. PPPMux Control Protocol (pppmuxcp)

| Field | Field Name | Type | Description |
|-------|------------|------|-------------|
|       |            |      |             |

### Packet Cable Lawful Intercept (pcl\_i)

Table A-279. Packet Cable Lawful Intercept (pcl\_i)

| Field      | Field Name | Type            | Description             |
|------------|------------|-----------------|-------------------------|
| pcli.cccid | CCCID      | Unsigned 32-bit | Call Content Connection |

| Field | Field Name | Type    | Description |
|-------|------------|---------|-------------|
|       |            | integer | Identifier  |

### Point-to-Point Protocol (ppp)

Table A-280. Point-to-Point Protocol (ppp)

| Field        | Field Name | Type                    | Description |
|--------------|------------|-------------------------|-------------|
| ppp.address  | Address    | Unsigned 8-bit integer  |             |
| ppp.control  | Control    | Unsigned 8-bit integer  |             |
| ppp.protocol | Protocol   | Unsigned 16-bit integer |             |

### Point-to-Point Tunnelling Protocol (pptp)

Table A-281. Point-to-Point Tunnelling Protocol (pptp)

| Field     | Field Name   | Type                    | Description       |
|-----------|--------------|-------------------------|-------------------|
| pptp.type | Message type | Unsigned 16-bit integer | PPTP message type |

### Portmap (portmap)

Table A-282. Portmap (portmap)

| Field                | Field Name   | Type                    | Description  |
|----------------------|--------------|-------------------------|--------------|
| portmap.answer       | Answer       | Boolean                 | Answer       |
| portmap.args         | Arguments    | Byte array              | Arguments    |
| portmap.port         | Port         | Unsigned 32-bit integer | Port         |
| portmap.proc         | Procedure    | Unsigned 32-bit integer | Procedure    |
| portmap.procedure_v1 | V1 Procedure | Unsigned 32-bit integer | V1 Procedure |
| portmap.procedure_v2 | V2 Procedure | Unsigned 32-bit integer | V2 Procedure |
| portmap.procedure_v3 | V3 Procedure | Unsigned 32-bit integer | V3 Procedure |
| portmap.procedure_v4 | V4 Procedure | Unsigned 32-bit integer | V4 Procedure |
| portmap.prog         | Program      | Unsigned 32-bit integer | Program      |
| portmap.proto        | Protocol     | Unsigned 32-bit integer | Protocol     |

| Field                | Field Name            | Type                    | Description           |
|----------------------|-----------------------|-------------------------|-----------------------|
| portmap.result       | Result                | Byte array              | Result                |
| portmap.rpcb         | RPCB                  | No value                | RPCB                  |
| portmap.rpcb.addr    | Universal Address     | String                  | Universal Address     |
| portmap.rpcb.netid   | Network Id            | String                  | Network Id            |
| portmap.rpcb.owner   | Owner of this Service | String                  | Owner of this Service |
| portmap.rpcb.program | Program               | Unsigned 32-bit integer | Program               |
| portmap.rpcb.version | Version               | Unsigned 32-bit integer | Version               |
| portmap.uaddr        | Universal Address     | String                  | Universal Address     |
| portmap.version      | Version               | Unsigned 32-bit integer | Version               |

### Post Office Protocol (pop)

Table A-283. Post Office Protocol (pop)

| Field        | Field Name | Type    | Description          |
|--------------|------------|---------|----------------------|
| pop.request  | Request    | Boolean | TRUE if POP request  |
| pop.response | Response   | Boolean | TRUE if POP response |

### Pragmatic General Multicast (pgm)

Table A-284. Pragmatic General Multicast (pgm)

| Field           | Field Name                       | Type                    | Description |
|-----------------|----------------------------------|-------------------------|-------------|
| pgm.ack.bitmap  | Packet Bitmap                    | Unsigned 32-bit integer |             |
| pgm.ack.maxsqn  | Maximum Received Sequence Number | Unsigned 32-bit integer |             |
| pgm.data.sqn    | Data Packet Sequence Number      | Unsigned 32-bit integer |             |
| pgm.data.trail  | Trailing Edge Sequence Number    | Unsigned 32-bit integer |             |
| pgm.genopts.len | Length                           | Unsigned 8-bit integer  |             |
| pgm.genopts.opx | Option Extensibility Bits        | Unsigned 8-bit integer  |             |

| Field                   | Field Name                           | Type                    | Description |
|-------------------------|--------------------------------------|-------------------------|-------------|
| pgm.genopts.type        | Type                                 | Unsigned 8-bit integer  |             |
| pgm.hdr.cksum           | Checksum                             | Unsigned 16-bit integer |             |
| pgm.hdr.dport           | Destination Port                     | Unsigned 16-bit integer |             |
| pgm.hdr.gsi             | Global Source Identifier             | Byte array              |             |
| pgm.hdr.opts            | Options                              | Unsigned 8-bit integer  |             |
| pgm.hdr.opts.netsetting | Network Significant Options          | Boolean                 |             |
| pgm.hdr.opts.opt        | Options                              | Boolean                 |             |
| pgm.hdr.opts.parity     | Parity                               | Boolean                 |             |
| pgm.hdr.opts.variable   | Variable length Parity Packet Option | Boolean                 |             |
| pgm.hdr.sport           | Source Port                          | Unsigned 16-bit integer |             |
| pgm.hdr.tsduhlen        | Transport Service Data Unit Length   | Unsigned 16-bit integer |             |
| pgm.hdr.type            | Type                                 | Unsigned 8-bit integer  |             |
| pgm.nak.grp             | Multicast Group NLA                  | IPv4 address            |             |
| pgm.nak.grpafi          | Multicast Group AFI                  | Unsigned 16-bit integer |             |
| pgm.nak.grpres          | Reserved                             | Unsigned 16-bit integer |             |
| pgm.nak.sqn             | Requested Sequence Number            | Unsigned 32-bit integer |             |
| pgm.nak.src             | Source NLA                           | IPv4 address            |             |
| pgm.nak.srcafi          | Source NLA AFI                       | Unsigned 16-bit integer |             |
| pgm.nak.srcres          | Reserved                             | Unsigned 16-bit integer |             |
| pgm.opts.ccdata.acker   | Acker                                | IPv4 address            |             |

| Field                        | Field Name                    | Type                    | Description |
|------------------------------|-------------------------------|-------------------------|-------------|
| pgm.opts.cdata.afi           | Acker AFI                     | Unsigned 16-bit integer |             |
| pgm.opts.cdata.lossrate      | Loss Rate                     | Unsigned 16-bit integer |             |
| pgm.opts.cdata.res           | Reserved                      | Unsigned 8-bit integer  |             |
| pgm.opts.cdata.res2          | Reserved                      | Unsigned 16-bit integer |             |
| pgm.opts.cdata.timestamp     | Time Stamp                    | Unsigned 16-bit integer |             |
| pgm.opts.join.min_join       | Minimum Sequence Number       | Unsigned 32-bit integer |             |
| pgm.opts.join.res            | Reserved                      | Unsigned 8-bit integer  |             |
| pgm.opts.len                 | Length                        | Unsigned 8-bit integer  |             |
| pgm.opts.nak.list            | List                          | Byte array              |             |
| pgm.opts.nak.op              | Reserved                      | Unsigned 8-bit integer  |             |
| pgm.opts.parity_parm.op      | Parity Parameters             | Unsigned 8-bit integer  |             |
| pgm.opts.parity_parm.prm_grp | Transmission Group Size       | Unsigned 32-bit integer |             |
| pgm.opts.tlen                | Total Length                  | Unsigned 16-bit integer |             |
| pgm.opts.type                | Type                          | Unsigned 8-bit integer  |             |
| pgm.spm.lead                 | Leading Edge Sequence Number  | Unsigned 32-bit integer |             |
| pgm.spm.path                 | Path NLA                      | IPv4 address            |             |
| pgm.spm.pathafi              | Path NLA AFI                  | Unsigned 16-bit integer |             |
| pgm.spm.res                  | Reserved                      | Unsigned 16-bit integer |             |
| pgm.spm.sqn                  | Sequence number               | Unsigned 32-bit integer |             |
| pgm.spm.trail                | Trailing Edge Sequence Number | Unsigned 32-bit integer |             |

**Prism (prism)**



**Table A-285. Prism (prism)**

| Field               | Field Name         | Type                    | Description |
|---------------------|--------------------|-------------------------|-------------|
| prism.channel.data  | Channel Time Field | Unsigned 32-bit integer |             |
| prism.frmlen.data   | Frame Length Field | Unsigned 32-bit integer |             |
| prism.hosttime.data | Host Time Field    | Unsigned 32-bit integer |             |
| prism.istx.data     | IsTX Field         | Unsigned 32-bit integer |             |
| prism.mactime.data  | MAC Time Field     | Unsigned 32-bit integer |             |
| prism.msgcode       | Message Code       | Unsigned 32-bit integer |             |
| prism.msglen        | Message Length     | Unsigned 32-bit integer |             |
| prism.noise.data    | Noise Field        | Unsigned 32-bit integer |             |
| prism.rate.data     | Rate Field         | Unsigned 32-bit integer |             |
| prism.rssi.data     | RSSI Field         | Unsigned 32-bit integer |             |
| prism.signal.data   | Signal Field       | Unsigned 32-bit integer |             |
| prism.sq.data       | SQ Field           | Unsigned 32-bit integer |             |

**Privilege Server operations (rpriv)****Table A-286. Privilege Server operations (rpriv)**

| Field                         | Field Name | Type                    | Description |
|-------------------------------|------------|-------------------------|-------------|
| rpriv.get_eptgt_req_authn_svc | Authn_Svc  | Unsigned 32-bit integer |             |
| rpriv.get_eptgt_req_authz_svc | Authz_Svc  | Unsigned 32-bit integer |             |
| rpriv.get_eptgt_req_key_size  | Key_Size   | Unsigned 32-bit integer |             |
| rpriv.get_eptgt_req_key_size2 | Key_Size   | Unsigned 32-bit integer |             |
| rpriv.get_eptgt_req_key_t     | Key_t      | String                  |             |
| rpriv.get_eptgt_req_key_t2    | Key_t2     | String                  |             |

| Field                         | Field Name | Type                       | Description |
|-------------------------------|------------|----------------------------|-------------|
| st_key_t2                     |            |                            |             |
| rpriv.get_eptgt_rq<br>st_var1 | Var1       | Unsigned 32-bit<br>integer |             |
| rpriv.opnum                   | Operation  | Unsigned 16-bit<br>integer | Operation   |

### Protocol Independent Multicast (pim)

Table A-287. Protocol Independent Multicast (pim)

| Field       | Field Name | Type                       | Description |
|-------------|------------|----------------------------|-------------|
| pim.cksum   | Checksum   | Unsigned 16-bit<br>integer |             |
| pim.code    | Code       | Unsigned 8-bit<br>integer  |             |
| pim.type    | Type       | Unsigned 8-bit<br>integer  |             |
| pim.version | Version    | Unsigned 8-bit<br>integer  |             |

### Q.2931 (q2931)

Table A-288. Q.2931 (q2931)

| Field                              | Field Name                     | Type                       | Description |
|------------------------------------|--------------------------------|----------------------------|-------------|
| q2931.call_ref                     | Call reference<br>value        | Byte array                 |             |
| q2931.call_ref_flag                | Call reference flag            | Boolean                    |             |
| q2931.call_ref_len                 | Call reference<br>value length | Unsigned 8-bit<br>integer  |             |
| q2931.disc                         | Protocol<br>discriminator      | Unsigned 8-bit<br>integer  |             |
| q2931.message_act<br>ion_indicator | Action indicator               | Unsigned 8-bit<br>integer  |             |
| q2931.message fla<br>g             | Flag                           | Boolean                    |             |
| q2931.message_len                  | Message length                 | Unsigned 16-bit<br>integer |             |
| q2931.message_ty<br>pe             | Message type                   | Unsigned 8-bit<br>integer  |             |
| q2931.message_ty<br>pe_ext         | Message type<br>extension      | Unsigned 8-bit<br>integer  |             |

### Q.931 (q931)

Table A-289. Q.931 (q931)

| Field                            | Field Name                  | Type                   | Description |
|----------------------------------|-----------------------------|------------------------|-------------|
| q931.call_ref                    | Call reference value        | Byte array             |             |
| q931.call_ref_flag               | Call reference flag         | Boolean                |             |
| q931.call_ref_len                | Call reference value length | Unsigned 8-bit integer |             |
| q931.called_party_number.digits  | Called party number digits  | String                 |             |
| q931.calling_party_number.digits | Calling party number digits | String                 |             |
| q931.cause_value                 | Cause value                 | Unsigned 8-bit integer |             |
| q931.connected_number.digits     | Called party number digits  | String                 |             |
| q931.disc                        | Protocol discriminator      | Unsigned 8-bit integer |             |
| q931.message_type                | Message type                | Unsigned 8-bit integer |             |
| q931.redirecting_number.digits   | Called party number digits  | String                 |             |

## Quake II Network Protocol (quake2)

Table A-290. Quake II Network Protocol (quake2)

| Field                             | Field Name          | Type                    | Description                  |
|-----------------------------------|---------------------|-------------------------|------------------------------|
| quake2.c2s                        | Client to Server    | Unsigned 32-bit integer | Client to Server             |
| quake2.connectionless             | Connectionless      | Unsigned 32-bit integer | Connectionless               |
| quake2.connectionless.marker      | Marker              | Unsigned 32-bit integer | Marker                       |
| quake2.connectionless.text        | Text                | String                  | Text                         |
| quake2.game                       | Game                | Unsigned 32-bit integer | Game                         |
| quake2.game.client.command        | Client Command Type | Unsigned 8-bit integer  | Quake II Client Command      |
| quake2.game.client.command.move   | Bitfield            | Unsigned 8-bit integer  | Quake II Client Command Move |
| quake2.game.client.command.move.a | Angles (pitch)      | Unsigned 8-bit integer  |                              |

| Field                                      | Field Name       | Type                    | Description                                  |
|--|------------------|-------------------------|--|
| angles                                     |                  |                         |  |
| quake2.game.client.command.move.buttons    | Buttons          | Unsigned 8-bit integer  |  |
| quake2.game.client.command.move.checksum   | Checksum         | Unsigned 8-bit integer  | Quake II Client Command Move                 |
| quake2.game.client.command.move.impulse    | Impulse          | Unsigned 8-bit integer  |  |
| quake2.game.client.command.move.lastframe  | Last Frame       | Unsigned 32-bit integer | Quake II Client Command Move                 |
| quake2.game.client.command.move.lightlevel | Lightlevel       | Unsigned 8-bit integer  | Quake II Client Command Move                 |
| quake2.game.client.command.move.movement   | Movement (fwd)   | Unsigned 8-bit integer  |  |
| quake2.game.client.command.move.msec       | Msec             | Unsigned 8-bit integer  | Quake II Client Command Move                 |
| quake2.game.qport                          | QPort            | Unsigned 32-bit integer | Quake II Client Port                         |
| quake2.game.rel1                           | Reliable         | Boolean                 | Packet is reliable and may be retransmitted  |
| quake2.game.rel2                           | Reliable         | Boolean                 | Packet was reliable and may be retransmitted |
| quake2.game.seq1                           | Sequence Number  | Unsigned 32-bit integer | Sequence number of the current packet        |
| quake2.game.seq2                           | Sequence Number  | Unsigned 32-bit integer | Sequence number of the last received packet  |
| quake2.game.server.command                 | Server Command   | Unsigned 8-bit integer  | Quake II Server Command                      |
| quake2.s2c                                 | Server to Client | Unsigned 32-bit integer | Server to Client                             |

### Quake III Arena Network Protocol (quake3)

Table A-291. Quake III Arena Network Protocol (quake3)

| Field                         | Field Name      | Type                    | Description                                  |
|-------------------------------|-----------------|-------------------------|--|
| quake3.connectionless         | Connectionless  | Unsigned 32-bit integer | Connectionless                               |
| quake3.connectionless.command | Command         | String                  | Command                                      |
| quake3.connectionless.marker  | Marker          | Unsigned 32-bit integer | Marker                                       |
| quake3.connectionless.text    | Text            | String                  | Text   |
| quake3.direction              | Direction       | No value                | Packet Direction                             |
| quake3.game                   | Game            | Unsigned 32-bit integer | Game   |
| quake3.game.qport             | QPort           | Unsigned 32-bit integer | Quake III Arena Client Port                  |
| quake3.game.rel1              | Reliable        | Boolean                 | Packet is reliable and may be retransmitted  |
| quake3.game.rel2              | Reliable        | Boolean                 | Packet was reliable and may be retransmitted |
| quake3.game.seq1              | Sequence Number | Unsigned 32-bit integer | Sequence number of the current packet        |
| quake3.game.seq2              | Sequence Number | Unsigned 32-bit integer | Sequence number of the last received packet  |
| quake3.server.address         | Server Address  | IPv4 address            | Server IP Address                            |
| quake3.server.port            | Server Port     | Unsigned 16-bit integer | Server UDP Port                              |

### Quake Network Protocol (quake)

Table A-292. Quake Network Protocol (quake)

| Field                      | Field Name | Type                    | Description     |
|----------------------------|------------|-------------------------|-----------------|
| quake.control.accept.port  | Port       | Unsigned 32-bit integer | Game Data Port  |
| quake.control.command      | Command    | Unsigned 8-bit integer  | Control Command |
| quake.control.connect.game | Game       | String                  | Game Name       |

| Field                                  | Field Name                | Type                    | Description                  |
|--|---------------------------|-------------------------|------------------------------|
| quake.control.connect.version          | Version                   | Unsigned 8-bit integer  | Game Protocol Version Number |
| quake.control.player_info.address      | Address                   | String                  | Player Address               |
| quake.control.player_info.colors       | Colors                    | Unsigned 32-bit integer | Player Colors                |
| quake.control.player_info.colors.pants | Pants                     | Unsigned 8-bit integer  | Pants Color                  |
| quake.control.player_info.colors.shirt | Shirt                     | Unsigned 8-bit integer  | Shirt Color                  |
| quake.control.player_info.connect_time | Connect Time              | Unsigned 32-bit integer | Player Connect Time          |
| quake.control.player_info.f frags      | F frags                   | Unsigned 32-bit integer | Player Frags                 |
| quake.control.player_info.name         | Name                      | String                  | Player Name                  |
| quake.control.player_info.player       | Player                    | Unsigned 8-bit integer  | Player                       |
| quake.control.reject.reason            | Reason                    | String                  | Reject Reason                |
| quake.control.rule_info.lastrule       | Last Rule                 | String                  | Last Rule Name               |
| quake.control.rule_info.rule           | Rule                      | String                  | Rule Name                    |
| quake.control.rule_info.value          | Value                     | String                  | Rule Value                   |
| quake.control.server_info.address      | Address                   | String                  | Server Address               |
| quake.control.server_info.game         | Game                      | String                  | Game Name                    |
| quake.control.server_info.map          | Map                       | String                  | Map Name                     |
| quake.control.server_info.max_players  | Maximal Number of Players | Unsigned 8-bit integer  | Maximal Number of Players    |
| quake.control.server_info.num_players  | Number of Players         | Unsigned 8-bit integer  | Current Number of Players    |

| Field                             | Field Name | Type                    | Description                  |
|-----------------------------------|------------|-------------------------|------------------------------|
| quake.control.server_info.server  | Server     | String                  | Server Name                  |
| quake.control.server_info.version | Version    | Unsigned 8-bit integer  | Game Protocol Version Number |
| quake.header.flags                | Flags      | Unsigned 16-bit integer | Flags                        |
| quake.header.length               | Length     | Unsigned 16-bit integer | full data length             |
| quake.header.sequence             | Sequence   | Unsigned 32-bit integer | Sequence Number              |

### QuakeWorld Network Protocol (quakeworld)

Table A-293. QuakeWorld Network Protocol (quakeworld)

| Field  | Field Name       | Type                    | Description                          |
|--|------------------|-------------------------|--------------------------------------|
| quakeworld.c2s   | Client to Server | Unsigned 32-bit integer | Client to Server                     |
| quakeworld.connectionless                              | Connectionless   | Unsigned 32-bit integer | Connectionless                       |
| quakeworld.connectionless.arguments                    | Arguments        | String                  | Arguments                            |
| quakeworld.connectionless.command                      | Command          | String                  | Command                              |
| quakeworld.connectionless.connect.challenge            | Challenge        | Signed 32-bit integer   | Challenge from the server            |
| quakeworld.connectionless.connect.infostring           | Infostring       | String                  | Infostring with additional variables |
| quakeworld.connectionless.connect.infostring.key       | Key              | String                  | Infostring Key                       |
| quakeworld.connectionless.connect.infostring.key_value | Key/Value        | String                  | Key and Value                        |
| quakeworld.connectionless.connect.infostring.value     | Value            | String                  | Infostring Value                     |
| quakeworld.connectionless.connect.qport                | QPort            | Unsigned 32-bit integer | QPort of the client                  |

| Field                                     | Field Name       | Type                    | Description                                  |
|---|------------------|-------------------------|--|
| port                                      |                  |                         |  |
| quakeworld.connectionless.connect.version | Version          | Unsigned 32-bit integer | Protocol Version                             |
| quakeworld.connectionless.marker          | Marker           | Unsigned 32-bit integer | Marker                                       |
| quakeworld.connectionless.rcon.command    | Command          | String                  | Command                                      |
| quakeworld.connectionless.rcon.password   | Password         | String                  | Rcon Password                                |
| quakeworld.connectionless.text            | Text             | String                  | Text   |
| quakeworld.game                           | Game             | Unsigned 32-bit integer | Game   |
| quakeworld.game.qport                     | QPort            | Unsigned 32-bit integer | QuakeWorld Client Port                       |
| quakeworld.game.rel1                      | Reliable         | Boolean                 | Packet is reliable and may be retransmitted  |
| quakeworld.game.rel2                      | Reliable         | Boolean                 | Packet was reliable and may be retransmitted |
| quakeworld.game.seq1                      | Sequence Number  | Unsigned 32-bit integer | Sequence number of the current packet        |
| quakeworld.game.seq2                      | Sequence Number  | Unsigned 32-bit integer | Sequence number of the last received packet  |
| quakeworld.s2c                            | Server to Client | Unsigned 32-bit integer | Server to Client                             |

### Qualified Logical Link Control (qlc)

Table A-294. Qualified Logical Link Control (qlc)

| Field       | Field Name    | Type                   | Description |
|-------------|---------------|------------------------|-------------|
| qlc.address | Address Field | Unsigned 8-bit integer |             |
| qlc.control | Control Field | Unsigned 8-bit integer |             |

### RFC 2250 MPEG1 (mpeg1)



**Table A-295. RFC 2250 MPEG1 (mpeg1)**

| Field                | Field Name         | Type                    | Description |
|----------------------|--------------------|-------------------------|-------------|
| mpeg1.stream         | MPEG-1 stream      | Byte array              |             |
| rtp.payload_mpeg_T   | T                  | Unsigned 16-bit integer |             |
| rtp.payload_mpeg_an  | AN                 | Unsigned 16-bit integer |             |
| rtp.payload_mpeg_b   | Beginning-of-slice | Boolean                 |             |
| rtp.payload_mpeg_bfc | BFC                | Unsigned 16-bit integer |             |
| rtp.payload_mpeg_fbv | FBV                | Unsigned 16-bit integer |             |
| rtp.payload_mpeg_ffc | FFC                | Unsigned 16-bit integer |             |
| rtp.payload_mpeg_ffv | FFV                | Unsigned 16-bit integer |             |
| rtp.payload_mpeg_mbz | MBZ                | Unsigned 16-bit integer |             |
| rtp.payload_mpeg_n   | New Picture Header | Unsigned 16-bit integer |             |
| rtp.payload_mpeg_p   | Picture type       | Unsigned 16-bit integer |             |
| rtp.payload_mpeg_s   | Sequence Header    | Boolean                 |             |
| rtp.payload_mpeg_tr  | Temporal Reference | Unsigned 16-bit integer |             |

**RIPng (ripng)****Table A-296. RIPng (ripng)**

| Field         | Field Name | Type                   | Description |
|---------------|------------|------------------------|-------------|
| ripng.cmd     | Command    | Unsigned 8-bit integer |             |
| ripng.version | Version    | Unsigned 8-bit integer |             |

**RPC Browser (rpc\_browser)****Table A-297. RPC Browser (rpc\_browser)**

| Field          | Field Name  | Type                    | Description         |
|----------------|-------------|-------------------------|---------------------|
| rpc_browser.rc | Return code | Unsigned 32-bit integer | Browser return code |

| Field                      | Field Name     | Type                    | Description  |
|----------------------------|----------------|-------------------------|--|
| rpc_browser.unknown.bytes  | Unknown bytes  | Byte array              | Unknown bytes. If you know what this is, contact ethereal developers.  |
| rpc_browser.unknown.hyper  | Unknown hyper  | Unsigned 64-bit integer | Unknown hyper. If you know what this is, contact ethereal developers.  |
| rpc_browser.unknown.long   | Unknown long   | Unsigned 32-bit integer | Unknown long. If you know what this is, contact ethereal developers.   |
| rpc_browser.unknown.string | Unknown string | String                  | Unknown string. If you know what this is, contact ethereal developers. |

### RSTAT (rstat)

Table A-298. RSTAT (rstat)

| Field              | Field Name   | Type                    | Description  |
|--------------------|--------------|-------------------------|--------------|
| rstat.procedure_v1 | V1 Procedure | Unsigned 32-bit integer | V1 Procedure |
| rstat.procedure_v2 | V2 Procedure | Unsigned 32-bit integer | V2 Procedure |
| rstat.procedure_v3 | V3 Procedure | Unsigned 32-bit integer | V3 Procedure |
| rstat.procedure_v4 | V4 Procedure | Unsigned 32-bit integer | V4 Procedure |

### RSYNC File Synchroniser (rsync)

Table A-299. RSYNC File Synchroniser (rsync)

| Field             | Field Name         | Type       | Description |
|-------------------|--------------------|------------|-------------|
| rsync.command     | Command String     | String     |             |
| rsync.data        | rsync data         | Byte array |             |
| rsync.hdr_magic   | Magic Header       | String     |             |
| rsync.hdr_version | Header Version     | String     |             |
| rsync.motd        | Server MOTD String | String     |             |

| Field          | Field Name             | Type   | Description |
|----------------|------------------------|--------|-------------|
| rsync.query    | Client Query String    | String |             |
| rsync.response | Server Response String | String |             |

## RX Protocol (rx)

Table A-300. RX Protocol (rx)

| Field                 | Field Name       | Type                    | Description                       |
|-----------------------|------------------|-------------------------|-----------------------------------|
| rx.abort              | ABORT Packet     | No value                | ABORT Packet                      |
| rx.abort_code         | Abort Code       | Unsigned 32-bit integer | Abort Code                        |
| rx.ack                | ACK Packet       | No value                | ACK Packet                        |
| rx.ack_type           | ACK Type         | Unsigned 8-bit integer  | Type Of ACKs                      |
| rx.bufferespace       | Bufferspace      | Unsigned 16-bit integer | Number Of Packets Available       |
| rx.callnumber         | Call Number      | Unsigned 32-bit integer | Call Number                       |
| rx.challenge          | CHALLENGE Packet | No value                | CHALLENGE Packet                  |
| rx.cid                | CID              | Unsigned 32-bit integer | CID                               |
| rx.encrypted          | Encrypted        | No value                | Encrypted part of response packet |
| rx.epoch              | Epoch            | Date/Time stamp         | Epoch                             |
| rx.first              | First Packet     | Unsigned 32-bit integer | First Packet                      |
| rx.flags              | Flags            | Unsigned 8-bit integer  | Flags                             |
| rx.flags.client_init  | Client Initiated | Boolean                 | Client Initiated                  |
| rx.flags.free_packet  | Free Packet      | Boolean                 | Free Packet                       |
| rx.flags.last_packet  | Last Packet      | Boolean                 | Last Packet                       |
| rx.flags.more_packets | More Packets     | Boolean                 | More Packets                      |
| rx.flags.request_ack  | Request Ack      | Boolean                 | Request Ack                       |
| rx.if_mtu             | Interface MTU    | Unsigned 32-bit integer | Interface MTU                     |

Appendix A. Ethereal Display Filter Fields

| Field            | Field Name      | Type                    | Description         |
|------------------|-----------------|-------------------------|---------------------|
| rx.inc_nonce     | Inc Nonce       | Unsigned 32-bit integer | Incremented Nonce   |
| rx.kvno          | kvno            | Unsigned 32-bit integer | kvno                |
| rx.level         | Level           | Unsigned 32-bit integer | Level               |
| rx.max_mtu       | Max MTU         | Unsigned 32-bit integer | Max MTU             |
| rx.max_packets   | Max Packets     | Unsigned 32-bit integer | Max Packets         |
| rx.maxskew       | Max Skew        | Unsigned 16-bit integer | Max Skew            |
| rx.min_level     | Min Level       | Unsigned 32-bit integer | Min Level           |
| rx.nonce         | Nonce           | Unsigned 32-bit integer | Nonce               |
| rx.num_acks      | Num ACKs        | Unsigned 8-bit integer  | Number Of ACKs      |
| rx.prev          | Prev Packet     | Unsigned 32-bit integer | Previous Packet     |
| rx.reason        | Reason          | Unsigned 8-bit integer  | Reason For This ACK |
| rx.response      | RESPONSE Packet | No value                | RESPONSE Packet     |
| rx.rwind         | rwind           | Unsigned 32-bit integer | rwind               |
| rx.securityindex | Security Index  | Unsigned 32-bit integer | Security Index      |
| rx.seq           | Sequence Number | Unsigned 32-bit integer | Sequence Number     |
| rx.serial        | Serial          | Unsigned 32-bit integer | Serial              |
| rx.serviceid     | Service ID      | Unsigned 16-bit integer | Service ID          |
| rx.spare         | Spare/Checksum  | Unsigned 16-bit integer | Spare/Checksum      |
| rx.ticket        | ticket          | Byte array              | Ticket              |
| rx.ticket_len    | Ticket len      | Unsigned 32-bit integer | Ticket Length       |
| rx.type          | Type            | Unsigned 8-bit          | Type                |

| Field         | Field Name  | Type                    | Description                   |
|---------------|-------------|-------------------------|-------------------------------|
|               |             | integer                 |                               |
| rx.userstatus | User Status | Unsigned 32-bit integer | User Status                   |
| rx.version    | Version     | Unsigned 32-bit integer | Version Of Challenge/Response |

## Radio Access Network Application Part (ranap)

Table A-301. Radio Access Network Application Part (ranap)

| Field   | Field Name                    | Type                    | Description |
|---|-------------------------------|-------------------------|-------------|
| ranap.CN_DomainIndicator  | CN-DomainIndicator            | Unsigned 8-bit integer  |             |
| ranap.Extension_Field_Value                                     | Extension Field Value         | Byte array              |             |
| ranap.IuSigConId  | IuSigConId                    | Byte array              |             |
| ranap.NAS_PDU   | NAS-PDU                       | Byte array              |             |
| ranap.PLMN_ID   | PLMN-ID                       | Byte array              |             |
| ranap.ProtocolExtensionContainer_present                        | ProtocolExtension Container   | Unsigned 8-bit integer  |             |
| ranap.ProtocolExtensionFields.octets                            | Number of octets              | Unsigned 16-bit integer |             |
| ranap.RAB_ID  | RAB-ID                        | Unsigned 8-bit integer  |             |
| ranap.RAB_SetupOrModifyItemSecond.PDP_Type                      | PDP-Type                      | Unsigned 8-bit integer  |             |
| ranap.RAB_SetupOrModifyItemSecond.dataVolumeReportingIndication | dataVolumeReportingIndication | Unsigned 8-bit integer  |             |
| ranap.RAB_SetupOrModifyItemSecond.dl_GTP_PDU_SequenceNumber     | dl_GTP_PDU_SequenceNumber     | Unsigned 16-bit integer |             |
| ranap.RAB_SetupOrModifyItemSecond.ul_GTP_PDU_SequenceNumber     | ul_GTP_PDU_SequenceNumber     | Unsigned 16-bit integer |             |
| ranap.RAC   | RAC                           | Byte array              |             |
| ranap.SAC   | SAC                           | Byte array              |             |

| Field  | Field Name                             | Type                    | Description |
|--|--|-------------------------|-------------|
| ranap.allocationOrRetentionPriority_present          | allocationOrRetentionPriority          | Unsigned 8-bit integer  |             |
| ranap.bindingID                                      | bindingID                              | Byte array              |             |
| ranap.cause_choice                                   | cause choice                           | Unsigned 8-bit integer  |             |
| ranap.cause_value                                    | cause value                            | Unsigned 8-bit integer  |             |
| ranap.dataVolumeReference                            | dataVolumeReference                    | Unsigned 8-bit integer  |             |
| ranap.dataVolumeReference_present                    | dataVolumeReference                    | Unsigned 8-bit integer  |             |
| ranap.dataVolumeReportingIndication_present          | dataVolumeReportingIndication          | Unsigned 8-bit integer  |             |
| ranap.dl-UnsuccessfullyTransmittedDataVolume         | dl-UnsuccessfullyTransmittedDataVolume | Unsigned 32-bit integer |             |
| ranap.dl_GTP_PDU_SequenceNumber_present              | dl_GTP_PDU_SequenceNumber              | Unsigned 8-bit integer  |             |
| ranap.dl_N_PDU_SequenceNumber_present                | dl_N_PDU_SequenceNumber                | Unsigned 8-bit integer  |             |
| ranap.dl_UnsuccessfullyTransmittedDataVolume_present | dl-UnsuccessfullyTransmittedDataVolume | Unsigned 8-bit integer  |             |
| ranap.dl_dataVolumes_present                         | dl_dataVolumes                         | Unsigned 8-bit integer  |             |
| ranap.gTP_TEI  | gTP_TEI                                | Byte array              |             |
| ranap.guaranteedBitRate_present                      | guaranteedBitRate                      | Unsigned 8-bit integer  |             |
| ranap.iECriticality                                  | iECriticality                          | Unsigned 8-bit integer  |             |
| ranap.iEsCriticalityDiagnostics_present              | iEsCriticalityDiagnostics              | Unsigned 8-bit integer  |             |
| ranap.ie.ProtocolExtensionFields.Id                  | ProtocolExtensionField ID              | Unsigned 16-bit integer |             |

| Field  | Field Name                             | Type                    | Description |
|--|--|-------------------------|-------------|
| ranap.ie.ProtocolExtensionFields.criticality | Criticality of ProtocolExtension Field | Unsigned 8-bit integer  |             |
| ranap.ie.criticality                         | Criticality of IE                      | Unsigned 8-bit integer  |             |
| ranap.ie.iE-Extensions_present               | iE-Extensions                          | Unsigned 8-bit integer  |             |
| ranap.ie.ie_id                               | IE-ID                                  | Unsigned 16-bit integer |             |
| ranap.ie.number_of_ProtocolExtensionFields   | Number of Protocol Extension Fields    | Unsigned 16-bit integer |             |
| ranap.ie.number_of_octets                    | Number of Octets in IE                 | Unsigned 16-bit integer |             |
| ranap.ie.protocol_extension_present          | Protocol Extension                     | Unsigned 8-bit integer  |             |
| ranap.ie_pair.first_criticality              | First Criticality                      | Unsigned 8-bit integer  |             |
| ranap.ie_pair.first_value.number_of_octets   | Number of Octets in first value        | Unsigned 16-bit integer |             |
| ranap.ie_pair.second_criticality             | Second Criticality                     | Unsigned 8-bit integer  |             |
| ranap.ie_pair.second_value.number_of_octets  | Number of Octets in second value       | Unsigned 16-bit integer |             |
| ranap.iuTransportAssociation_present         | iuTransportAssociation                 | Unsigned 8-bit integer  |             |
| ranap.msg_extension_present                  | Message Extension                      | Unsigned 8-bit integer  |             |
| ranap.nAS-SynchronisationIndicator           | nAS-SynchronisationIndicator           | Unsigned 8-bit integer  |             |
| ranap.nAS-SynchronisationIndicator_present   | nAS-SynchronisationIndicator           | Unsigned 8-bit integer  |             |
| ranap.nas_pdu_length                         | length of NAS-PDU                      | Unsigned 16-bit integer |             |
| ranap.num_of_CriticalityDiagnostics_         | Number of CriticalityDiagnostics_      | Unsigned 16-bit integer |             |

| Field  | Field Name                        | Type                    | Description |
|--|-----------------------------------|-------------------------|-------------|
| IEs  | ics-IEs                           | integer                 |             |
| ranap.number_of_ProtocolExtensionFields                                    | Number of ProtocolExtensionFields | Unsigned 16-bit integer |             |
| ranap.number_of_RABs   | Number of RABs                    | Unsigned 8-bit integer  |             |
| ranap.number_of_ies  | Number of IEs in list             | Unsigned 16-bit integer |             |
| ranap.pDP_TypeInformation_present  | pDP_TypeInformation               | Unsigned 8-bit integer  |             |
| ranap.pdu.criticality  | Criticality of PDU                | Unsigned 8-bit integer  |             |
| ranap.pdu.num_of_octets  | Number of Octets in PDU           | Unsigned 16-bit integer |             |
| ranap.pdu.number_of_ies  | Number of IEs in PDU              | Unsigned 16-bit integer |             |
| ranap.procedureCode_present  | procedureCode                     | Unsigned 8-bit integer  |             |
| ranap.procedureCriticality   | procedureCriticality              | Unsigned 8-bit integer  |             |
| ranap.procedureCriticality_present   | procedureCriticality              | Unsigned 8-bit integer  |             |
| ranap.procedure_code   | Procedure Code                    | Unsigned 8-bit integer  |             |
| ranap.rAB_Parameters_present   | rAB-Parameters                    | Unsigned 8-bit integer  |             |
| ranap.rAB_SubflowCombinationBitRate_present                                | subflowSDU_Size                   | Unsigned 8-bit integer  |             |
| ranap.rab_Parameters.allocationOrRetentionPriority.preemptionCapability    | pre-emptionCapability             | Unsigned 8-bit integer  |             |
| ranap.rab_Parameters.allocationOrRetentionPriority.preemptionVulnerability | pre-emptionVulnerability          | Unsigned 8-bit integer  |             |
| ranap.rab_Parameters.allocationOrRetentionPriority.pri                     | priorityLevel                     | Unsigned 8-bit integer  |             |



| Field   | Field Name                      | Type                    | Description |
|---|---------------------------------|-------------------------|-------------|
| orityLevel  |                                 |                         |             |
| ranap.rab_Parameters.allocationOrRetentionPriority.queuingAllowed | queuingAllowed                  | Unsigned 8-bit integer  |             |
| ranap.rab_Parameters.deliveryOrder                                | deliveryOrder                   | Unsigned 8-bit integer  |             |
| ranap.rab_Parameters.guaranteedBitrate                            | guaranteedBitrate               | Unsigned 32-bit integer |             |
| ranap.rab_Parameters.maxBitrate                                   | maxBitrate                      | Unsigned 32-bit integer |             |
| ranap.rab_Parameters.maxSDU_Size                                  | maxSDU_Size                     | Unsigned 16-bit integer |             |
| ranap.rab_Parameters.rAB_AsymmetryIndicator                       | rAB_AsymmetryIndicator          | Unsigned 8-bit integer  |             |
| ranap.rab_Parameters.rAB_SubflowCombinationBitRate                | rAB_SubflowCombinationBitRate   | Unsigned 32-bit integer |             |
| ranap.rab_Parameters.ranap_deliveryOfErroneousSDU                 | deliveryOfErroneousSDU          | Unsigned 8-bit integer  |             |
| ranap.rab_Parameters.relocationRequirement                        | relocationRequirement           | Unsigned 8-bit integer  |             |
| ranap.rab_Parameters.residualBitErrorRatio.exponent               | residualBitErrorRatio: exponent | Unsigned 8-bit integer  |             |
| ranap.rab_Parameters.residualBitErrorRatio.mantissa               | residualBitErrorRatio: mantissa | Unsigned 8-bit integer  |             |
| ranap.rab_Parameters.sDU_ErrorRatio.exponent                      | sDU_ErrorRatio: exponent        | Unsigned 8-bit integer  |             |
| ranap.rab_Parameters.sDU_ErrorRatio.mantissa                      | sDU_ErrorRatio: mantissa        | Unsigned 8-bit integer  |             |
| ranap.rab_Parameters.sourceStatisticsDescriptor                   | sourceStatisticsDescriptor      | Unsigned 8-bit integer  |             |
| ranap.rab_Parameters.subflowSDU_Size                              | subflowSDU_Size                 | Unsigned 8-bit integer  |             |

Appendix A. Ethereal Display Filter Fields

| Field   | Field Name                          | Type                    | Description |
|---|-------------------------------------|-------------------------|-------------|
| ize   |                                     | integer                 |             |
| ranap.rab_Parameters.trafficClass             | Traffic Class                       | Unsigned 8-bit integer  |             |
| ranap.rab_Parameters.trafficHandlingPriority  | trafficHandlingPriority             | Unsigned 8-bit integer  |             |
| ranap.rab_Parameters.transferDelay            | transferDelay                       | Unsigned 16-bit integer |             |
| ranap.ranap_pdu_index                         | RANAP-PDU Index                     | Unsigned 8-bit integer  |             |
| ranap.relocationRequirement_present           | relocationRequirement               | Unsigned 8-bit integer  |             |
| ranap.repetitionNumber                        | repetitionNumber                    | Unsigned 16-bit integer |             |
| ranap.repetitionNumber_present                | repetitionNumber                    | Unsigned 8-bit integer  |             |
| ranap.sDU_ErrorRatio_present                  | sDU_ErrorRatio                      | Unsigned 8-bit integer  |             |
| ranap.sDU_FormatInformationParameters_present | sDU_FormatInformationParameters     | Unsigned 8-bit integer  |             |
| ranap.service_Handover                        | service-Handover                    | Unsigned 8-bit integer  |             |
| ranap.service_Handover_present                | service-Handover                    | Unsigned 8-bit integer  |             |
| ranap.sourceStatisticsDescriptor_present      | sourceStatisticsDescriptor          | Unsigned 8-bit integer  |             |
| ranap.subflowSDU_Size_present                 | subflowSDU_Size                     | Unsigned 8-bit integer  |             |
| ranap.trafficHandlingPriority_present         | trafficHandlingPriority             | Unsigned 8-bit integer  |             |
| ranap.transferDelay_present                   | transferDelay                       | Unsigned 8-bit integer  |             |
| ranap.transportLayerAddress                   | transportLayerAddress               | Byte array              |             |
| ranap.transportLayerAddress_length            | bit length of transportLayerAddress | Unsigned 8-bit integer  |             |
| ranap.transportLa                             | transportLayerAd                    | Unsigned 8-bit          |             |

| Field                                   | Field Name                | Type                   | Description |
|---|---------------------------|------------------------|-------------|
| etherAddress_present                    | dress                     | integer                |             |
| ranap.transportLayerInformation_present | transportLayerInformation | Unsigned 8-bit integer |             |
| ranap.triggeringMessage                 | triggeringMessage         | Unsigned 8-bit integer |             |
| ranap.triggeringMessage_present         | triggeringMessage         | Unsigned 8-bit integer |             |
| ranap.uP_ModeVersions                   | uP_ModeVersions           | Byte array             |             |
| ranap.ul_GTP_PDU_SequenceNumber_present | ul_GTP_PDU_SequenceNumber | Unsigned 8-bit integer |             |
| ranap.ul_N_PDU_SequenceNumber_present   | ul_N_PDU_SequenceNumber   | Unsigned 8-bit integer |             |
| ranap.userPlaneInformation_present      | userPlaneInformation      | Unsigned 8-bit integer |             |
| ranap.userPlaneMode                     | userPlaneMode             | Unsigned 8-bit integer |             |

## Radius Protocol (radius)

Table A-302. Radius Protocol (radius)

| Field         | Field Name | Type                    | Description |
|---------------|------------|-------------------------|-------------|
| radius.code   | Code       | Unsigned 8-bit integer  |             |
| radius.id     | Identifier | Unsigned 8-bit integer  |             |
| radius.length | Length     | Unsigned 16-bit integer |             |

## Raw packet data (raw)

Table A-303. Raw packet data (raw)

| Field | Field Name | Type | Description |
|-------|------------|------|-------------|
|       |            |      |             |

## Real Time Streaming Protocol (rtsp)

Table A-304. Real Time Streaming Protocol (rtsp)

| Field       | Field Name | Type   | Description |
|-------------|------------|--------|-------------|
| rtsp.method | Method     | String |             |

| Field       | Field Name | Type                    | Description |
|-------------|------------|-------------------------|-------------|
| rtsp.status | Status     | Unsigned 32-bit integer |             |
| rtsp.url    | URL        | String                  |             |

### Real-Time Transport Protocol (rtp)

Table A-305. Real-Time Transport Protocol (rtp)

| Field             | Field Name                            | Type                    | Description |
|-------------------|---------------------------------------|-------------------------|-------------|
| rtp.cc            | Contributing source identifiers count | Unsigned 8-bit integer  |             |
| rtp.csrc.item     | CSRC item                             | Unsigned 32-bit integer |             |
| rtp.ext           | Extension                             | Boolean                 |             |
| rtp.ext.len       | Extension length                      | Unsigned 16-bit integer |             |
| rtp.ext.profile   | Defined by profile                    | Unsigned 16-bit integer |             |
| rtp.hdr_ext       | Header extension                      | Unsigned 32-bit integer |             |
| rtp.marker        | Marker                                | Boolean                 |             |
| rtp.p_type        | Payload type                          | Unsigned 8-bit integer  |             |
| rtp.padding       | Padding                               | Boolean                 |             |
| rtp.padding.count | Padding count                         | Unsigned 8-bit integer  |             |
| rtp.padding.data  | Padding data                          | Byte array              |             |
| rtp.payload       | Payload                               | Byte array              |             |
| rtp.seq           | Sequence number                       | Unsigned 16-bit integer |             |
| rtp.ssrc          | Synchronization Source identifier     | Unsigned 32-bit integer |             |
| rtp.timestamp     | Timestamp                             | Unsigned 32-bit integer |             |
| rtp.version       | Version                               | Unsigned 8-bit integer  |             |

### Real-time Transport Control Protocol (rtcp)

Table A-306. Real-time Transport Control Protocol (rtcp)

| Field | Field Name | Type | Description |
|-------|------------|------|-------------|
|-------|------------|------|-------------|

| Field                   | Field Name                        | Type                    | Description |
|-------------------------|-----------------------------------|-------------------------|-------------|
| rtcp.app.data           | Application specific data         | Byte array              |             |
| rtcp.app.name           | Name (ASCII)                      | String                  |             |
| rtcp.app.subtype        | Subtype                           | Unsigned 8-bit integer  |             |
| rtcp.length             | Length                            | Unsigned 16-bit integer |             |
| rtcp.nack.blp           | Bitmask of following lost packets | Unsigned 16-bit integer |             |
| rtcp.nack.fsn           | First sequence number             | Unsigned 16-bit integer |             |
| rtcp.padding            | Padding                           | Boolean                 |             |
| rtcp.padding.count      | Padding count                     | Unsigned 8-bit integer  |             |
| rtcp.padding.data       | Padding data                      | Byte array              |             |
| rtcp.pt                 | Packet type                       | Unsigned 8-bit integer  |             |
| rtcp.rc                 | Reception report count            | Unsigned 8-bit integer  |             |
| rtcp.sc                 | Source count                      | Unsigned 8-bit integer  |             |
| rtcp.sdes.length        | Length                            | Unsigned 32-bit integer |             |
| rtcp.sdes.prefix.length | Prefix length                     | Unsigned 8-bit integer  |             |
| rtcp.sdes.prefix.string | Prefix string                     | String                  |             |
| rtcp.sdes.ssrc_csrc     | SSRC / CSRC identifier            | Unsigned 32-bit integer |             |
| rtcp.sdes.text          | Text                              | String                  |             |
| rtcp.sdes.type          | Type                              | Unsigned 8-bit integer  |             |
| rtcp.sender.octetcount  | Sender's octet count              | Unsigned 32-bit integer |             |
| rtcp.sender.packetcount | Sender's packet count             | Unsigned 32-bit integer |             |
| rtcp.senderssrc         | Sender SSRC                       | Unsigned 32-bit integer |             |

| Field                 | Field Name                                | Type                    | Description |
|-----------------------|---|-------------------------|-------------|
| rtcp.ssrc.cum_nr      | Cumulative number of packets lost         | Unsigned 32-bit integer |             |
| rtcp.ssrc.dlsr        | Delay since last SR timestamp             | Unsigned 32-bit integer |             |
| rtcp.ssrc.ext_high    | Extended highest sequence number received | Unsigned 32-bit integer |             |
| rtcp.ssrc.fraction    | Fraction lost                             | Unsigned 8-bit integer  |             |
| rtcp.ssrc.high_cycles | Sequence number cycles count              | Unsigned 16-bit integer |             |
| rtcp.ssrc.high_seq    | Highest sequence number received          | Unsigned 16-bit integer |             |
| rtcp.ssrc.identifier  | Identifier                                | Unsigned 32-bit integer |             |
| rtcp.ssrc.jitter      | Interarrival jitter                       | Unsigned 32-bit integer |             |
| rtcp.ssrc.lsr         | Last SR timestamp                         | Unsigned 32-bit integer |             |
| rtcp.timestamp.ntp    | NTP timestamp                             | String                  |             |
| rtcp.timestamp.rtp    | RTP timestamp                             | Unsigned 32-bit integer |             |
| rtcp.version          | Version                                   | Unsigned 8-bit integer  |             |

**Registry Server Attributes Manipulation Interface (rs\_attr)**

Table A-307. Registry Server Attributes Manipulation Interface (rs\_attr)

| Field         | Field Name | Type                    | Description |
|---------------|------------|-------------------------|-------------|
| rs_attr.opnum | Operation  | Unsigned 16-bit integer | Operation   |

**Registry server administration operations. (rs\_repadm)**

Table A-308. Registry server administration operations. (rs\_repadm)

| Field             | Field Name | Type                    | Description |
|-------------------|------------|-------------------------|-------------|
| rs_repadmin.opnum | Operation  | Unsigned 16-bit integer | Operation   |

**Remote Override interface (roverride)**

Table A-309. Remote Override interface (roverride)

| Field           | Field Name | Type                    | Description |
|-----------------|------------|-------------------------|-------------|
| roverride.opnum | Operation  | Unsigned 16-bit integer | Operation   |

**Remote Procedure Call (rpc)**

Table A-310. Remote Procedure Call (rpc)

| Field                      | Field Name                     | Type                    | Description                    |
|----------------------------|--------------------------------|-------------------------|--------------------------------|
| rpc.array.len              | num                            | Unsigned 32-bit integer | Length of RPC array            |
| rpc.auth.flavor            | Flavor                         | Unsigned 32-bit integer | Flavor                         |
| rpc.auth.gid               | GID                            | Unsigned 32-bit integer | GID                            |
| rpc.auth.length            | Length                         | Unsigned 32-bit integer | Length                         |
| rpc.auth.machinename       | Machine Name                   | String                  | Machine Name                   |
| rpc.auth.stamp             | Stamp                          | Unsigned 32-bit integer | Stamp                          |
| rpc.auth.uid               | UID                            | Unsigned 32-bit integer | UID                            |
| rpc.authdes.convkey        | Conversation Key (encrypted)   | Unsigned 32-bit integer | Conversation Key (encrypted)   |
| rpc.authdes.namekind       | Namekind                       | Unsigned 32-bit integer | Namekind                       |
| rpc.authdes.netname        | Netname                        | String                  | Netname                        |
| rpc.authdes.nickname       | Nickname                       | Unsigned 32-bit integer | Nickname                       |
| rpc.authdes.timestamp      | Timestamp (encrypted)          | Unsigned 32-bit integer | Timestamp (encrypted)          |
| rpc.authdes.timeverifier   | Timestamp verifier (encrypted) | Unsigned 32-bit integer | Timestamp verifier (encrypted) |
| rpc.authdes.window         | Window (encrypted)             | Unsigned 32-bit integer | Windows (encrypted)            |
| rpc.authdes.windowverifier | Window verifier (encrypted)    | Unsigned 32-bit integer | Window verifier (encrypted)    |
| rpc.authgss.checksum       | GSS Checksum                   | Byte array              | GSS Checksum                   |
| rpc.authgss.context        | GSS Context                    | Byte array              | GSS Context                    |

| Field                         | Field Name                           | Type                    | Description  |
|-------------------------------|--------------------------------------|-------------------------|--|
| t                             |                                      |                         |  |
| rpc.authgss.data              | GSS Data                             | Byte array              | GSS Data   |
| rpc.authgss.data.length       | Length                               | Unsigned 32-bit integer | Length   |
| rpc.authgss.major             | GSS Major Status                     | Unsigned 32-bit integer | GSS Major Status                                       |
| rpc.authgss.minor             | GSS Minor Status                     | Unsigned 32-bit integer | GSS Minor Status                                       |
| rpc.authgss.procedure         | GSS Procedure                        | Unsigned 32-bit integer | GSS Procedure  |
| rpc.authgss.sequence          | GSS Sequence Number                  | Unsigned 32-bit integer | GSS Sequence Number                                    |
| rpc.authgss.service           | GSS Service                          | Unsigned 32-bit integer | GSS Service  |
| rpc.authgss.token_length      | GSS Token Length                     | Unsigned 32-bit integer | GSS Token Length                                       |
| rpc.authgss.version           | GSS Version                          | Unsigned 32-bit integer | GSS Version  |
| rpc.authgss.window            | GSS Sequence Window                  | Unsigned 32-bit integer | GSS Sequence Window                                    |
| rpc.call.dup                  | Duplicate Call                       | Unsigned 32-bit integer | Duplicate Call   |
| rpc.dup                       | Duplicate Transaction                | Unsigned 32-bit integer | Duplicate Transaction                                  |
| rpc.fraglen                   | Fragment Length                      | Unsigned 32-bit integer | Fragment Length  |
| rpc.fragment                  | RPC Fragment                         |                         | RPC Fragment   |
| rpc.fragment.error            | Defragmentation error                |                         | Defragmentation error due to illegal fragments         |
| rpc.fragment.multiple_tails   | Multiple tail fragments found        | Boolean                 | Several tails were found when defragmenting the packet |
| rpc.fragment.overlap          | Fragment overlap                     | Boolean                 | Fragment overlaps with other fragments                 |
| rpc.fragment.overlap.conflict | Conflicting data in fragment overlap | Boolean                 | Overlapping fragments contained conflicting data       |



| Field                        | Field Name                | Type                    | Description                                      |
|------------------------------|---------------------------|-------------------------|--|
| rpc.fragment.toolongfragment | Fragment too long         | Boolean                 | Fragment contained data past end of packet       |
| rpc.fragments                | RPC Fragments             | No value                | RPC Fragments                                    |
| rpc.lastfrag                 | Last Fragment             | Boolean                 | Last Fragment                                    |
| rpc.msgtyp                   | Message Type              | Unsigned 32-bit integer | Message Type                                     |
| rpc.procedure                | Procedure                 | Unsigned 32-bit integer | Procedure  |
| rpc.program                  | Program                   | Unsigned 32-bit integer | Program  |
| rpc.programversion           | Program Version           | Unsigned 32-bit integer | Program Version                                  |
| rpc.programversion.max       | Program Version (Maximum) | Unsigned 32-bit integer | Program Version (Maximum)                        |
| rpc.programversion.min       | Program Version (Minimum) | Unsigned 32-bit integer | Program Version (Minimum)                        |
| rpc.repframe                 | Reply Frame               |                         | Reply Frame                                      |
| rpc.reply.dup                | Duplicate Reply           | Unsigned 32-bit integer | Duplicate Reply                                  |
| rpc.replystat                | Reply State               | Unsigned 32-bit integer | Reply State                                      |
| rpc.reqframe                 | Request Frame             |                         | Request Frame                                    |
| rpc.state_accept             | Accept State              | Unsigned 32-bit integer | Accept State                                     |
| rpc.state_auth               | Auth State                | Unsigned 32-bit integer | Auth State                                       |
| rpc.state_reject             | Reject State              | Unsigned 32-bit integer | Reject State                                     |
| rpc.time                     | Time from request         | Time duration           | Time between Request and Reply for ONC-RPC calls |
| rpc.value_follows            | Value Follows             | Boolean                 | Value Follows                                    |
| rpc.version                  | RPC Version               | Unsigned 32-bit integer | RPC Version                                      |
| rpc.version.max              | RPC Version (Maximum)     | Unsigned 32-bit integer | RPC Version (Maximum)                            |
| rpc.version.min              | RPC Version (Minimum)     | Unsigned 32-bit integer | Program Version (Minimum)                        |

| Field   | Field Name | Type                    | Description |
|---------|------------|-------------------------|-------------|
| rpc.xid | XID        | Unsigned 32-bit integer | XID         |

## Remote Program Load (rpl)

Table A-311. Remote Program Load (rpl)

| Field          | Field Name         | Type                          | Description   |
|----------------|--------------------|-------------------------------|---|
| rpl.adapterid  | Adapter ID         | Unsigned 16-bit integer       | RPL Adapter ID  |
| rpl.bsmversion | BSM Version        | Unsigned 16-bit integer       | RPL Version of BSM.obj  |
| rpl.config     | Configuration      | Byte array                    | RPL Configuration   |
| rpl.connclass  | Connection Class   | Unsigned 16-bit integer       | RPL Connection Class  |
| rpl.corrval    | Correlator Value   | Unsigned 32-bit integer       | RPL Correlator Value  |
| rpl.data       | Data               | Byte array                    | RPL Binary File Data  |
| rpl.ec         | EC                 | Byte array                    | RPL EC  |
| rpl.equipment  | Equipment          | Unsigned 16-bit integer       | RPL Equipment - AX from INT 11h                                     |
| rpl.flags      | Flags              | Unsigned 8-bit integer        | RPL Bit Significant Option Flags                                    |
| rpl.address    | Locate Address     | Unsigned 32-bit integer       | RPL Locate Address  |
| rpl.lmac       | Loader MAC Address | 6-byte Hardware (MAC) Address | RPL Loader MAC Address  |
| rpl.maxframe   | Maximum Frame Size | Unsigned 16-bit integer       | RPL Maximum Frame Size  |
| rpl.memsize    | Memory Size        | Unsigned 16-bit integer       | RPL Memory Size - AX from INT 12h MINUS 32k MINUS the Boot ROM Size |
| rpl.respval    | Response Code      | Unsigned 8-bit integer        | RPL Response Code   |
| rpl.sap        | SAP                | Unsigned 8-bit integer        | RPL SAP   |
| rpl.sequence   | Sequence Number    | Unsigned 32-bit integer       | RPL Sequence Number   |
| rpl.shortname  | Short Name         | Byte array                    | RPL BSM Short   |

| Field        | Field Name      | Type                          | Description                  |
|--------------|-----------------|-------------------------------|------------------------------|
|              |                 |                               | Name                         |
| rpl.smac     | Set MAC Address | 6-byte Hardware (MAC) Address | RPL Set MAC Address          |
| rpl.type     | Type            | Unsigned 16-bit integer       | RPL Packet Type              |
| rpl.xaddress | XFER Address    | Unsigned 32-bit integer       | RPL Transfer Control Address |

## Remote Quota (rquota)

Table A-312. Remote Quota (rquota)

| Field               | Field Name   | Type                    | Description                       |
|---------------------|--------------|-------------------------|-----------------------------------|
| rquota.active       | active       | Boolean                 | Indicates whether quota is active |
| rquota.bhardlimit   | bhardlimit   | Unsigned 32-bit integer | Hard limit for blocks             |
| rquota.bsize        | bsize        | Unsigned 32-bit integer | Block size                        |
| rquota.bsoftlimit   | bsoftlimit   | Unsigned 32-bit integer | Soft limit for blocks             |
| rquota.btimeleft    | btimeleft    | Unsigned 32-bit integer | Time left for excessive disk use  |
| rquota.curblocks    | curblocks    | Unsigned 32-bit integer | Current block count               |
| rquota.curfiles     | curfiles     | Unsigned 32-bit integer | Current # allocated files         |
| rquota.fhardlimit   | fhardlimit   | Unsigned 32-bit integer | Hard limit on allocated files     |
| rquota.fsoftlimit   | fsoftlimit   | Unsigned 32-bit integer | Soft limit of allocated files     |
| rquota.ftimeleft    | ftimeleft    | Unsigned 32-bit integer | Time left for excessive files     |
| rquota.pathp        | pathp        | String                  | Filesystem of interest            |
| rquota.procedure_v1 | V1 Procedure | Unsigned 32-bit integer | V1 Procedure                      |
| rquota.rquota       | rquota       | No value                | Rquota structure                  |
| rquota.status       | status       | Unsigned 32-bit integer | Status code                       |
| rquota.uid          | uid          | Unsigned 32-bit integer | User ID                           |

**Remote Shell (rsh)**

Table A-313. Remote Shell (rsh)

| Field        | Field Name | Type    | Description          |
|--------------|------------|---------|----------------------|
| rsh.request  | Request    | Boolean | TRUE if rsh request  |
| rsh.response | Response   | Boolean | TRUE if rsh response |

**Remote Wall protocol (rwall)**

Table A-314. Remote Wall protocol (rwall)

| Field              | Field Name   | Type                    | Description  |
|--------------------|--------------|-------------------------|--------------|
| rwall.message      | Message      | String                  | Message      |
| rwall.procedure_v1 | V1 Procedure | Unsigned 32-bit integer | V1 Procedure |

**Remote sec\_login preauth interface. (rsec\_login)**

Table A-315. Remote sec\_login preauth interface. (rsec\_login)

| Field            | Field Name | Type                    | Description |
|------------------|------------|-------------------------|-------------|
| rsec_login.opnum | Operation  | Unsigned 16-bit integer | Operation   |

**Resource ReserVation Protocol (RSVP) (rsvp)**

Table A-316. Resource ReserVation Protocol (RSVP) (rsvp)

| Field                     | Field Name           | Type     | Description |
|---------------------------|----------------------|----------|-------------|
| rsvp.acceptable_label_set | ACCEPTABLE LABEL SET | No value |             |
| rsvp.ack                  | Ack Message          | Boolean  |             |
| rsvp.admin_status         | ADMIN STATUS         | No value |             |
| rsvp.adspec               | ADSPEC               | No value |             |
| rsvp.bundle               | Bundle Message       | Boolean  |             |
| rsvp.confirm              | CONFIRM              | No value |             |
| rsvp.dclass               | DCLASS               | No value |             |
| rsvp.error                | ERROR                | No value |             |
| rsvp.explicit_route       | EXPLICIT ROUTE       | No value |             |
| rsvp.filter               | FILTERSPEC           | No value |             |
| rsvp.flowspec             | FLOWSPEC             | No value |             |
| rsvp.generalized_uni      | GENERALIZED UNI      | No value |             |

| Field                 | Field Name           | Type                   | Description |
|-----------------------|----------------------|------------------------|-------------|
| rsvp.hello            | HELLO Message        | Boolean                |             |
| rsvp.hello_obj        | HELLO Request/Ack    | No value               |             |
| rsvp.hop              | HOP                  | No value               |             |
| rsvp.integrity        | INTEGRITY            | No value               |             |
| rsvp.label            | LABEL                | No value               |             |
| rsvp.label_request    | LABEL REQUEST        | No value               |             |
| rsvp.label_set        | RESTRICTED LABEL SET | No value               |             |
| rsvp.lsp_tunnel_if_id | LSP INTERFACE-ID     | No value               |             |
| rsvp.msg              | Message Type         | Unsigned 8-bit integer |             |
| rsvp.msgid            | MESSAGE-ID           | No value               |             |
| rsvp.msgid_list       | MESSAGE-ID LIST      | No value               |             |
| rsvp.notify_request   | NOTIFY REQUEST       | No value               |             |
| rsvp.obj_unknown      | Unknown object       | No value               |             |
| rsvp.object           | Object class         | Unsigned 8-bit integer |             |
| rsvp.path             | Path Message         | Boolean                |             |
| rsvp.perr             | Path Error Message   | Boolean                |             |
| rsvp.policy           | POLICY               | No value               |             |
| rsvp.protection       | PROTECTION           | No value               |             |
| rsvp.ptear            | Path Tear Message    | Boolean                |             |
| rsvp.record_route     | RECORD ROUTE         | No value               |             |
| rsvp.recovery_label   | RECOVERY LABEL       | No value               |             |
| rsvp.rerr             | Resv Error Message   | Boolean                |             |
| rsvp.restart          | RESTART CAPABILITY   | No value               |             |
| rsvp.resv             | Resv Message         | Boolean                |             |
| rsvp.resvconf         | Resv Confirm Message | Boolean                |             |

| Field                      | Field Name                | Type                    | Description |
|----------------------------|---------------------------|-------------------------|-------------|
| rsvp.rtear                 | Resv Tear Message         | Boolean                 |             |
| rsvp.rtearconf             | Resv Tear Confirm Message | Boolean                 |             |
| rsvp.scope                 | SCOPE                     | No value                |             |
| rsvp.sender                | SENDER TEMPLATE           | No value                |             |
| rsvp.sender.ip             | Sender IPv4 address       | IPv4 address            |             |
| rsvp.sender.lsp_id         | Sender LSP ID             | Unsigned 16-bit integer |             |
| rsvp.sender.port           | Sender port number        | Unsigned 16-bit integer |             |
| rsvp.session               | SESSION                   | No value                |             |
| rsvp.session.ext_tunnel_id | Extended tunnel ID        | Unsigned 32-bit integer |             |
| rsvp.session.ip            | Destination address       | IPv4 address            |             |
| rsvp.session.port          | Port number               | Unsigned 16-bit integer |             |
| rsvp.session.proto         | Protocol                  | Unsigned 8-bit integer  |             |
| rsvp.session.tunnel_id     | Tunnel ID                 | Unsigned 16-bit integer |             |
| rsvp.session_attribute     | SESSION ATTRIBUTE         | No value                |             |
| rsvp.srefresh              | Srefresh Message          | Boolean                 |             |
| rsvp.style                 | STYLE                     | No value                |             |
| rsvp.suggested_label       | SUGGESTED LABEL           | No value                |             |
| rsvp.time                  | TIME VALUES               | No value                |             |
| rsvp.tspec                 | SENDER TSPEC              | No value                |             |
| rsvp.upstream_label        | UPSTREAM LABEL            | No value                |             |

### Rlogin Protocol (rlogin)

Table A-317. Rlogin Protocol (rlogin)

| Field            | Field Name | Type     | Description |
|------------------|------------|----------|-------------|
| rlogin.user_info | User Info  | No value |             |

| Field                       | Field Name  | Type                    | Description |
|-----------------------------|-------------|-------------------------|-------------|
| rlogin.window_size          | Window Info | No value                |             |
| rlogin.window_size.cols     | Columns     | Unsigned 16-bit integer |             |
| rlogin.window_size.rows     | Rows        | Unsigned 16-bit integer |             |
| rlogin.window_size.x_pixels | X Pixels    | Unsigned 16-bit integer |             |
| rlogin.window_size.y_pixels | Y Pixels    | Unsigned 16-bit integer |             |

## Routing Information Protocol (rip)

Table A-318. Routing Information Protocol (rip)

| Field              | Field Name          | Type                    | Description                      |
|--------------------|---------------------|-------------------------|----------------------------------|
| rip.auth.passwd    | Password            | String                  | Authentication password          |
| rip.auth.type      | Authentication type | Unsigned 16-bit integer | Type of authentication           |
| rip.command        | Command             | Unsigned 8-bit integer  | What type of RIP Command is this |
| rip.family         | Address Family      | Unsigned 16-bit integer | Address family                   |
| rip.ip             | IP Address          | IPv4 address            | IP Address                       |
| rip.metric         | Metric              | Unsigned 16-bit integer | Metric for this route            |
| rip.netmask        | Netmask             | IPv4 address            | Netmask                          |
| rip.next_hop       | Next Hop            | IPv4 address            | Next Hop router for this route   |
| rip.route_tag      | Route Tag           | Unsigned 16-bit integer | Route Tag                        |
| rip.routing_domain | Routing Domain      | Unsigned 16-bit integer | RIPv2 Routing Domain             |
| rip.version        | Version             | Unsigned 8-bit integer  | Version of the RIP protocol      |

## Routing Table Maintenance Protocol (rtmp)

Table A-319. Routing Table Maintenance Protocol (rtmp)

| Field      | Field Name | Type                   | Description |
|------------|------------|------------------------|-------------|
| nbp.nodeid | Node       | Unsigned 8-bit integer | Node        |

| Field                  | Field Name  | Type                    | Description      |
|------------------------|-------------|-------------------------|------------------|
| nbp.nodeid.length      | Node Length | Unsigned 8-bit integer  | Node Length      |
| rtmp.function          | Function    | Unsigned 8-bit integer  | Request Function |
| rtmp.net               | Net         | Unsigned 16-bit integer | Net              |
| rtmp.tuple.dist        | Distance    | Unsigned 16-bit integer | Distance         |
| rtmp.tuple.net         | Net         | Unsigned 16-bit integer | Net              |
| rtmp.tuple.range_end   | Range End   | Unsigned 16-bit integer | Range End        |
| rtmp.tuple.range_start | Range Start | Unsigned 16-bit integer | Range Start      |

**SADMIND (sadmind)**

Table A-320. SADMIND (sadmind)

| Field                | Field Name   | Type                    | Description  |
|----------------------|--------------|-------------------------|--------------|
| sadmind.procedure_v1 | V1 Procedure | Unsigned 32-bit integer | V1 Procedure |
| sadmind.procedure_v2 | V2 Procedure | Unsigned 32-bit integer | V2 Procedure |
| sadmind.procedure_v3 | V3 Procedure | Unsigned 32-bit integer | V3 Procedure |

**SCSI (scsi)**

Table A-321. SCSI (scsi)

| Field               | Field Name              | Type                    | Description |
|---------------------|-------------------------|-------------------------|-------------|
| scsi.cdb.alloclen   | Allocation Length       | Unsigned 8-bit integer  |             |
| scsi.cdb.alloclen16 | Allocation Length       | Unsigned 16-bit integer |             |
| scsi.cdb.alloclen32 | Allocation Length       | Unsigned 32-bit integer |             |
| scsi.cdb.control    | Control                 | Unsigned 8-bit integer  |             |
| scsi.cdb.defectfmt  | Defect List Format      | Unsigned 8-bit integer  |             |
| scsi.cdb.mode.flags | Mode Sense/Select Flags | Unsigned 8-bit integer  |             |



| Field                      | Field Name             | Type                    | Description |
|----------------------------|------------------------|-------------------------|-------------|
| scsi.cdb.paramlen          | Parameter Length       | Unsigned 8-bit integer  |             |
| scsi.cdb.paramlen16        | Parameter Length       | Unsigned 16-bit integer |             |
| scsi.formatunit.flags      | Flags                  | Unsigned 8-bit integer  |             |
| scsi.formatunit.interleave | Interleave             | Unsigned 16-bit integer |             |
| scsi.formatunit.vendor     | Vendor Unique          | Unsigned 8-bit integer  |             |
| scsi.inquiry.cmdt.pagecode | CMDT Page Code         | Unsigned 8-bit integer  |             |
| scsi.inquiry.devtype       | Peripheral Device Type | Unsigned 8-bit integer  |             |
| scsi.inquiry.evpd.pagecode | EVPD Page Code         | Unsigned 8-bit integer  |             |
| scsi.inquiry.flags         | Flags                  | Unsigned 8-bit integer  |             |
| scsi.inquiry.normaca       | NormACA                | Unsigned 8-bit integer  |             |
| scsi.inquiry.qualifier     | Peripheral Qualifier   | Unsigned 8-bit integer  |             |
| scsi.inquiry.version       | Version                | Unsigned 8-bit integer  |             |
| scsi.log.pc                | Page Control           | Unsigned 8-bit integer  |             |
| scsi.logsel.flags          | Flags                  | Unsigned 8-bit integer  |             |
| scsi.logsns.flags          | Flags                  | Unsigned 16-bit integer |             |
| scsi.logsns.pagecode       | Page Code              | Unsigned 8-bit integer  |             |
| scsi.mode.flags            | Flags                  | Unsigned 8-bit integer  |             |
| scsi.mode.mrie             | MRIE                   | Unsigned 8-bit integer  |             |
| scsi.mode.pc               | Page Control           | Unsigned 8-bit integer  |             |
| scsi.mode.qerr             | Queue Error Management | Boolean                 |             |

Appendix A. Ethereal Display Filter Fields

| Field                       | Field Name                  | Type                    | Description |
|-----------------------------|-----------------------------|-------------------------|-------------|
| scsi.mode.qmod              | Queue Algorithm Modifier    | Unsigned 8-bit integer  |             |
| scsi.mode.sbc.page code     | SBC-2 Page Code             | Unsigned 8-bit integer  |             |
| scsi.mode.smc.pag ecode     | SMC-2 Page Code             | Unsigned 8-bit integer  |             |
| scsi.mode.spc.page code     | SPC-2 Page Code             | Unsigned 8-bit integer  |             |
| scsi.mode.ssc.page code     | SSC-2 Page Code             | Unsigned 8-bit integer  |             |
| scsi.mode.tac               | Task Aborted Status         | Boolean                 |             |
| scsi.mode.tst               | Task Set Type               | Unsigned 8-bit integer  |             |
| scsi.persresv.scope         | Reservation Scope           | Unsigned 8-bit integer  |             |
| scsi.persresv.type          | Reservation Type            | Unsigned 8-bit integer  |             |
| scsi.persresvin.svc action  | Service Action              | Unsigned 8-bit integer  |             |
| scsi.persresvout.sv caction | Service Action              | Unsigned 8-bit integer  |             |
| scsi.proto                  | Protocol                    | Unsigned 8-bit integer  |             |
| scsi.rdwr10.lba             | Logical Block Address (LBA) | Unsigned 32-bit integer |             |
| scsi.rdwr10.xferlen         | Transfer Length             | Unsigned 16-bit integer |             |
| scsi.rdwr12.xferlen         | Transfer Length             | Unsigned 32-bit integer |             |
| scsi.rdwr16.lba             | Logical Block Address (LBA) | Byte array              |             |
| scsi.rdwr6.lba              | Logical Block Address (LBA) | Unsigned 24-bit integer |             |
| scsi.rdwr6.xferlen          | Transfer Length             | Unsigned 24-bit integer |             |
| scsi.read.flags             | Flags                       | Unsigned 8-bit integer  |             |
| scsi.readcapacity.fl ags    | Flags                       | Unsigned 8-bit integer  |             |

| Field                     | Field Name                      | Type                    | Description |
|---------------------------|---------------------------------|-------------------------|-------------|
| scsi.readcapacity.lba     | Logical Block Address           | Unsigned 32-bit integer |             |
| scsi.readcapacity.pmi     | PMI                             | Unsigned 8-bit integer  |             |
| scsi.readdefdata.flags    | Flags                           | Unsigned 8-bit integer  |             |
| scsi.reassignblks.flags   | Flags                           | Unsigned 8-bit integer  |             |
| scsi.release.flags        | Release Flags                   | Unsigned 8-bit integer  |             |
| scsi.release.thirdpartyid | Third-Party ID                  | Byte array              |             |
| scsi.reportluns.lun       | LUN                             | Unsigned 8-bit integer  |             |
| scsi.reportluns.mlun      | Multi-level LUN                 | Byte array              |             |
| scsi.sbc.opcode           | SBC-2 Opcode                    | Unsigned 8-bit integer  |             |
| scsi.smc.opcode           | SMC-2 Opcode                    | Unsigned 8-bit integer  |             |
| scsi.sns.addlen           | Additional Sense Length         | Unsigned 8-bit integer  |             |
| scsi.sns.asc              | Additional Sense Code           | Unsigned 8-bit integer  |             |
| scsi.sns.ascascq          | Additional Sense Code+Qualifier | Unsigned 16-bit integer |             |
| scsi.sns.ascq             | Additional Sense Code Qualifier | Unsigned 8-bit integer  |             |
| scsi.sns.errtype          | SNS Error Type                  | Unsigned 8-bit integer  |             |
| scsi.sns.fru              | Field Replaceable Unit Code     | Unsigned 8-bit integer  |             |
| scsi.sns.info             | Sense Info                      | Unsigned 32-bit integer |             |
| scsi.sns.key              | Sense Key                       | Unsigned 8-bit integer  |             |
| scsi.sns.sksv             | SKSV                            | Boolean                 |             |
| scsi.spc.opcode           | SPC-2 Opcode                    | Unsigned 8-bit integer  |             |

| Field                    | Field Name            | Type                    | Description |
|--------------------------|-----------------------|-------------------------|-------------|
| scsi.spc2.addcdblen      | Additional CDB Length | Unsigned 8-bit integer  |             |
| scsi.spc2.resv.key       | Reservation Key       | Byte array              |             |
| scsi.spc2.resv.scopeaddr | Scope Address         | Byte array              |             |
| scsi.spc2.svcaction      | Service Action        | Unsigned 16-bit integer |             |
| scsi.ssc.opcode          | SSC-2 Opcode          | Unsigned 8-bit integer  |             |
| ssci.mode.rac            | Report a Check        | Boolean                 |             |

### SGI Mount Service (sgimount)

Table A-322. SGI Mount Service (sgimount)

| Field | Field Name | Type | Description |
|-------|------------|------|-------------|
|       |            |      |             |

### SMB (Server Message Block Protocol) (smb)

Table A-323. SMB (Server Message Block Protocol) (smb)

| Field                          | Field Name             | Type    | Description            |
|--------------------------------|------------------------|---------|------------------------|
| nt.access_mask.access_sacl     | Access SACL            | Boolean | Access SACL            |
| nt.access_mask.delete          | Delete                 | Boolean | Delete                 |
| nt.access_mask.generic_all     | Generic all            | Boolean | Generic all            |
| nt.access_mask.generic_execute | Generic execute        | Boolean | Generic execute        |
| nt.access_mask.generic_read    | Generic read           | Boolean | Generic read           |
| nt.access_mask.generic_write   | Generic write          | Boolean | Generic write          |
| nt.access_mask.maximum_allowed | Maximum allowed        | Boolean | Maximum allowed        |
| nt.access_mask.read_control    | Read control           | Boolean | Read control           |
| nt.access_mask.specific_0      | Specific access, bit 0 | Boolean | Specific access, bit 0 |
| nt.access_mask.specific_1      | Specific access, bit 1 | Boolean | Specific access, bit 1 |
| nt.access_mask.specific_2      | Specific access, bit 2 | Boolean | Specific access, bit 2 |

| Field                      | Field Name              | Type    | Description                          |
|----------------------------|-------------------------|---------|--------------------------------------|
| cific_10                   | 10                      |         | 10                                   |
| nt.access_mask.specific_11 | Specific access, bit 11 | Boolean | Specific access, bit 11              |
| nt.access_mask.specific_12 | Specific access, bit 12 | Boolean | Specific access, bit 12              |
| nt.access_mask.specific_13 | Specific access, bit 13 | Boolean | Specific access, bit 13              |
| nt.access_mask.specific_14 | Specific access, bit 14 | Boolean | Specific access, bit 14              |
| nt.access_mask.specific_15 | Specific access, bit 15 | Boolean | Specific access, bit 15              |
| nt.access_mask.specific_2  | Specific access, bit 2  | Boolean | Specific access, bit 2               |
| nt.access_mask.specific_3  | Specific access, bit 3  | Boolean | Specific access, bit 3               |
| nt.access_mask.specific_4  | Specific access, bit 4  | Boolean | Specific access, bit 4               |
| nt.access_mask.specific_5  | Specific access, bit 5  | Boolean | Specific access, bit 5               |
| nt.access_mask.specific_6  | Specific access, bit 6  | Boolean | Specific access, bit 6               |
| nt.access_mask.specific_7  | Specific access, bit 7  | Boolean | Specific access, bit 7               |
| nt.access_mask.specific_8  | Specific access, bit 8  | Boolean | Specific access, bit 8               |
| nt.access_mask.specific_9  | Specific access, bit 9  | Boolean | Specific access, bit 9               |
| nt.access_mask.synchronise | Synchronise             | Boolean | Synchronise                          |
| nt.access_mask.write_dac   | Write DAC               | Boolean | Write DAC                            |
| nt.access_mask.write_owner | Write owner             | Boolean | Write owner                          |
| smb.access.append          | Append                  | Boolean | Can object's contents be appended to |
| smb.access.caching         | Caching                 | Boolean | Caching mode?                        |
| smb.access.delete          | Delete                  | Boolean | Can object be deleted                |

| Field                      | Field Name       | Type                    | Description  |
|----------------------------|------------------|-------------------------|--|
| smb.access.delete_child    | Delete Child     | Boolean                 | Can object's subdirectories be deleted                       |
| smb.access.execute         | Execute          | Boolean                 | Can object be executed (if file) or traversed (if directory) |
| smb.access.generic_all     | Generic All      | Boolean                 | Is generic all allowed for this attribute                    |
| smb.access.generic_execute | Generic Execute  | Boolean                 | Is generic execute allowed for this object?                  |
| smb.access.generic_read    | Generic Read     | Boolean                 | Is generic read allowed for this object?                     |
| smb.access.generic_write   | Generic Write    | Boolean                 | Is generic write allowed for this object?                    |
| smb.access.locality        | Locality         | Unsigned 16-bit integer | Locality of reference  |
| smb.access.maximum_allowed | Maximum Allowed  | Boolean                 | ?  |
| smb.access.mode            | Access Mode      | Unsigned 16-bit integer | Access Mode  |
| smb.access.read            | Read             | Boolean                 | Can object's contents be read                                |
| smb.access.read_attributes | Read Attributes  | Boolean                 | Can object's attributes be read                              |
| smb.access.read_control    | Read Control     | Boolean                 | Are reads allowed of owner, group and ACL data of the SID?   |
| smb.access.read_ea         | Read EA          | Boolean                 | Can object's extended attributes be read                     |
| smb.access.sharing         | Sharing Mode     | Unsigned 16-bit integer | Sharing Mode   |
| smb.access.smb_date        | Last Access Date | Unsigned 16-bit integer | Last Access Date, SMB_DATE format                            |
| smb.access.smb_time        | Last Access Time | Unsigned 16-bit         | Last Access Time,  |

| Field                                   | Field Name               | Type                       | Description   |
|---|--------------------------|----------------------------|---|
| me                                      |                          | integer                    | SMB_TIME format   |
| smb.access.synchroni<br>ze              | Synchronize              | Boolean                    | Windows NT:<br>synchronize access                         |
| smb.access.system<br>_security          | System Security          | Boolean                    | Access to a system<br>ACL?                                |
| smb.access.time                         | Last Access              | Date/Time stamp            | Last Access Time  |
| smb.access.write                        | Write                    | Boolean                    | Can object's<br>contents be written                       |
| smb.access.write_a<br>ttributes         | Write Attributes         | Boolean                    | Can object's<br>attributes be<br>written                  |
| smb.access.write_<br>dac                | Write DAC                | Boolean                    | Is write allowed to<br>the owner group<br>or ACLs?        |
| smb.access.write_e<br>a                 | Write EA                 | Boolean                    | Can object's<br>extended<br>attributes be<br>written      |
| smb.access.write_o<br>wner              | Write Owner              | Boolean                    | Can owner write<br>to the object?                         |
| smb.access.writeth<br>rough             | Writethrough             | Boolean                    | Writethrough<br>mode?                                     |
| smb.access_mask                         | Access required          | Unsigned 32-bit<br>integer | Access mask   |
| smb.account                             | Account                  | String                     | Account,<br>username                                      |
| smb.ace.flags.cont<br>ainer_inherit     | Container Inherit        | Boolean                    | Will subordinate<br>containers inherit<br>this ACE?       |
| smb.ace.flags.fail<br>ed_access         | Audit Failed<br>Accesses | Boolean                    | Should failed<br>accesses be<br>audited?                  |
| smb.ace.flags.inher<br>it_only          | Inherit Only             | Boolean                    | Does this ACE<br>apply to the<br>current object?          |
| smb.ace.flags.inher<br>ited_ace         | Inherited ACE            | Boolean                    | Was this ACE<br>inherited from its<br>parent object?      |
| smb.ace.flags.non_<br>propagate_inherit | Non-Propagate<br>Inherit | Boolean                    | Will subordinate<br>object propagate<br>this ACE further? |

| Field                            | Field Name                | Type                    | Description  |
|----------------------------------|---------------------------|-------------------------|--|
| smb.ace.flags.object_inherit     | Object Inherit            | Boolean                 | Will subordinate files inherit this ACE?           |
| smb.ace.flags.successful_access  | Audit Successful Accesses | Boolean                 | Should successful accesses be audited?             |
| smb.ace.size                     | Size                      | Unsigned 16-bit integer | Size of this ACE                                   |
| smb.ace.type                     | Type                      | Unsigned 8-bit integer  | Type of ACE  |
| smb.acl.num_aces                 | Num ACEs                  | Unsigned 32-bit integer | Number of ACE structures for this ACL              |
| smb.acl.revision                 | Revision                  | Unsigned 16-bit integer | Version of NT ACL structure                        |
| smb.acl.size                     | Size                      | Unsigned 16-bit integer | Size of NT ACL structure                           |
| smb.actual_free_allocation_units | Actual Free Units         | Unsigned 64-bit integer | Number of actual free allocation units             |
| smb.alignment                    | Alignment                 | Unsigned 32-bit integer | What alignment do we require for buffers           |
| smb.alloc.count                  | Allocation Block Count    | Unsigned 32-bit integer | Allocation Block Count                             |
| smb.alloc.size                   | Allocation Block Count    | Unsigned 32-bit integer | Allocation Block Size                              |
| smb.alloc_size                   | Allocation Size           | Unsigned 32-bit integer | Number of bytes to reserve on create or truncate   |
| smb.andxoffset                   | AndXOffset                | Unsigned 16-bit integer | Offset to next command in this SMB packet          |
| smb.ansi_password                | ANSI Password             | Byte array              | ANSI Password                                      |
| smb.ansi_pwlen                   | ANSI Password Length      | Unsigned 16-bit integer | Length of ANSI password                            |
| smb.avail.units                  | Available Units           | Unsigned 32-bit integer | Total number of available units on this filesystem |
| smb.backup.time                  | Backed-up                 | Date/Time stamp         | Backup time  |



| Field                         | Field Name         | Type                    | Description   |
|-------------------------------|--------------------|-------------------------|---|
| smb.bcc                       | Byte Count (BCC)   | Unsigned 16-bit integer | Byte Count, count of data bytes                           |
| smb.blocksize                 | Block Size         | Unsigned 16-bit integer | Block size (in bytes) at server                           |
| smb.bpu                       | Blocks Per Unit    | Unsigned 16-bit integer | Blocks per unit at server                                 |
| smb.buffer_format             | Buffer Format      | Unsigned 8-bit integer  | Buffer Format, type of buffer                             |
| smb.caller_free_all oc_units  | Caller Free Units  | Unsigned 64-bit integer | Number of caller free allocation units                    |
| smb.cancel_to                 | Cancel to          |                         | This packet is a cancellation of the packet in this frame |
| smb.change.time               | Change             | Date/Time stamp         | Last Change Time  |
| smb.change_count              | Change Count       | Unsigned 16-bit integer | Number of changes to wait for                             |
| smb.cmd                       | SMB Command        | Unsigned 8-bit integer  | SMB Command   |
| smb.compressed.c hunk_shift   | Chunk Shift        | Unsigned 8-bit integer  | Allocated size of the stream in number of bytes           |
| smb.compressed.cl uster_shift | Cluster Shift      | Unsigned 8-bit integer  | Allocated size of the stream in number of bytes           |
| smb.compressed.fi le_size     | Compressed Size    | Unsigned 64-bit integer | Size of the compressed file                               |
| smb.compressed.f ormat        | Compression Format | Unsigned 16-bit integer | Compression algorithm used                                |
| smb.compressed.u nit_shift    | Unit Shift         | Unsigned 8-bit integer  | Size of the stream in number of bytes                     |
| smb.connect.flags. dtid       | Disconnect TID     | Boolean                 | Disconnect TID?   |
| smb.connect.supp ort.dfs      | In Dfs             | Boolean                 | Is this in a Dfs tree?                                    |
| smb.connect.supp ort.search   | Search Bits        | Boolean                 | Exclusive Search Bits supported?                          |
| smb.continuation_ to          | Continuation to    |                         | This packet is a continuation to the packet in this       |

| Field                      | Field Name                             | Type                    | Description  |
|----------------------------|--|-------------------------|--|
|                            |  |                         | frame  |
| smb.copy.flags.dest_mode   | Destination mode                       | Boolean                 | Is destination in ASCII?                                       |
| smb.copy.flags.dir         | Must be directory                      | Boolean                 | Must target be a directory?                                    |
| smb.copy.flags.ea_action   | EA action if EAs not supported on dest | Boolean                 | Fail copy if source file has EAs and dest doesn't support EAs? |
| smb.copy.flags.file        | Must be file                           | Boolean                 | Must target be a file?   |
| smb.copy.flags.source_mode | Source mode                            | Boolean                 | Is source in ASCII?  |
| smb.copy.flags.tree_copy   | Tree copy                              | Boolean                 | Is copy a tree copy?   |
| smb.copy.flags.verify      | Verify writes                          | Boolean                 | Verify all writes?   |
| smb.count                  | Count                                  | Unsigned 32-bit integer | Count number of items/bytes                                    |
| smb.create.action          | Create action                          | Unsigned 32-bit integer | Type of action taken   |
| smb.create.disposition     | Disposition                            | Unsigned 32-bit integer | Create disposition, what to do if the file does/does not exist |
| smb.create.file_id         | Server unique file ID                  | Unsigned 32-bit integer | Server unique file ID  |
| smb.create.smb.date        | Create Date                            | Unsigned 16-bit integer | Create Date, SMB_DATE format                                   |
| smb.create.smb.time        | Create Time                            | Unsigned 16-bit integer | Create Time, SMB_TIME format                                   |
| smb.create.time            | Created                                | Date/Time stamp         | Creation Time  |
| smb.data_disp              | Data Displacement                      | Unsigned 16-bit integer | Data Displacement  |
| smb.data_len               | Data Length                            | Unsigned 16-bit integer | Length of data   |
| smb.data_offset            | Data Offset                            | Unsigned 16-bit integer | Data Offset  |
| smb.data_size              | Data Size                              | Unsigned 32-bit integer | Data Size  |

| Field                             | Field Name           | Type                    | Description   |
|-----------------------------------|----------------------|-------------------------|---|
| smb.dc                            | Data Count           | Unsigned 16-bit integer | Number of data bytes in this buffer                       |
| smb.dcm                           | Data Compaction Mode | Unsigned 16-bit integer | Data Compaction Mode                                      |
| smb.delete_pending                | Delete Pending       | Unsigned 16-bit integer | Is this object about to be deleted?                       |
| smb.destination_name              | Destination Name     | String                  | Name of recipient of message                              |
| smb.device.floppy                 | Floppy               | Boolean                 | Is this a floppy disk                                     |
| smb.device.mounted                | Mounted              | Boolean                 | Is this a mounted device                                  |
| smb.device.read_only              | Read Only            | Boolean                 | Is this a read-only device                                |
| smb.device.remote                 | Remote               | Boolean                 | Is this a remote device                                   |
| smb.device.removable              | Removable            | Boolean                 | Is this a removable device                                |
| smb.device.type                   | Device Type          | Unsigned 32-bit integer | Type of device  |
| smb.device.virtual                | Virtual              | Boolean                 | Is this a virtual device                                  |
| smb.device.write_once             | Write Once           | Boolean                 | Is this a write-once device                               |
| smb.dfs.flags.fielding            | Fielding             | Boolean                 | The servers in referrals are capable of fielding          |
| smb.dfs.flags.server_hold_storage | Hold Storage         | Boolean                 | The servers in referrals should hold storage for the file |
| smb.dfs.num_referrals             | Num Referrals        | Unsigned 16-bit integer | Number of referrals in this pdu                           |
| smb.dfs.path_consumed             | Path Consumed        | Unsigned 16-bit integer | Number of RequestFilename bytes client                    |
| smb.dfs.referral.alt_path         | Alt Path             | String                  | Alternative(8.3) Path that matched pathconsumed           |
| smb.dfs.referral.alt              | Alt Path Offset      | Unsigned 16-bit         | Offset of   |

| Field                        | Field Name              | Type                       | Description   |
|------------------------------|-------------------------|----------------------------|---|
| _path_offset                 |                         | integer                    | alternative(8.3)<br>Path that matched<br>pathconsumed                   |
| smb.dfs.referral.flags.strip | Strip                   | Boolean                    | Should we strip off<br>pathconsumed<br>characters before<br>submitting? |
| smb.dfs.referral.node        | Node                    | String                     | Name of entity to<br>visit next   |
| smb.dfs.referral.node_offset | Node Offset             | Unsigned 16-bit<br>integer | Offset of name of<br>entity to visit next                               |
| smb.dfs.referral.path        | Path                    | String                     | Dfs Path that<br>matched<br>pathconsumed                                |
| smb.dfs.referral.path_offset | Path Offset             | Unsigned 16-bit<br>integer | Offset of Dfs Path<br>that matched<br>pathconsumed                      |
| smb.dfs.referral.proximity   | Proximity               | Unsigned 16-bit<br>integer | Hint describing<br>proximity of this<br>server to the client            |
| smb.dfs.referral.server.type | Server Type             | Unsigned 16-bit<br>integer | Type of referral<br>server  |
| smb.dfs.referral.size        | Size                    | Unsigned 16-bit<br>integer | Size of referral<br>element   |
| smb.dfs.referral.ttl         | TTL                     | Unsigned 16-bit<br>integer | Number of<br>seconds the client<br>can cache this<br>referral           |
| smb.dfs.referral.version     | Version                 | Unsigned 16-bit<br>integer | Version of referral<br>element  |
| smb.dialect.index            | Selected Index          | Unsigned 16-bit<br>integer | Index of selected<br>dialect  |
| smb.dialect.name             | Name                    | String                     | Name of dialect   |
| smb.dir.count                | Root Directory<br>Count | Unsigned 32-bit<br>integer | Directory Count   |
| smb.dir_name                 | Directory               | String                     | SMB Directory<br>Name   |
| smb.ea.error_offset          | EA Error offset         | Unsigned 32-bit<br>integer | Offset into EA list<br>if EA error                                      |
| smb.ea.length                | EA Length               | Unsigned 32-bit<br>integer | Total EA length<br>for opened file                                      |

| Field                         | Field Name          | Type                    | Description  |
|-------------------------------|---------------------|-------------------------|--|
| smb.ea_size                   | EA Size             | Unsigned 32-bit integer | Size of file's EA information                          |
| smb.echo.count                | Echo Count          | Unsigned 16-bit integer | Number of times to echo data back                      |
| smb.echo.data                 | Echo Data           | Byte array              | Data for SMB Echo Request/Response                     |
| smb.echo.seq_num              | Echo Seq Num        | Unsigned 16-bit integer | Sequence number for this echo response                 |
| smb.encryption_key            | Encryption Key      | Byte array              | Challenge/Response Encryption Key (for LM2.1 dialect)  |
| smb.encryption_key_length     | Key Length          | Unsigned 16-bit integer | Encryption key length (must be 0 if not LM2.1 dialect) |
| smb.end_of_file               | End Of File         | Unsigned 64-bit integer | Offset to the first free byte in the file              |
| smb.end_of_search             | End Of Search       | Unsigned 16-bit integer | Was last entry returned?                               |
| smb.error_class               | Error Class         | Unsigned 8-bit integer  | DOS Error Class  |
| smb.error_code                | Error Code          | Unsigned 16-bit integer | DOS Error Code   |
| smb.ext_attr                  | Extended Attributes | Byte array              | Extended Attributes                                    |
| smb.ff2_loi                   | Level of Interest   | Unsigned 16-bit integer | Level of interest for FIND_FIRST2 command              |
| smb.fid                       | FID                 | Unsigned 16-bit integer | FID: File ID   |
| smb.file                      | File Name           | String                  | File Name  |
| smb.file.count                | Root File Count     | Unsigned 32-bit integer | File Count   |
| smb.file_attribute.archive    | Archive             | Boolean                 | ARCHIVE file attribute                                 |
| smb.file_attribute.compressed | Compressed          | Boolean                 | Is this file compressed?                               |
| smb.file_attribute.device     | Device              | Boolean                 | Is this file a device?                                 |

| Field                                  | Field Name      | Type                    | Description  |
|--|-----------------|-------------------------|--|
| smb.file_attribute.directory           | Directory       | Boolean                 | DIRECTORY file attribute                                 |
| smb.file_attribute.encrypted           | Encrypted       | Boolean                 | Is this file encrypted?                                  |
| smb.file_attribute.hidden              | Hidden          | Boolean                 | HIDDEN file attribute                                    |
| smb.file_attribute.normal              | Normal          | Boolean                 | Is this a normal file?                                   |
| smb.file_attribute.not_content_indexed | Content Indexed | Boolean                 | May this file be indexed by the content indexing service |
| smb.file_attribute.offline             | Offline         | Boolean                 | Is this file offline?                                    |
| smb.file_attribute.read_only           | Read Only       | Boolean                 | READ ONLY file attribute                                 |
| smb.file_attribute.reparse             | Reparse Point   | Boolean                 | Does this file have an associated reparse point?         |
| smb.file_attribute.sparse              | Sparse          | Boolean                 | Is this a sparse file?                                   |
| smb.file_attribute.system              | System          | Boolean                 | SYSTEM file attribute                                    |
| smb.file_attribute.temporary           | Temporary       | Boolean                 | Is this a temporary file?                                |
| smb.file_attribute.volume              | Volume ID       | Boolean                 | VOLUME file attribute                                    |
| smb.file_data                          | File Data       | Byte array              | Data read/written to the file                            |
| smb.file_index                         | File Index      | Unsigned 32-bit integer | File index   |
| smb.file_name_len                      | File Name Len   | Unsigned 32-bit integer | Length of File Name                                      |
| smb.file_size                          | File Size       | Unsigned 32-bit integer | File Size  |
| smb.file_type                          | File Type       | Unsigned 16-bit integer | Type of file   |
| smb.files_moved                        | Files Moved     | Unsigned 16-bit integer | Number of files moved                                    |
| smb.find_first2 fla                    | Backup Intent   | Boolean                 | Find with backup   |

| <b>Field</b>                   | <b>Field Name</b>             | <b>Type</b> | <b>Description</b>                                   |
|--------------------------------|-------------------------------|-------------|--|
| gs.backup                      |                               |             | intent   |
| smb.find_first2.flags.close    | Close                         | Boolean     | Close search after this request                      |
| smb.find_first2.flags.continue | Continue                      | Boolean     | Continue search from previous ending place           |
| smb.find_first2.flags.eos      | Close on EOS                  | Boolean     | Close search if end of search reached                |
| smb.find_first2.flags.resume   | Resume                        | Boolean     | Return resume keys for each entry found              |
| smb.flags.canon                | Canonicalized Pathnames       | Boolean     | Are pathnames canonicalized?                         |
| smb.flags.caseless             | Case Sensitivity              | Boolean     | Are pathnames caseless or casesensitive?             |
| smb.flags.lock                 | Lock and Read                 | Boolean     | Are Lock&Read and Write&Unlock operations supported? |
| smb.flags.notify               | Notify                        | Boolean     | Notify on open or all?                               |
| smb.flags.oplock               | Oplocks                       | Boolean     | Is an oplock requested/granted?                      |
| smb.flags.receive_buffer       | Receive Buffer Posted         | Boolean     | Have receive buffers been reported?                  |
| smb.flags.response             | Request/Response              | Boolean     | Is this a request or a response?                     |
| smb.flags2.dfs                 | Dfs                           | Boolean     | Can pathnames be resolved using Dfs?                 |
| smb.flags2.ea                  | Extended Attributes           | Boolean     | Are extended attributes supported?                   |
| smb.flags2.esn                 | Extended Security Negotiation | Boolean     | Is extended security negotiation supported?          |
| smb.flags2.long_names_allowed  | Long Names Allowed            | Boolean     | Are long file names allowed in                       |

| Field                      | Field Name            | Type                    | Description                                    |
|----------------------------|-----------------------|-------------------------|--|
|                            |                       |                         | the response?                                  |
| smb.flags2.long_names_used | Long Names Used       | Boolean                 | Are pathnames in this request long file names? |
| smb.flags2.nt_error        | Error Code Type       | Boolean                 | Are error codes NT or DOS format?              |
| smb.flags2.roe             | Execute-only Reads    | Boolean                 | Will reads be allowed for execute-only files?  |
| smb.flags2.sec_sig         | Security Signatures   | Boolean                 | Are security signatures supported?             |
| smb.flags2.string          | Unicode Strings       | Boolean                 | Are strings ASCII or Unicode?                  |
| smb.fn_loi                 | Level of Interest     | Unsigned 16-bit integer | Level of interest for FIND_NOTIFY command      |
| smb.forwarded_name         | Forwarded Name        | String                  | Recipient name being forwarded                 |
| smb.free_alloc_units       | Free Units            | Unsigned 64-bit integer | Number of free allocation units                |
| smb.free_block_count       | Free Block Count      | Unsigned 32-bit integer | Free Block Count                               |
| smb.free_units             | Free Units            | Unsigned 16-bit integer | Number of free units at server                 |
| smb.fs_attr.cpn            | Case Preserving       | Boolean                 | Will this FS Preserve Name Case?               |
| smb.fs_attr.css            | Case Sensitive Search | Boolean                 | Does this FS support Case Sensitive Search?    |
| smb.fs_attr.dim            | Mounted               | Boolean                 | Is this FS a Mounted Device?                   |
| smb.fs_attr.fc             | Compression           | Boolean                 | Does this FS support File Compression?         |
| smb.fs_attr.pacls          | Persistent ACLs       | Boolean                 | Does this FS support Persistent ACLs?          |
| smb.fs_attr.vic            | Compressed            | Boolean                 | Is this FS Compressed?                         |



| Field                     | Field Name       | Type                    | Description   |
|---------------------------|------------------|-------------------------|---|
| smb.fs_attr.vq            | Volume Quotas    | Boolean                 | Does this FS support Volume Quotas?                                     |
| smb.fs_bytes_per_sector   | Bytes per Sector | Unsigned 32-bit integer | Bytes per sector  |
| smb.fs_id                 | FS Id            | Unsigned 32-bit integer | File System ID (NT Server always returns 0)                             |
| smb.fs_max_name_len       | Max name length  | Unsigned 32-bit integer | Maximum length of each file name component in number of bytes           |
| smb.fs_name               | FS Name          | String                  | Name of filesystem  |
| smb.fs_name.len           | Label Length     | Unsigned 32-bit integer | Length of filesystem name in bytes                                      |
| smb.fs_sector_per_unit    | Sectors/Unit     | Unsigned 32-bit integer | Sectors per allocation unit   |
| smb.fs_units              | Total Units      | Unsigned 32-bit integer | Total number of units on this filesystem                                |
| smb.impersonation.level   | Impersonation    | Unsigned 32-bit integer | Impersonation level   |
| smb.index_number          | Index Number     | Unsigned 64-bit integer | File system unique identifier   |
| smb.ipc_state.endpoint    | Endpoint         | Unsigned 16-bit integer | Which end of the pipe this is   |
| smb.ipc_state.icount      | Icount           | Unsigned 16-bit integer | Count to control pipe instancing  |
| smb.ipc_state.nonblocking | Nonblocking      | Boolean                 | Is I/O to this pipe nonblocking?  |
| smb.ipc_state.pipe_type   | Pipe Type        | Unsigned 16-bit integer | What type of pipe this is   |
| smb.ipc_state.read_mode   | Read Mode        | Unsigned 16-bit integer | How this pipe should be read  |
| smb.is_directory          | Is Directory     | Unsigned 8-bit integer  | Is this object a directory?   |
| smb.last_name_offset      | Last Name Offset | Unsigned 16-bit integer | If non-0 this is the offset into the datablock for the file name of the |

| Field                        | Field Name        | Type                    | Description   |
|------------------------------|-------------------|-------------------------|---|
|                              |                   |                         | last entry  |
| smb.last_write.smb.date      | Last Write Date   | Unsigned 16-bit integer | Last Write Date, SMB_DATE format                              |
| smb.last_write.smb.time      | Last Write Time   | Unsigned 16-bit integer | Last Write Time, SMB_TIME format                              |
| smb.last_write.time          | Last Write        | Date/Time stamp         | Time this file was last written to                            |
| smb.link_count               | Link Count        | Unsigned 32-bit integer | Number of hard links to the file                              |
| smb.list_len                 | ListLength        | Unsigned 32-bit integer | Length of the remaining data                                  |
| smb.lock.length              | Length            | Unsigned 64-bit integer | Length of lock/unlock region                                  |
| smb.lock.offset              | Offset            | Unsigned 64-bit integer | Offset in the file of lock/unlock region                      |
| smb.lock.type.cancel         | Cancel            | Boolean                 | Cancel outstanding lock requests?                             |
| smb.lock.type.change         | Change            | Boolean                 | Change type of lock?  |
| smb.lock.type.large          | Large Files       | Boolean                 | Large file locking requested?                                 |
| smb.lock.type.oplock_release | Oplock Break      | Boolean                 | Is this a notification of, or a response to, an oplock break? |
| smb.lock.type.shared         | Shared            | Boolean                 | Shared or exclusive lock requested?                           |
| smb.locking.num_locks        | Number of Locks   | Unsigned 16-bit integer | Number of lock requests in this request                       |
| smb.locking.num_unlocks      | Number of Unlocks | Unsigned 16-bit integer | Number of unlock requests in this request                     |
| smb.locking.oplock.level     | Oplock Level      | Unsigned 8-bit integer  | Level of existing oplock at client (if any)                   |
| smb.loi                      | Level of Interest | Unsigned 16-bit         | Level of interest   |

| Field                    | Field Name           | Type                    | Description                               |
|--------------------------|----------------------|-------------------------|---|
|                          |                      | integer                 | for TRANSACTION[2] commands               |
| smb.mac.access_control   | Mac Access Control   | Boolean                 | Are Mac Access Control Supported          |
| smb.mac.desktop_db_calls | Desktop DB Calls     | Boolean                 | Are Macintosh Desktop DB Calls Supported? |
| smb.mac.finderinfo       | Finder Info          | Byte array              | Finder Info                               |
| smb.mac.get_set_comments | Get Set Comments     | Boolean                 | Are Mac Get Set Comments supported?       |
| smb.mac.streams_support  | Mac Streams          | Boolean                 | Are Mac Extensions and streams supported? |
| smb.mac.support_flags    | Mac Support Flags    | Unsigned 32-bit integer | Mac Support Flags                         |
| smb.mac.uids             | Macintosh Unique IDs | Boolean                 | Are Unique IDs supported                  |
| smb.machine_name         | Machine Name         | String                  | Name of target machine                    |
| smb.max_buf              | Max Buffer           | Unsigned 16-bit integer | Max client buffer size                    |
| smb.max_bufsize          | Max Buffer Size      | Unsigned 32-bit integer | Maximum transmit buffer size              |
| smb.max_mpx_count        | Max Mpx Count        | Unsigned 16-bit integer | Maximum pending multiplexed requests      |
| smb.max_raw              | Max Raw Buffer       | Unsigned 32-bit integer | Maximum raw buffer size                   |
| smb.max_referral_level   | Max Referral Level   | Unsigned 16-bit integer | Latest referral version number understood |
| smb.max_vcs              | Max VCs              | Unsigned 16-bit integer | Maximum VCs between client and server     |
| smb.maxcount             | Max Count            | Unsigned 16-bit integer | Maximum Count                             |

| Field                      | Field Name          | Type                    | Description                                 |
|----------------------------|---------------------|-------------------------|---|
| smb.mdc                    | Max Data Count      | Unsigned 32-bit integer | Maximum number of data bytes to return      |
| smb.message                | Message             | String                  | Message text                                |
| smb.message.len            | Message Len         | Unsigned 16-bit integer | Length of message                           |
| smb.mgid                   | Message Group ID    | Unsigned 16-bit integer | Message group ID for multi-block messages   |
| smb.mid                    | Multiplex ID        | Unsigned 16-bit integer | Multiplex ID                                |
| smb.mincount               | Min Count           | Unsigned 16-bit integer | Minimum Count                               |
| smb.modify.time            | Modified            | Date/Time stamp         | Modification Time                           |
| smb.monitor_handle         | Monitor Handle      | Unsigned 16-bit integer | Handle for Find Notify operations           |
| smb.move.flags.dir         | Must be directory   | Boolean                 | Must target be a directory?                 |
| smb.move.flags.file        | Must be file        | Boolean                 | Must target be a file?                      |
| smb.move.flags.verify      | Verify writes       | Boolean                 | Verify all writes?                          |
| smb.mpc                    | Max Parameter Count | Unsigned 32-bit integer | Maximum number of parameter bytes to return |
| smb.msc                    | Max Setup Count     | Unsigned 8-bit integer  | Maximum number of setup words to return     |
| smb.native_fs              | Native File System  | String                  | Native File System                          |
| smb.native_lanman          | Native LAN Manager  | String                  | Which LANMAN protocol we are running        |
| smb.native_os              | Native OS           | String                  | Which OS we are running                     |
| smb.next_entry_offset      | Next Entry Offset   | Unsigned 32-bit integer | Offset to next entry                        |
| smb.nt.create.batch_oplock | Batch Oplock        | Boolean                 | Is a batch oplock requested?                |
| smb.nt.create.dir          | Create Directory    | Boolean                 | Must target of open be a                    |

| Field                                      | Field Name        | Type                    | Description  |
|--|-------------------|-------------------------|--|
|  |                   |                         | directory?   |
| smb.nt.create.oplock                       | Exclusive Oplock  | Boolean                 | Is an oplock requested   |
| smb.nt.create_options.delete_on_close      | Delete On Close   | Boolean                 | Should the file be deleted when closed?                              |
| smb.nt.create_options.directory            | Directory         | Boolean                 | Should file being opened/created be a directory?                     |
| smb.nt.create_options.eight_dot_three_only | 8.3 Only          | Boolean                 | Does the client understand only 8.3 filenames?                       |
| smb.nt.create_options.no_ea_knowledge      | No EA Knowledge   | Boolean                 | Does the client not understand extended attributes?                  |
| smb.nt.create_options.non_directory        | Non-Directory     | Boolean                 | Should file being opened/created be a non-directory?                 |
| smb.nt.create_options.random_access        | Random Access     | Boolean                 | Will the client be accessing the file randomly?                      |
| smb.nt.create_options.sequential_only      | Sequential Only   | Boolean                 | Will accesses to this file only be sequential?                       |
| smb.nt.create_options.sync_io_alert        | Sync I/O Alert    | Boolean                 | All operations are performed synchronous                             |
| smb.nt.create_options.sync_io_nonalert     | Sync I/O Nonalert | Boolean                 | All operations are synchronous and may block                         |
| smb.nt.create_options.write_through        | Write Through     | Boolean                 | Should writes to the file write buffered data out before completing? |
| smb.nt.function                            | Function          | Unsigned 16-bit integer | Function for NT Transaction  |
| smb.nt.ioctl.data                          | IOCTL Data        | Byte array              | Data for the IOCTL call  |
| smb.nt.ioctl.flags.root_handle             | Root Handle       | Boolean                 | Apply to this share or root Dfs share                                |
| smb.nt.ioctl.function                      | Function          | Unsigned 32-bit         | NT IOCTL   |

| Field                      | Field Name            | Type                    | Description   |
|----------------------------|-----------------------|-------------------------|---|
| on                         |                       | integer                 | function code                                       |
| smb.nt.ioctl.isfsctl       | IsFSctl               | Unsigned 8-bit integer  | Is this a device IOCTL (FALSE) or FS Control (TRUE) |
| smb.nt.notify.action       | Action                | Unsigned 32-bit integer | Which action caused this notify response            |
| smb.nt.notify.attributes   | Attribute Change      | Boolean                 | Notify on changes to attributes                     |
| smb.nt.notify.creation     | Created Change        | Boolean                 | Notify on changes to creation time                  |
| smb.nt.notify.dir_name     | Directory Name Change | Boolean                 | Notify on changes to directory name                 |
| smb.nt.notify.ea           | EA Change             | Boolean                 | Notify on changes to Extended Attributes            |
| smb.nt.notify.file_name    | File Name Change      | Boolean                 | Notify on changes to file name                      |
| smb.nt.notify.last_access  | Last Access Change    | Boolean                 | Notify on changes to last access                    |
| smb.nt.notify.last_write   | Last Write Change     | Boolean                 | Notify on changes to last write                     |
| smb.nt.notify.security     | Security Change       | Boolean                 | Notify on changes to security settings              |
| smb.nt.notify.size         | Size Change           | Boolean                 | Notify on changes to size                           |
| smb.nt.notify.stream_name  | Stream Name Change    | Boolean                 | Notify on changes to stream name?                   |
| smb.nt.notify.stream_size  | Stream Size Change    | Boolean                 | Notify on changes of stream size                    |
| smb.nt.notify.stream_write | Stream Write          | Boolean                 | Notify on stream write?                             |
| smb.nt.notify.watch_tree   | Watch Tree            | Unsigned 8-bit integer  | Should Notify watch subdirectories also?            |
| smb.nt_qsd.dacl            | DACL                  | Boolean                 | Is DACL security informaton being queried?          |
| smb.nt_qsd.group           | Group                 | Boolean                 | Is group security informaton being                  |

| Field                          | Field Name        | Type                    | Description                                  |
|--------------------------------|-------------------|-------------------------|--|
|                                |                   |                         | queried?                                     |
| smb.nt_qsd.owner               | Owner             | Boolean                 | Is owner security information being queried? |
| smb.nt_qsd.sacl                | SACL              | Boolean                 | Is SACL security information being queried?  |
| smb.nt_status                  | NT Status         | Unsigned 32-bit integer | NT Status code                               |
| smb.ntr_clu                    | Cluster count     | Unsigned 32-bit integer | Number of clusters                           |
| smb.ntr_loi                    | Level of Interest | Unsigned 16-bit integer | NT Rename level                              |
| smb.offset                     | Offset            | Unsigned 32-bit integer | Offset in file                               |
| smb.offset_high                | High Offset       | Unsigned 32-bit integer | High 32 Bits Of File Offset                  |
| smb.open.action.lock           | Exclusive Open    | Boolean                 | Is this file opened by another user?         |
| smb.open.action.open           | Open Action       | Unsigned 16-bit integer | Open Action, how the file was opened         |
| smb.open.flags.additional_info | Additional Info   | Boolean                 | Additional Information Requested?            |
| smb.open.flags.batch_oplock    | Batch Oplock      | Boolean                 | Batch Oplock Requested?                      |
| smb.open.flags.ea_len          | Total EA Len      | Boolean                 | Total EA Len Requested?                      |
| smb.open.flags.ex_oplock       | Exclusive Oplock  | Boolean                 | Exclusive Oplock Requested?                  |
| smb.open.function.create       | Create            | Boolean                 | Create file if it doesn't exist?             |
| smb.open.function.open         | Open              | Unsigned 16-bit integer | Action to be taken on open if file exists    |
| smb.oplock.level               | Oplock level      | Unsigned 8-bit integer  | Level of oplock granted                      |
| smb.originator_name            | Originator Name   | String                  | Name of sender of message                    |
| smb.padding                    | Padding           | Byte array              | Padding or                                   |

| Field                       | Field Name             | Type                    | Description  |
|-----------------------------|------------------------|-------------------------|--|
|                             |                        |                         | unknown data   |
| smb.password                | Password               | Byte array              | Password   |
| smb.path                    | Path                   | String                  | Path. Server name and share name                     |
| smb.pc                      | Parameter Count        | Unsigned 16-bit integer | Number of parameter bytes in this buffer             |
| smb.pd                      | Parameter Displacement | Unsigned 16-bit integer | Displacement of these parameter bytes                |
| smb.pid                     | Process ID             | Unsigned 16-bit integer | Process ID   |
| smb.po                      | Parameter Offset       | Unsigned 16-bit integer | Offset (from header start) to parameters             |
| smb.primary_domain          | Primary Domain         | String                  | The server's primary domain                          |
| smb.print.identifier        | Identifier             | String                  | Identifier string for this print job                 |
| smb.print.mode              | Mode                   | Unsigned 16-bit integer | Text or Graphics mode                                |
| smb.print.queued.date       | Queued                 | Date/Time stamp         | Date when this entry was queued                      |
| smb.print.queued.smb.date   | Queued Date            | Unsigned 16-bit integer | Date when this print job was queued, SMB_DATE format |
| smb.print.queued.smb.time   | Queued Time            | Unsigned 16-bit integer | Time when this print job was queued, SMB_TIME format |
| smb.print.restart_index     | Restart Index          | Unsigned 16-bit integer | Index of entry after last returned                   |
| smb.print.setup.len         | Setup Len              | Unsigned 16-bit integer | Length of printer setup data                         |
| smb.print.spool.file_number | Spool File Number      | Unsigned 16-bit integer | Spool File Number, assigned by the spooler           |
| smb.print.spool.file_size   | Spool File Size        | Unsigned 32-bit integer | Number of bytes in spool file                        |



| Field                       | Field Name             | Type                    | Description  |
|-----------------------------|------------------------|-------------------------|--|
| smb.print.spool.name        | Name                   | Byte array              | Name of client that submitted this job                             |
| smb.print.start_index       | Start Index            | Unsigned 16-bit integer | First queue entry to return  |
| smb.print.status            | Status                 | Unsigned 8-bit integer  | Status of this entry   |
| smb.pwlen                   | Password Length        | Unsigned 16-bit integer | Length of password   |
| smb.qfi_loi                 | Level of Interest      | Unsigned 16-bit integer | Level of interest for QUERY_FS_INFORMATION2 command                |
| smb.quota.flags.deny_disk   | Deny Disk              | Boolean                 | Is the default quota limit enforced?                               |
| smb.quota.flags.enabled     | Enabled                | Boolean                 | Is quotas enabled of this FS?                                      |
| smb.quota.flags.log_limit   | Log Limit              | Boolean                 | Should the server log an event when the limit is exceeded?         |
| smb.quota.flags.log_warning | Log Warning            | Boolean                 | Should the server log an event when the warning level is exceeded? |
| smb.quota.hard.default      | (Hard) Quota Limit     | Unsigned 64-bit integer | Hard Quota limit   |
| smb.quota.soft.default      | (Soft) Quota Threshold | Unsigned 64-bit integer | Soft Quota threshold   |
| smb.quota.used              | Quota Used             | Unsigned 64-bit integer | How much Quota is used by this user                                |
| smb.quota.user.offset       | Next Offset            | Unsigned 32-bit integer | Relative offset to next user quota structure                       |
| smb.remaining               | Remaining              | Unsigned 32-bit integer | Remaining number of bytes  |
| smb.request.mask            | Request Mask           | Unsigned 32-bit integer | Connectionless mode mask   |
| smb.reserved                | Reserved               | Byte array              | Reserved bytes, must be zero                                       |

| Field                          | Field Name           | Type                    | Description   |
|--------------------------------|----------------------|-------------------------|---|
| smb.response.mask              | Response Mask        | Unsigned 32-bit integer | Connectionless mode mask                              |
| smb.response_in                | Response in          |                         | The response to this packet is in this packet         |
| smb.response_to                | Response to          |                         | This packet is a response to the packet in this frame |
| smb.resume                     | Resume Key           | Unsigned 32-bit integer | Resume Key  |
| smb.resume.client.cookie       | Client Cookie        | Byte array              | Cookie, must not be modified by the server            |
| smb.resume.find_id             | Find ID              | Unsigned 8-bit integer  | Handle for Find operation                             |
| smb.resume.key_length          | Resume Key Length    | Unsigned 16-bit integer | Resume Key length                                     |
| smb.resume.server.cookie       | Server Cookie        | Byte array              | Cookie, must not be modified by the client            |
| smb.rfid                       | Root FID             | Unsigned 32-bit integer | Open is relative to this FID (if nonzero)             |
| smb.rm.read                    | Read Raw             | Boolean                 | Is Read Raw supported?                                |
| smb.rm.write                   | Write Raw            | Boolean                 | Is Write Raw supported?                               |
| smb.root.dir.count             | Root Directory Count | Unsigned 32-bit integer | Root Directory Count                                  |
| smb.root.file.count            | Root File Count      | Unsigned 32-bit integer | Root File Count                                       |
| smb.sc                         | Setup Count          | Unsigned 8-bit integer  | Number of setup words in this buffer                  |
| smb.sd.length                  | SD Length            | Unsigned 32-bit integer | Total length of security descriptor                   |
| smb.search.attribute.archive   | Archive              | Boolean                 | ARCHIVE search attribute                              |
| smb.search.attribute.directory | Directory            | Boolean                 | DIRECTORY search attribute                            |

| <b>Field</b>                            | <b>Field Name</b>          | <b>Type</b>             | <b>Description</b>                                     |
|---|----------------------------|-------------------------|--|
| smb.search.attribute.hidden             | Hidden                     | Boolean                 | HIDDEN search attribute                                |
| smb.search.attribute.read_only          | Read Only                  | Boolean                 | READ ONLY search attribute                             |
| smb.search.attribute.system             | System                     | Boolean                 | SYSTEM search attribute                                |
| smb.search.attribute.volume             | Volume ID                  | Boolean                 | VOLUME ID search attribute                             |
| smb.search_count                        | Search Count               | Unsigned 16-bit integer | Maximum number of search entries to return             |
| smb.search_pattern                      | Search Pattern             | String                  | Search Pattern   |
| smb.sec_desc.revision                   | Revision                   | Unsigned 16-bit integer | Version of NT Security Descriptor structure            |
| smb.sec_desc.type.dacl_auto_inherit_req | DACL Auto Inherit Required | Boolean                 | Does this SecDesc have DACL Auto Inherit Required set? |
| smb.sec_desc.type.dacl_auto_inherited   | DACL Auto Inherited        | Boolean                 | Is this DACL auto inherited                            |
| smb.sec_desc.type.dacl_defaulted        | DACL Defaulted             | Boolean                 | Does this SecDesc have DACL Defaulted?                 |
| smb.sec_desc.type.dacl_present          | DACL Present               | Boolean                 | Does this SecDesc have DACL present?                   |
| smb.sec_desc.type.dacl_protected        | DACL Protected             | Boolean                 | Is the DACL structure protected?                       |
| smb.sec_desc.type.group_defaulted       | Group Defaulted            | Boolean                 | Is Group Defaulted?                                    |
| smb.sec_desc.type.owner_defaulted       | Owner Defaulted            | Boolean                 | Is Owner Defaulted set?                                |
| smb.sec_desc.type.sacl_auto_inherit_req | SACL Auto Inherit Required | Boolean                 | Does this SecDesc have SACL Auto Inherit Required set? |
| smb.sec_desc.type.sacl_auto             | SACL Auto                  | Boolean                 | Is this SACL auto                                      |

| Field                               | Field Name                           | Type                    | Description  |
|-------------------------------------|--------------------------------------|-------------------------|--|
| smb.auto_inherited                  | Inherited                            |                         | inherited  |
| smb.sec_desc.type.sacl_defaulted    | SACL Defaulted                       | Boolean                 | Does this SecDesc have SACL Defaulted?                       |
| smb.sec_desc.type.sacl_present      | SACL Present                         | Boolean                 | Is the SACL present?   |
| smb.sec_desc.type.sacl_protected    | SACL Protected                       | Boolean                 | Is the SACL structure protected?                             |
| smb.sec_desc.type.self_relative     | Self Relative                        | Boolean                 | Is this SecDesc self relative?                               |
| smb.sec_desc_len                    | NT Security Descriptor Length        | Unsigned 32-bit integer | Security Descriptor Length                                   |
| smb.security.flags.context_tracking | Context Tracking                     | Boolean                 | Is security tracking static or dynamic?                      |
| smb.security.flags.effective_only   | Effective Only                       | Boolean                 | Are only enabled or all aspects of the user's SID available? |
| smb.security_blob                   | Security Blob                        | Byte array              | Security blob  |
| smb.security_blob_len               | Security Blob Length                 | Unsigned 16-bit integer | Security blob length   |
| smb.seek_mode                       | Seek Mode                            | Unsigned 16-bit integer | Seek Mode, what type of seek                                 |
| smb.segment                         | SMB Segment                          |                         | SMB Segment  |
| smb.segment.error                   | Defragmentation error                |                         | Defragmentation error due to illegal fragments               |
| smb.segment.multipletails           | Multiple tail fragments found        | Boolean                 | Several tails were found when defragmenting the packet       |
| smb.segment.overlap                 | Fragment overlap                     | Boolean                 | Fragment overlaps with other fragments                       |
| smb.segment.overlap.conflict        | Conflicting data in fragment overlap | Boolean                 | Overlapping fragments contained conflicting data             |
| smb.segment.segments                | SMB Segments                         | No value                | SMB Segments   |

| Field                             | Field Name         | Type    | Description  |
|-----------------------------------|--------------------|---------|--|
| smb.segment.toolongfragment       | Fragment too long  | Boolean | Fragment contained data past end of packet             |
| smb.server                        | Server             | String  | The name of the DC/server                              |
| smb.server_cap.bulk_transfer      | Bulk Transfer      | Boolean | Are Bulk Read and Bulk Write supported?                |
| smb.server_cap.compressed_data    | Compressed Data    | Boolean | Is compressed data transfer supported?                 |
| smb.server_cap.dfs                | Dfs                | Boolean | Is Dfs supported?                                      |
| smb.server_cap.extended_security  | Extended Security  | Boolean | Are Extended security exchanges supported?             |
| smb.server_cap.infolevel_passthru | Infolevel Passthru | Boolean | Is NT information level request passthrough supported? |
| smb.server_cap.large_files        | Large Files        | Boolean | Are large files (>4GB) supported?                      |
| smb.server_cap.large_readx        | Large ReadX        | Boolean | Is Large Read andX supported?                          |
| smb.server_cap.large_writex       | Large WriteX       | Boolean | Is Large Write andX supported?                         |
| smb.server_cap.level_2_oplocks    | Level 2 Oplocks    | Boolean | Are Level 2 oplocks supported?                         |
| smb.server_cap.lock_and_read      | Lock and Read      | Boolean | Is Lock and Read supported?                            |
| smb.server_cap.mpx_mode           | MPX Mode           | Boolean | Are Read Mpx and Write Mpx supported?                  |
| smb.server_cap.nt_find            | NT Find            | Boolean | Is NT Find supported?                                  |
| smb.server_cap.nt_smbs            | NT SMBs            | Boolean | Are NT SMBs supported?                                 |
| smb.server_cap.nt_status          | NT Status Codes    | Boolean | Are NT Status Codes supported?                         |
| smb.server_cap.raw                | Raw Mode           | Boolean | Are Raw Read and Raw Write                             |

| Field                          | Field Name           | Type                    | Description                                |
|--------------------------------|----------------------|-------------------------|--|
| w_mode                         |                      |                         | supported?                                 |
| smb.server_cap.reserved        | Reserved             | Boolean                 | RESERVED                                   |
| smb.server_cap.rpc_remote_apis | RPC Remote APIs      | Boolean                 | Are RPC Remote APIs supported?             |
| smb.server_cap.unicode         | Unicode              | Boolean                 | Are Unicode strings supported?             |
| smb.server_cap.unix            | UNIX                 | Boolean                 | Are UNIX extensions supported?             |
| smb.server_date_time           | Server Date and Time | Date/Time stamp         | Current date and time at server            |
| smb.server_date_time.smb_date  | Server Date          | Unsigned 16-bit integer | Current date at server, SMB_DATE format    |
| smb.server_date_time.smb_time  | Server Time          | Unsigned 16-bit integer | Current time at server, SMB_TIME format    |
| smb.server_fid                 | Server FID           | Unsigned 32-bit integer | Server unique File ID                      |
| smb.server_guid                | Server GUID          | Byte array              | Globally unique identifier for this server |
| smb.server_timezone            | Time Zone            | Signed 16-bit integer   | Current timezone at server.                |
| smb.service                    | Service              | String                  | Service name                               |
| smb.session_key                | Session Key          | Unsigned 32-bit integer | Unique token identifying this session      |
| smb.setup.action.guest         | Guest                | Boolean                 | Client logged in as GUEST?                 |
| smb.share.access.delete        | Delete               | Boolean                 |  |
| smb.share.access.read          | Read                 | Boolean                 | Can the object be shared for reading?      |
| smb.share.access.write         | Write                | Boolean                 | Can the object be shared for write?        |
| smb.short_file                 | Short File Name      | String                  | Short (8.3) File Name                      |

| Field                   | Field Name          | Type                    | Description                                    |
|-------------------------|---------------------|-------------------------|--|
| smb.short_file_name_len | Short File Name Len | Unsigned 32-bit integer | Length of Short (8.3) File Name                |
| smb.sid                 | SID                 | Unsigned 16-bit integer | SID: Search ID, handle for find operations     |
| smb.sid.num_auth        | Num Auth            | Unsigned 8-bit integer  | Number of authorities for this SID             |
| smb.sid.revision        | Revision            | Unsigned 8-bit integer  | Version of SID structure                       |
| smb.sm.mode             | Mode                | Boolean                 | User or Share security mode?                   |
| smb.sm.password         | Password            | Boolean                 | Encrypted or plaintext passwords?              |
| smb.sm.sig_required     | Sig Req             | Boolean                 | Are security signatures required?              |
| smb.sm.signatures       | Signatures          | Boolean                 | Are security signatures enabled?               |
| smb.storage_type        | Storage Type        | Unsigned 32-bit integer | Type of storage                                |
| smb.stream_name         | Stream Name         | String                  | Name of the stream                             |
| smb.stream_name_len     | Stream Name Length  | Unsigned 32-bit integer | Length of stream name                          |
| smb.stream_size         | Stream Size         | Unsigned 64-bit integer | Size of the stream in number of bytes          |
| smb.system.time         | System Time         | Date/Time stamp         | System Time                                    |
| smb.tdc                 | Total Data Count    | Unsigned 32-bit integer | Total number of data bytes                     |
| smb.tid                 | Tree ID             | Unsigned 16-bit integer | Tree ID  |
| smb.time                | Time from request   | Time duration           | Time between Request and Response for SMB cmds |
| smb.timeout             | Timeout             | Unsigned 32-bit integer | Timeout in miliseconds                         |
| smb.total_data_len      | Total Data Length   | Unsigned 16-bit         | Total length of                                |

| Field                         | Field Name              | Type                    | Description                                    |
|-------------------------------|-------------------------|-------------------------|--|
|                               |                         | integer                 | data   |
| smb.tpc                       | Total Parameter Count   | Unsigned 32-bit integer | Total number of parameter bytes                |
| smb.trans2.cmd                | Subcommand              | Unsigned 16-bit integer | Subcommand for TRANSACTION2                    |
| smb.trans_name                | Transaction Name        | String                  | Name of transaction                            |
| smb.transaction.flags.dtid    | Disconnect TID          | Boolean                 | Disconnect TID?                                |
| smb.transaction.flags.owt     | One Way Transaction     | Boolean                 | One Way Transaction (no response)?             |
| smb.uid                       | User ID                 | Unsigned 16-bit integer | User ID  |
| smb.unicode_password          | Unicode Password        | Byte array              | Unicode Password                               |
| smb.unicode_password.length   | Unicode Password Length | Unsigned 16-bit integer | Length of Unicode password                     |
| smb.units                     | Total Units             | Unsigned 16-bit integer | Total number of units at server                |
| smb.unknown                   | Unknown Data            | Byte array              | Unknown Data. Should be implemented by someone |
| smb.vc                        | VC Number               | Unsigned 16-bit integer | VC Number                                      |
| smb.volume.label              | Label                   | String                  | Volume label                                   |
| smb.volume.label.length       | Label Length            | Unsigned 32-bit integer | Length of volume label                         |
| smb.volume.serial             | Volume Serial Number    | Unsigned 32-bit integer | Volume serial number                           |
| smb.wct                       | Word Count (WCT)        | Unsigned 8-bit integer  | Word Count, count of parameter words           |
| smb.write.mode.connectionless | Connectionless          | Boolean                 | Connectionless mode requested?                 |
| smb.write.mode.message_start  | Message Start           | Boolean                 | Is this the start of a message?                |
| smb.write.mode.raw            | Write Raw               | Boolean                 | Use WriteRawNamedPipe?                         |



| Field                           | Field Name       | Type    | Description                      |
|---------------------------------|------------------|---------|----------------------------------|
| smb.write.mode.return_remaining | Return Remaining | Boolean | Return remaining data responses? |
| smb.write.mode.write_through    | Write Through    | Boolean | Write through mode requested?    |

### SMB MailSlot Protocol (mailslot)

Table A-324. SMB MailSlot Protocol (mailslot)

| Field             | Field Name    | Type                    | Description                      |
|-------------------|---------------|-------------------------|----------------------------------|
| mailslot.class    | Class         | Unsigned 16-bit integer | MAILSLOT Class of transaction    |
| mailslot.name     | Mailslot Name | String                  | MAILSLOT Name of mailslot        |
| mailslot.opcode   | Opcode        | Unsigned 16-bit integer | MAILSLOT OpCode                  |
| mailslot.priority | Priority      | Unsigned 16-bit integer | MAILSLOT Priority of transaction |
| mailslot.size     | Size          | Unsigned 16-bit integer | MAILSLOT Total size of mail data |

### SMB Pipe Protocol (pipe)

Table A-325. SMB Pipe Protocol (pipe)

| Field                          | Field Name                           | Type    | Description  |
|--------------------------------|--------------------------------------|---------|--|
| pipe.fragment                  | Fragment                             |         | Pipe Fragment  |
| pipe.fragment.error            | Defragmentation error                |         | Defragmentation error due to illegal fragments         |
| pipe.fragment.multipletails    | Multiple tail fragments found        | Boolean | Several tails were found when defragmenting the packet |
| pipe.fragment.overlap          | Fragment overlap                     | Boolean | Fragment overlaps with other fragments                 |
| pipe.fragment.overlap.conflict | Conflicting data in fragment overlap | Boolean | Overlapping fragments contained conflicting data       |
| pipe.fragment.too longfragment | Fragment too long                    | Boolean | Fragment contained data past end of packet             |

| Field                           | Field Name         | Type                    | Description  |
|---------------------------------|--------------------|-------------------------|--|
| pipe.fragments                  | Fragments          | No value                | Pipe Fragments   |
| pipe.function                   | Function           | Unsigned 16-bit integer | SMB Pipe Function Code   |
| pipe.getinfo.current_instances  | Current Instances  | Unsigned 8-bit integer  | Current number of instances  |
| pipe.getinfo.info_level         | Information Level  | Unsigned 16-bit integer | Information level of information to return                             |
| pipe.getinfo.input_buffer_size  | Input Buffer Size  | Unsigned 16-bit integer | Actual size of buffer for incoming (client) I/O                        |
| pipe.getinfo.maximum_instances  | Maximum Instances  | Unsigned 8-bit integer  | Maximum allowed number of instances                                    |
| pipe.getinfo.output_buffer_size | Output Buffer Size | Unsigned 16-bit integer | Actual size of buffer for outgoing (server) I/O                        |
| pipe.getinfo.pipe_name          | Pipe Name          | String                  | Name of pipe   |
| pipe.getinfo.pipe_name_length   | Pipe Name Length   | Unsigned 8-bit integer  | Length of pipe name  |
| pipe.peek.available_bytes       | Available Bytes    | Unsigned 16-bit integer | Total number of bytes available to be read from the pipe               |
| pipe.peek.remaining_bytes       | Bytes Remaining    | Unsigned 16-bit integer | Total number of bytes remaining in the message at the head of the pipe |
| pipe.peek.status                | Pipe Status        | Unsigned 16-bit integer | Pipe status  |
| pipe.priority                   | Priority           | Unsigned 16-bit integer | SMB Pipe Priority  |
| pipe.write_raw.bytes_written    | Bytes Written      | Unsigned 16-bit integer | Number of bytes written to the pipe                                    |

### SNA-over-Ethernet (snaeth)

Table A-326. SNA-over-Ethernet (snaeth)

| Field      | Field Name | Type                    | Description           |
|------------|------------|-------------------------|-----------------------|
| snaeth_len | Length     | Unsigned 16-bit integer | Length of LLC payload |

**SNMP Multiplex Protocol (smux)**

Table A-327. SNMP Multiplex Protocol (smux)

| Field | Field Name | Type | Description |
|-------|------------|------|-------------|
|       |            |      |             |

**SPNEGO-KRB5 (spnego-krb5)**

Table A-328. SPNEGO-KRB5 (spnego-krb5)

| Field | Field Name | Type | Description |
|-------|------------|------|-------------|
|       |            |      |             |

**SPRAY (spray)**

Table A-329. SPRAY (spray)

| Field              | Field Name   | Type                    | Description   |
|--------------------|--------------|-------------------------|---------------|
| spray.clock        | clock        | No value                | Clock         |
| spray.counter      | counter      | Unsigned 32-bit integer | Counter       |
| spray.procedure_v1 | V1 Procedure | Unsigned 32-bit integer | V1 Procedure  |
| spray.sec          | sec          | Unsigned 32-bit integer | Seconds       |
| spray.sprayarr     | Data         | Byte array              | Sprayarr data |
| spray.usec         | usec         | Unsigned 32-bit integer | Microseconds  |

**SS7 SCCP-User Adaptation Layer (sua)**

Table A-330. SS7 SCCP-User Adaptation Layer (sua)

| Field                             | Field Name       | Type                    | Description |
|-----------------------------------|------------------|-------------------------|-------------|
| sua.affected_point_code_mask      | Mask             | Unsigned 8-bit integer  |             |
| sua.affected_point_code_dpc       | Affected DPC     | Unsigned 24-bit integer |             |
| sua.asp_capabilities_a_bit        | Protocol Class 3 | Boolean                 |             |
| sua.asp_capabilities_b_bit        | Protocol Class 2 | Boolean                 |             |
| sua.asp_capabilities_c_bit        | Protocol Class 1 | Boolean                 |             |
| sua.asp_capabilities_d_bit        | Protocol Class 0 | Boolean                 |             |
| sua.asp_capabilities_interworking | Interworking     | Unsigned 8-bit          |             |

Appendix A. Ethereal Display Filter Fields

| Field                                     | Field Name                   | Type                    | Description |
|---|------------------------------|-------------------------|-------------|
| s_interworking                            |                              | integer                 |             |
| sua.asp_capabilities_reserved             | Reserved                     | Byte array              |             |
| sua.asp_capabilities_reserved_bits        | Reserved Bits                | Unsigned 8-bit integer  |             |
| sua.asp_identifier                        | ASP Identifier               | Unsigned 32-bit integer |             |
| sua.cause_user_cause                      | Cause                        | Unsigned 16-bit integer |             |
| sua.cause_user_user                       | User                         | Unsigned 16-bit integer |             |
| sua.congestion_level                      | Congestion Level             | Unsigned 32-bit integer |             |
| sua.correlation_id                        | Correlation ID               | Unsigned 32-bit integer |             |
| sua.credit                                | Credit                       | Unsigned 32-bit integer |             |
| sua.data                                  | Data                         | Byte array              |             |
| sua.deregistration_status                 | Deregistration status        | Unsigned 32-bit integer |             |
| sua.destination_address_gt_bit            | Include GT                   | Boolean                 |             |
| sua.destination_address_pc_bit            | Include PC                   | Boolean                 |             |
| sua.destination_address_reserved_bits     | Reserved Bits                | Unsigned 16-bit integer |             |
| sua.destination_address_routing_indicator | Routing Indicator            | Unsigned 16-bit integer |             |
| sua.destination_address_ssn_bit           | Include SSN                  | Boolean                 |             |
| sua.destination_reference_number          | Destination Reference Number | Unsigned 32-bit integer |             |
| sua.diagnostic_information                | Diagnostic Information       | Byte array              |             |
| sua.drm_label_end                         | End                          | Unsigned 8-bit integer  |             |
| sua.drm_label_start                       | Start                        | Unsigned 8-bit integer  |             |

| Field                              | Field Name                   | Type                    | Description |
|------------------------------------|------------------------------|-------------------------|-------------|
| sua.drm_label_value                | Label Value                  | Unsigned 16-bit integer |             |
| sua.error_code                     | Error code                   | Unsigned 32-bit integer |             |
| sua.global_title_nature_of_address | Nature of Address            | Unsigned 8-bit integer  |             |
| sua.global_title_number_of_digits  | Number of Digits             | Unsigned 8-bit integer  |             |
| sua.global_title_numbering_plan    | Numbering Plan               | Unsigned 8-bit integer  |             |
| sua.global_title_signals           | Global Title                 | Byte array              |             |
| sua.global_title_translation_type  | Translation Type             | Unsigned 8-bit integer  |             |
| sua.heartbeat_data                 | Heartbeat Data               | Byte array              |             |
| sua.hostname_name                  | Hostname                     | String                  |             |
| sua.importance_importance          | Importance                   | Unsigned 8-bit integer  |             |
| sua.importance_reserved            | Reserved                     | Byte array              |             |
| sua.info_string                    | Info string                  | String                  |             |
| sua.ipv4_address                   | IP Version 4 address         | IPv4 address            |             |
| sua.ipv6_address                   | IP Version 6 address         | IPv6 address            |             |
| sua.local_routing_key_identifier   | Local routing key identifier | Unsigned 32-bit integer |             |
| sua.message_class                  | Message Class                | Unsigned 8-bit integer  |             |
| sua.message_length                 | Message Length               | Unsigned 32-bit integer |             |
| sua.message_priority_priority      | Message Priority             | Unsigned 8-bit integer  |             |
| sua.message_priority_reserved      | Reserved                     | Byte array              |             |
| sua.message_type                   | Message Type                 | Unsigned 8-bit integer  |             |
| sua.network_apppe                  | Network                      | Unsigned 32-bit         |             |

Appendix A. Ethereal Display Filter Fields

| Field                                  | Field Name                   | Type                    | Description |
|--|------------------------------|-------------------------|-------------|
| arance                                 | Appearance                   | integer                 |             |
| sua.parameter_length                   | Parameter Length             | Unsigned 16-bit integer |             |
| sua.parameter_padding                  | Padding                      | Byte array              |             |
| sua.parameter_tag                      | Parameter Tag                | Unsigned 16-bit integer |             |
| sua.parameter_value                    | Parameter Value              | Byte array              |             |
| sua.point_code                         | Point Code                   | Unsigned 32-bit integer |             |
| sua.protocol_class_reserved            | Reserved                     | Byte array              |             |
| sua.protocol_class_class               | Protocol Class               | Unsigned 8-bit integer  |             |
| sua.protocol_class_return_on_error_bit | Return On Error Bit          | Boolean                 |             |
| sua.receive_sequence_number_number     | Receive Sequence Number P(R) | Unsigned 8-bit integer  |             |
| sua.receive_sequence_number_reserved   | Reserved                     | Byte array              |             |
| sua.receive_sequence_number_spare_bit  | Spare Bit                    | Boolean                 |             |
| sua.registration_status                | Registration status          | Unsigned 32-bit integer |             |
| sua.reserved                           | Reserved                     | Byte array              |             |
| sua.routing_context                    | Routing context              | Unsigned 32-bit integer |             |
| sua.routing_key_identifier             | Local Routing Key Identifier | Unsigned 32-bit integer |             |
| sua.sccp_cause_reserved                | Reserved                     | Byte array              |             |
| sua.sccp_cause_type                    | Cause Type                   | Unsigned 8-bit integer  |             |
| sua.sccp_cause_value                   | Cause Value                  | Unsigned 8-bit integer  |             |

| Field   | Field Name                   | Type                    | Description |
|---|------------------------------|-------------------------|-------------|
| sua.segmentation_first_bit                    | First Segment Bit            | Boolean                 |             |
| sua.segmentation_number_of_remaining_segments | Number of Remaining Segments | Unsigned 8-bit integer  |             |
| sua.segmentation_reference                    | Segmentation Reference       | Unsigned 24-bit integer |             |
| sua.sequence_control_sequence_control         | Sequence Control             | Unsigned 32-bit integer |             |
| sua.sequence_number_more_data_bit             | More Data Bit                | Boolean                 |             |
| sua.sequence_number_receive_sequence_number   | Receive Sequence Number P(R) | Unsigned 8-bit integer  |             |
| sua.sequence_number_reserved                  | Reserved                     | Byte array              |             |
| sua.sequence_number_sent_sequence_number      | Sent Sequence Number P(S)    | Unsigned 8-bit integer  |             |
| sua.sequence_number_spare_bit                 | Spare Bit                    | Boolean                 |             |
| sua.smi_reserved                              | Reserved                     | Byte array              |             |
| sua.smi_smi                                   | SMI                          | Unsigned 8-bit integer  |             |
| sua.source_addresses_gt_bit                   | Include GT                   | Boolean                 |             |
| sua.source_addresses_pc_bit                   | Include PC                   | Boolean                 |             |
| sua.source_addresses_reserved_bits            | Reserved Bits                | Unsigned 16-bit integer |             |
| sua.source_addresses_routing_indicator        | Routing Indicator            | Unsigned 16-bit integer |             |
| sua.source_addresses_ssn_bit                  | Include SSN                  | Boolean                 |             |
| sua.source_reference_number                   | Source Reference Number      | Unsigned 32-bit integer |             |
| sua.ss7_hop_counter_counter                   | SS7 Hop Counter              | Unsigned 8-bit integer  |             |

| Field                        | Field Name        | Type                    | Description |
|------------------------------|-------------------|-------------------------|-------------|
| sua.ss7_hop_counter_reserved | Reserved          | Byte array              |             |
| sua.ssn_number               | Subsystem Number  | Unsigned 8-bit integer  |             |
| sua.ssn_reserved             | Reserved          | Byte array              |             |
| sua.status_info              | Status info       | Unsigned 16-bit integer |             |
| sua.status_type              | Status type       | Unsigned 16-bit integer |             |
| sua.tid_label_end            | End               | Unsigned 8-bit integer  |             |
| sua.tid_label_start          | Start             | Unsigned 8-bit integer  |             |
| sua.tid_label_value          | Label Value       | Unsigned 16-bit integer |             |
| sua.traffic_mode_type        | Traffic mode Type | Unsigned 32-bit integer |             |
| sua.version                  | Version           | Unsigned 8-bit integer  |             |

### SSCOP (sscop)

Table A-331. SSCOP (sscop)

| Field | Field Name | Type | Description |
|-------|------------|------|-------------|
|       |            |      |             |

### SSH Protocol (ssh)

Table A-332. SSH Protocol (ssh)

| Field  | Field Name                                     | Type                    | Description  |
|--|--|-------------------------|--|
| ssh.compression_algorithms_client_to_server        | compression_algorithms_client_to_server string | String                  | SSH compression_algorithms_client_to_server string |
| ssh.compression_algorithms_client_to_server_length | compression_algorithms_client_to_server length | Unsigned 32-bit integer | SSH compression_algorithms_client_to_server length |
| ssh.compression_algorithms_server_to_client        | compression_algorithms_server_to_client string | String                  | SSH compression_algorithms_server_to_client string |
| ssh.compression_a                                  | compression_algor                              | Unsigned 32-bit         | SSH  |



| Field   | Field Name                                    | Type                    | Description                                       |
|---|---|-------------------------|---|
| algorithms_server_to_client_length                | algorithms_server_to_client_length            | integer                 | compression_algorithms_server_to_client_length    |
| ssh.cookie  | Cookie  | Byte array              | SSH Cookie  |
| ssh.encrypted_packet                              | Encrypted Packet                              | Byte array              | SSH Protocol Packet                               |
| ssh.encryption_algorithms_client_to_server        | encryption_algorithms_client_to_server string | String                  | SSH encryption_algorithms_client_to_server string |
| ssh.encryption_algorithms_client_to_server_length | encryption_algorithms_client_to_server_length | Unsigned 32-bit integer | SSH encryption_algorithms_client_to_server_length |
| ssh.encryption_algorithms_server_to_client        | encryption_algorithms_server_to_client string | String                  | SSH encryption_algorithms_server_to_client string |
| ssh.encryption_algorithms_server_to_client_length | encryption_algorithms_server_to_client_length | Unsigned 32-bit integer | SSH encryption_algorithms_server_to_client_length |
| ssh.kex_algorithms                                | kex_algorithms string                         | String                  | SSH kex_algorithms string                         |
| ssh.kex_algorithms_length                         | kex_algorithms_length                         | Unsigned 32-bit integer | SSH kex_algorithms_length                         |
| ssh.languages_client_to_server                    | languages_client_to_server string             | String                  | SSH languages_client_to_server string             |
| ssh.languages_client_to_server_length             | languages_client_to_server_length             | Unsigned 32-bit integer | SSH languages_client_to_server_length             |
| ssh.languages_server_to_client                    | languages_server_to_client string             | String                  | SSH languages_server_to_client string             |
| ssh.languages_server_to_client_length             | languages_server_to_client_length             | Unsigned 32-bit integer | SSH languages_server_to_client_length             |
| ssh.mac_algorithms_client_to_server               | mac_algorithms_client_to_server string        | String                  | SSH mac_algorithms_client_to_server               |

| Field                                       | Field Name                             | Type                    | Description                                |
|---|--|-------------------------|--|
|   |  |                         | string                                     |
| ssh.mac_algorithm_s_client_to_server_length | mac_algorithms_client_to_server_length | Unsigned 32-bit integer | SSH mac_algorithms_client_to_server_length |
| ssh.mac_algorithm_s_server_to_client        | mac_algorithms_server_to_client_string | String                  | SSH mac_algorithms_server_to_client_string |
| ssh.mac_algorithm_s_server_to_client_length | mac_algorithms_server_to_client_length | Unsigned 32-bit integer | SSH mac_algorithms_server_to_client_length |
| ssh.mac_string                              | MAC String                             | String                  | SSH MAC String                             |
| ssh.message_code                            | Message Code                           | Unsigned 8-bit integer  | SSH Message Code                           |
| ssh.packet_length                           | Packet Length                          | Unsigned 32-bit integer | SSH packet length                          |
| ssh.padding_length                          | Padding Length                         | Unsigned 8-bit integer  | SSH Packet Number                          |
| ssh.padding_string                          | Padding String                         | String                  | SSH Padding String                         |
| ssh.payload                                 | Payload                                | Byte array              | SSH Payload                                |
| ssh.protocol                                | Protocol                               | String                  | SSH Protocol                               |
| ssh.server_host_key_algorithms              | server_host_key_algorithms_string      | String                  | SSH server_host_key_algorithms_string      |
| ssh.server_host_key_algorithms_length       | server_host_key_algorithms_length      | Unsigned 32-bit integer | SSH server_host_key_algorithms_length      |

## Secure Socket Layer (ssl)

Table A-333. Secure Socket Layer (ssl)

| Field                         | Field Name       | Type                   | Description                 |
|-------------------------------|------------------|------------------------|-----------------------------|
| ssl.alert_message             | Alert Message    | No value               | Alert message               |
| ssl.alert_message.description | Description      | Unsigned 8-bit integer | Alert message description   |
| ssl.alert_message.level       | Level            | Unsigned 8-bit integer | Alert message level         |
| ssl.app_data                  | Application Data | No value               | Payload is application data |

| Field                              | Field Name                 | Type                    | Description                                |
|------------------------------------|----------------------------|-------------------------|--|
| ssl.change_cipher_spec             | Change Cipher Spec Message | No value                | Signals a change in cipher specifications  |
| ssl.handshake                      | Handshake Protocol         | No value                | Handshake protocol message                 |
| ssl.handshake.cert_type            | Certificate type           | Unsigned 8-bit integer  | Certificate type                           |
| ssl.handshake.cert_types           | Certificate types          | No value                | List of certificate types                  |
| ssl.handshake.cert_types_count     | Certificate types count    | Unsigned 8-bit integer  | Count of certificate types                 |
| ssl.handshake.certificate          | Certificate                | Byte array              | Certificate                                |
| ssl.handshake.certificate_length   | Certificate Length         | Unsigned 24-bit integer | Length of certificate                      |
| ssl.handshake.certificates         | Certificates               | No value                | List of certificates                       |
| ssl.handshake.certificates_length  | Certificates Length        | Unsigned 24-bit integer | Length of certificates field               |
| ssl.handshake.challenge            | Challenge                  | No value                | Challenge data used to authenticate server |
| ssl.handshake.challenge_length     | Challenge Length           | Unsigned 16-bit integer | Length of challenge field                  |
| ssl.handshake.cipher_spec_len      | Cipher Spec Length         | Unsigned 16-bit integer | Length of cipher specs field               |
| ssl.handshake.cipher_suites_length | Cipher Suites Length       | Unsigned 16-bit integer | Length of cipher suites field              |
| ssl.handshake.cipherspec           | Cipher Spec                | Unsigned 24-bit integer | Cipher specification                       |
| ssl.handshake.ciphersuite          | Cipher Suite               | Unsigned 16-bit integer | Cipher suite                               |
| ssl.handshake.ciphersuites         | Cipher Suites              | No value                | List of cipher suites supported by client  |
| ssl.handshake.clear_key_data       | Clear Key Data             | No value                | Clear portion of MASTER-KEY                |
| ssl.handshake.clear_key_length     | Clear Key Data Length      | Unsigned 16-bit integer | Length of clear key data                   |
| ssl.handshake.com                  | Compression                | Unsigned 8-bit          | Compression                                |

| Field                                  | Field Name                    | Type                       | Description   |
|--|-------------------------------|----------------------------|---|
| p_method                               | Method                        | integer                    | Method  |
| ssl.handshake.com<br>p_methods         | Compression<br>Methods        | No value                   | List of<br>compression<br>methods<br>supported by<br>client |
| ssl.handshake.com<br>p_methods_length  | Compression<br>Methods Length | Unsigned 8-bit<br>integer  | Length of<br>compression<br>methods field                   |
| ssl.handshake.con<br>nection_id        | Connection ID                 | No value                   | Server's challenge<br>to client                             |
| ssl.handshake.con<br>nection_id_length | Connection ID<br>Length       | Unsigned 16-bit<br>integer | Length of<br>connection ID                                  |
| ssl.handshake.dna<br>me                | Distinguished<br>Name         | Byte array                 | Distinguished<br>name of a CA that<br>server trusts         |
| ssl.handshake.dna<br>me_len            | Distinguished<br>Name Length  | Unsigned 16-bit<br>integer | Length of<br>distinguished<br>name                          |
| ssl.handshake.dna<br>mes               | Distinguished<br>Names        | No value                   | List of CAs that<br>server trusts                           |
| ssl.handshake.dna<br>mes_len           | Distinguished<br>Names Length | Unsigned 16-bit<br>integer | Length of list of<br>CAs that server<br>trusts              |
| ssl.handshake.encr<br>ypted_key        | Encrypted Key                 | No value                   | Secret portion of<br>MASTER-KEY<br>encrypted to<br>server   |
| ssl.handshake.encr<br>ypted_key_length | Encrypted Key<br>Data Length  | Unsigned 16-bit<br>integer | Length of<br>encrypted key<br>data                          |
| ssl.handshake.key<br>_arg              | Key Argument                  | No value                   | Key Argument<br>(e.g., Initialization<br>Vector)            |
| ssl.handshake.key<br>_arg_length       | Key Argument<br>Length        | Unsigned 16-bit<br>integer | Length of key<br>argument                                   |
| ssl.handshake.leng<br>th               | Length                        | Unsigned 24-bit<br>integer | Length of<br>handshake<br>message                           |
| ssl.handshake.md5<br>_hash             | MD5 Hash                      | No value                   | Hash of messages,<br>master_secret, etc.                    |
| ssl.handshake.ran                      | Random.bytes                  | No value                   | Random challenge<br>used to                                 |

| Field                           | Field Name             | Type                    | Description   |
|---------------------------------|------------------------|-------------------------|---|
| dom                             |                        |                         | authenticate server                                   |
| ssl.handshake.random_time       | Random.gmt_unix_time   | Date/Time stamp         | Unix time field of random structure                   |
| ssl.handshake.session_id        | Session ID             | Byte array              | Identifies the SSL session, allowing later resumption |
| ssl.handshake.session_id_hit    | Session ID Hit         | Boolean                 | Did the server find the client's Session ID?          |
| ssl.handshake.session_id_length | Session ID Length      | Unsigned 8-bit integer  | Length of session ID field                            |
| ssl.handshake.sha_hash          | SHA-1 Hash             | No value                | Hash of messages, master_secret, etc.                 |
| ssl.handshake.type              | Handshake Message Type | Unsigned 8-bit integer  | SSLv2 handshake message type                          |
| ssl.handshake.verify_data       | Verify Data            | No value                | Opaque verification data                              |
| ssl.handshake.version           | Version                | Unsigned 16-bit integer | Maximum version supported by client                   |
| ssl.pct_handshake.type          | Handshake Message Type | Unsigned 8-bit integer  | PCT handshake message type                            |
| ssl.record                      | Record Layer           | No value                | Record layer  |
| ssl.record.content_type         | Content Type           | Unsigned 8-bit integer  | Content type  |
| ssl.record.is_escape            | Is Escape              | Boolean                 | Indicates a security escape                           |
| ssl.record.length               | Length                 | Unsigned 16-bit integer | Length of SSL record data                             |
| ssl.record.padding_length       | Padding Length         | Unsigned 8-bit integer  | Length of padding at end of record                    |
| ssl.record.version              | Version                | Unsigned 16-bit integer | Record layer version.                                 |

### Sequenced Packet eXchange (spx)

Table A-334. Sequenced Packet eXchange (spx)

| Field     | Field Name            | Type                    | Description |
|-----------|-----------------------|-------------------------|-------------|
| spx.ack   | Acknowledgment Number | Unsigned 16-bit integer |             |
| spx.alloc | Allocation            | Unsigned 16-bit         |             |

| Field    | Field Name                | Type                    | Description |
|----------|---------------------------|-------------------------|-------------|
|          | Number                    | integer                 |             |
| spx.ctl  | Connection Control        | Unsigned 8-bit integer  |             |
| spx.dst  | Destination Connection ID | Unsigned 16-bit integer |             |
| spx.seq  | Sequence Number           | Unsigned 16-bit integer |             |
| spx.src  | Source Connection ID      | Unsigned 16-bit integer |             |
| spx.type | Datastream type           | Unsigned 8-bit integer  |             |

### Service Advertisement Protocol (ipxsap)

Table A-335. Service Advertisement Protocol (ipxsap)

| Field           | Field Name | Type    | Description          |
|-----------------|------------|---------|----------------------|
| ipxsap.request  | Request    | Boolean | TRUE if SAP request  |
| ipxsap.response | Response   | Boolean | TRUE if SAP response |

### Service Location Protocol (srvloc)

Table A-336. Service Location Protocol (srvloc)

| Field                       | Field Name                    | Type                    | Description                      |
|-----------------------------|-------------------------------|-------------------------|----------------------------------|
| srvloc.attrreq.attrlist     | Attribute List                | String                  |                                  |
| srvloc.attrreq.attrlistlen  | Attribute List Length         | Unsigned 16-bit integer |                                  |
| srvloc.attrreq.prlist       | Previous Response List        | String                  | Previous Response List           |
| srvloc.attrreq.prlistlen    | Previous Response List Length | Unsigned 16-bit integer | Length of Previous Response List |
| srvloc.attrreq.scopelist    | Scope List                    | String                  |                                  |
| srvloc.attrreq.scopelistlen | Scope List Length             | Unsigned 16-bit integer | Length of the Scope List         |
| srvloc.attrreq.slpspi       | SLP SPI                       | String                  |                                  |
| srvloc.attrreq.slpspilen    | SLP SPI Length                | Unsigned 16-bit integer | Length of the SLP SPI            |
| srvloc.attrreq.taglist      | Tag List                      | String                  |                                  |

| Field                           | Field Name            | Type                    | Description                       |
|---------------------------------|-----------------------|-------------------------|-----------------------------------|
| st                              |                       |                         |                                   |
| srvloc.attrreq.taglistlen       | Tag List Length       | Unsigned 16-bit integer |                                   |
| srvloc.attrreq.url              | Service URL           | String                  | URL of service                    |
| srvloc.attrreq.urllength        | URL Length            | Unsigned 16-bit integer |                                   |
| srvloc.attrreply.attrlist       | Attribute List        | String                  |                                   |
| srvloc.attrreply.attrlistlen    | Attribute List Length | Unsigned 16-bit integer | Length of Attribute List          |
| srvloc.authblkv2.slpspi         | SLP SPI               | String                  |                                   |
| srvloc.authblkv2.slpspilen      | SLP SPI Length        | Unsigned 16-bit integer | Length of the SLP SPI             |
| srvloc.authblkv2.timestamp      | Timestamp             | Date/Time stamp         | Timestamp on Authentication Block |
| srvloc.authblkv2_blocksd        | BSD                   | Unsigned 16-bit integer | Block Structure Descriptor        |
| srvloc.authblkv2_blocklen       | Length                | Unsigned 16-bit integer | Length of Authentication Block    |
| srvloc.daadvert.attrlist        | Attribute List        | String                  |                                   |
| srvloc.daadvert.attrlistlen     | Attribute List Length | Unsigned 16-bit integer |                                   |
| srvloc.daadvert.authcount       | Auths                 | Unsigned 8-bit integer  | Number of Authentication Blocks   |
| srvloc.daadvert.scopeopelist    | Scope List            | String                  |                                   |
| srvloc.daadvert.scopeopelistlen | Scope List Length     | Unsigned 16-bit integer | Length of the Scope List          |
| srvloc.daadvert.slpspi          | SLP SPI               | String                  |                                   |
| srvloc.daadvert.slpspilen       | SLP SPI Length        | Unsigned 16-bit integer | Length of the SLP SPI             |
| srvloc.daadvert.timestamp       | DAADVERT Timestamp    | Date/Time stamp         | Timestamp on DA Advert            |
| srvloc.daadvert.url             | URL                   | String                  |                                   |

Appendix A. Ethereal Display Filter Fields

| Field                              | Field Name                  | Type                       | Description                                 |
|------------------------------------|-----------------------------|----------------------------|---|
| srvloc.daadvert.url<br>len         | URL Length                  | Unsigned 16-bit<br>integer |   |
| srvloc.err                         | Error Code                  | Unsigned 16-bit<br>integer |   |
| srvloc.errv2                       | Error Code                  | Unsigned 16-bit<br>integer |   |
| srvloc.flags_v1                    | Flags                       | Unsigned 8-bit<br>integer  |   |
| srvloc.flags_v1.attr<br>ibute_auth | Attribute<br>Authentication | Boolean                    | Can whole packet<br>fit into a<br>datagram? |
| srvloc.flags_v1.fresh              | Fresh Registration          | Boolean                    | Is this a new<br>registration?              |
| srvloc.flags_v1.monolingual        | Monolingual                 | Boolean                    | Can whole packet<br>fit into a<br>datagram? |
| srvloc.flags_v1.overflow.          | Overflow                    | Boolean                    | Can whole packet<br>fit into a<br>datagram? |
| srvloc.flags_v1.url<br>_auth       | URL<br>Authentication       | Boolean                    | Can whole packet<br>fit into a<br>datagram? |
| srvloc.flags_v2                    | Flags                       | Unsigned 16-bit<br>integer |   |
| srvloc.flags_v2.fresh              | Fresh Registration          | Boolean                    | Is this a new<br>registration?              |
| srvloc.flags_v2.overflow           | Overflow                    | Boolean                    | Can whole packet<br>fit into a<br>datagram? |
| srvloc.flags_v2.req<br>multi       | Multicast<br>requested      | Boolean                    | Do we want<br>multicast?                    |
| srvloc.function                    | Function                    | Unsigned 8-bit<br>integer  |   |
| srvloc.langtag                     | Lang Tag                    | String                     |   |
| srvloc.langtaglen                  | Lang Tag Len                | Unsigned 16-bit<br>integer |   |
| srvloc.nextextoff                  | Next Extension<br>Offset    | Unsigned 24-bit<br>integer |   |
| srvloc.pktlen                      | Packet Length               | Unsigned 24-bit<br>integer |   |



| Field                         | Field Name                    | Type                    | Description                               |
|-------------------------------|-------------------------------|-------------------------|---|
| srvloc.saadvert.attrlist      | Attribute List                | String                  |   |
| srvloc.saadvert.attrlistlen   | Attribute List Length         | Unsigned 16-bit integer |   |
| srvloc.saadvert.authcount     | Auths                         | Unsigned 8-bit integer  | Number of Authentication Blocks           |
| srvloc.saadvert.scopeplist    | Scope List                    | String                  |   |
| srvloc.saadvert.scopeplistlen | Scope List Length             | Unsigned 16-bit integer | Length of the Scope List                  |
| srvloc.saadvert.url           | URL                           | String                  |   |
| srvloc.saadvert.urlen         | URL Length                    | Unsigned 16-bit integer |   |
| srvloc.srvdereq.scopeplist    | Scope List                    | String                  |   |
| srvloc.srvdereq.scopeplistlen | Scope List Length             | Unsigned 16-bit integer |   |
| srvloc.srvdereq.taglist       | Tag List                      | String                  |   |
| srvloc.srvdereq.taglistlen    | Tag List Length               | Unsigned 16-bit integer |   |
| srvloc.srvreq.attrauthcount   | Attr Auths                    | Unsigned 8-bit integer  | Number of Attribute Authentication Blocks |
| srvloc.srvreq.attrlist        | Attribute List                | String                  |   |
| srvloc.srvreq.attrlistlen     | Attribute List Length         | Unsigned 16-bit integer |   |
| srvloc.srvreq.predicate       | Predicate                     | String                  |   |
| srvloc.srvreq.predicatelen    | Predicate Length              | Unsigned 16-bit integer | Length of the Predicate                   |
| srvloc.srvreq.prlist          | Previous Response List        | String                  | Previous Response List                    |
| srvloc.srvreq.prlistlen       | Previous Response List Length | Unsigned 16-bit integer | Length of Previous Response List          |
| srvloc.srvreq.scopeplist      | Scope List                    | String                  |   |

| Field                                 | Field Name                       | Type                       | Description                               |
|---------------------------------------|----------------------------------|----------------------------|---|
| srvloc.srvreq.scope<br>listlen        | Scope List Length                | Unsigned 16-bit<br>integer | Length of the<br>Scope List               |
| srvloc.srvreq.slp<br>spi              | SLP SPI                          | String                     |   |
| srvloc.srvreq.slp<br>spsilen          | SLP SPI Length                   | Unsigned 16-bit<br>integer | Length of the SLP<br>SPI                  |
| srvloc.srvreq.srv<br>type             | Service Type                     | String                     |   |
| srvloc.srvreq.srv<br>typelen          | Service Type<br>Length           | Unsigned 16-bit<br>integer | Length of Service<br>Type List            |
| srvloc.srvreq.srv<br>typelist         | Service Type List                | String                     |   |
| srvloc.srvreq.url<br>count            | Number of URLs                   | Unsigned 16-bit<br>integer |   |
| srvloc.srvtypereq.<br>nameauthlist    | Naming Authority<br>List         | String                     |   |
| srvloc.srvtypereq.<br>nameauthlistlen | Naming Authority<br>List Length  | Unsigned 16-bit<br>integer | Length of the<br>Naming Authority<br>List |
| srvloc.srvtypereq.<br>prlist          | Previous Response<br>List        | String                     | Previous Response<br>List                 |
| srvloc.srvtypereq.<br>prlistlen       | Previous Response<br>List Length | Unsigned 16-bit<br>integer | Length of Previous<br>Response List       |
| srvloc.srvtypereq.<br>scopelist       | Scope List                       | String                     |   |
| srvloc.srvtypereq.<br>scopelistlen    | Scope List Length                | Unsigned 16-bit<br>integer | Length of the<br>Scope List               |
| srvloc.srvtypereq.<br>servtypelen     | Service Type<br>Length           | Unsigned 16-bit<br>integer | Length of the<br>Service Type             |
| srvloc.srvtypereq.<br>servtypelistlen | Service Type List<br>Length      | Unsigned 16-bit<br>integer | Length of the<br>Service Type List        |
| srvloc.srvtyperply.<br>servtype       | Service Type                     | String                     |   |
| srvloc.srvtyperply.<br>servtypelist   | Service Type List                | String                     |   |
| srvloc.url.lifetime                   | URL lifetime                     | Unsigned 16-bit<br>integer |   |
| srvloc.url.numaut<br>hs               | Num Auths                        | Unsigned 8-bit<br>integer  |   |
| srvloc.url.reserved                   | Reserved                         | Unsigned 8-bit             |   |

| Field             | Field Name | Type                    | Description    |
|-------------------|------------|-------------------------|----------------|
|                   |            | integer                 |                |
| srvloc.url.url    | URL        | String                  |                |
| srvloc.url.urllen | URL Length | Unsigned 16-bit integer |                |
| srvloc.version    | Version    | Unsigned 8-bit integer  |                |
| srvloc.xid        | XID        | Unsigned 24-bit integer | Transaction ID |

### Session Announcement Protocol (sap)

Table A-337. Session Announcement Protocol (sap)

| Field            | Field Name                | Type                   | Description                             |
|------------------|---------------------------|------------------------|---|
| sap.auth         | Authentication data       | No value               | Auth data                               |
| sap.auth.flags   | Authentication data flags | Unsigned 8-bit integer | Auth flags                              |
| sap.auth.flags.p | Padding Bit               | Boolean                | Compression                             |
| sap.auth.flags.t | Authentication Type       | Unsigned 8-bit integer | Auth type                               |
| sap.auth.flags.v | Version Number            | Unsigned 8-bit integer | Version                                 |
| sap.flags        | Flags                     | Unsigned 8-bit integer | Bits in the beginning of the SAP header |
| sap.flags.a      | Address Type              | Boolean                | Originating source address type         |
| sap.flags.c      | Compression Bit           | Boolean                | Compression                             |
| sap.flags.e      | Encryption Bit            | Boolean                | Encryption                              |
| sap.flags.r      | Reserved                  | Boolean                | Reserved                                |
| sap.flags.t      | Message Type              | Boolean                | Announcement type                       |
| sap.flags.v      | Version Number            | Unsigned 8-bit integer | 3 bit version field in the SAP header   |

### Session Description Protocol (sdp)

Table A-338. Session Description Protocol (sdp)

| Field         | Field Name                | Type   | Description           |
|---------------|---------------------------|--------|-----------------------|
| sdp.bandwidth | Bandwidth Information (b) | String | Bandwidth Information |

| Field                            | Field Name                              | Type   | Description                         |
|----------------------------------|---|--------|-------------------------------------|
| sdp.bandwidth.modifier           | Bandwidth Modifier                      | String | Bandwidth Modifier                  |
| sdp.bandwidth.value              | Bandwidth Value                         | String | Bandwidth Value                     |
| sdp.connection_info              | Connection Information (c)              | String | Connection Information              |
| sdp.connection_info.address      | Connection Address                      | String | Connection Address                  |
| sdp.connection_info.address_type | Connection Address Type                 | String | Connection Address Type             |
| sdp.connection_info.network_type | Connection Network Type                 | String | Connection Network Type             |
| sdp.connection_info.num_addr     | Connection Number of Addresses          | String | Connection Number of Addresses      |
| sdp.connection_info.ttl          | Connection TTL                          | String | Connection TTL                      |
| sdp.email                        | E-mail Address (e)                      | String | E-mail Address                      |
| sdp.encryption_key               | Encryption Key (k)                      | String | Encryption Key                      |
| sdp.encryption_key.data          | Key Data                                | String | Data                                |
| sdp.encryption_key.type          | Key Type                                | String | Type                                |
| sdp.invalid                      | Invalid line                            | String | Invalid line                        |
| sdp.media                        | Media Description, name and address (m) | String | Media Description, name and address |
| sdp.media.format                 | Media Format                            | String | Media Format                        |
| sdp.media.media                  | Media Type                              | String | Media Type                          |
| sdp.media.port                   | Media Port                              | String | Media Port                          |
| sdp.media.portcount              | Media Port Count                        | String | Media Port Count                    |
| sdp.media.proto                  | Media Proto                             | String | Media Proto                         |
| sdp.media_attr                   | Media Attribute (a)                     | String | Media Attribute                     |
| sdp.media_attribute.field        | Media Attribute Fieldname               | String | Media Attribute Fieldname           |
| sdp.media_attribute              | Media Attribute                         | String | Media Attribute                     |

| Field                    | Field Name                           | Type   | Description                      |
|--------------------------|--------------------------------------|--------|----------------------------------|
| e.value                  | Value                                |        | Value                            |
| sdp.media_title          | Media Title (i)                      | String | Media Title                      |
| sdp.owner                | Owner/Creator,<br>Session Id (o)     | String | Owner/Creator,<br>Session Id     |
| sdp.owner.address        | Owner Address                        | String | Owner Address                    |
| sdp.owner.address_type   | Owner Address Type                   | String | Owner Address Type               |
| sdp.owner.network_type   | Owner Network Type                   | String | Owner Network Type               |
| sdp.owner.sessionid      | Session ID                           | String | Session ID                       |
| sdp.owner.username       | Owner Username                       | String | Owner Username                   |
| sdp.owner.version        | Session Version                      | String | Session Version                  |
| sdp.phone                | Phone Number (p)                     | String | Phone Number                     |
| sdp.repeat_time          | Repeat Time (r)                      | String | Repeat Time                      |
| sdp.repeat_time.duration | Repeat Duration                      | String | Repeat Duration                  |
| sdp.repeat_time.interval | Repeat Interval                      | String | Repeat Interval                  |
| sdp.repeat_time.offset   | Repeat Offset                        | String | Repeat Offset                    |
| sdp.session_attr         | Session Attribute (a)                | String | Session Attribute                |
| sdp.session_attr.field   | Session Attribute Fieldname          | String | Session Attribute Fieldname      |
| sdp.session_attr.value   | Session Attribute Value              | String | Session Attribute Value          |
| sdp.session_info         | Session Information (i)              | String | Session Information              |
| sdp.session_name         | Session Name (s)                     | String | Session Name                     |
| sdp.time                 | Time Description,<br>active time (t) | String | Time Description,<br>active time |
| sdp.time.start           | Session Start Time                   | String | Session Start Time               |
| sdp.time.stop            | Session Stop Time                    | String | Session Stop Time                |
| sdp.timezone             | Time Zone Adjustments (z)            | String | Time Zone Adjustments            |
| sdp.timezone.offse       | Timezone Offset                      | String | Timezone Offset                  |

| Field             | Field Name  | Type   | Description                                |
|-------------------|---|--------|--|
| t                 |   |        |  |
| sdp.timezone.time | Timezone Time                                     | String | Timezone Time                              |
| sdp.unknown       | Unknown   | String | Unknown                                    |
| sdp.uri           | URI of Description<br>(u)                         | String | URI of Description                         |
| sdp.version       | Session<br>Description<br>Protocol Version<br>(v) | String | Session<br>Description<br>Protocol Version |

## Session Initiation Protocol (sip)

Table A-339. Session Initiation Protocol (sip)

| Field                   | Field Name          | Type   | Description                          |
|-------------------------|---------------------|--------|--------------------------------------|
| sip.Accept              | Accept              | String | RFC 3261: Accept Header              |
| sip.Accept-Encoding     | Accept-Encoding     | String | RFC 3261: Accept-Encoding Header     |
| sip.Accept-Language     | Accept-Language     | String | RFC 3261: Accept-Language Header     |
| sip.Alert-Info          | Alert-Info          | String | RFC 3261: Alert-Info Header          |
| sip.Allow               | Allow               | String | RFC 3261: Allow Header               |
| sip.Allow-Events        | Allow-Events        | String | RFC 3265: Allow-Events Header        |
| sip.Authentication-Info | Authentication-Info | String | RFC 3261: Authentication-Info Header |
| sip.Authorization       | Authorization       | String | RFC 3261: Authorization Header       |
| sip.CSeq                | CSeq                | String | RFC 3261: CSeq Header                |
| sip.Call-ID             | Call-ID             | String | RFC 3261: Call-ID Header             |
| sip.Call-Info           | Call-Info           | String | RFC 3261: Call-Info Header           |
| sip.Contact             | Contact             | String | RFC 3261: Contact Header             |
| sip.Content-            | Content-            | String | RFC 3261:                            |

| Field                      | Field Name             | Type   | Description                             |
|----------------------------|------------------------|--------|---|
| Disposition                | Disposition            |        | Content-<br>Disposition<br>Header       |
| sip.Content-<br>Encoding   | Content-Encoding       | String | RFC 3261:<br>Content-Encoding<br>Header |
| sip.Content-<br>Language   | Content-Language       | String | RFC 3261:<br>Content-Language<br>Header |
| sip.Content-<br>Length     | Content-Length         | String | RFC 3261:<br>Content-Length<br>Header   |
| sip.Content-Type           | Content-Type           | String | RFC 3261:<br>Content-Type<br>Header     |
| sip.Date                   | Date                   | String | RFC 3261: Date<br>Header                |
| sip.Error-Info             | Error-Info             | String | RFC 3261: Error-<br>Info Header         |
| sip.Event                  | Event                  | String | RFC 3265: Event<br>Header               |
| sip.Expires                | Expires                | String | RFC 3261: Expires<br>Header             |
| sip.From                   | From                   | String | RFC 3261: From<br>Header                |
| sip.In-Reply-To            | In-Reply-To            | String | RFC 3261: In-<br>Reply-To Header        |
| sip.MIME-Version           | MIME-Version           | String | RFC 3261: MIME-<br>Version Header       |
| sip.Max-Forwards           | Max-Forwards           | String | RFC 3261: Max-<br>Forwards Header       |
| sip.Method                 | Method                 | String | SIP Method                              |
| sip.Min-Expires            | Min-Expires            | String | RFC 3261: Min-<br>Expires Header        |
| sip.Organization           | Organization           | String | RFC 3261:<br>Organization<br>Header     |
| sip.Priority               | Priority               | String | RFC 3261: Priority<br>Header            |
| sip.Proxy-<br>Authenticate | Proxy-<br>Authenticate | String | RFC 3261: Proxy-<br>Authenticate        |

| Field                       | Field Name              | Type   | Description                                 |
|-----------------------------|-------------------------|--------|---|
|                             |                         |        | Header                                      |
| sip.Proxy-<br>Authorization | Proxy-<br>Authorization | String | RFC 3261: Proxy-<br>Authorization<br>Header |
| sip.Proxy-Require           | Proxy-Require           | String | RFC 3261: Proxy-<br>Require Header          |
| sip.RAck                    | RAck                    | String | RFC 3262: RAck<br>Header                    |
| sip.RSeq                    | RSeq                    | String | RFC 3262: RSeq<br>Header                    |
| sip.Record-Route            | Record-Route            | String | RFC 3261: Record-<br>Route Header           |
| sip.Reply-To                | Reply-To                | String | RFC 3261: Reply-<br>To Header               |
| sip.Require                 | Require                 | String | RFC 3261: Require<br>Header                 |
| sip.Retry-After             | Retry-After             | String | RFC 3261: Retry-<br>After Header            |
| sip.Route                   | Route                   | String | RFC 3261: Route<br>Header                   |
| sip.Server                  | Server                  | String | RFC 3261: Server<br>Header                  |
| sip.Status-Code             | Status-Code             | String | SIP Status Code                             |
| sip.Subject                 | Subject                 | String | RFC 3261: Subject<br>Header                 |
| sip.Subscription-<br>State  | Subscription-State      | String | RFC 3265:<br>Subscription-State<br>Header   |
| sip.Supported               | Supported               | String | RFC 3261:<br>Supported Header               |
| sip.Timestamp               | Timestamp               | String | RFC 3261:<br>Timestamp<br>Header            |
| sip.To                      | To                      | String | RFC 3261: To<br>Header                      |
| sip.Unsupported             | Unsupported             | String | RFC 3261:<br>Unsupported<br>Header          |
| sip.User-Agent              | User-Agent              | String | RFC 3261: User-<br>Agent Header             |



| Field                | Field Name       | Type     | Description                       |
|----------------------|------------------|----------|-----------------------------------|
| sip.Via              | Via              | String   | RFC 3261: Via Header              |
| sip.WWW-Authenticate | WWW-Authenticate | String   | RFC 3261: WWW-Authenticate Header |
| sip.Warning          | Warning          | String   | RFC 3261: Warning Header          |
| sip.msg_hdr          | Message Header   | No value | Message Header in SIP message     |

### Short Frame (short)

Table A-340. Short Frame (short)

| Field | Field Name | Type | Description |
|-------|------------|------|-------------|
|       |            |      |             |

### Short Message Peer to Peer (smpp)

Table A-341. Short Message Peer to Peer (smpp)

| Field                             | Field Name               | Type                   | Description  |
|-----------------------------------|--------------------------|------------------------|--|
| smpp.SC_interface_version         | SMSC-supported version   | String                 | Version of SMPP interface supported by the SMSC.         |
| smpp.additional_status_info_text  | Information              | String                 | Description of the meaning of a response PDU.            |
| smpp.addr_npi                     | Numbering plan indicator | Unsigned 8-bit integer | Gives the numbering plan this address belongs to.        |
| smpp.addr_ton                     | Type of number           | Unsigned 8-bit integer | Indicates the type of number, given in the address.      |
| smpp.address_range                | Address                  | String                 | Given address or address range.                          |
| smpp.alert_on_message_delivery    | Alert on delivery        | No value               | Instructs the handset to alert user on message delivery. |
| smpp.callback_number              | Callback number          | No value               | Associates a call back number with the message.          |
| smpp.callback_number_presentation | Presentation             | Unsigned 8-bit         | Controls the presentation                                |

| Field                        | Field Name                                 | Type                    | Description   |
|------------------------------|--|-------------------------|---|
| m.pres                       |  | integer                 | indication.   |
| smpp.callback_number.scrn    | Screening                                  | Unsigned 8-bit integer  | Controls screening of the callback-number.                |
| smpp.callback_number_atag    | Callback number - alphanumeric display tag | No value                | Associates an alphanumeric display with call back number. |
| smpp.command_id              | Operation                                  | Unsigned 32-bit integer | Defines the SMPP PDU.                                     |
| smpp.command_length          | Length                                     | Unsigned 32-bit integer | Total length of the SMPP PDU.                             |
| smpp.command_status          | Result                                     | Unsigned 32-bit integer | Indicates success or failure of the SMPP request.         |
| smpp.data_coding             | Data coding                                | Unsigned 8-bit integer  | Defines the encoding scheme of the message.               |
| smpp.delivery_failure_reason | Delivery failure reason                    | Unsigned 8-bit integer  | Indicates the reason for a failed delivery attempt.       |
| smpp.dest_address_number_pi  | Numbering plan indicator (recipient)       | Unsigned 8-bit integer  | Gives recipient numbering plan this address belongs to.   |
| smpp.dest_address_subunit    | Subunit destination                        | Unsigned 8-bit integer  | Subunit address within mobile to route message to.        |
| smpp.dest_address_type       | Type of number (recipient)                 | Unsigned 8-bit integer  | Indicates recipient type of number, given in the address. |
| smpp.dest_bearer_type        | Destination bearer                         | Unsigned 8-bit integer  | Desired bearer for delivery of message.                   |
| smpp.dest_network_type       | Destination network                        | Unsigned 8-bit integer  | Network associated with the destination address.          |
| smpp.dest_telematics_id      | Telematic interworking (dest)              | Unsigned 16-bit integer | Telematic interworking to be used for message delivery.   |

| Field                    | Field Name                      | Type                    | Description  |
|--------------------------|---------------------------------|-------------------------|--|
| smpp.destination_addr    | Recipient address               | String                  | Address of SME receiving this message.                           |
| smpp.destination_port    | Destination port                | Unsigned 16-bit integer | Application port associated with the destination of the message. |
| smpp.display_time        | Display time                    | Unsigned 8-bit integer  | Associates a display time with the message on the handset.       |
| smpp.dl_name             | Distr. list name                | String                  | The name of the distribution list.                               |
| smpp.dlist               | Destination list                | No value                | The list of destinations for a short message.                    |
| smpp.dlist_resp          | Unsuccessful delivery list      | No value                | The list of unsuccessful deliveries to destinations.             |
| smpp.dpf_result          | Delivery pending set?           | Unsigned 8-bit integer  | Indicates whether Delivery Pending Flag was set.                 |
| smpp.error_code          | Error code                      | Unsigned 8-bit integer  | Network specific error code defining reason for failure.         |
| smpp.error_status_code   | Status                          | Unsigned 32-bit integer | Indicates success/failure of request for this address.           |
| smpp.esm.submit.features | GSM features                    | Unsigned 8-bit integer  | GSM network specific features.                                   |
| smpp.esm.submit.msg_mode | Messaging mode                  | Unsigned 8-bit integer  | Mode attribute for this message.                                 |
| smpp.esm.submit.msg_type | Message type                    | Unsigned 8-bit integer  | Type attribute for this message.                                 |
| smpp.esme_addr           | ESME address                    | String                  | Address of ESME originating this message.                        |
| smpp.esme_addr_npi       | Numbering plan indicator (ESME) | Unsigned 8-bit integer  | Gives the numbering plan this address                            |

| Field                     | Field Name            | Type                   | Description   |
|---------------------------|-----------------------|------------------------|---|
|                           |                       |                        | belongs to.   |
| smpp.esme_addr_ton        | Type of number (ESME) | Unsigned 8-bit integer | Indicates recipient type of number, given in the address. |
| smpp.final_date           | Final date            | Date/Time stamp        | Date-time when the queried message reached a final state. |
| smpp.final_date_r         | Final date            | Time duration          | Date-time when the queried message reached a final state. |
| smpp.interface_version    | Version (if)          | String                 | Version of SMPP interface supported.                      |
| smpp.its_reply_type       | Reply method          | Unsigned 8-bit integer | Indicates the handset reply method on message receipt.    |
| smpp.its_session.ind      | Session indicator     | Unsigned 8-bit integer | Indicates whether this message is end of conversation.    |
| smpp.its_session.number   | Session number        | Unsigned 8-bit integer | Session number of interactive teleservice.                |
| smpp.its_session.sequence | Sequence number       | Unsigned 8-bit integer | Sequence number of the dialogue unit.                     |
| smpp.language_indicator   | Language              | Unsigned 8-bit integer | Indicates the language of the short message.              |
| smpp.message              | Message               | No value               | The actual message or data.                               |
| smpp.message_id           | Message id.           | String                 | Identifier of the submitted short message.                |
| smpp.message_payload      | Payload               | No value               | Short message user data.                                  |
| smpp.message_state        | Message state         | Unsigned 8-bit integer | Specifies the status of the queried short message.        |

| Field                       | Field Name          | Type                    | Description   |
|-----------------------------|---------------------|-------------------------|---|
| smpp.more_messages_to_send  | More messages?      | Unsigned 8-bit integer  | Indicates more messages pending for the same destination. |
| smpp.ms_availability_status | Availability status | Unsigned 8-bit integer  | Indicates the availability state of the handset.          |
| smpp.ms_validity            | Validity info       | Unsigned 8-bit integer  | Associates validity info with the message on the handset. |
| smpp.msg_wait.ind           | Indication          | Unsigned 8-bit integer  | Indicates to the handset that a message is waiting.       |
| smpp.msg_wait.type          | Type                | Unsigned 8-bit integer  | Indicates type of message that is waiting.                |
| smpp.network_error.code     | Error code          | Unsigned 16-bit integer | Gives the actual network error code.                      |
| smpp.network_error.type     | Error type          | Unsigned 8-bit integer  | Indicates the network type.                               |
| smpp.number_of_messages     | Number of messages  | Unsigned 8-bit integer  | Indicates number of messages stored in a mailbox.         |
| smpp.opt_param              | Optional parameters | No value                | The list of optional parameters in this operation.        |
| smpp.password               | Password            | String                  | Password used for authentication.                         |
| smpp.payload_type           | Payload             | Unsigned 8-bit integer  | PDU type contained in the message payload.                |
| smpp.priority_flag          | Priority level      | Unsigned 8-bit integer  | The priority level of the short message.                  |
| smpp.privacy_indicator      | Privacy indicator   | Unsigned 8-bit integer  | Indicates the privacy level of the message.               |
| smpp.protocol_id            | Protocol id.        | Unsigned 8-bit integer  | Protocol identifier according GSM 03.40.                  |

| Field                         | Field Name                    | Type                    | Description   |
|-------------------------------|-------------------------------|-------------------------|---|
| smpp.qos_time_to_live         | Validity period               | Unsigned 32-bit integer | Number of seconds to retain message before expiry.      |
| smpp.receipted_message_id     | SMSC identifier               | String                  | SMSC handle of the message being received.              |
| smpp.regdel.acks              | Message type                  | Unsigned 8-bit integer  | SME acknowledgement request.                            |
| smpp.regdel.notif             | Intermediate notif            | Unsigned 8-bit integer  | Intermediate notification request.                      |
| smpp.regdel.receivept         | Delivery receipt              | Unsigned 8-bit integer  | SMSC delivery receipt request.                          |
| smpp.replace_if_present_flag  | Replace                       | Unsigned 8-bit integer  | Replace the short message with this one or not.         |
| smpp.reserved_op              | Optional parameter - Reserved | No value                | An optional parameter that is reserved in this version. |
| smpp.sar_msg_ref_num          | SAR reference number          | Unsigned 16-bit integer | Reference number for a concatenated short message.      |
| smpp.sar_segment_seqnum       | SAR sequence number           | Unsigned 8-bit integer  | Segment number within a concatenated short message.     |
| smpp.sar_total_segments       | SAR size                      | Unsigned 16-bit integer | Number of segments of a concatenated short message.     |
| smpp.schedule_delivery_time   | Scheduled delivery time       | Date/Time stamp         | Scheduled time for delivery of short message.           |
| smpp.schedule_delivery_time_r | Scheduled delivery time       | Time duration           | Scheduled time for delivery of short message.           |
| smpp.sequence_number          | Sequence #                    | Unsigned 32-bit integer | A number to correlate requests with responses.          |
| smpp.service_type             | Service type                  | String                  | SMS application   |

| Field                     | Field Name                            | Type                    | Description   |
|---------------------------|---------------------------------------|-------------------------|---|
|                           |                                       |                         | service associated with the message.                        |
| smpp.set_dpf              | Request DPF set                       | Unsigned 8-bit integer  | Request to set the DPF for certain failure scenario's.      |
| smpp.sm_default_msg_id    | Predefined message                    | Unsigned 8-bit integer  | Index of a predefined ('canned') short message.             |
| smpp.sm_length            | Message length                        | Unsigned 8-bit integer  | Length of the message content.                              |
| smpp.source_addr          | Originator address                    | String                  | Address of SME originating this message.                    |
| smpp.source_addr_npi      | Numbering plan indicator (originator) | Unsigned 8-bit integer  | Gives originator numbering plan this address belongs to.    |
| smpp.source_addr_subunit  | Subunit origin                        | Unsigned 8-bit integer  | Subunit address within mobile that generated the message.   |
| smpp.source_addr_ton      | Type of number (originator)           | Unsigned 8-bit integer  | Indicates originator type of number, given in the address.  |
| smpp.source_bearer_type   | Originator bearer                     | Unsigned 8-bit integer  | Bearer over which the message originated.                   |
| smpp.source_network_type  | Originator network                    | Unsigned 8-bit integer  | Network associated with the originator address.             |
| smpp.source_port          | Source port                           | Unsigned 16-bit integer | Application port associated with the source of the message. |
| smpp.source_telematics_id | Telematic interworking (orig)         | Unsigned 16-bit integer | Telematic interworking used for message submission.         |
| smpp.system_id            | System ID                             | String                  | Identifies a system.  |
| smpp.system_type          | System type                           | String                  | Categorises the system.                                     |

| Field                       | Field Name                           | Type                    | Description   |
|-----------------------------|--------------------------------------|-------------------------|---|
| smpp.user_message_reference | Message reference                    | Unsigned 16-bit integer | Reference to the message, assigned by the user.           |
| smpp.user_response_code     | Application response code            | Unsigned 8-bit integer  | A response code set by the user.                          |
| smpp.ussd_service_op        | USSD service operation               | Unsigned 8-bit integer  | Indicates the USSD service operation.                     |
| smpp.validity_period        | Validity period                      | Date/Time stamp         | Validity period of this message.                          |
| smpp.validity_period_r      | Validity period                      | Time duration           | Validity period of this message.                          |
| smpp.vendor_op              | Optional parameter - Vendor-specific | No value                | A supplied optional parameter specific to an SMSC-vendor. |

### Signalling Connection Control Part (sccp)

Table A-342. Signalling Connection Control Part (sccp)

| Field               | Field Name                  | Type                    | Description |
|---------------------|-----------------------------|-------------------------|-------------|
| sccp.called.ansi_pc | PC                          | String                  |             |
| sccp.called.cluster | PC Cluster                  | Unsigned 24-bit integer |             |
| sccp.called.digits  | GT Digits                   | String                  |             |
| sccp.called.es      | Encoding Scheme             | Unsigned 8-bit integer  |             |
| sccp.called.gti     | Global Title Indicator      | Unsigned 8-bit integer  |             |
| sccp.called.member  | PC Member                   | Unsigned 24-bit integer |             |
| sccp.called.nai     | Nature of Address Indicator | Unsigned 8-bit integer  |             |
| sccp.called.network | PC Network                  | Unsigned 24-bit integer |             |
| sccp.called.ni      | National Indicator          | Unsigned 8-bit integer  |             |
| sccp.called.np      | Numbering Plan              | Unsigned 8-bit integer  |             |
| sccp.called.oe      | Odd/Even Indicator          | Unsigned 8-bit integer  |             |
| sccp.called.pc      | PC                          | Unsigned 16-bit         |             |



| Field                | Field Name                  | Type                    | Description |
|----------------------|-----------------------------|-------------------------|-------------|
|                      |                             | integer                 |             |
| sccp.called.pci      | Point Code Indicator        | Unsigned 8-bit integer  |             |
| sccp.called.ri       | Routing Indicator           | Unsigned 8-bit integer  |             |
| sccp.called.ssn      | SubSystem Number            | Unsigned 8-bit integer  |             |
| sccp.called.ssni     | SubSystem Number Indicator  | Unsigned 8-bit integer  |             |
| sccp.called.tt       | Translation Type            | Unsigned 8-bit integer  |             |
| sccp.calling.ansi_pc | PC                          | String                  |             |
| sccp.calling.cluster | PC Cluster                  | Unsigned 24-bit integer |             |
| sccp.calling.digits  | GT Digits                   | String                  |             |
| sccp.calling.es      | Encoding Scheme             | Unsigned 8-bit integer  |             |
| sccp.calling.gti     | Global Title Indicator      | Unsigned 8-bit integer  |             |
| sccp.calling.member  | PC Member                   | Unsigned 24-bit integer |             |
| sccp.calling.nai     | Nature of Address Indicator | Unsigned 8-bit integer  |             |
| sccp.calling.network | PC Network                  | Unsigned 24-bit integer |             |
| sccp.calling.ni      | National Indicator          | Unsigned 8-bit integer  |             |
| sccp.calling.np      | Numbering Plan              | Unsigned 8-bit integer  |             |
| sccp.calling.oe      | Odd/Even Indicator          | Unsigned 8-bit integer  |             |
| sccp.calling.pc      | PC                          | Unsigned 16-bit integer |             |
| sccp.calling.pci     | Point Code Indicator        | Unsigned 8-bit integer  |             |
| sccp.calling.ri      | Routing Indicator           | Unsigned 8-bit integer  |             |
| sccp.calling.ssn     | SubSystem                   | Unsigned 8-bit          |             |

Appendix A. Ethereal Display Filter Fields

| Field                     | Field Name                                   | Type                       | Description |
|---------------------------|--|----------------------------|-------------|
|                           | Number                                       | integer                    |             |
| sccp.calling.ssni         | SubSystem<br>Number Indicator                | Unsigned 8-bit<br>integer  |             |
| sccp.calling.tt           | Translation Type                             | Unsigned 8-bit<br>integer  |             |
| sccp.class                | Class  | Unsigned 8-bit<br>integer  |             |
| sccp.credit               | Credit                                       | Unsigned 8-bit<br>integer  |             |
| sccp.digits               | Called or Calling<br>GT Digits               | String                     |             |
| sccp.dlr                  | Destination Local<br>Reference               | Unsigned 24-bit<br>integer |             |
| sccp.error_cause          | Error Cause                                  | Unsigned 8-bit<br>integer  |             |
| sccp.handling             | Message handling                             | Unsigned 8-bit<br>integer  |             |
| sccp.hops                 | Hop Counter                                  | Unsigned 8-bit<br>integer  |             |
| sccp.importance           | Importance                                   | Unsigned 8-bit<br>integer  |             |
| sccp.isni.counter         | ISNI Counter                                 | Unsigned 8-bit<br>integer  |             |
| sccp.isni.iri             | ISNI Routing<br>Indicator                    | Unsigned 8-bit<br>integer  |             |
| sccp.isni.mi              | ISNI Mark for<br>Identification<br>Indicator | Unsigned 8-bit<br>integer  |             |
| sccp.isni.netspec         | ISNI Network<br>Specific (Type 1)            | Unsigned 8-bit<br>integer  |             |
| sccp.isni.ti              | ISNI Type<br>Indicator                       | Unsigned 8-bit<br>integer  |             |
| sccp.message_type         | Message Type                                 | Unsigned 8-bit<br>integer  |             |
| sccp.more                 | More data                                    | Unsigned 8-bit<br>integer  |             |
| sccp.optional_poin<br>ter | Pointer to<br>Optional<br>parameter          | Unsigned 8-bit<br>integer  |             |
| sccp.refusal_cause        | Refusal Cause                                | Unsigned 8-bit             |             |

| Field                           | Field Name                                     | Type                    | Description |
|---------------------------------|--|-------------------------|-------------|
|                                 |  | integer                 |             |
| sccp.release_cause              | Release Cause                                  | Unsigned 8-bit integer  |             |
| sccp.reset_cause                | Reset Cause                                    | Unsigned 8-bit integer  |             |
| sccp.return_cause               | Return Cause                                   | Unsigned 8-bit integer  |             |
| sccp.rsn                        | Receive Sequence Number                        | Unsigned 8-bit integer  |             |
| sccp.segmentation.class         | Segmentation: Class                            | Unsigned 8-bit integer  |             |
| sccp.segmentation.first         | Segmentation: First                            | Unsigned 8-bit integer  |             |
| sccp.segmentation.remaining     | Segmentation: Remaining                        | Unsigned 8-bit integer  |             |
| sccp.segmentation.slr           | Segmentation: Source Local Reference           | Unsigned 24-bit integer |             |
| sccp.sequencing_segmenting.more | Sequencing Segmenting: More                    | Unsigned 8-bit integer  |             |
| sccp.sequencing_segmenting.rsn  | Sequencing Segmenting: Receive Sequence Number | Unsigned 8-bit integer  |             |
| sccp.sequencing_segmenting.ssn  | Sequencing Segmenting: Send Sequence Number    | Unsigned 8-bit integer  |             |
| sccp.slr                        | Source Local Reference                         | Unsigned 24-bit integer |             |
| sccp.ssn                        | Called or Calling SubSystem Number             | Unsigned 8-bit integer  |             |
| sccp.variable_pointer1          | Pointer to first Mandatory Variable parameter  | Unsigned 8-bit integer  |             |
| sccp.variable_pointer2          | Pointer to second Mandatory Variable parameter | Unsigned 8-bit integer  |             |
| sccp.variable_pointer3          | Pointer to third Mandatory                     | Unsigned 8-bit integer  |             |

| Field | Field Name         | Type | Description |
|-------|--------------------|------|-------------|
|       | Variable parameter |      |             |

### Signalling Connection Control Part Management (sccpmg)

Table A-343. Signalling Connection Control Part Management (sccpmg)

| Field               | Field Name                       | Type                    | Description |
|---------------------|----------------------------------|-------------------------|-------------|
| sccpmg.ansi_pc      | Affected Point Code              | String                  |             |
| sccpmg.cluster      | Affected PC Cluster              | Unsigned 24-bit integer |             |
| sccpmg.congestion   | SCCP Congestion Level (ITU)      | Unsigned 8-bit integer  |             |
| sccpmg.member       | Affected PC Member               | Unsigned 24-bit integer |             |
| sccpmg.message_type | Message Type                     | Unsigned 8-bit integer  |             |
| sccpmg.network      | Affected PC Network              | Unsigned 24-bit integer |             |
| sccpmg.pc           | Affected Point Code              | Unsigned 16-bit integer |             |
| sccpmg.smi          | Subsystem Multiplicity Indicator | Unsigned 8-bit integer  |             |
| sccpmg.ssn          | Affected SubSystem Number        | Unsigned 8-bit integer  |             |

### Simple Mail Transfer Protocol (smtp)

Table A-344. Simple Mail Transfer Protocol (smtp)

| Field              | Field Name         | Type                    | Description |
|--------------------|--------------------|-------------------------|-------------|
| smtp.req           | Request            | Boolean                 |             |
| smtp.req.command   | Command            | String                  |             |
| smtp.req.parameter | Request parameter  | String                  |             |
| smtp.response.code | Response code      | Unsigned 32-bit integer |             |
| smtp.rsp           | Response           | Boolean                 |             |
| smtp.rsp.parameter | Response parameter | String                  |             |

## Simple Network Management Protocol (snmp)

Table A-345. Simple Network Management Protocol (snmp)

| Field               | Field Name    | Type                   | Description |
|---------------------|---------------|------------------------|-------------|
| snmpv3.flags        | SNMPv3 Flags  | Unsigned 8-bit integer |             |
| snmpv3.flags.auth   | Authenticated | Boolean                |             |
| snmpv3.flags.crypt  | Encrypted     | Boolean                |             |
| snmpv3.flags.report | Reportable    | Boolean                |             |

## Sinec H1 Protocol (h1)

Table A-346. Sinec H1 Protocol (h1)

| Field        | Field Name                  | Type                    | Description |
|--------------|-----------------------------|-------------------------|-------------|
| h1.dbnr      | Memory block number         | Unsigned 8-bit integer  |             |
| h1.dlen      | Length in words             | Signed 16-bit integer   |             |
| h1.dwnr      | Address within memory block | Unsigned 16-bit integer |             |
| h1.empty     | Empty field                 | Unsigned 8-bit integer  |             |
| h1.empty_len | Empty field length          | Unsigned 8-bit integer  |             |
| h1.header    | H1-Header                   | Unsigned 16-bit integer |             |
| h1.len       | Length indicator            | Unsigned 16-bit integer |             |
| h1.opcode    | Opcode                      | Unsigned 8-bit integer  |             |
| h1.opfield   | Operation identifier        | Unsigned 8-bit integer  |             |
| h1.oplen     | Operation length            | Unsigned 8-bit integer  |             |
| h1.org       | Memory type                 | Unsigned 8-bit integer  |             |
| h1.reqlen    | Request length              | Unsigned 8-bit integer  |             |
| h1.request   | Request identifier          | Unsigned 8-bit integer  |             |
| h1.reslen    | Response length             | Unsigned 8-bit          |             |

| Field       | Field Name          | Type                   | Description |
|-------------|---------------------|------------------------|-------------|
|             |                     | integer                |             |
| h1.response | Response identifier | Unsigned 8-bit integer |             |
| h1.resvalue | Response value      | Unsigned 8-bit integer |             |

## Skinny Client Control Protocol (skinny)

Table A-347. Skinny Client Control Protocol (skinny)

| Field                       | Field Name       | Type                    | Description  |
|-----------------------------|------------------|-------------------------|--|
| skinny.activeForward        | Active Forward   | Unsigned 32-bit integer | This is non zero to indicate that a forward is active on the line                    |
| skinny.alarmParam1          | AlarmParam1      | Unsigned 32-bit integer | An as yet undecoded param1 value from the alarm message                              |
| skinny.alarmParam2          | AlarmParam2      | IPv4 address            | This is the second alarm parameter i think it's an ip address                        |
| skinny.alarmSeverity        | AlarmSeverity    | Unsigned 32-bit integer | The severity of the reported alarm.  |
| skinny.buttonCount          | ButtonCount      | Unsigned 32-bit integer | Number of (VALID) button definitions in this message.                                |
| skinny.buttonDefinition     | ButtonDefinition | Unsigned 8-bit integer  | The button type for this instance (ie line, speed dial, ...)                         |
| skinny.buttonInstanceNumber | InstanceNumber   | Unsigned 8-bit integer  | The button instance number for a button or the StationKeyPad value, repeats allowed. |
| skinny.buttonOffset         | ButtonOffset     | Unsigned 32-bit integer | Offset is the number of the first button referenced by this message.                 |
| skinny.callIdentifier       | Call Identifier  | Unsigned 32-bit integer | Call identifier for this call.   |
| skinny.callState            | CallState        | Unsigned 32-bit         | The D channel call   |

| Field                   | Field Name         | Type                    | Description  |
|-------------------------|--------------------|-------------------------|--|
|                         |                    | integer                 | state of the call  |
| skinny.callType         | Call Type          | Unsigned 32-bit integer | What type of call, in/out/etc  |
| skinny.calledParty      | CalledParty        | String                  | The number called.   |
| skinny.calledPartyName  | Called Party Name  | String                  | The name of the party we are calling.                                |
| skinny.callingPartyName | Calling Party Name | String                  | The passed name of the calling party.                                |
| skinny.capCount         | CapCount           | Unsigned 32-bit integer | How many capabilities  |
| skinny.conferenceID     | Conference ID      | Unsigned 32-bit integer | The conference ID  |
| skinny.data_length      | Data Length        | Unsigned 32-bit integer | Number of bytes in the data portion.                                 |
| skinny.dateMilliseconds | Milliseconds       | Unsigned 32-bit integer | Milliseconds   |
| skinny.dateSeconds      | Seconds            | Unsigned 32-bit integer | Seconds  |
| skinny.dateTemplate     | DateTemplate       | String                  | The display format for the date/time on the phone.                   |
| skinny.day              | Day                | Unsigned 32-bit integer | The day of the current month   |
| skinny.dayOfWeek        | DayOfWeek          | Unsigned 32-bit integer | The day of the week  |
| skinny.detectInterval   | HF Detect Interval | Unsigned 32-bit integer | The number of milliseconds that determines a hook flash has occurred |
| skinny.deviceName       | DeviceName         | String                  | The device name of the phone.  |
| skinny.deviceResetType  | Reset Type         | Unsigned 32-bit integer | How the devices it to be reset (reset/restart)                       |
| skinny.deviceTone       | Tone               | Unsigned 32-bit integer | Which tone to play   |
| skinny.deviceType       | DeviceType         | Unsigned 32-bit integer | DeviceType of the station.   |

| Field                         | Field Name        | Type                    | Description  |
|-------------------------------|-------------------|-------------------------|--|
| skinny.deviceUnregisterStatus | Unregister Status | Unsigned 32-bit integer | The status of the device unregister request (*CAN* be refused)               |
| skinny.directoryNumber        | Directory Number  | String                  | The number we are reporting statistics for.                                  |
| skinny.displayMessage         | DisplayMessage    | String                  | The message displayed on the phone.  |
| skinny.echoCancelType         | Echo Cancel Type  | Unsigned 32-bit integer | Is echo cancelling enabled or not  |
| skinny.forwardAllActive       | Forward All       | Unsigned 32-bit integer | Forward all calls  |
| skinny.forwardBusyActive      | Forward Busy      | Unsigned 32-bit integer | Forward calls when busy  |
| skinny.forwardNoAnswerActive  | Forward NoAns     | Unsigned 32-bit integer | Forward only when no answer  |
| skinny.forwardNumber          | Forward Number    | String                  | The number to forward calls to.  |
| skinny.fqdn                   | DisplayName       | String                  | The full display name for this line.   |
| skinny.g723BitRate            | G723 BitRate      | Unsigned 32-bit integer | The G723 bit rate for this stream/JUNK if not g723 stream                    |
| skinny.hookFlashDetectMode    | Hook Flash Mode   | Unsigned 32-bit integer | Which method to use to detect that a hook flash has occurred                 |
| skinny.hour                   | Hour              | Unsigned 32-bit integer | Hour of the day  |
| skinny.ipAddress              | IP Address        | IPv4 address            | An IP address  |
| skinny.jitter                 | Jitter            | Unsigned 32-bit integer | Average jitter during the call.  |
| skinny.keepAliveInterval      | KeepAliveInterval | Unsigned 32-bit integer | How often are keep alives exchanged between the client and the call manager. |
| skinny.lampMode               | LampMode          | Unsigned 32-bit         | The lamp mode  |



| Field                        | Field Name           | Type                    | Description  |
|------------------------------|----------------------|-------------------------|--|
|                              |                      | integer                 |  |
| skinny.latency               | Latency(ms)          | Unsigned 32-bit integer | Average packet latency during the call.  |
| skinny.lineDirNumber         | Line Dir Number      | String                  | The directory number for this line.  |
| skinny.lineInstance          | Line Instance        | Unsigned 32-bit integer | The display call plane associated with this call.  |
| skinny.lineNumber            | LineNumber           | Unsigned 32-bit integer | Line Number  |
| skinny.maxFramesPerPacket    | MaxFramesPerPacket   | Unsigned 16-bit integer | Max frames per packet  |
| skinny.maxStreams            | MaxStreams           | Unsigned 32-bit integer | 32 bit unsigned integer indicating the maximum number of simultaneous RTP duplex streams that the client can handle. |
| skinny.mediaEnunciationType  | Enunciation Type     | Unsigned 32-bit integer | No clue.   |
| skinny.messageTimeoutValue   | Message Timeout      | Unsigned 32-bit integer | The timeout in seconds for this message  |
| skinny.messageid             | Message ID           | Unsigned 32-bit integer | The function requested/done with this message.   |
| skinny.microphoneMode        | Microphone Mode      | Unsigned 32-bit integer | Turns on and off the microphone on the set   |
| skinny.millisecondPacketSize | MS/Packet            | Unsigned 32-bit integer | The number of milliseconds of conversation in each packet  |
| skinny.minute                | Minute               | Unsigned 32-bit integer | Minute   |
| skinny.month                 | Month                | Unsigned 32-bit integer | The current month  |
| skinny.multicastIpAddress    | Multicast Ip Address | IPv4 address            | The multicast address for this   |

Appendix A. Ethereal Display Filter Fields

| Field                           | Field Name                 | Type                    | Description   |
|---------------------------------|----------------------------|-------------------------|---|
|                                 |                            |                         | conference  |
| skinny.multicastPort            | Multicast Port             | Unsigned 32-bit integer | The multicast port the to listens on.                       |
| skinny.numberLines              | Number of Lines            | Unsigned 32-bit integer | How many lines this device has                              |
| skinny.numberSpeedDials         | Number of SpeedDials       | Unsigned 32-bit integer | The number of speed dials this device has                   |
| skinny.octetsRecv               | Octets Received            | Unsigned 32-bit integer | Octets received during the call.                            |
| skinny.octetsSent               | Octets Sent                | Unsigned 32-bit integer | Octets sent during the call.                                |
| skinny.openReceiveChannelStatus | OpenReceiveChannelStatus   | Unsigned 32-bit integer | The status of the opened receive channel.                   |
| skinny.originalCalledParty      | Original Called Party      | String                  | The number of the original calling party.                   |
| skinny.originalCalledPartyName  | Original Called Party Name | String                  | name of the original person who placed the call.            |
| skinny.packetsLost              | Packets Lost               | Unsigned 32-bit integer | Packets lost during the call.                               |
| skinny.packetsRecv              | Packets Received           | Unsigned 32-bit integer | Packets received during the call.                           |
| skinny.packetsSent              | Packets Sent               | Unsigned 32-bit integer | Packets Sent during the call.                               |
| skinny.passThruPartyID          | PassThruPartyID            | Unsigned 32-bit integer | The pass thru party id                                      |
| skinny.payloadCapability        | PayloadCapability          | Unsigned 32-bit integer | The payload capability for this media capability structure. |
| skinny.portNumber               | Port Number                | Unsigned 32-bit integer | A port number   |
| skinny.precedenceValue          | Precedence                 | Unsigned 32-bit integer | Precedence value  |
| skinny.receptionStatus          | ReceptionStatus            | Unsigned 32-bit integer | The current status of the multicast media.                  |

| Field                             | Field Name                 | Type                    | Description  |
|-----------------------------------|----------------------------|-------------------------|--|
| skinny.remoteIpAddress            | Remote Ip Address          | IPv4 address            | The remote end ip address for this stream  |
| skinny.remotePortNumber           | Remote Port                | Unsigned 32-bit integer | The remote port number listening for this stream   |
| skinny.reserved                   | Reserved                   | Unsigned 32-bit integer | Reserved for future(?) use.  |
| skinny.ringType                   | Ring Type                  | Unsigned 32-bit integer | What type of ring to play  |
| skinny.secondaryKeepAliveInterval | SecondaryKeepAliveInterval | Unsigned 32-bit integer | How often are keep alives exchanges between the client and the secondary call manager.                   |
| skinny.serverIdentifier           | Server Identifier          | String                  | Server Identifier.   |
| skinny.serverIpAddress            | Server Ip Address          | IPv4 address            | The IP address for this server   |
| skinny.serverListenPort           | Server Port                | Unsigned 32-bit integer | The port the server listens on.  |
| skinny.serverName                 | Server Name                | String                  | The server name for this device.   |
| skinny.sessionType                | Session Type               | Unsigned 32-bit integer | The type of this session.  |
| skinny.silenceSuppression         | Silence Suppression        | Unsigned 32-bit integer | Mode for silence suppression   |
| skinny.softKeyCount               | SoftKeyCount               | Unsigned 32-bit integer | The number of valid softkeys in this message.  |
| skinny.softKeyEvent               | SoftKeyEvent               | Unsigned 32-bit integer | Which softkey event is being reported.   |
| skinny.softKeyInfoIndex           | SoftKeyInfoIndex           | Unsigned 16-bit integer | Array of size 16 16-bit unsigned integers containing an index into the soft key description information. |
| skinny.softKeyLabel               | SoftKeyLabel               | String                  | The text label for this soft key.  |

Appendix A. Ethereal Display Filter Fields

| Field                  | Field Name      | Type                    | Description  |
|------------------------|-----------------|-------------------------|--|
| skinny.softKeyMap      | SoftKeyMap      | Unsigned 16-bit integer |  |
| skinny.softKeyMap.0    | SoftKey0        | Boolean                 |  |
| skinny.softKeyMap.1    | SoftKey1        | Boolean                 |  |
| skinny.softKeyMap.10   | SoftKey10       | Boolean                 |  |
| skinny.softKeyMap.11   | SoftKey11       | Boolean                 |  |
| skinny.softKeyMap.12   | SoftKey12       | Boolean                 |  |
| skinny.softKeyMap.13   | SoftKey13       | Boolean                 |  |
| skinny.softKeyMap.14   | SoftKey14       | Boolean                 |  |
| skinny.softKeyMap.15   | SoftKey15       | Boolean                 |  |
| skinny.softKeyMap.2    | SoftKey2        | Boolean                 |  |
| skinny.softKeyMap.3    | SoftKey3        | Boolean                 |  |
| skinny.softKeyMap.4    | SoftKey4        | Boolean                 |  |
| skinny.softKeyMap.5    | SoftKey5        | Boolean                 |  |
| skinny.softKeyMap.6    | SoftKey6        | Boolean                 |  |
| skinny.softKeyMap.7    | SoftKey7        | Boolean                 |  |
| skinny.softKeyMap.8    | SoftKey8        | Boolean                 |  |
| skinny.softKeyMap.9    | SoftKey9        | Boolean                 |  |
| skinny.softKeyOffset   | SoftKeyOffset   | Unsigned 32-bit integer | The offset for the first soft key in this message. |
| skinny.softKeySetCount | SoftKeySetCount | Unsigned 32-bit integer | The number of valid softkey sets in this message.  |

| Field                            | Field Name               | Type                       | Description   |
|----------------------------------|--------------------------|----------------------------|---|
| skinny.softKeySet<br>Description | SoftKeySet               | Unsigned 8-bit<br>integer  | A text description<br>of what this<br>softkey when this<br>softkey set is<br>displayed          |
| skinny.softKeySet<br>Offset      | SoftKeySetOffset         | Unsigned 32-bit<br>integer | The offset for the<br>first soft key set in<br>this message.                                    |
| skinny.softKeyTe<br>mplateIndex  | SoftKeyTemplatel<br>ndex | Unsigned 8-bit<br>integer  | Array of size 16 8-<br>bit unsigned ints<br>containing an<br>index into the<br>softKeyTemplate. |
| skinny.speakerMo<br>de           | Speaker                  | Unsigned 32-bit<br>integer | This message sets<br>the speaker mode<br>on/off   |
| skinny.speedDialD<br>irNum       | SpeedDial<br>Number      | String                     | the number to dial<br>for this speed dial.  |
| skinny.speedDialD<br>isplay      | SpeedDial Display        | String                     | The text to display<br>for this speed dial.   |
| skinny.speedDial<br>Number       | SpeedDialNumber          | Unsigned 32-bit<br>integer | Which speed dial<br>number  |
| skinny.stationInsta<br>nce       | StationInstance          | Unsigned 32-bit<br>integer | The stations<br>instance.   |
| skinny.stationIpPo<br>rt         | StationIpPort            | Unsigned 16-bit<br>integer | The station IP port   |
| skinny.stationKey<br>padButton   | KeypadButton             | Unsigned 32-bit<br>integer | The button<br>pressed on the<br>phone.  |
| skinny.stationUser<br>Id         | StationUserId            | Unsigned 32-bit<br>integer | The station user id.  |
| skinny.statsProces<br>singType   | StatsProcessingTy<br>pe  | Unsigned 32-bit<br>integer | What do do after<br>you send the stats.   |
| skinny.stimulus                  | Stimulus                 | Unsigned 32-bit<br>integer | Reason for the<br>device stimulus<br>message.   |
| skinny.stimulusIns<br>tance      | StimulusInstance         | Unsigned 32-bit<br>integer | The instance of the<br>stimulus   |
| skinny.timeStamp                 | Timestamp                | Unsigned 32-bit<br>integer | Time stamp for the<br>call reference  |
| skinny.tokenRejW<br>aitTime      | Retry Wait Time          | Unsigned 32-bit<br>integer | The time to wait<br>before retrying this  |

| Field                       | Field Name           | Type                    | Description   |
|-----------------------------|----------------------|-------------------------|---|
|                             |                      |                         | token request.                                      |
| skinny.totalButtonCount     | TotalButtonCount     | Unsigned 32-bit integer | The total number of buttons defined for this phone. |
| skinny.totalSoftKeyCount    | TotalSoftKeyCount    | Unsigned 32-bit integer | The total number of softkeys for this device.       |
| skinny.totalSoftKeySetCount | TotalSoftKeySetCount | Unsigned 32-bit integer | The total number of softkey sets for this device.   |
| skinny.unknown              | Data                 | Unsigned 32-bit integer | Place holder for unknown data.                      |
| skinny.userName             | Username             | String                  | Username for this device.                           |
| skinny.version              | Version              | String                  | Version.  |
| skinny.year                 | Year                 | Unsigned 32-bit integer | The current year                                    |

### SLIMP3 Communication Protocol (slimp3)

Table A-348. SLIMP3 Communication Protocol (slimp3)

| Field                     | Field Name         | Type                    | Description               |
|---------------------------|--------------------|-------------------------|---------------------------|
| slimp3.control            | Control Packet     | Boolean                 | SLIMP3 control            |
| slimp3.data               | Data               | Boolean                 | SLIMP3 Data               |
| slimp3.data_ack           | Data Ack           | Boolean                 | SLIMP3 Data Ack           |
| slimp3.data_req           | Data Request       | Boolean                 | SLIMP3 Data Request       |
| slimp3.discovery_req      | Discovery Request  | Boolean                 | SLIMP3 Discovery Request  |
| slimp3.discovery_response | Discovery Response | Boolean                 | SLIMP3 Discovery Response |
| slimp3.display            | Display            | Boolean                 | SLIMP3 display            |
| slimp3.hello              | Hello              | Boolean                 | SLIMP3 hello              |
| slimp3.i2c                | I2C                | Boolean                 | SLIMP3 I2C                |
| slimp3.ir                 | Infrared           | Unsigned 32-bit integer | SLIMP3 Infrared command   |
| slimp3.opcode             | Opcode             | Unsigned 8-bit integer  | SLIMP3 message type       |

### Socks Protocol (socks)

**Table A-349. Socks Protocol (socks)**

| Field            | Field Name           | Type                    | Description |
|------------------|----------------------|-------------------------|-------------|
| socks.command    | Command              | Unsigned 8-bit integer  |             |
| socks.dst        | Remote Address       | IPv4 address            |             |
| socks.dstV6      | Remote Address(ipv6) | IPv6 address            |             |
| socks.dstport    | Remote Port          | Unsigned 16-bit integer |             |
| socks.results    | Results(V5)          | Unsigned 8-bit integer  |             |
| socks.results_v4 | Results(V4)          | Unsigned 8-bit integer  |             |
| socks.results_v5 | Results(V5)          | Unsigned 8-bit integer  |             |
| socks.username   | User Name            | String                  |             |
| socks.version    | Version              | Unsigned 8-bit integer  |             |

**Spanning Tree Protocol (stp)****Table A-350. Spanning Tree Protocol (stp)**

| Field                             | Field Name                    | Type                          | Description |
|-----------------------------------|-------------------------------|-------------------------------|-------------|
| mstp.cist_bridge_hw               | CIST Bridge Identifier        | 6-byte Hardware (MAC) Address |             |
| mstp.cist_internal_root_path_cost | CIST Internal Root Path Cost  | Unsigned 32-bit integer       |             |
| mstp.cist_remaining_hops          | CIST Remaining hops           | Unsigned 8-bit integer        |             |
| mstp.config_digest                | MST Config digest             | Byte array                    |             |
| mstp.config_format_selector       | MST Config ID format selector | Unsigned 8-bit integer        |             |
| mstp.config_name                  | MST Config name               | String                        |             |
| mstp.config_revision_level        | MST Config revision           | Unsigned 16-bit integer       |             |
| mstp.msti.bridge_priority         | Bridge Identifier Priority    | Unsigned 8-bit integer        |             |
| mstp.msti.flags                   | MSTI flags                    | Unsigned 8-bit integer        |             |
| mstp.msti.port_priority           | Port identifier priority      | Unsigned 8-bit integer        |             |

Appendix A. Ethereal Display Filter Fields

| Field                    | Field Name                     | Type                            | Description |
|--------------------------|--------------------------------|---------------------------------|-------------|
| mstp.msti.remaining_hops | Remaining hops                 | Unsigned 8-bit integer          |             |
| mstp.msti.root.hw        | Regional Root                  | 6-byte Hardware (MAC) Address   |             |
| mstp.msti.root_cost      | Internal root path cost        | Unsigned 32-bit integer         |             |
| mstp.version_3_length    | MST Extension, Length          | Unsigned 16-bit integer         |             |
| stp.bridge.hw            | Bridge Identifier              | 6-byte Hardware (MAC) Address   |             |
| stp.flags                | BPDU flags                     | Unsigned 8-bit integer          |             |
| stp.flags.agreement      | Agreement                      | Boolean                         |             |
| stp.flags.forwarding     | Forwarding                     | Boolean                         |             |
| stp.flags.learning       | Learning                       | Boolean                         |             |
| stp.flags.port_role      | Port Role                      | Unsigned 8-bit integer          |             |
| stp.flags.proposal       | Proposal                       | Boolean                         |             |
| stp.flags.tc             | Topology Change                | Boolean                         |             |
| stp.flags.tcack          | Topology Change Acknowledgment | Boolean                         |             |
| stp.forward              | Forward Delay                  | Double-precision floating point |             |
| stp.hello                | Hello Time                     | Double-precision floating point |             |
| stp.max_age              | Max Age                        | Double-precision floating point |             |
| stp.msg_age              | Message Age                    | Double-precision floating point |             |
| stp.port                 | Port identifier                | Unsigned 16-bit integer         |             |
| stp.protocol             | Protocol Identifier            | Unsigned 16-bit integer         |             |
| stp.root.cost            | Root Path Cost                 | Unsigned 32-bit integer         |             |
| stp.root.hw              | Root Identifier                | 6-byte Hardware (MAC) Address   |             |



| Field                | Field Name                  | Type                   | Description |
|----------------------|-----------------------------|------------------------|-------------|
| stp.type             | BPDU Type                   | Unsigned 8-bit integer |             |
| stp.version          | Protocol Version Identifier | Unsigned 8-bit integer |             |
| stp.version_1_length | Version 1 Length            | Unsigned 8-bit integer |             |

## Spnego (spnego)

Table A-351. Spnego (spnego)

| Field                         | Field Name      | Type                    | Description                    |
|-------------------------------|-----------------|-------------------------|--------------------------------|
| spnego.krb5.blob              | krb5_blob       | Byte array              | krb5_blob                      |
| spnego.krb5.confounder        | krb5_confounder | Byte array              | KRB5 Confounder                |
| spnego.krb5.seal_algorithm    | krb5_seal_alg   | Unsigned 16-bit integer | KRB5 Sealing Algorithm         |
| spnego.krb5.sgn_algorithm     | krb5_sgn_alg    | Unsigned 16-bit integer | KRB5 Signing Algorithm         |
| spnego.krb5.sgn_checksum      | krb5_sgn_cksum  | Byte array              | KRB5 Data Checksum             |
| spnego.krb5.snd_seq           | krb5_snd_seq    | Byte array              | KRB5 Encrypted Sequence Number |
| spnego.krb5.token_id          | krb5_tok_id     | Unsigned 16-bit integer | KRB5 Token Id                  |
| spnego.mechlistmic            | mechListMIC     | No value                | SPNEGO mechListMIC             |
| spnego.negtokeninit           | negTokenInit    | No value                | SPNEGO negTokenInit            |
| spnego.negtokeninit.mechtoken | mechToken       | No value                | SPNEGO negTokenInit mechToken  |
| spnego.negtokeninit.mechtype  | mechType        | No value                | SPNEGO negTokenInit mechTypes  |
| spnego.negtokeninit.negresult | negResult       | Unsigned 16-bit integer | negResult                      |
| spnego.negtokeninit.reqflags  | reqFlags        | Byte array              | reqFlags                       |
| spnego.negtokentarg           | negTokenTarg    | No value                | SPNEGO negTokenTarg            |
| spnego.negtokenta             | responseToken   | No value                | SPNEGO                         |

| Field            | Field Name | Type     | Description         |
|------------------|------------|----------|---------------------|
| rg.responsetoken |            |          | responseToken       |
| spnego.wraptoken | wrapToken  | No value | SPNEGO<br>wrapToken |

## Stream Control Transmission Protocol (sctp)

Table A-352. Stream Control Transmission Protocol (sctp)

| Field                                      | Field Name                   | Type                    | Description |
|--|------------------------------|-------------------------|-------------|
| sctp.abort.t_bit                           | T-Bit                        | Boolean                 |             |
| sctp.adapation_layer_indication.indication | Indication                   | Unsigned 32-bit integer |             |
| sctp.asconf.serial_number                  | Serial Number                | Unsigned 32-bit integer |             |
| sctp.asconf_ack.serial_number              | Serial Number                | Unsigned 32-bit integer |             |
| sctp.cause.code                            | Cause code                   | Unsigned 16-bit integer |             |
| sctp.cause.length                          | Cause length                 | Unsigned 16-bit integer |             |
| sctp.cause.measure_of_staleness            | Measure of staleness in usec | Unsigned 32-bit integer |             |
| sctp.cause.missing_parameter_type          | Missing parameter type       | Unsigned 16-bit integer |             |
| sctp.cause.nr_of_missing_parameters        | Number of missing parameters | Unsigned 32-bit integer |             |
| sctp.cause.stream_identifier               | Stream identifier            | Unsigned 16-bit integer |             |
| sctp.cause.tsn                             | TSN                          | Unsigned 32-bit integer |             |
| sctp.checksum                              | Checksum                     | Unsigned 32-bit integer |             |
| sctp.checksum_bad                          | Bad checksum                 | Boolean                 |             |
| sctp.chunk_flags                           | Flags                        | Unsigned 8-bit integer  |             |
| sctp.chunk_length                          | Length                       | Unsigned 16-bit integer |             |
| sctp.chunk_type                            | Identifier                   | Unsigned 8-bit integer  |             |

| Field  | Field Name                                  | Type                    | Description |
|--|---|-------------------------|-------------|
| sctp.correlation_id                          | Correlation_id                              | Unsigned 32-bit integer |             |
| sctp.cumulative_ts_n.ack                     | Cumulative TSN Ack                          | Unsigned 32-bit integer |             |
| sctp.cwr.lowest_ts_n                         | Lowest TSN                                  | Unsigned 32-bit integer |             |
| sctp.data.b_bit                              | B-Bit                                       | Boolean                 |             |
| sctp.data.e_bit                              | E-Bit                                       | Boolean                 |             |
| sctp.data.u_bit                              | U-Bit                                       | Boolean                 |             |
| sctp.dstport                                 | Destination port                            | Unsigned 16-bit integer |             |
| sctp.ecne.lowest_ts_n                        | Lowest TSN                                  | Unsigned 32-bit integer |             |
| sctp.forward_tsn.sid                         | Stream identifier                           | Unsigned 16-bit integer |             |
| sctp.forward_tsn.sn                          | Stream sequence number                      | Unsigned 16-bit integer |             |
| sctp.forward_tsn.ts_n                        | New cumulative TSN                          | Unsigned 32-bit integer |             |
| sctp.init.chunk.credit                       | Advertised receiver window credit (a_rwnd)  | Unsigned 32-bit integer |             |
| sctp.init.chunk.initial.tsn                  | Initial TSN                                 | Unsigned 32-bit integer |             |
| sctp.init.chunk.initiate.tag                 | Initiate tag                                | Unsigned 32-bit integer |             |
| sctp.init.chunk.nr.in.streams                | Number of inbound streams                   | Unsigned 16-bit integer |             |
| sctp.init.chunk.nr.out.streams               | Number of outbound streams                  | Unsigned 16-bit integer |             |
| sctp.parameter.cookie_preservative_increment | Suggested Cookie life-span increment (msec) | Unsigned 32-bit integer |             |
| sctp.parameter.hostname.hostname             | Hostname                                    | String                  |             |
| sctp.parameter.ipv4_address                  | IP Version 4 address                        | IPv4 address            |             |
| sctp.parameter.ipv6_address                  | IP Version 6 address                        | IPv6 address            |             |

| Field                                 | Field Name                                 | Type                    | Description |
|---------------------------------------|--|-------------------------|-------------|
| sctp.parameter.length                 | Parameter length                           | Unsigned 16-bit integer |             |
| sctp.parameter.supported_address_type | Supported address type                     | Unsigned 16-bit integer |             |
| sctp.parameter.type                   | Parameter type                             | Unsigned 16-bit integer |             |
| sctp.payload_protocol_id              | Payload protocol identifier                | Unsigned 32-bit integer |             |
| sctp.port                             | Port                                       | Unsigned 16-bit integer |             |
| sctp.sack.a_rwnd                      | Advertised receiver window credit (a_rwnd) | Unsigned 32-bit integer |             |
| sctp.sack.cumulative_tsn_ack          | Cumulative TSN ACK                         | Unsigned 32-bit integer |             |
| sctp.sack.duplicate_tsn               | Duplicate TSN                              | Unsigned 16-bit integer |             |
| sctp.sack.gap_block_end               | End  | Unsigned 16-bit integer |             |
| sctp.sack.gap_block_start             | Start                                      | Unsigned 16-bit integer |             |
| sctp.sack.number_of_duplicated_tsns   | Number of duplicated TSNs                  | Unsigned 16-bit integer |             |
| sctp.sack.number_of_gap_blocks        | Number of gap acknowledgement blocks       | Unsigned 16-bit integer |             |
| sctp.shutdown.cumulative_tsn_ack      | Cumulative TSN Ack                         | Unsigned 32-bit integer |             |
| sctp.shutdown_complete_t_bit          | T-Bit                                      | Boolean                 |             |
| sctp.srcport                          | Source port                                | Unsigned 16-bit integer |             |
| sctp.stream_id                        | Stream Identifier                          | Unsigned 16-bit integer |             |
| sctp.stream_sequence_number           | Stream sequence number                     | Unsigned 16-bit integer |             |
| sctp.tsn                              | TSN  | Unsigned 32-bit integer |             |
| sctp.verification_tag                 | Verification tag                           | Unsigned 32-bit         |             |

| Field | Field Name | Type    | Description |
|-------|------------|---------|-------------|
| g     |            | integer |             |

### Synchronous Data Link Control (SDLC) (sdlc)

Table A-353. Synchronous Data Link Control (SDLC) (sdlc)

| Field        | Field Name    | Type                    | Description   |
|--------------|---------------|-------------------------|---------------|
| sdlc.address | Address Field | Unsigned 8-bit integer  | Address       |
| sdlc.control | Control Field | Unsigned 16-bit integer | Control field |

### Syslog message (syslog)

Table A-354. Syslog message (syslog)

| Field           | Field Name | Type                   | Description      |
|-----------------|------------|------------------------|------------------|
| syslog.facility | Facility   | Unsigned 8-bit integer | Message facility |
| syslog.level    | Level      | Unsigned 8-bit integer | Message level    |
| syslog.msg      | Message    | String                 | Message Text     |

### Systems Network Architecture (sna)

Table A-355. Systems Network Architecture (sna)

| Field                | Field Name             | Type                    | Description |
|----------------------|------------------------|-------------------------|-------------|
| sna.control.05.delay | Channel Delay          | Unsigned 16-bit integer |             |
| sna.control.05.ptp   | Point-to-point         | Boolean                 |             |
| sna.control.05.type  | Network Address Type   | Unsigned 8-bit integer  |             |
| sna.control.0e.type  | Type                   | Unsigned 8-bit integer  |             |
| sna.control.0e.value | Value                  | String                  |             |
| sna.control.hprkey   | Control Vector HPR Key | Unsigned 8-bit integer  |             |
| sna.control.key      | Control Vector Key     | Unsigned 8-bit integer  |             |
| sna.control.len      | Control Vector Length  | Unsigned 8-bit integer  |             |
| sna.gds              | GDS Variable           | No value                |             |
| sna.gds.cont         | Continuation Flag      | Boolean                 |             |

Appendix A. Ethereal Display Filter Fields

| Field                | Field Name                         | Type                    | Description |
|----------------------|------------------------------------|-------------------------|-------------|
| sna.gds.len          | GDS Variable Length                | Unsigned 16-bit integer |             |
| sna.gds.type         | Type of Variable                   | Unsigned 16-bit integer |             |
| sna.nlp.frh          | Transmission Priority Field        | Unsigned 8-bit integer  |             |
| sna.nlp.nhdr         | Network Layer Packet Header        | No value                | NHDR        |
| sna.nlp.nhdr.0       | Network Layer Packet Header Byte 0 | Unsigned 8-bit integer  |             |
| sna.nlp.nhdr.1       | Network Layer Packet Header Byte 1 | Unsigned 8-bit integer  |             |
| sna.nlp.nhdr.anr     | Automatic Network Routing Entry    | Byte array              |             |
| sna.nlp.nhdr.fra     | Function Routing Address Entry     | Byte array              |             |
| sna.nlp.nhdr.ft      | Function Type                      | Unsigned 8-bit integer  |             |
| sna.nlp.nhdr.slowdn1 | Slowdown 1                         | Boolean                 |             |
| sna.nlp.nhdr.slowdn2 | Slowdown 2                         | Boolean                 |             |
| sna.nlp.nhdr.sm      | Switching Mode Field               | Unsigned 8-bit integer  |             |
| sna.nlp.nhdr.tpf     | Transmission Priority Field        | Unsigned 8-bit integer  |             |
| sna.nlp.nhdr.tspi    | Time Sensitive Packet Indicator    | Boolean                 |             |
| sna.nlp.thdr         | RTP Transport Header               | No value                | THDR        |
| sna.nlp.thdr.8       | RTP Transport Packet Header Byte 8 | Unsigned 8-bit integer  |             |
| sna.nlp.thdr.9       | RTP Transport Packet Header Byte 9 | Unsigned 8-bit integer  |             |
| sna.nlp.thdr.bsn     | Byte Sequence Number               | Unsigned 32-bit integer |             |

| Field                              | Field Name                           | Type                    | Description          |
|------------------------------------|--------------------------------------|-------------------------|----------------------|
| sna.nlp.thdr.cqfi                  | Connection Qualifier Field Indicator | Boolean                 |                      |
| sna.nlp.thdr.dlf                   | Data Length Field                    | Unsigned 32-bit integer |                      |
| sna.nlp.thdr.eomi                  | End Of Message Indicator             | Boolean                 |                      |
| sna.nlp.thdr.lmi                   | Last Message Indicator               | Boolean                 |                      |
| sna.nlp.thdr.offset                | Data Offset/4                        | Unsigned 16-bit integer | Data Offset in Words |
| sna.nlp.thdr.optional.0d.arb       | ARB Flow Control                     | Boolean                 |                      |
| sna.nlp.thdr.optional.0d.dedicated | Dedicated RTP Connection             | Boolean                 |                      |
| sna.nlp.thdr.optional.0d.reliable  | Reliable Connection                  | Boolean                 |                      |
| sna.nlp.thdr.optional.0d.target    | Target Resource ID Present           | Boolean                 |                      |
| sna.nlp.thdr.optional.0d.version   | Version                              | Unsigned 16-bit integer |                      |
| sna.nlp.thdr.optional.0e.4         | Connection Setup Byte 4              | Unsigned 8-bit integer  |                      |
| sna.nlp.thdr.optional.0e.abspbeg   | ABSP Begin                           | Unsigned 32-bit integer |                      |
| sna.nlp.thdr.optional.0e.abspend   | ABSP End                             | Unsigned 32-bit integer |                      |
| sna.nlp.thdr.optional.0e.echo      | Status Acknowledge Number            | Unsigned 16-bit integer |                      |
| sna.nlp.thdr.optional.0e.gap       | Gap Detected                         | Boolean                 |                      |
| sna.nlp.thdr.optional.0e.idle      | RTP Idle Packet                      | Boolean                 |                      |
| sna.nlp.thdr.optional.0e.nabsp     | Number Of ABSP                       | Unsigned 8-bit integer  |                      |
| sna.nlp.thdr.optional.0e.rseq      | Received Sequence Number             | Unsigned 32-bit integer |                      |
| sna.nlp.thdr.optional.0e.stat      | Status                               | Unsigned 8-bit integer  |                      |

Appendix A. Ethereal Display Filter Fields

| Field                                     | Field Name   | Type                       | Description |
|---|--|----------------------------|-------------|
| sna.nlp.thdr.optio<br>nal.0e.sync         | Status Report<br>Number                                  | Unsigned 16-bit<br>integer |             |
| sna.nlp.thdr.optio<br>nal.0f.bits         | Client Bits  | Unsigned 8-bit<br>integer  |             |
| sna.nlp.thdr.optio<br>nal.10.tcid         | Transport<br>Connection<br>Identifier                    | Byte array                 | TCID        |
| sna.nlp.thdr.optio<br>nal.12.sense        | Sense Data   | Byte array                 |             |
| sna.nlp.thdr.optio<br>nal.14.rr.2         | Return Route TG<br>Descriptor Byte 2                     | Unsigned 8-bit<br>integer  |             |
| sna.nlp.thdr.optio<br>nal.14.rr.bfe       | BF Entry Indicator                                       | Boolean                    |             |
| sna.nlp.thdr.optio<br>nal.14.rr.key       | Key  | Unsigned 8-bit<br>integer  |             |
| sna.nlp.thdr.optio<br>nal.14.rr.len       | Length   | Unsigned 8-bit<br>integer  |             |
| sna.nlp.thdr.optio<br>nal.14.rr.num       | Number Of TG<br>Control Vectors                          | Unsigned 8-bit<br>integer  |             |
| sna.nlp.thdr.optio<br>nal.14.si.2         | Switching<br>Information Byte 2                          | Unsigned 8-bit<br>integer  |             |
| sna.nlp.thdr.optio<br>nal.14.si.alive     | RTP Alive Timer  | Unsigned 32-bit<br>integer |             |
| sna.nlp.thdr.optio<br>nal.14.si.dirsearch | Directory Search<br>Required on Path<br>Switch Indicator | Boolean                    |             |
| sna.nlp.thdr.optio<br>nal.14.si.key       | Key  | Unsigned 8-bit<br>integer  |             |
| sna.nlp.thdr.optio<br>nal.14.si.len       | Length   | Unsigned 8-bit<br>integer  |             |
| sna.nlp.thdr.optio<br>nal.14.si.limitres  | Limited Resource<br>Link Indicator                       | Boolean                    |             |
| sna.nlp.thdr.optio<br>nal.14.si.maxpsize  | Maximum Packet<br>Size On Return<br>Path                 | Unsigned 32-bit<br>integer |             |
| sna.nlp.thdr.optio<br>nal.14.si.mnpsrscv  | MNPS RSCV<br>Retention<br>Indicator                      | Boolean                    |             |
| sna.nlp.thdr.optio<br>nal.14.si.mobility  | Mobility Indicator                                       | Boolean                    |             |



| Field                                | Field Name                          | Type                    | Description |
|--------------------------------------|-------------------------------------|-------------------------|-------------|
| sna.nlp.thdr.optional.14.si.ncescope | NCE Scope Indicator                 | Boolean                 |             |
| sna.nlp.thdr.optional.14.si.refifo   | Resequencing (REFIFO) Indicator     | Boolean                 |             |
| sna.nlp.thdr.optional.14.si.switch   | Path Switch Time                    | Unsigned 32-bit integer |             |
| sna.nlp.thdr.optional.22.2           | Adaptive Rate Based Segment Byte 2  | Unsigned 8-bit integer  |             |
| sna.nlp.thdr.optional.22.3           | Adaptive Rate Based Segment Byte 3  | Unsigned 8-bit integer  |             |
| sna.nlp.thdr.optional.22.arb         | ARB Mode                            | Unsigned 8-bit integer  |             |
| sna.nlp.thdr.optional.22.field1      | Field 1                             | Unsigned 32-bit integer |             |
| sna.nlp.thdr.optional.22.field2      | Field 2                             | Unsigned 32-bit integer |             |
| sna.nlp.thdr.optional.22.field3      | Field 3                             | Unsigned 32-bit integer |             |
| sna.nlp.thdr.optional.22.field4      | Field 4                             | Unsigned 32-bit integer |             |
| sna.nlp.thdr.optional.22.parity      | Parity Indicator                    | Boolean                 |             |
| sna.nlp.thdr.optional.22.raa         | Rate Adjustment Action              | Unsigned 8-bit integer  |             |
| sna.nlp.thdr.optional.22.raterep     | Rate Reply Correlator               | Unsigned 8-bit integer  |             |
| sna.nlp.thdr.optional.22.ratereq     | Rate Request Correlator             | Unsigned 8-bit integer  |             |
| sna.nlp.thdr.optional.22.type        | Message Type                        | Unsigned 8-bit integer  |             |
| sna.nlp.thdr.optional.len            | Optional Segment Length/4           | Unsigned 8-bit integer  |             |
| sna.nlp.thdr.optional.type           | Optional Segment Type               | Unsigned 8-bit integer  |             |
| sna.nlp.thdr.osi                     | Optional Segments Present Indicator | Boolean                 |             |
| sna.nlp.thdr.rasapi                  | Reply ASAP Indicator                | Boolean                 |             |

Appendix A. Ethereal Display Filter Fields

| Field               | Field Name                        | Type                   | Description |
|---------------------|-----------------------------------|------------------------|-------------|
| sna.nlp.thdr.retryi | Retry Indicator                   | Boolean                |             |
| sna.nlp.thdr.setupi | Setup Indicator                   | Boolean                |             |
| sna.nlp.thdr.somi   | Start Of Message Indicator        | Boolean                |             |
| sna.nlp.thdr.sri    | Session Request Indicator         | Boolean                |             |
| sna.nlp.thdr.tcid   | Transport Connection Identifier   | Byte array             | TCID        |
| sna.rh              | Request/Response Header           | No value               |             |
| sna.rh.0            | Request/Response Header Byte 0    | Unsigned 8-bit integer |             |
| sna.rh.1            | Request/Response Header Byte 1    | Unsigned 8-bit integer |             |
| sna.rh.2            | Request/Response Header Byte 2    | Unsigned 8-bit integer |             |
| sna.rh.bbi          | Begin Bracket Indicator           | Boolean                |             |
| sna.rh.bci          | Begin Chain Indicator             | Boolean                |             |
| sna.rh.cdi          | Change Direction Indicator        | Boolean                |             |
| sna.rh.cebi         | Conditional End Bracket Indicator | Boolean                |             |
| sna.rh.csi          | Code Selection Indicator          | Unsigned 8-bit integer |             |
| sna.rh.dr1          | Definite Response 1 Indicator     | Boolean                |             |
| sna.rh.dr2          | Definite Response 2 Indicator     | Boolean                |             |
| sna.rh.ebi          | End Bracket Indicator             | Boolean                |             |
| sna.rh.eci          | End Chain Indicator               | Boolean                |             |
| sna.rh.edi          | Enciphered Data Indicator         | Boolean                |             |
| sna.rh.eri          | Exception Response Indicator      | Boolean                |             |

| Field              | Field Name                           | Type                    | Description |
|--------------------|--------------------------------------|-------------------------|-------------|
| sna.rh.fi          | Format Indicator                     | Boolean                 |             |
| sna.rh.lcci        | Length-Checked Compression Indicator | Boolean                 |             |
| sna.rh.pdi         | Padded Data Indicator                | Boolean                 |             |
| sna.rh.pi          | Pacing Indicator                     | Boolean                 |             |
| sna.rh.qri         | Queued Response Indicator            | Boolean                 |             |
| sna.rh.rlwi        | Request Larger Window Indicator      | Boolean                 |             |
| sna.rh.rri         | Request/Response Indicator           | Unsigned 8-bit integer  |             |
| sna.rh.rti         | Response Type Indicator              | Boolean                 |             |
| sna.rh.ru_category | Request/Response Unit Category       | Unsigned 8-bit integer  |             |
| sna.rh.sdi         | Sense Data Included                  | Boolean                 |             |
| sna.th             | Transmission Header                  | No value                |             |
| sna.th.0           | Transmission Header Byte 0           | Unsigned 8-bit integer  | TH Byte 0   |
| sna.th.cmd_fmt     | Command Format                       | Unsigned 8-bit integer  |             |
| sna.th.cmd_sn      | Command Sequence Number              | Unsigned 16-bit integer |             |
| sna.th.cmd_type    | Command Type                         | Unsigned 8-bit integer  |             |
| sna.th.daf         | Destination Address Field            | Unsigned 16-bit integer |             |
| sna.th.dcf         | Data Count Field                     | Unsigned 16-bit integer |             |
| sna.th.def         | Destination Element Field            | Unsigned 16-bit integer |             |
| sna.th.dsaf        | Destination Subarea Address Field    | Unsigned 32-bit integer |             |
| sna.th.efi         | Expedited Flow Indicator             | Unsigned 8-bit integer  |             |

Appendix A. Ethereal Display Filter Fields

| Field                 | Field Name                    | Type                    | Description  |
|-----------------------|-------------------------------|-------------------------|--|
| sna.th.er_vr_supp_ind | ER and VR Support Indicator   | Unsigned 8-bit integer  |  |
| sna.th.ern            | Explicit Route Number         | Unsigned 8-bit integer  |  |
| sna.th.fid            | Format Identifier             | Unsigned 8-bit integer  |  |
| sna.th.iern           | Initial Explicit Route Number | Unsigned 8-bit integer  |  |
| sna.th.lsid           | Local Session Identification  | Unsigned 8-bit integer  |  |
| sna.th.mft            | MPR FID4 Type                 | Boolean                 |  |
| sna.th.mpf            | Mapping Field                 | Unsigned 8-bit integer  |  |
| sna.th.nlp_cp         | NLP Count or Padding          | Unsigned 8-bit integer  |  |
| sna.th.nlpoi          | NLP Offset Indicator          | Unsigned 8-bit integer  |  |
| sna.th.nwkw_prt       | Network Priority              | Unsigned 8-bit integer  |  |
| sna.th.oaf            | Origin Address Field          | Unsigned 16-bit integer |  |
| sna.th.odai           | ODAI Assignment Indicator     | Unsigned 8-bit integer  |  |
| sna.th.oef            | Origin Element Field          | Unsigned 16-bit integer |  |
| sna.th.osaf           | Origin Subarea Address Field  | Unsigned 32-bit integer |  |
| sna.th.piubf          | PIU Blocking Field            | Unsigned 8-bit integer  |  |
| sna.th.sa             | Session Address               | Byte array              |  |
| sna.th.snai           | SNA Indicator                 | Boolean                 | Used to identify whether the PIU originated or is destined for an SNA or non-SNA device. |
| sna.th.snf            | Sequence Number Field         | Unsigned 16-bit integer |  |
| sna.th.tg_nonfifo_ind | Transmission Group Non-FIFO   | Boolean                 |  |

| Field                 | Field Name                                  | Type                    | Description                |
|-----------------------|---|-------------------------|----------------------------|
|                       | Indicator                                   |                         |                            |
| sna.th.tg_snf         | Transmission Group Sequence Number Field    | Unsigned 16-bit integer |                            |
| sna.th.tg_sweep       | Transmission Group Sweep                    | Unsigned 8-bit integer  |                            |
| sna.th.tgsf           | Transmission Group Segmenting Field         | Unsigned 8-bit integer  |                            |
| sna.th.tpf            | Transmission Priority Field                 | Unsigned 8-bit integer  |                            |
| sna.th.vr_cwi         | Virtual Route Change Window Indicator       | Unsigned 16-bit integer | Change Window Indicator    |
| sna.th.vr_cwri        | Virtual Route Change Window Reply Indicator | Unsigned 16-bit integer |                            |
| sna.th.vr_pac_cnt_ind | Virtual Route Pacing Count Indicator        | Unsigned 8-bit integer  |                            |
| sna.th.vr_rwi         | Virtual Route Reset Window Indicator        | Boolean                 |                            |
| sna.th.vr_snf_send    | Virtual Route Send Sequence Number Field    | Unsigned 16-bit integer | Send Sequence Number Field |
| sna.th.vr_sqti        | Virtual Route Sequence and Type Indicator   | Unsigned 16-bit integer | Route Sequence and Type    |
| sna.th.vrn            | Virtual Route Number                        | Unsigned 8-bit integer  |                            |
| sna.th.vrprq          | Virtual Route Pacing Request                | Boolean                 |                            |
| sna.th.vrprs          | Virtual Route Pacing Response               | Boolean                 |                            |
| sna.xid               | XID   | No value                | XID Frame                  |
| sna.xid.0             | XID Byte 0                                  | Unsigned 8-bit integer  |                            |
| sna.xid.format        | XID Format                                  | Unsigned 8-bit integer  |                            |
| sna.xid.id            | Node  | Unsigned 32-bit         |                            |

Appendix A. Ethereal Display Filter Fields

| Field                    | Field Name                               | Type                    | Description               |
|--------------------------|--|-------------------------|---------------------------|
|                          | Identification                           | integer                 |                           |
| sna.xid.idblock          | ID Block                                 | Unsigned 32-bit integer |                           |
| sna.xid.idnum            | ID Number                                | Unsigned 32-bit integer |                           |
| sna.xid.len              | XID Length                               | Unsigned 8-bit integer  |                           |
| sna.xid.type             | XID Type                                 | Unsigned 8-bit integer  |                           |
| sna.xid.type3.10         | XID Type 3 Byte 10                       | Unsigned 8-bit integer  |                           |
| sna.xid.type3.11         | XID Type 3 Byte 11                       | Unsigned 8-bit integer  |                           |
| sna.xid.type3.12         | XID Type 3 Byte 12                       | Unsigned 8-bit integer  |                           |
| sna.xid.type3.15         | XID Type 3 Byte 15                       | Unsigned 8-bit integer  |                           |
| sna.xid.type3.8          | Characteristics of XID sender            | Unsigned 16-bit integer |                           |
| sna.xid.type3.actpu      | ACTPU suppression indicator              | Boolean                 |                           |
| sna.xid.type3.asend_bind | Adaptive BIND pacing support as sender   | Boolean                 | Pacing support as sender  |
| sna.xid.type3.asend_rcv  | Adaptive BIND pacing support as receiver | Boolean                 | Pacing support as receive |
| sna.xid.type3.branch     | Branch Indicator                         | Unsigned 8-bit integer  |                           |
| sna.xid.type3.brnn       | Option Set 1123 Indicator                | Boolean                 |                           |
| sna.xid.type3.cp         | Control Point Services                   | Boolean                 |                           |
| sna.xid.type3.cpchange   | CP name change support                   | Boolean                 |                           |
| sna.xid.type3.cpcp       | CP-CP session support                    | Boolean                 |                           |
| sna.xid.type3.dedsvc     | Dedicated SVC Indicator                  | Boolean                 |                           |

| Field                    | Field Name                                 | Type                   | Description              |
|--------------------------|--|------------------------|--------------------------|
| sna.xid.type3.dlc        | XID DLC                                    | Unsigned 8-bit integer |                          |
| sna.xid.type3.dlen       | DLC Dependent Section Length               | Unsigned 8-bit integer |                          |
| sna.xid.type3.dlur       | Dependent LU Requester Indicator           | Boolean                |                          |
| sna.xid.type3.dlus       | DLUS Served LU Registration Indicator      | Boolean                |                          |
| sna.xid.type3.exbn       | Extended HPR Border Node                   | Boolean                |                          |
| sna.xid.type3.gener_bind | Whole BIND PIU generated indicator         | Boolean                | Whole BIND PIU generated |
| sna.xid.type3.gendai     | Generalized ODAI Usage Option              | Boolean                |                          |
| sna.xid.type3.initself   | INIT-SELF support                          | Boolean                |                          |
| sna.xid.type3.negotcomp  | Negotiation Complete                       | Boolean                |                          |
| sna.xid.type3.negotsup   | Negotiation Complete Supported             | Boolean                |                          |
| sna.xid.type3.nonact     | Nonactivation Exchange                     | Boolean                |                          |
| sna.xid.type3.nwnode     | Sender is network node                     | Boolean                |                          |
| sna.xid.type3.pacing     | Qualifier for adaptive BIND pacing support | Unsigned 8-bit integer |                          |
| sna.xid.type3.paralleltg | Parallel TG Support                        | Boolean                |                          |
| sna.xid.type3.pbn        | Peripheral Border Node                     | Boolean                |                          |
| sna.xid.type3.pucap      | PU Capabilities                            | Boolean                |                          |
| sna.xid.type3.quiesce    | Quiesce TG Request                         | Boolean                |                          |
| sna.xid.type3.recvbind   | Whole BIND PIU required indicator          | Boolean                | Whole BIND PIU required  |

| Field                    | Field Name                      | Type                    | Description |
|--------------------------|---------------------------------|-------------------------|-------------|
| sna.xid.type3.stand_bind | Stand-Alone BIND Support        | Boolean                 |             |
| sna.xid.type3.state      | XID exchange state indicator    | Unsigned 16-bit integer |             |
| sna.xid.type3.tg         | XID TG                          | Unsigned 8-bit integer  |             |
| sna.xid.type3.tgshare    | TG Sharing Prohibited Indicator | Boolean                 |             |

### Systems Network Architecture XID (sna\_xid)

Table A-356. Systems Network Architecture XID (sna\_xid)

| Field | Field Name | Type | Description |
|-------|------------|------|-------------|
|       |            |      |             |

### TACACS (tacacs)

Table A-357. TACACS (tacacs)

| Field           | Field Name          | Type                    | Description         |
|-----------------|---------------------|-------------------------|---------------------|
| tacacs.destaddr | Destination address | IPv4 address            | Destination address |
| tacacs.destport | Destination port    | Unsigned 16-bit integer | Destination port    |
| tacacs.line     | Line                | Unsigned 16-bit integer | Line                |
| tacacs.nonce    | Nonce               | Unsigned 16-bit integer | Nonce               |
| tacacs.passlen  | Password length     | Unsigned 8-bit integer  | Password length     |
| tacacs.reason   | Reason              | Unsigned 8-bit integer  | Reason              |
| tacacs.response | Response            | Unsigned 8-bit integer  | Response            |
| tacacs.result1  | Result 1            | Unsigned 32-bit integer | Result 1            |
| tacacs.result2  | Result 2            | Unsigned 32-bit integer | Result 2            |
| tacacs.result3  | Result 3            | Unsigned 16-bit integer | Result 3            |
| tacacs.type     | Type                | Unsigned 8-bit integer  | Type                |



| Field          | Field Name      | Type                   | Description     |
|----------------|-----------------|------------------------|-----------------|
| tacacs.userlen | Username length | Unsigned 8-bit integer | Username length |
| tacacs.version | Version         | Unsigned 8-bit integer | Version         |

**TACACS+ (tacplus)**

Table A-358. TACACS+ (tacplus)

| Field                         | Field Name      | Type                    | Description                             |
|-------------------------------|-----------------|-------------------------|---|
| tacplus.flags                 | Flags           | Unsigned 8-bit integer  | Flags                                   |
| tacplus.flags.connection_type | Connection type | Boolean                 | Connection type (single or multiple)    |
| tacplus.flags.payload_type    | Payload type    | Boolean                 | Payload type (unencrypted or encrypted) |
| tacplus.majvers               | Major version   | Unsigned 8-bit integer  | Major version number                    |
| tacplus.minvers               | Minor version   | Unsigned 8-bit integer  | Minor version number                    |
| tacplus.packet_len            | Packet length   | Unsigned 32-bit integer | Packet length                           |
| tacplus.request               | Request         | Boolean                 | TRUE if TACACS+ request                 |
| tacplus.response              | Response        | Boolean                 | TRUE if TACACS+ response                |
| tacplus.seqno                 | Sequence number | Unsigned 8-bit integer  | Sequence number                         |
| tacplus.session_id            | Session ID      | Unsigned 32-bit integer | Session ID                              |
| tacplus.type                  | Type            | Unsigned 8-bit integer  | Type                                    |

**TPKT (tpkt)**

Table A-359. TPKT (tpkt)

| Field         | Field Name | Type                    | Description |
|---------------|------------|-------------------------|-------------|
| tpkt.length   | Length     | Unsigned 16-bit integer |             |
| tpkt.reserved | Reserved   | Unsigned 8-bit integer  |             |

| Field        | Field Name | Type                   | Description |
|--------------|------------|------------------------|-------------|
| tpkt.version | Version    | Unsigned 8-bit integer |             |

### Tabular Data Stream (tds)

Table A-360. Tabular Data Stream (tds)

| Field                         | Field Name                           | Type                    | Description  |
|-------------------------------|--------------------------------------|-------------------------|--|
| tds.channel                   | Channel                              | Unsigned 16-bit integer | Channel Number   |
| tds.fragment                  | TDS Fragment                         |                         | TDS Fragment   |
| tds.fragment.error            | Defragmentation error                |                         | Defragmentation error due to illegal fragments         |
| tds.fragment.multipletails    | Multiple tail fragments found        | Boolean                 | Several tails were found when defragmenting the packet |
| tds.fragment.overlap          | Segment overlap                      | Boolean                 | Fragment overlaps with other fragments                 |
| tds.fragment.overlap.conflict | Conflicting data in fragment overlap | Boolean                 | Overlapping fragments contained conflicting data       |
| tds.fragment.toolongfragment  | Segment too long                     | Boolean                 | Segment contained data past end of packet              |
| tds.fragments                 | TDS Fragments                        | No value                | TDS Fragments  |
| tds.packet_number             | Packet Number                        | Unsigned 8-bit integer  | Packet Number  |
| tds.size                      | Size                                 | Unsigned 16-bit integer | Packet Size  |
| tds.status                    | Status                               | Unsigned 8-bit integer  | Frame status   |
| tds.type                      | Type                                 | Unsigned 8-bit integer  | Packet Type  |
| tds.window                    | Window                               | Unsigned 8-bit integer  | Window   |

### Tazmen Sniffer Protocol (tzsp)

Table A-361. Tazmen Sniffer Protocol (tzsp)

| Field | Field Name | Type | Description |
|-------|------------|------|-------------|
|-------|------------|------|-------------|

| Field                        | Field Name    | Type                    | Description                 |
|------------------------------|---------------|-------------------------|-----------------------------|
| tzsp.encap                   | Encapsulation | Unsigned 16-bit integer | Encapsulation               |
| tzsp.reserved                | Reserved      | Unsigned 8-bit integer  | Reserved                    |
| tzsp.version                 | Version       | Unsigned 8-bit integer  | Version                     |
| tzsp.wlan.channel            | Channel       | Unsigned 8-bit integer  | Channel                     |
| tzsp.wlan.rate               | Rate          | Unsigned 8-bit integer  | Rate                        |
| tzsp.wlan.signal             | Signal        | Unsigned 8-bit integer  | Signal                      |
| tzsp.wlan.silence            | Silence       | Unsigned 8-bit integer  | Silence                     |
| tzsp.wlan.status             | Status        | Unsigned 16-bit integer | Status                      |
| tzsp.wlan.status.fc_s_err    | FCS           | Boolean                 | Frame check sequence        |
| tzsp.wlan.status.mac_port    | Port          | Unsigned 8-bit integer  | MAC port                    |
| tzsp.wlan.status.msg_type    | Type          | Unsigned 8-bit integer  | Message type                |
| tzsp.wlan.status.pcf         | PCF           | Boolean                 | Point Coordination Function |
| tzsp.wlan.status.undecrypted | Undecrypted   | Boolean                 | Undecrypted                 |
| tzsp.wlan.time               | Time          | Unsigned 32-bit integer | Time                        |

### Telnet (telnet)

Table A-362. Telnet (telnet)

| Field | Field Name | Type | Description |
|-------|------------|------|-------------|
|       |            |      |             |

### Time Protocol (time)

Table A-363. Time Protocol (time)

| Field     | Field Name | Type                    | Description                                       |
|-----------|------------|-------------------------|---|
| time.time | Time       | Unsigned 32-bit integer | Seconds since 00:00 (midnight) 1 January 1900 GMT |

## Time Synchronization Protocol (tsp)

Table A-364. Time Synchronization Protocol (tsp)

| Field        | Field Name   | Type                    | Description             |
|--------------|--------------|-------------------------|-------------------------|
| tsp.hopcnt   | Hop Count    | Unsigned 8-bit integer  | Hop Count               |
| tsp.name     | Machine Name | String                  | Sender Machine Name     |
| tsp.sec      | Seconds      | Unsigned 32-bit integer | Seconds                 |
| tsp.sequence | Sequence     | Unsigned 16-bit integer | Sequence Number         |
| tsp.type     | Type         | Unsigned 8-bit integer  | Packet Type             |
| tsp.usec     | Microseconds | Unsigned 32-bit integer | Microseconds            |
| tsp.version  | Version      | Unsigned 8-bit integer  | Protocol Version Number |

## Token-Ring (tr)

Table A-365. Token-Ring (tr)

| Field         | Field Name                    | Type                          | Description                            |
|---------------|-------------------------------|-------------------------------|--|
| tr.ac         | Access Control                | Unsigned 8-bit integer        |  |
| tr.addr       | Source or Destination Address | 6-byte Hardware (MAC) Address | Source or Destination Hardware Address |
| tr.broadcast  | Broadcast Type                | Unsigned 8-bit integer        | Type of Token-Ring Broadcast           |
| tr.direction  | Direction                     | Unsigned 8-bit integer        | Direction of RIF                       |
| tr.dst        | Destination                   | 6-byte Hardware (MAC) Address | Destination Hardware Address           |
| tr.fc         | Frame Control                 | Unsigned 8-bit integer        |  |
| tr.frame      | Frame                         | Boolean                       |  |
| tr.frame_pcf  | Frame PCF                     | Unsigned 8-bit integer        |  |
| tr.frame_type | Frame Type                    | Unsigned 8-bit integer        |  |

| Field                   | Field Name           | Type                          | Description   |
|-------------------------|----------------------|-------------------------------|---|
| tr.max_frame_size       | Maximum Frame Size   | Unsigned 8-bit integer        |   |
| tr.monitor_cnt          | Monitor Count        | Unsigned 8-bit integer        |   |
| tr.priority             | Priority             | Unsigned 8-bit integer        |   |
| tr.priority_reservation | Priority Reservation | Unsigned 8-bit integer        |   |
| tr.rif                  | Ring-Bridge Pairs    | String                        | String representing Ring-Bridge Pairs   |
| tr.rif.bridge           | RIF Bridge           | Unsigned 8-bit integer        |   |
| tr.rif.ring             | RIF Ring             | Unsigned 16-bit integer       |   |
| tr.rif_bytes            | RIF Bytes            | Unsigned 8-bit integer        | Number of bytes in Routing Information Fields, including the two bytes of Routing Control Field |
| tr.sr                   | Source Routed        | Boolean                       | Source Routed   |
| tr.src                  | Source               | 6-byte Hardware (MAC) Address | Source Hardware Address   |

### Token-Ring Media Access Control (trmac)

Table A-366. Token-Ring Media Access Control (trmac)

| Field                   | Field Name                         | Type                   | Description |
|-------------------------|------------------------------------|------------------------|-------------|
| trmac.dstclass          | Destination Class                  | Unsigned 8-bit integer |             |
| trmac.errors.abort      | Abort Delimiter Transmitted Errors | Unsigned 8-bit integer |             |
| trmac.errors.ac         | A/C Errors                         | Unsigned 8-bit integer |             |
| trmac.errors.burst      | Burst Errors                       | Unsigned 8-bit integer |             |
| trmac.errors.congestion | Receiver Congestion Errors         | Unsigned 8-bit integer |             |
| trmac.errors.fc         | Frame-Copied Errors                | Unsigned 8-bit integer |             |
| trmac.errors.freq       | Frequency Errors                   | Unsigned 8-bit         |             |

| Field                 | Field Name           | Type                          | Description |
|-----------------------|----------------------|-------------------------------|-------------|
|                       |                      | integer                       |             |
| trmac.errors.internal | Internal Errors      | Unsigned 8-bit integer        |             |
| trmac.errors.iso      | Isolating Errors     | Unsigned 16-bit integer       |             |
| trmac.errors.line     | Line Errors          | Unsigned 8-bit integer        |             |
| trmac.errors.lost     | Lost Frame Errors    | Unsigned 8-bit integer        |             |
| trmac.errors.noniso   | Non-Isolating Errors | Unsigned 16-bit integer       |             |
| trmac.errors.token    | Token Errors         | Unsigned 8-bit integer        |             |
| trmac.length          | Total Length         | Unsigned 8-bit integer        |             |
| trmac.mvec            | Major Vector         | Unsigned 8-bit integer        |             |
| trmac.naun            | NAUN                 | 6-byte Hardware (MAC) Address |             |
| trmac.srcclass        | Source Class         | Unsigned 8-bit integer        |             |
| trmac.svec            | Sub-Vector           | Unsigned 8-bit integer        |             |

## Transmission Control Protocol (tcp)

Table A-367. Transmission Control Protocol (tcp)

| Field                         | Field Name                             | Type                    | Description                                    |
|-------------------------------|--|-------------------------|--|
| tcp.ack                       | Acknowledgement number                 | Unsigned 32-bit integer |  |
| tcp.analysis.ack_lost_segment | ACKed Lost Packet                      | No value                | This frame ACKs a lost segment                 |
| tcp.analysis.ack_rtt          | The RTT to ACK the segment was         | Time duration           | How long time it took to ACK the segment (RTT) |
| tcp.analysis.acks_frame       | This is an ACK to the segment in frame | Unsigned 32-bit integer | Which previous segment is this an ACK for      |
| tcp.analysis.duplicate_ack    | Duplicate ACK                          | No value                | This is a duplicate ACK                        |
| tcp.analysis.flags            | TCP Analysis                           | No value                | This frame has                                 |

| Field                              | Field Name                      | Type                    | Description   |
|------------------------------------|---------------------------------|-------------------------|---|
|                                    | Flags                           |                         | some of the TCP analysis flags set  |
| tcp.analysis.keep_alive            | Keep Alive                      | No value                | This is a keep-alive segment  |
| tcp.analysis.lost_segment          | Previous Segment Lost           | No value                | A segment before this one was lost from the capture                           |
| tcp.analysis.retransmission        | Retransmission                  | No value                | This frame is a suspected TCP retransmission                                  |
| tcp.analysis.zero_window           | Zero Window                     | No value                | This is a Zero-Window   |
| tcp.analysis.zero_window_probe     | Zero Window Probe               | No value                | This is a zero-window-probe   |
| tcp.analysis.zero_window_violation | Zero Window Violation           | No value                | This is a zero-window violation, an attempt to write >1 byte to a zero-window |
| tcp.checksum                       | Checksum                        | Unsigned 16-bit integer |   |
| tcp.checksum_bad                   | Bad Checksum                    | Boolean                 |   |
| tcp.dstport                        | Destination Port                | Unsigned 16-bit integer |   |
| tcp.flags                          | Flags                           | Unsigned 8-bit integer  |   |
| tcp.flags.ack                      | Acknowledgment                  | Boolean                 |   |
| tcp.flags.cwr                      | Congestion Window Reduced (CWR) | Boolean                 |   |
| tcp.flags.ecn                      | ECN-Echo                        | Boolean                 |   |
| tcp.flags.fin                      | Fin                             | Boolean                 |   |
| tcp.flags.push                     | Push                            | Boolean                 |   |
| tcp.flags.reset                    | Reset                           | Boolean                 |   |
| tcp.flags.syn                      | Syn                             | Boolean                 |   |
| tcp.flags.urg                      | Urgent                          | Boolean                 |   |
| tcp.hdr_len                        | Header Length                   | Unsigned 8-bit integer  |   |
| tcp.len                            | TCP Segment Len                 | Unsigned 32-bit         |   |

| Field                     | Field Name                     | Type                    | Description  |
|---------------------------|--------------------------------|-------------------------|--|
|                           |                                | integer                 |  |
| tcp.nxtseq                | Next sequence number           | Unsigned 32-bit integer |  |
| tcp.options.cc            | TCP CC Option                  | Boolean                 | TCP CC Option                                      |
| tcp.options.ccecho        | TCP CC Echo Option             | Boolean                 | TCP CC Echo Option                                 |
| tcp.options.ccnew         | TCP CC New Option              | Boolean                 | TCP CC New Option                                  |
| tcp.options.echo          | TCP Echo Option                | Boolean                 | TCP Sack Echo                                      |
| tcp.options.echo_reply    | TCP Echo Reply Option          | Boolean                 | TCP Echo Reply Option                              |
| tcp.options.md5           | TCP MD5 Option                 | Boolean                 | TCP MD5 Option                                     |
| tcp.options.mss           | TCP MSS Option                 | Boolean                 | TCP MSS Option                                     |
| tcp.options.mss_val       | TCP MSS Option Value           | Unsigned 16-bit integer | TCP MSS Option Value                               |
| tcp.options.sack          | TCP Sack Option                | Boolean                 | TCP Sack Option                                    |
| tcp.options.sack_left     | TCP Sack Left Edge             | Unsigned 32-bit integer | TCP Sack Left Edge                                 |
| tcp.options.sack_perm     | TCP Sack Perm Option           | Boolean                 | TCP Sack Perm Option                               |
| tcp.options.sack_right    | TCP Sack Right Edge            | Unsigned 32-bit integer | TCP Sack Right Edge                                |
| tcp.options.time_stamp    | TCP Time Stamp Option          | Boolean                 | TCP Time Stamp Option                              |
| tcp.options.wscale        | TCP Window Scale Option        | Boolean                 | TCP Window Option                                  |
| tcp.options.wscale_val    | TCP Windows Scale Option Value | Unsigned 8-bit integer  | TCP Window Scale Value                             |
| tcp.port                  | Source or Destination Port     | Unsigned 16-bit integer |  |
| tcp.segment               | TCP Segment                    |                         | TCP Segment  |
| tcp.segment.error         | Desegmentation error           |                         | Desegmentation error due to illegal segments       |
| tcp.segment.multipletails | Multiple tail segments found   | Boolean                 | Several tails were found when desegmenting the pdu |
| tcp.segment.overlap       | Segment overlap                | Boolean                 | Segment overlaps                                   |



| Field                        | Field Name                          | Type                    | Description                                     |
|------------------------------|-------------------------------------|-------------------------|---|
| p                            |                                     |                         | with other segments                             |
| tcp.segment.overlap.conflict | Conflicting data in segment overlap | Boolean                 | Overlapping segments contained conflicting data |
| tcp.segment.toolongfragment  | Segment too long                    | Boolean                 | Segment contained data past end of the pdu      |
| tcp.segments                 | TCP Segments                        | No value                | TCP Segments                                    |
| tcp.seq                      | Sequence number                     | Unsigned 32-bit integer |   |
| tcp.srcport                  | Source Port                         | Unsigned 16-bit integer |   |
| tcp.urgent_pointer           | Urgent pointer                      | Unsigned 16-bit integer |   |
| tcp.window_size              | Window size                         | Unsigned 16-bit integer |   |

### Transparent Network Substrate Protocol (tns)

Table A-368. Transparent Network Substrate Protocol (tns)

| Field                   | Field Name            | Type                    | Description                   |
|-------------------------|-----------------------|-------------------------|-------------------------------|
| tns.abort               | Abort                 | Boolean                 | Abort                         |
| tns.abort_data          | Abort Data            | String                  | Abort Data                    |
| tns.abort_reason_system | Abort Reason (User)   | Unsigned 8-bit integer  | Abort Reason from System      |
| tns.abort_reason_user   | Abort Reason (User)   | Unsigned 8-bit integer  | Abort Reason from Application |
| tns.accept              | Accept                | Boolean                 | Accept                        |
| tns.accept_data         | Accept Data           | String                  | Accept Data                   |
| tns.accept_data_length  | Accept Data Length    | Unsigned 16-bit integer | Length of Accept Data         |
| tns.accept_data_offset  | Offset to Accept Data | Unsigned 16-bit integer | Offset to Accept Data         |
| tns.compat_version      | Version (Compatible)  | Unsigned 16-bit integer | Version (Compatible)          |
| tns.connect             | Connect               | Boolean                 | Connect                       |
| tns.connect_data        | Connect Data          | String                  | Connect Data                  |
| tns.connect_data_length | Length of Connect     | Unsigned 16-bit         | Length of Connect             |

Appendix A. Ethereal Display Filter Fields

| Field                      | Field Name                      | Type                    | Description                     |
|----------------------------|---------------------------------|-------------------------|---------------------------------|
| ength                      | Data                            | integer                 | Data                            |
| tns.connect_data_max       | Maximum Receivable Connect Data | Unsigned 32-bit integer | Maximum Receivable Connect Data |
| tns.connect_data_offset    | Offset to Connect Data          | Unsigned 16-bit integer | Offset to Connect Data          |
| tns.connect_flags.enablena | NA services enabled             | Boolean                 | NA services enabled             |
| tns.connect_flags.interchg | Interchange is involved         | Boolean                 | Interchange is involved         |
| tns.connect_flags.nalink   | NA services linked in           | Boolean                 | NA services linked in           |
| tns.connect_flags.nareq    | NA services required            | Boolean                 | NA services required            |
| tns.connect_flags.wantna   | NA services wanted              | Boolean                 | NA services wanted              |
| tns.connect_flags0         | Connect Flags 0                 | Unsigned 8-bit integer  | Connect Flags 0                 |
| tns.connect_flags1         | Connect Flags 1                 | Unsigned 8-bit integer  | Connect Flags 1                 |
| tns.control                | Control                         | Boolean                 | Control                         |
| tns.control.cmd            | Control Command                 | Unsigned 16-bit integer | Control Command                 |
| tns.control.data           | Control Data                    | Byte array              | Control Data                    |
| tns.data                   | Data                            | Boolean                 | Data                            |
| tns.data_flag              | Data Flag                       | Unsigned 16-bit integer | Data Flag                       |
| tns.data_flag.c            | Confirmation                    | Boolean                 | Confirmation                    |
| tns.data_flag.dic          | Do Immediate Confirmation       | Boolean                 | Do Immediate Confirmation       |
| tns.data_flag.eof          | End of File                     | Boolean                 | End of File                     |
| tns.data_flag.more         | More Data to Come               | Boolean                 | More Data to Come               |
| tns.data_flag.rc           | Request Confirmation            | Boolean                 | Request Confirmation            |
| tns.data_flag.reserved     | Reserved                        | Boolean                 | Reserved                        |
| tns.data_flag.rts          | Request To Send                 | Boolean                 | Request To Send                 |

| Field                        | Field Name                          | Type                    | Description                         |
|------------------------------|-------------------------------------|-------------------------|-------------------------------------|
| tns.data_flag.send           | Send Token                          | Boolean                 | Send Token                          |
| tns.data_flag.sntt           | Send NT Trailer                     | Boolean                 | Send NT Trailer                     |
| tns.header_checksum          | Header Checksum                     | Unsigned 16-bit integer | Checksum of Header Data             |
| tns.length                   | Packet Length                       | Unsigned 16-bit integer | Length of TNS packet                |
| tns.line_turnaround          | Line Turnaround Value               | Unsigned 16-bit integer | Line Turnaround Value               |
| tns.marker                   | Marker                              | Boolean                 | Marker                              |
| tns.marker.data              | Marker Data                         | Unsigned 16-bit integer | Marker Data                         |
| tns.marker.databyte          | Marker Data Byte                    | Unsigned 8-bit integer  | Marker Data Byte                    |
| tns.marker.type              | Marker Type                         | Unsigned 8-bit integer  | Marker Type                         |
| tns.max_tdu_size             | Maximum Transmission Data Unit Size | Unsigned 16-bit integer | Maximum Transmission Data Unit Size |
| tns.nt_proto_characteristics | NT Protocol Characteristics         | Unsigned 16-bit integer | NT Protocol Characteristics         |
| tns.ntp_flag.asio            | ASync IO Supported                  | Boolean                 | ASync IO Supported                  |
| tns.ntp_flag.cbio            | Callback IO supported               | Boolean                 | Callback IO supported               |
| tns.ntp_flag.crel            | Confirmed release                   | Boolean                 | Confirmed release                   |
| tns.ntp_flag.dfio            | Full duplex IO supported            | Boolean                 | Full duplex IO supported            |
| tns.ntp_flag.dtest           | Data test                           | Boolean                 | Data Test                           |
| tns.ntp_flag.grant           | Can grant connection to another     | Boolean                 | Can grant connection to another     |
| tns.ntp_flag.handoff         | Can handoff connection to another   | Boolean                 | Can handoff connection to another   |
| tns.ntp_flag.hangon          | Hangan to listener connect          | Boolean                 | Hangan to listener connect          |
| tns.ntp_flag.pio             | Packet oriented IO                  | Boolean                 | Packet oriented IO                  |
| tns.ntp_flag.sigio           | Generate SIGIO signal               | Boolean                 | Generate SIGIO signal               |

| Field                    | Field Name              | Type                    | Description                    |
|--------------------------|-------------------------|-------------------------|--------------------------------|
| tns.ntp_flag.sigpipe     | Generate SIGPIPE signal | Boolean                 | Generate SIGPIPE signal        |
| tns.ntp_flag.sigurg      | Generate SIGURG signal  | Boolean                 | Generate SIGURG signal         |
| tns.ntp_flag.srun        | Spawner running         | Boolean                 | Spawner running                |
| tns.ntp_flag.tduio       | TDU based IO            | Boolean                 | TDU based IO                   |
| tns.ntp_flag.testop      | Test operation          | Boolean                 | Test operation                 |
| tns.ntp_flag.urgentio    | Urgent IO supported     | Boolean                 | Urgent IO supported            |
| tns.packet_checksum      | Packet Checksum         | Unsigned 16-bit integer | Checksum of Packet Data        |
| tns.redirect             | Redirect                | Boolean                 | Redirect                       |
| tns.redirect_data        | Redirect Data           | String                  | Redirect Data                  |
| tns.redirect_data_length | Redirect Data Length    | Unsigned 16-bit integer | Length of Redirect Data        |
| tns.refuse               | Refuse                  | Boolean                 | Refuse                         |
| tns.refuse_data          | Refuse Data             | String                  | Refuse Data                    |
| tns.refuse_data_length   | Refuse Data Length      | Unsigned 16-bit integer | Length of Refuse Data          |
| tns.refuse_reason_system | Refuse Reason (System)  | Unsigned 8-bit integer  | Refuse Reason from System      |
| tns.refuse_reason_user   | Refuse Reason (User)    | Unsigned 8-bit integer  | Refuse Reason from Application |
| tns.request              | Request                 | Boolean                 | TRUE if TNS request            |
| tns.reserved_byte        | Reserved Byte           | Byte array              | Reserved Byte                  |
| tns.response             | Response                | Boolean                 | TRUE if TNS response           |
| tns.sdu_size             | Session Data Unit Size  | Unsigned 16-bit integer | Session Data Unit Size         |
| tns.service_options      | Service Options         | Unsigned 16-bit integer | Service Options                |
| tns.so_flag.ap           | Attention Processing    | Boolean                 | Attention Processing           |
| tns.so_flag.bconn        | Broken Connect Notify   | Boolean                 | Broken Connect Notify          |
| tns.so_flag.dc1          | Don't Care              | Boolean                 | Don't Care                     |
| tns.so_flag.dc2          | Don't Care              | Boolean                 | Don't Care                     |

| Field            | Field Name                  | Type                    | Description                 |
|------------------|-----------------------------|-------------------------|-----------------------------|
| tns.so_flag.dio  | Direct IO to Transport      | Boolean                 | Direct IO to Transport      |
| tns.so_flag.fd   | Full Duplex                 | Boolean                 | Full Duplex                 |
| tns.so_flag.hc   | Header Checksum             | Boolean                 | Header Checksum             |
| tns.so_flag.hd   | Half Duplex                 | Boolean                 | Half Duplex                 |
| tns.so_flag.pc   | Packet Checksum             | Boolean                 | Packet Checksum             |
| tns.so_flag.ra   | Can Receive Attention       | Boolean                 | Can Receive Attention       |
| tns.so_flag.sa   | Can Send Attention          | Boolean                 | Can Send Attention          |
| tns.trace_cf1    | Trace Cross Facility Item 1 | Unsigned 32-bit integer | Trace Cross Facility Item 1 |
| tns.trace_cf2    | Trace Cross Facility Item 2 | Unsigned 32-bit integer | Trace Cross Facility Item 2 |
| tns.trace_cid    | Trace Unique Connection ID  | Unsigned 64-bit integer | Trace Unique Connection ID  |
| tns.type         | Packet Type                 | Unsigned 8-bit integer  | Type of TNS packet          |
| tns.value_of_one | Value of 1 in Hardware      | Byte array              | Value of 1 in Hardware      |
| tns.version      | Version                     | Unsigned 16-bit integer | Version                     |

### Trivial File Transfer Protocol (tftp)

Table A-369. Trivial File Transfer Protocol (tftp)

| Field                 | Field Name       | Type                    | Description                                |
|-----------------------|------------------|-------------------------|--|
| tftp.block            | Block            | Unsigned 16-bit integer | Block number                               |
| tftp.destination_file | DESTINATION File | String                  | TFTP source file name                      |
| tftp.error.code       | Error code       | Unsigned 16-bit integer | Error code in case of TFTP error message   |
| tftp.error.message    | Error message    | String                  | Error string in case of TFTP error message |
| tftp.opcode           | Opcode           | Unsigned 16-bit integer | TFTP message type                          |
| tftp.source_file      | Source File      | String                  | TFTP source file                           |

| Field     | Field Name | Type   | Description        |
|-----------|------------|--------|--------------------|
|           |            |        | name               |
| tftp.type | Type       | String | TFTP transfer type |

## Universal Computer Protocol (ucp)

Table A-370. Universal Computer Protocol (ucp)

| Field        | Field Name                   | Type                    | Description  |
|--------------|------------------------------|-------------------------|--|
| ucp.hdr.LEN  | Length                       | Unsigned 16-bit integer | Total number of characters between <stx>...<etx>.        |
| ucp.hdr.OT   | Operation                    | Unsigned 8-bit integer  | The operation that is requested with this message.       |
| ucp.hdr.O_R  | Type                         | Unsigned 8-bit integer  | Your basic 'is a request or response'.                   |
| ucp.hdr.TRN  | Transaction Reference Number | Unsigned 8-bit integer  | Transaction number for this command, used in windowing.  |
| ucp.message  | Data                         | No value                | The actual message or data.                              |
| ucp.parm     | Data                         | No value                | The actual content of the operation.                     |
| ucp.parm.AAC | AAC                          | String                  | Accumulated charges.                                     |
| ucp.parm.AC  | AC                           | String                  | Authentication code.                                     |
| ucp.parm.ACK | (N)Ack                       | Unsigned 8-bit integer  | Positive or negative acknowledge of the operation.       |
| ucp.parm.A_D | A_D                          | Unsigned 8-bit integer  | Add to/delete from fixed subscriber address list record. |
| ucp.parm.AdC | AdC                          | String                  | Address code recipient.                                  |
| ucp.parm.BAS | BAS                          | Unsigned 8-bit integer  | Barring status flag.                                     |
| ucp.parm.CPg | CPg                          | String                  | Reserved for Code Page.                                  |

| Field          | Field Name | Type                   | Description                            |
|----------------|------------|------------------------|--|
| ucp.parm.CS    | CS         | Unsigned 8-bit integer | Additional character set number.       |
| ucp.parm.CT    | CT         | Date/Time stamp        | Accumulated charges timestamp.         |
| ucp.parm.DAdC  | DAdC       | String                 | Diverted address code.                 |
| ucp.parm.DCs   | DCs        | Unsigned 8-bit integer | Data coding scheme (deprecated).       |
| ucp.parm.DD    | DD         | Unsigned 8-bit integer | Deferred delivery requested.           |
| ucp.parm.DDT   | DDT        | Date/Time stamp        | Deferred delivery time.                |
| ucp.parm.DSCTS | DSCTS      | Date/Time stamp        | Delivery timestamp.                    |
| ucp.parm.Dst   | Dst        | Unsigned 8-bit integer | Delivery status.                       |
| ucp.parm.EC    | Error code | Unsigned 8-bit integer | The result of the requested operation. |
| ucp.parm.GA    | GA         | String                 | GA?? haven't got a clue.               |
| ucp.parm.GAdC  | GAdC       | String                 | Group address code.                    |
| ucp.parm.HPLMN | HPLMN      | String                 | Home PLMN address.                     |
| ucp.parm.IVR5x | IVR5x      | String                 | UCP release number supported/accepted. |
| ucp.parm.L1P   | L1P        | String                 | New leg. code for level 1 priority.    |
| ucp.parm.L1R   | L1R        | Unsigned 8-bit integer | Leg. code for priority 1 flag.         |
| ucp.parm.L3P   | L3P        | String                 | New leg. code for level 3 priority.    |
| ucp.parm.L3R   | L3R        | Unsigned 8-bit integer | Leg. code for priority 3 flag.         |
| ucp.parm.LAC   | LAC        | String                 | New leg. code for                      |

| Field         | Field Name | Type                    | Description   |
|---------------|------------|-------------------------|---|
|               |            |                         | all calls.  |
| ucp.parm.LAR  | LAR        | Unsigned 8-bit integer  | Leg. code for all calls flag.                         |
| ucp.parm.LAdC | LAdC       | String                  | Address for VSMSC list operation.                     |
| ucp.parm.LCR  | LCR        | Unsigned 8-bit integer  | Leg. code for reverse charging flag.                  |
| ucp.parm.LMN  | LMN        | Unsigned 8-bit integer  | Last message number.                                  |
| ucp.parm.LNPI | LNPI       | Unsigned 8-bit integer  | Numbering plan id. list address.                      |
| ucp.parm.LNo  | LNo        | String                  | Standard text list number requested by calling party. |
| ucp.parm.LPID | LPID       | Unsigned 16-bit integer | Last resort PID value.                                |
| ucp.parm.LPR  | LPR        | String                  | Legitimation code for priority requested.             |
| ucp.parm.LRAd | LRAd       | String                  | Last resort address.                                  |
| ucp.parm.LRC  | LRC        | String                  | Legitimation code for reverse charging.               |
| ucp.parm.LRP  | LRP        | String                  | Legitimation code for repitition.                     |
| ucp.parm.LRR  | LRR        | Unsigned 8-bit integer  | Leg. code for repitition flag.                        |
| ucp.parm.LRq  | LRq        | Unsigned 8-bit integer  | Last resort address request.                          |
| ucp.parm.LST  | LST        | String                  | Legitimation code for standard text.                  |
| ucp.parm.LTON | LTON       | Unsigned 8-bit integer  | Type of number list address.                          |
| ucp.parm.LUM  | LUM        | String                  | Legitimation code for urgent message.                 |
| ucp.parm.LUR  | LUR        | Unsigned 8-bit          | Leg. code for   |



| Field              | Field Name | Type                    | Description   |
|--------------------|------------|-------------------------|---|
|                    |            | integer                 | urgent message flag.                                  |
| ucp.parm.MCLs      | MCLs       | Unsigned 8-bit integer  | Message class.  |
| ucp.parm.MMS       | MMS        | Unsigned 8-bit integer  | More messages to send.                                |
| ucp.parm.MNo       | MNo        | String                  | Message number.                                       |
| ucp.parm.MT        | MT         | Unsigned 8-bit integer  | Message type.   |
| ucp.parm.MVP       | MVP        | Date/Time stamp         | Modified validity period.                             |
| ucp.parm.NAC       | NAC        | String                  | New authentication code.                              |
| ucp.parm.NAdC      | NAdC       | String                  | Notification address.                                 |
| ucp.parm.NB        | NB         | String                  | No. of bits in Transparent Data (TD) message.         |
| ucp.parm.NMESS     | NMESS      | Unsigned 8-bit integer  | Number of stored messages.                            |
| ucp.parm.NMESS_str | NMESS_str  | String                  | Number of stored messages.                            |
| ucp.parm.NPID      | NPID       | Unsigned 16-bit integer | Notification PID value.                               |
| ucp.parm.NPL       | NPL        | Unsigned 16-bit integer | Number of parameters in the following list.           |
| ucp.parm.NPWD      | NPWD       | No value                | New password.   |
| ucp.parm.NRq       | NRq        | Unsigned 8-bit integer  | Notification request.                                 |
| ucp.parm.NT        | NT         | Unsigned 8-bit integer  | Notification type.                                    |
| ucp.parm.NoA       | NoA        | Unsigned 16-bit integer | Maximum number of alphanumerical characters accepted. |
| ucp.parm.NoB       | NoB        | Unsigned 16-bit integer | Maximum number of data bits accepted.                 |
| ucp.parm.NoN       | NoN        | Unsigned 16-bit         | Maximum number  |

| Field           | Field Name | Type                    | Description                            |
|-----------------|------------|-------------------------|--|
|                 |            | integer                 | of numerical characters accepted.      |
| ucp.parm.OAC    | OAC        | String                  | Authentication code, originator.       |
| ucp.parm.OAdC   | OAdC       | String                  | Address code originator.               |
| ucp.parm.ONPI   | ONPI       | Unsigned 8-bit integer  | Originator numbering plan id.          |
| ucp.parm.OPID   | OPID       | Unsigned 8-bit integer  | Originator protocol identifier.        |
| ucp.parm.OTOA   | OTOA       | String                  | Originator Type Of Address.            |
| ucp.parm.OTON   | OTON       | Unsigned 8-bit integer  | Originator type of number.             |
| ucp.parm.PID    | PID        | Unsigned 16-bit integer | SMT PID value.                         |
| ucp.parm.PNC    | PNC        | Unsigned 8-bit integer  | Paging network controller.             |
| ucp.parm.PR     | PR         | Unsigned 8-bit integer  | Priority requested.                    |
| ucp.parm.PWD    | PWD        | No value                | Current password.                      |
| ucp.parm.RC     | RC         | Unsigned 8-bit integer  | Reverse charging request.              |
| ucp.parm.REQ_OT | REQ_OT     | Unsigned 8-bit integer  | UCP release number supported/accepted. |
| ucp.parm.RES1   | RES1       | String                  | Reserved for future use.               |
| ucp.parm.RES2   | RES2       | String                  | Reserved for future use.               |
| ucp.parm.RES4   | RES4       | String                  | Reserved for future use.               |
| ucp.parm.RES5   | RES5       | String                  | Reserved for future use.               |
| ucp.parm.RP     | RP         | Unsigned 8-bit integer  | Repetition requested.                  |
| ucp.parm.RPI    | RPI        | Unsigned 8-bit integer  | Reply path.                            |

| Field            | Field Name      | Type                    | Description   |
|------------------|-----------------|-------------------------|---|
| ucp.parm.RPID    | RPID            | String                  | Replace PID   |
| ucp.parm.RPLy    | RPLy            | String                  | Reserved for Reply type.                              |
| ucp.parm.RT      | RT              | Unsigned 8-bit integer  | Receiver type.  |
| ucp.parm.R_T     | R_T             | String                  | Message number.                                       |
| ucp.parm.Rsn     | Rsn             | Unsigned 16-bit integer | Reason code.  |
| ucp.parm.SCTS    | SCTS            | Date/Time stamp         | Service Centre timestamp.                             |
| ucp.parm.SM      | SM              | String                  | System message.                                       |
| ucp.parm.SP      | SP              | Date/Time stamp         | Stop time.  |
| ucp.parm.SSTAT   | SSTAT           | Unsigned 8-bit integer  | Supplementary services for which status is requested. |
| ucp.parm.ST      | ST              | Date/Time stamp         | Start time.   |
| ucp.parm.STYP0   | STYP0           | Unsigned 8-bit integer  | Subtype of operation.                                 |
| ucp.parm.STYP1   | STYP1           | Unsigned 8-bit integer  | Subtype of operation.                                 |
| ucp.parm.STx     | STx             | No value                | Standard text.  |
| ucp.parm.TNo     | TNo             | String                  | Standard text number requested by calling party.      |
| ucp.parm.UM      | UM              | Unsigned 8-bit integer  | Urgent message indicator.                             |
| ucp.parm.VERS    | VERS            | String                  | Version number.                                       |
| ucp.parm.VP      | VP              | Date/Time stamp         | Validity period.                                      |
| ucp.parm.XSer    | Extra services: | No value                | Extra services.                                       |
| ucp.xser.service | Type of service | Unsigned 8-bit integer  | The type of service specified.                        |

### Unreassembled Fragmented Packet (unreassembled)

Table A-371. Unreassembled Fragmented Packet (unreassembled)

| Field | Field Name | Type | Description |
|-------|------------|------|-------------|
|       |            |      |             |

### User Datagram Protocol (udp)

**Table A-372. User Datagram Protocol (udp)**

| Field            | Field Name                 | Type                    | Description |
|------------------|----------------------------|-------------------------|-------------|
| udp.checksum     | Checksum                   | Unsigned 16-bit integer |             |
| udp.checksum_bad | Bad Checksum               | Boolean                 |             |
| udp.dstport      | Destination Port           | Unsigned 16-bit integer |             |
| udp.length       | Length                     | Unsigned 16-bit integer |             |
| udp.port         | Source or Destination Port | Unsigned 16-bit integer |             |
| udp.srcport      | Source Port                | Unsigned 16-bit integer |             |

**Virtual Router Redundancy Protocol (vrrp)**

**Table A-373. Virtual Router Redundancy Protocol (vrrp)**

| Field               | Field Name       | Type                   | Description   |
|---------------------|------------------|------------------------|---|
| vrrp.adver_int      | Adver Int        | Unsigned 8-bit integer | Time interval (in seconds) between ADVERTISEMENTS               |
| vrrp.auth_type      | Auth Type        | Unsigned 8-bit integer | The authentication method being utilized                        |
| vrrp.count_ip_addrs | Count IP Addrs   | Unsigned 8-bit integer | The number of IP addresses contained in this VRRP advertisement |
| vrrp.ip_addr        | IP Address       | IPv4 address           | IP address associated with the virtual router                   |
| vrrp.ipv6_addr      | IPv6 Address     | IPv6 address           | IPv6 address associated with the virtual router                 |
| vrrp.prio           | Priority         | Unsigned 8-bit integer | Sending VRRP router's priority for the virtual router           |
| vrrp.type           | VRRP packet type | Unsigned 8-bit integer | VRRP type   |
| vrrp.typever        | VRRP message     | Unsigned 8-bit         | VRRP version and  |

| Field            | Field Name            | Type                   | Description  |
|------------------|-----------------------|------------------------|--|
|                  | version and type      | integer                | type   |
| vrrp.version     | VRRP protocol version | Unsigned 8-bit integer | VRRP version                                       |
| vrrp.virt_rtr_id | Virtual Rtr ID        | Unsigned 8-bit integer | Virtual router this packet is reporting status for |

## Virtual Trunking Protocol (vtp)

Table A-374. Virtual Trunking Protocol (vtp)

| Field            | Field Name                    | Type                    | Description   |
|------------------|-------------------------------|-------------------------|---|
| vtp.code         | Code                          | Unsigned 8-bit integer  |   |
| vtp.conf_rev_num | Configuration Revision Number | Unsigned 32-bit integer | Revision number of the configuration information                |
| vtp.followers    | Followers                     | Unsigned 8-bit integer  | Number of following Subset-Advert messages                      |
| vtp.md           | Management Domain             | String                  | Management domain   |
| vtp.md5_digest   | MD5 Digest                    | Byte array              |   |
| vtp.md_len       | Management Domain Length      | Unsigned 8-bit integer  | Length of management domain string                              |
| vtp.seq_num      | Sequence Number               | Unsigned 8-bit integer  | Order of this frame in the sequence of Subset-Advert frames     |
| vtp.start_value  | Start Value                   | Unsigned 16-bit integer | Virtual LAN ID of first VLAN for which information is requested |
| vtp.upd_id       | Updater Identity              | IPv4 address            | IP address of the updater                                       |
| vtp.upd_ts       | Update Timestamp              | String                  | Time stamp of the current configuration revision                |
| vtp.version      | Version                       | Unsigned 8-bit integer  |   |

| Field                          | Field Name              | Type                    | Description   |
|--------------------------------|-------------------------|-------------------------|---|
| vtp.vlan_info.802_10_index     | 802.10 Index            | Unsigned 32-bit integer | IEEE 802.10 security association identifier for this VLAN |
| vtp.vlan_info.isl_vlan_id      | ISL VLAN ID             | Unsigned 16-bit integer | ID of this VLAN on ISL trunks                             |
| vtp.vlan_info.len              | VLAN Information Length | Unsigned 8-bit integer  | Length of the VLAN information field                      |
| vtp.vlan_info.mtu_size         | MTU Size                | Unsigned 16-bit integer | MTU for this VLAN   |
| vtp.vlan_info.status.vlan_susp | VLAN suspended          | Boolean                 | VLAN suspended  |
| vtp.vlan_info.tlv_len          | Length                  | Unsigned 8-bit integer  |   |
| vtp.vlan_info.tlv_type         | Type                    | Unsigned 8-bit integer  |   |
| vtp.vlan_info.vlan_name        | VLAN Name               | String                  | VLAN name   |
| vtp.vlan_info.vlan_name_len    | VLAN Name Length        | Unsigned 8-bit integer  | Length of VLAN name string                                |
| vtp.vlan_info.vlan_type        | VLAN Type               | Unsigned 8-bit integer  | Type of VLAN  |

### WAP Binary XML (wbxml)

Table A-375. WAP Binary XML (wbxml)

| Field                   | Field Name                  | Type                    | Description                                   |
|-------------------------|-----------------------------|-------------------------|---|
| wbxml.charset           | Character Set               | Unsigned 32-bit integer | WBXML Character Set                           |
| wbxml.public_id_known   | Public Identifier (known)   | Unsigned 32-bit integer | WBXML Known Public Identifier (integer)       |
| wbxml.public_id_literal | Public Identifier (literal) | String                  | WBXML Literal Public Identifier (text string) |
| wbxml.version           | Version                     | Unsigned 8-bit integer  | WBXML Version                                 |

### Web Cache Coordination Protocol (wccp)

**Table A-376. Web Cache Coordination Protocol (wccp)**

| Field              | Field Name           | Type                    | Description                                   |
|--------------------|----------------------|-------------------------|---|
| wccp.cache_ip      | Web Cache IP address | IPv4 address            | The IP address of a Web cache                 |
| wccp.change_num    | Change Number        | Unsigned 32-bit integer | The Web-Cache list entry change number        |
| wccp.hash_revision | Hash Revision        | Unsigned 32-bit integer | The cache hash revision                       |
| wccp.message       | WCCP Message Type    | Unsigned 32-bit integer | The WCCP message that was sent                |
| wccp.recvd_id      | Received ID          | Unsigned 32-bit integer | The number of I_SEE_YOU's that have been sent |
| wccp.version       | WCCP Version         | Unsigned 32-bit integer | The WCCP version                              |

**Wellfleet Breath of Life (bofl)****Table A-377. Wellfleet Breath of Life (bofl)**

| Field         | Field Name | Type                    | Description                                   |
|---------------|------------|-------------------------|---|
| bofl.pdu      | PDU        | Unsigned 32-bit integer | PDU; normally equals 0x01010000 or 0x01011111 |
| bofl.sequence | Sequence   | Unsigned 32-bit integer | incremental counter                           |

**Wellfleet Compression (wcp)****Table A-378. Wellfleet Compression (wcp)**

| Field       | Field Name | Type                   | Description     |
|-------------|------------|------------------------|-----------------|
| wcp.alg     | Alg        | Unsigned 8-bit integer | Algorithm       |
| wcp.alg1    | Alg 1      | Unsigned 8-bit integer | Algorithm #1    |
| wcp.alg2    | Alg 2      | Unsigned 8-bit integer | Algorithm #2    |
| wcp.alg3    | Alg 3      | Unsigned 8-bit integer | Algorithm #3    |
| wcp.alg4    | Alg 4      | Unsigned 8-bit integer | Algorithm #4    |
| wcp.alg_cnt | Alg Count  | Unsigned 8-bit integer | Algorithm Count |

| Field          | Field Name        | Type                    | Description                  |
|----------------|-------------------|-------------------------|------------------------------|
| wcp.checksum   | Checksum          | Unsigned 8-bit integer  | Packet Checksum              |
| wcp.cmd        | Command           | Unsigned 8-bit integer  | Compression Command          |
| wcp.ext_cmd    | Extended Command  | Unsigned 8-bit integer  | Extended Compression Command |
| wcp.flag       | Compress Flag     | Unsigned 8-bit integer  | Compressed byte flag         |
| wcp.hist       | History           | Unsigned 8-bit integer  | History Size                 |
| wcp.init       | Initiator         | Unsigned 8-bit integer  | Initiator                    |
| wcp.long_comp  | Long Compression  | Unsigned 16-bit integer | Long Compression type        |
| wcp.long_len   | Compress Length   | Unsigned 8-bit integer  | Compressed length            |
| wcp.mark       | Compress Marker   | Unsigned 8-bit integer  | Compressed marker            |
| wcp.off        | Source offset     | Unsigned 16-bit integer | Data source offset           |
| wcp.pib        | PIB               | Unsigned 8-bit integer  | PIB                          |
| wcp.ppc        | PerPackComp       | Unsigned 8-bit integer  | Per Packet Compression       |
| wcp.rev        | Revision          | Unsigned 8-bit integer  | Revision                     |
| wcp.rexmit     | Rexmit            | Unsigned 8-bit integer  | Retransmit                   |
| wcp.seq        | SEQ               | Unsigned 16-bit integer | Sequence Number              |
| wcp.seq_size   | Seq Size          | Unsigned 8-bit integer  | Sequence Size                |
| wcp.short_comp | Short Compression | Unsigned 8-bit integer  | Short Compression type       |
| wcp.short_len  | Compress Length   | Unsigned 8-bit integer  | Compressed length            |
| wcp.tid        | TID               | Unsigned 16-bit integer | TID                          |

**Wellfleet HDLC (whdlc)**



**Table A-379. Wellfleet HDLC (whdlc)**

| Field               | Field Name | Type                   | Description |
|---------------------|------------|------------------------|-------------|
| wfleet_hdlc.address | Address    | Unsigned 8-bit integer |             |
| wfleet_hdlc.command | Command    | Unsigned 8-bit integer |             |

**Who (who)****Table A-380. Who (who)**

| Field         | Field Name                        | Type                            | Description |
|---------------|-----------------------------------|---------------------------------|-------------|
| who.boottime  | Boot Time                         | Date/Time stamp                 |             |
| who.hostname  | Hostname                          | String                          |             |
| who.idle      | Time Idle                         | Unsigned 32-bit integer         |             |
| who.loadav_10 | Load Average Over Past 10 Minutes | Double-precision floating point |             |
| who.loadav_15 | Load Average Over Past 15 Minutes | Double-precision floating point |             |
| who.loadav_5  | Load Average Over Past 5 Minutes  | Double-precision floating point |             |
| who.rcvtime   | Receive Time                      | Date/Time stamp                 |             |
| who.sendtime  | Send Time                         | Date/Time stamp                 |             |
| who.timeon    | Time On                           | Date/Time stamp                 |             |
| who.tty       | TTY Name                          | String                          |             |
| who.type      | Type                              | Unsigned 8-bit integer          |             |
| who.uid       | User ID                           | String                          |             |
| who.vers      | Version                           | Unsigned 8-bit integer          |             |
| who.whoent    | Who utmp Entry                    | No value                        |             |

**Windows 2000 DNS (dnsserver)****Table A-381. Windows 2000 DNS (dnsserver)**

| Field           | Field Name  | Type                    | Description |
|-----------------|-------------|-------------------------|-------------|
| dnsserver.opnum | Operation   | Unsigned 16-bit integer | Operation   |
| dnsserver.rc    | Return code | Unsigned 32-bit         | Return code |

| Field | Field Name | Type    | Description |
|-------|------------|---------|-------------|
|       |            | integer |             |

### Wireless Session Protocol (wap-wsp)

Table A-382. Wireless Session Protocol (wap-wsp)

| Field                               | Field Name        | Type                    | Description       |
|-------------------------------------|-------------------|-------------------------|-------------------|
| wsp.TID                             | Transaction ID    | Unsigned 8-bit integer  | Transaction ID    |
| wsp.capabilities                    | Capabilities      | No value                | Capabilities      |
| wsp.capabilities.aliases            | Aliases           | Unsigned 8-bit integer  | Aliases           |
| wsp.capabilities.client_SDU         | Client SDU        | Unsigned 8-bit integer  | Client SDU        |
| wsp.capabilities.code_pages         | Header Code Pages | String                  | Header Code Pages |
| wsp.capabilities.extend_methods     | Extended Methods  | String                  | Extended Methods  |
| wsp.capabilities.method_mor         | Method MOR        | Unsigned 8-bit integer  | Method MOR        |
| wsp.capabilities.protocol_opt       | Protocol Options  | String                  | Protocol Options  |
| wsp.capabilities.push_mor           | Push MOR          | Unsigned 8-bit integer  | Push MOR          |
| wsp.capabilities.server_SDU         | Server SDU        | Unsigned 8-bit integer  | Server SDU        |
| wsp.capability.length               | Capability Length | Unsigned 32-bit integer | Capability Length |
| wsp.content_type.parameter.charset  | Charset           | Unsigned 16-bit integer | Charset           |
| wsp.content_type.parameter.comment  | Comment           | String                  | Comment           |
| wsp.content_type.parameter.domain   | Domain            | String                  | Domain            |
| wsp.content_type.parameter.filename | Filename          | String                  | Filename          |
| wsp.content_type.parameter.name     | Name              | String                  | Name              |
| wsp.content_type.parameter.path     | Path              | String                  | Path              |

| Field                                     | Field Name         | Type                    | Description                |
|---|--------------------|-------------------------|----------------------------|
| wsp.content_type.parameter.start          | Start              | String                  | Start                      |
| wsp.content_type.parameter.start_info     | Start-info         | String                  | Start-info                 |
| wsp.content_type.parameter.type           | Type               | Unsigned 32-bit integer | Type                       |
| wsp.content_type.parameter.upart.type     | Type               | String                  | Multipart type             |
| wsp.content_type.parameter.upart.type.int | Type               | Unsigned 8-bit integer  | Multipart type (int value) |
| wsp.content_type.type                     | Content Type       | Unsigned 8-bit integer  | Content Type               |
| wsp.content_type.type.string              | Content Type       | String                  | Content Type               |
| wsp.header.accept                         | Accept             | Unsigned 8-bit integer  | Accept                     |
| wsp.header.accept.string                  | Accept             | String                  | Accept                     |
| wsp.header.accept_application             | Accept-Application | Unsigned 32-bit integer | Accept-Application         |
| wsp.header.accept_application.string      | Accept-Application | String                  | Accept-Application         |
| wsp.header.accept_charset                 | Accept-Charset     | Unsigned 16-bit integer | Accept-Charset             |
| wsp.header.accept_charset.string          | Accept-Charset     | String                  | Accept-Charset             |
| wsp.header.accept_language                | Accept-Language    | Unsigned 8-bit integer  | Accept-Language            |
| wsp.header.accept_language.string         | Accept-Language    | String                  | Accept-Language            |
| wsp.header.accept_ranges                  | Accept-Ranges      | Unsigned 8-bit integer  | Accept-Ranges              |
| wsp.header.accept_ranges.string           | Accept-Ranges      | String                  | Accept-Ranges              |
| wsp.header.age                            | Age                | Unsigned 32-bit integer | Age                        |
| wsp.header.applic                         | Application        | String                  | Application                |

Appendix A. Ethereal Display Filter Fields

| Field   | Field Name                  | Type                       | Description                 |
|---|-----------------------------|----------------------------|-----------------------------|
| ation_header                                    | Header                      |                            | Header                      |
| wsp.header.applic<br>ation_header.value         | Application<br>Header Value | String                     | Application<br>Header Value |
| wsp.header.bearer<br>_indication                | Bearer-indication           | Unsigned 32-bit<br>integer | Bearer-indication           |
| wsp.header.cache_<br>control                    | Cache-Control               | Unsigned 8-bit<br>integer  | Cache-Control               |
| wsp.header.cache_<br>control.field_name         | Field Name                  | Unsigned 8-bit<br>integer  | Cache-Control<br>field name |
| wsp.header.cache_<br>control.field_name<br>.str | Field Name                  | String                     | Cache-Control<br>field name |
| wsp.header.cache_<br>control.string             | Cache-Control               | String                     | Cache-Control               |
| wsp.header.connec<br>tion                       | Connection                  | Unsigned 8-bit<br>integer  | Connection                  |
| wsp.header.connec<br>tion_str                   | Connection                  | String                     | Connection                  |
| wsp.header.conten<br>t-id                       | Content-ID                  | String                     | Content-ID                  |
| wsp.header.conten<br>t_length                   | Content-Length              | Unsigned 32-bit<br>integer | Content-Length              |
| wsp.header.date                                 | Date                        | Date/Time stamp            | Date                        |
| wsp.header.etag                                 | Etag                        | String                     | Etag                        |
| wsp.header.expire<br>s                          | Expires                     | Date/Time stamp            | Expires                     |
| wsp.header.if_mo<br>dified_since                | If-Modified-Since           | Date/Time stamp            | If-Modified-Since           |
| wsp.header.last_m<br>odified                    | Last-Modified               | Date/Time stamp            | Last-Modified               |
| wsp.header.locatio<br>n                         | Location                    | String                     | Location                    |
| wsp.header.pragm<br>a                           | Pragma                      | String                     | pragma                      |
| wsp.header.profile                              | Profile                     | String                     | Profile                     |
| wsp.header.server                               | Server                      | String                     | Server                      |
| wsp.header.shift                                | Shift code                  | Unsigned 8-bit<br>integer  | Shift code                  |
| wsp.header.transfe                              | Transfer Encoding           | Unsigned 8-bit             | Transfer Encoding           |

| Field                                | Field Name               | Type                    | Description   |
|--------------------------------------|--------------------------|-------------------------|---|
| r_enc                                |                          | integer                 |   |
| wsp.header.transfer_enc_str          | Transfer Encoding        | String                  | Transfer Encoding   |
| wsp.header.user_agent                | User-Agent               | String                  | User-Agent  |
| wsp.header.via                       | Via                      | String                  | Via   |
| wsp.header.wap_application_id        | X-Wap-Application-Id     | Unsigned 8-bit integer  | WAP application id  |
| wsp.header.wap_application_id.string | X-Wap-Application-Id     | String                  | WAP application id  |
| wsp.header.warning                   | Warning                  | No value                | Warning   |
| wsp.header.warning.agent             | Warning Agent            | String                  | Warning Agent   |
| wsp.header.warning.code              | Warning Code             | Unsigned 32-bit integer | Warning Code  |
| wsp.header.warning.text              | Warning Text             | String                  | Warning Text  |
| wsp.header.x-up-devcap-em-size       | x-up-devcap-em-size      | Unsigned 32-bit integer | The height and width of an uppercase M in pixels in a handset.      |
| wsp.header.x-up-devcap-gui           | x-up-devcap-gui          | Unsigned 8-bit integer  | Indicates if the handset has a GUI                                  |
| wsp.header.x-up-devcap-has-color     | x-up-devcap-has-color    | Unsigned 8-bit integer  | Indicates if the handset supports colour.                           |
| wsp.header.x-up-devcap-immed-alert   | x-up-devcap-immed-alert  | Unsigned 8-bit integer  | Indicates if the handset has support for immediate UPNOTIFY alerts. |
| wsp.header.x-up-devcap-num-softkeys  | x-up-devcap-num-softkeys | Unsigned 8-bit integer  | The number of softkeys that can be displayed on the handset.        |
| wsp.header.x-up-devcap-screen-chars  | x-up-devcap-screen-chars | Unsigned 8-bit integer  | The height and width of the handset's display in characters.        |
| wsp.header.x-up-                     | x-up-devcap-             | Unsigned 8-bit          | The colour/gray   |

| Field                                | Field Name                | Type                    | Description   |
|--------------------------------------|---------------------------|-------------------------|---|
| devcap-screen-depth                  | screen-depth              | integer                 | depth of the display in bits.   |
| wsp.header.x-up-devcap-screen-pixels | x-up-devcap-screen-pixels | Unsigned 32-bit integer | The height and width of the handset's display in pixels.  |
| wsp.header.x-up-devcap-softkey-size  | x-up-devcap-softkey-size  | Unsigned 8-bit integer  | The number of chars that can be displayed on a softkey label.                                   |
| wsp.header.x-up-proxy-ba-enable      | x-up-proxy-ba-enable      | Unsigned 8-bit integer  | Indicates if the WAP gateway should cache basic authentication details on behalf of the handset |
| wsp.header.x-up-proxy-ba-realm       | x-up-proxy-ba-realm       | String                  | Indicates the realm within which basic authentication credentials apply                         |
| wsp.header.x-up-proxy-bookmark       | x-up-proxy-bookmark       | String                  | Specifies the URL to use for server-side bookmarks  |
| wsp.header.x-up-proxy-client-id      | x-up-proxy-client-id      | Byte array              | The ClientId of the handset   |
| wsp.header.x-up-proxy-enable-trust   | x-up-proxy-enable-trust   | Unsigned 8-bit integer  | Indicates whether to enable Trusted Provisioning Domain   |
| wsp.header.x-up-proxy-home-page      | x-up-proxy-home-page      | String                  | Specifies the server-assigned home page URL.  |
| wsp.header.x-up-proxy-linger         | x-up-proxy-linger         | Unsigned 8-bit integer  | Indicates the circuit linger time in seconds  |
| wsp.header.x-up-proxy-net-ask        | x-up-proxy-net-ask        | Unsigned 8-bit integer  | Indicates to browser if circuit switched call is allowed without user interaction               |
| wsp.header.x-up-proxy-notify         | x-up-proxy-notify         | Unsigned 8-bit integer  | Indicates to the handset that there are pending UPNOTIFY pushes waiting.                        |

| Field                                 | Field Name                 | Type                    | Description  |
|---------------------------------------|----------------------------|-------------------------|--|
| wsp.header.x-up-proxy-operator-domain | x-up-proxy-operator-domain | String                  | Indicates the Trusted Provisioning Domain.   |
| wsp.header.x-up-proxy-push-accept     | x-up-proxy-push-accept     | String                  | The content types that the handset can handle when sent via UPNOTIFY pushes.           |
| wsp.header.x-up-proxy-push-addr       | x-up-proxy-push-addr       | Byte array              | The network address and port number that the handset can receive UPNOTIFY pushes on.   |
| wsp.header.x-up-proxy-push-seq        | x-up-proxy-push-seq        | Unsigned 16-bit integer | Specifies the sequence number of the last UPNOTIFY push sent.                          |
| wsp.header.x-up-proxy-redirect-enable | x-up-proxy-redirect-enable | Unsigned 8-bit integer  | Indicates if the handset wants the WAP gateway to handle HTTP redirects on its behalf  |
| wsp.header.x-up-proxy-redirect-status | x-up-proxy-redirect-status | Unsigned 32-bit integer | Indicates the status of a redirect performed on behalf of a handset                    |
| wsp.header.x-up-proxy-request-uri     | x-up-proxy-request-uri     | String                  | Indicates to the handset that the previous request was redirected to the specified URI |
| wsp.header.x-up-proxy-tod             | x-up-proxy-tod             | Unsigned 8-bit integer  | Time of day  |
| wsp.header.x-up-proxy-trans-charset   | x-up-proxy-trans-charset   | Unsigned 16-bit integer | For POSTs indicates the charset encoding of a document                                 |
| wsp.header.x-up-proxy-trans-          | x-up-proxy-trans-charset   | String                  | For POSTs indicates the charset encoding   |

| Field                                 | Field Name                | Type                    | Description  |
|---------------------------------------|---------------------------|-------------------------|--|
| charset.string                        |                           |                         | of a document  |
| wsp.header.x-up-proxy-trust           | x-up-proxy-trust          | Unsigned 8-bit integer  | Indicates if the content being returned was received from within the Trusted Provisioning Domain |
| wsp.header.x-up-proxy-trust-old       | x-up-proxy-trust-old      | Unsigned 8-bit integer  | Indicates if the content being returned was received from within the Trusted Provisioning Domain |
| wsp.header.x-up-proxy-uplink-version  | x-up-proxy-uplink-version | String                  | Version of the MAG WAP gateway   |
| wsp.header.x_wap_tod                  | X-WAP.TOD                 | Date/Time stamp         | X-WAP.TOD  |
| wsp.headers                           | Headers                   | No value                | Headers  |
| wsp.headers.header                    | Header                    | No value                | Header   |
| wsp.headers_length                    | Headers Length            | Unsigned 32-bit integer | Headers Length   |
| wsp.multipart                         | Part                      | Unsigned 32-bit integer | MIME part of multipart data.   |
| wsp.multipart.data                    | Data in this part         | No value                | The data of 1 MIME-multipart part.   |
| wsp.pdu_type                          | PDU Type                  | Unsigned 8-bit integer  | PDU Type   |
| wsp.post.data                         | Data (Post)               | No value                | Post Data  |
| wsp.push.data                         | Push Data                 | No value                | Push Data  |
| wsp.redirect_addr                     | Address                   | Byte array              | Redirect Address   |
| wsp.redirect_afl                      | Flags/Length              | Unsigned 8-bit integer  | Redirect Address Flags/Length  |
| wsp.redirect_afl.address_len          | Address Len               | Unsigned 8-bit integer  | Redirect Address Length  |
| wsp.redirect_afl.bearer_type_included | Bearer Type Included      | Boolean                 | Redirect Address bearer type included  |



| Field                                     | Field Name             | Type                    | Description                           |
|---|------------------------|-------------------------|---------------------------------------|
| wsp.redirect_afl.port_number_included     | Port Number Included   | Boolean                 | Redirect Address port number included |
| wsp.redirect_bearer_type                  | Bearer Type            | Unsigned 8-bit integer  | Redirect Bearer Type                  |
| wsp.redirect_flags                        | Flags                  | Unsigned 8-bit integer  | Redirect Flags                        |
| wsp.redirect_flags.permanent              | Permanent Redirect     | Boolean                 | Permanent Redirect                    |
| wsp.redirect_flags.reuse_security_session | Reuse Security Session | Boolean                 | Permanent Redirect                    |
| wsp.redirect_ipv4_addr                    | IP Address             | IPv4 address            | Redirect Address (IP)                 |
| wsp.redirect_ipv6_addr                    | IPv6 Address           | IPv6 address            | Redirect Address (IPv6)               |
| wsp.redirect_port_num                     | Port Number            | Unsigned 16-bit integer | Redirect Port Number                  |
| wsp.reply.data                            | Data                   | No value                | Data                                  |
| wsp.reply.status                          | Status                 | Unsigned 8-bit integer  | Status                                |
| wsp.server.session_id                     | Server Session ID      | Unsigned 32-bit integer | Server Session ID                     |
| wsp.uri                                   | URI                    | String                  | URI                                   |
| wsp.uri_length                            | URI Length             | Unsigned 32-bit integer | URI Length                            |
| wsp.version.major                         | Version (Major)        | Unsigned 8-bit integer  | Version (Major)                       |
| wsp.version.minor                         | Version (Minor)        | Unsigned 8-bit integer  | Version (Minor)                       |

### Wireless Transaction Protocol (wap-wsp-wtp)

Table A-383. Wireless Transaction Protocol (wap-wsp-wtp)

| Field            | Field Name                | Type                    | Description               |
|------------------|---------------------------|-------------------------|---------------------------|
| wtp.RID          | Re-transmission Indicator | Boolean                 | Re-transmission Indicator |
| wtp.TID          | Transaction ID            | Unsigned 16-bit integer | Transaction ID            |
| wtp.TID.response | TID Response              | Boolean                 | TID Response              |

| Field                          | Field Name                           | Type                   | Description  |
|--------------------------------|--------------------------------------|------------------------|--|
| wtp.abort.reason.provider      | Abort Reason                         | Unsigned 8-bit integer | Abort Reason   |
| wtp.abort.reason.user          | Abort Reason                         | Unsigned 8-bit integer | Abort Reason   |
| wtp.abort.type                 | Abort Type                           | Unsigned 8-bit integer | Abort Type   |
| wtp.ack.tvetok                 | Tve/Tok flag                         | Boolean                | Tve/Tok flag   |
| wtp.continue_flag              | Continue Flag                        | Boolean                | Continue Flag  |
| wtp.fragment                   | WTP Fragment                         |                        | WTP Fragment   |
| wtp.fragment.error             | Defragmentation error                |                        | Defragmentation error due to illegal fragments         |
| wtp.fragment.multiple_tails    | Multiple tail fragments found        | Boolean                | Several tails were found when defragmenting the packet |
| wtp.fragment.overlap           | Fragment overlap                     | Boolean                | Fragment overlaps with other fragments                 |
| wtp.fragment.overlap.conflict  | Conflicting data in fragment overlap | Boolean                | Overlapping fragments contained conflicting data       |
| wtp.fragment.too_long_fragment | Fragment too long                    | Boolean                | Fragment contained data past end of packet             |
| wtp.fragments                  | WTP Fragments                        | No value               | WTP Fragments  |
| wtp.header.TIDNew              | TIDNew                               | Boolean                | TIDNew   |
| wtp.header.UP                  | U/P flag                             | Boolean                | U/P Flag   |
| wtp.header.missing_packets     | Missing Packets                      | Unsigned 8-bit integer | Missing Packets  |
| wtp.header.sequence            | Packet Sequence Number               | Unsigned 8-bit integer | Packet Sequence Number                                 |
| wtp.header.version             | Version                              | Unsigned 8-bit integer | Version  |
| wtp.header_data                | Data                                 | Byte array             | Data   |
| wtp.header_variable_part       | Header: Variable part                | Byte array             | Variable part of the header                            |
| wtp.inv.reserved               | Reserved                             | Unsigned 8-bit         | Reserved   |

| Field                     | Field Name             | Type                   | Description                                      |
|---------------------------|------------------------|------------------------|--|
|                           |                        | integer                |  |
| wtp.inv.transaction_class | Transaction Class      | Unsigned 8-bit integer | Transaction Class                                |
| wtp.pdu_type              | PDU Type               | Unsigned 8-bit integer | PDU Type   |
| wtp.sub_pdu_size          | Sub PDU size           | Byte array             | Size of Sub-PDU                                  |
| wtp.tpi                   | TPI                    | Unsigned 8-bit integer | Identification of the Transport Information Item |
| wtp.tpi.info              | Information            | No value               | The information being send by this TPI           |
| wtp.tpi.opt               | Option                 | Unsigned 8-bit integer | The given option for this TPI                    |
| wtp.tpi.opt.val           | Option Value           | No value               | The value that is supplied with this option      |
| wtp.tpi.psn               | Packet sequence number | Unsigned 8-bit integer | Sequence number of this packet                   |
| wtp.trailer_flags         | Trailer Flags          | Unsigned 8-bit integer | Trailer Flags                                    |

### Wireless Transport Layer Security (wap-wtls)

Table A-384. Wireless Transport Layer Security (wap-wtls)

| Field                                 | Field Name       | Type                   | Description      |
|---------------------------------------|------------------|------------------------|------------------|
| wsp.wtls.alert                        | Alert            | No value               | Alert            |
| wsp.wtls.alert.description            | Description      | Unsigned 8-bit integer | Description      |
| wsp.wtls.alert.level                  | Level            | Unsigned 8-bit integer | Level            |
| wsp.wtls.handshake                    | Handshake        | Unsigned 8-bit integer | Handshake        |
| wsp.wtls.handshake.certificate        | Certificate      | No value               | Certificate      |
| wsp.wtls.handshake.certificate.after  | Valid not after  | Date/Time stamp        | Valid not after  |
| wsp.wtls.handshake.certificate.before | Valid not before | Date/Time stamp        | Valid not before |
| wsp.wtls.handshake.charset            | Charset          | Unsigned 16-bit        | Charset          |

Appendix A. Ethereal Display Filter Fields

| Field  | Field Name        | Type                    | Description       |
|--|-------------------|-------------------------|-------------------|
| ke.certificate.issuer.charset                      |                   | integer                 |                   |
| wsp.wtls.handshake.certificate.issuer.name         | Name              | String                  | Name              |
| wsp.wtls.handshake.certificate.issuer.size         | Size              | Unsigned 8-bit integer  | Size              |
| wsp.wtls.handshake.certificate.issuer.type         | Issuer            | Unsigned 8-bit integer  | Issuer            |
| wsp.wtls.handshake.certificate.parameter           | Parameter Set     | String                  | Parameter Set     |
| wsp.wtls.handshake.certificate.parameter_index     | Parameter Index   | Unsigned 8-bit integer  | Parameter Index   |
| wsp.wtls.handshake.certificate.public.type         | Public Key Type   | Unsigned 8-bit integer  | Public Key Type   |
| wsp.wtls.handshake.certificate.rsa.exponent        | RSA Exponent Size | Unsigned 32-bit integer | RSA Exponent Size |
| wsp.wtls.handshake.certificate.rsa.modules         | RSA Modulus Size  | Unsigned 32-bit integer | RSA Modulus Size  |
| wsp.wtls.handshake.certificate.signature.signature | Signature Size    | Unsigned 32-bit integer | Signature Size    |
| wsp.wtls.handshake.certificate.signature.type      | Signature Type    | Unsigned 8-bit integer  | Signature Type    |
| wsp.wtls.handshake.certificate.subject.charset     | Charset           | Unsigned 16-bit integer | Charset           |
| wsp.wtls.handshake.certificate.subject.name        | Name              | String                  | Name              |
| wsp.wtls.handshake.certificate.subject.size        | Size              | Unsigned 8-bit integer  | Size              |
| wsp.wtls.handshake.certificate.subject             | Subject           | Unsigned 8-bit integer  | Subject           |

| Field   | Field Name          | Type                    | Description         |
|---|---------------------|-------------------------|---------------------|
| ct.type   |                     |                         |                     |
| wsp.wtls.handshake.certificate.type                 | Type                | Unsigned 8-bit integer  | Type                |
| wsp.wtls.handshake.certificate.version              | Version             | Unsigned 8-bit integer  | Version             |
| wsp.wtls.handshake.certificates                     | Certificates        | No value                | Certificates        |
| wsp.wtls.handshake.client_hello                     | Client Hello        | No value                | Client Hello        |
| wsp.wtls.handshake.client_hello.cipher              | Cipher              | String                  | Cipher              |
| wsp.wtls.handshake.client_hello.ciphers             | Cipher Suites       | No value                | Cipher Suite        |
| wsp.wtls.handshake.client_hello.client_keys_id      | Client Keys         | No value                | Client Keys         |
| wsp.wtls.handshake.client_hello.client_keys_len     | Length              | Unsigned 16-bit integer | Length              |
| wsp.wtls.handshake.client_hello.compression_methods | Compression Methods | No value                | Compression Methods |
| wsp.wtls.handshake.client_hello.compression         | Compression         | Unsigned 8-bit integer  | Compression         |
| wsp.wtls.handshake.client_hello.gmt                 | Time GMT            | Date/Time stamp         | Time GMT            |
| wsp.wtls.handshake.client_hello.identifier_charset  | Identifier CharSet  | Unsigned 16-bit integer | Identifier CharSet  |
| wsp.wtls.handshake.client_hello.identifier_name     | Identifier Name     | String                  | Identifier Name     |
| wsp.wtls.handshake.client_hello.identifier_size     | Identifier Size     | Unsigned 8-bit integer  | Identifier Size     |
| wsp.wtls.handshake.client_hello.identifier_type     | Identifier Type     | Unsigned 8-bit integer  | Identifier Type     |

Appendix A. Ethereal Display Filter Fields

| Field  | Field Name      | Type                    | Description     |
|--|-----------------|-------------------------|-----------------|
| wsp.wtls.handshake.client_hello.identifier         | Identifier      | No value                | Identifier      |
| wsp.wtls.handshake.client_hello.key_exchange       | Key Exchange    | Unsigned 8-bit integer  | Key Exchange    |
| wsp.wtls.handshake.client_hello.key_exchange.suite | Suite           | Unsigned 8-bit integer  | Suite           |
| wsp.wtls.handshake.client_hello.parameter          | Parameter Set   | String                  | Parameter Set   |
| wsp.wtls.handshake.client_hello.parameter_index    | Parameter Index | Unsigned 8-bit integer  | Parameter Index |
| wsp.wtls.handshake.client_hello.random             | Random          | No value                | Random          |
| wsp.wtls.handshake.client_hello.refresh            | Refresh         | Unsigned 8-bit integer  | Refresh         |
| wsp.wtls.handshake.client_hello.sequence_mode      | Sequence Mode   | Unsigned 8-bit integer  | Sequence Mode   |
| wsp.wtls.handshake.client_hello.session.str        | Session ID      | String                  | Session ID      |
| wsp.wtls.handshake.client_hello.sessionid          | Session ID      | Unsigned 32-bit integer | Session ID      |
| wsp.wtls.handshake.client_hello.trusted_keys_id    | Trusted Keys    | No value                | Trusted Keys    |
| wsp.wtls.handshake.client_hello.version            | Version         | Unsigned 8-bit integer  | Version         |
| wsp.wtls.handshake.length                          | Length          | Unsigned 16-bit integer | Length          |
| wsp.wtls.handshake.server_hello                    | Server Hello    | No value                | Server Hello    |
| wsp.wtls.handshake.server_hello.cipher             | Cipher          | No value                | Cipher          |

| Field   | Field Name      | Type                    | Description     |
|---|-----------------|-------------------------|-----------------|
| her   |                 |                         |                 |
| wsp.wtls.handshake.server_hello.cipher.bulk   | Cipher Bulk     | Unsigned 8-bit integer  | Cipher Bulk     |
| wsp.wtls.handshake.server_hello.cipher.mac    | Cipher MAC      | Unsigned 8-bit integer  | Cipher MAC      |
| wsp.wtls.handshake.server_hello.compression   | Compression     | Unsigned 8-bit integer  | Compression     |
| wsp.wtls.handshake.server_hello.gmt           | Time GMT        | Date/Time stamp         | Time GMT        |
| wsp.wtls.handshake.server_hello.key           | Client Key ID   | Unsigned 8-bit integer  | Client Key ID   |
| wsp.wtls.handshake.server_hello.random        | Random          | No value                | Random          |
| wsp.wtls.handshake.server_hello.refresh       | Refresh         | Unsigned 8-bit integer  | Refresh         |
| wsp.wtls.handshake.server_hello.sequence_mode | Sequence Mode   | Unsigned 8-bit integer  | Sequence Mode   |
| wsp.wtls.handshake.server_hello.session.str   | Session ID      | String                  | Session ID      |
| wsp.wtls.handshake.server_hello.sessionid     | Session ID      | Unsigned 32-bit integer | Session ID      |
| wsp.wtls.handshake.server_hello.version       | Version         | Unsigned 8-bit integer  | Version         |
| wsp.wtls.handshake.type                       | Type            | Unsigned 8-bit integer  | Type            |
| wsp.wtls.rec_cipher                           | Record Ciphred  | No value                | Record Ciphred  |
| wsp.wtls.rec_length                           | Record Length   | Unsigned 16-bit integer | Record Length   |
| wsp.wtls.rec_seq                              | Record Sequence | Unsigned 16-bit integer | Record Sequence |

| Field             | Field Name  | Type                   | Description |
|-------------------|-------------|------------------------|-------------|
| wsp.wtls.rec_type | Record Type | Unsigned 8-bit integer | Record Type |
| wsp.wtls.record   | Record      | Unsigned 8-bit integer | Record      |

## X Display Manager Control Protocol (xdmcp)

Table A-385. X Display Manager Control Protocol (xdmcp)

| Field                     | Field Name          | Type                    | Description                     |
|---------------------------|---------------------|-------------------------|---------------------------------|
| xdmcp.authentication_name | Authentication name | String                  | Authentication name             |
| xdmcp.authorization_name  | Authorization name  | String                  | Authorization name              |
| xdmcp.display_number      | Display number      | Unsigned 16-bit integer | Display number                  |
| xdmcp.hostname            | Hostname            | String                  | Hostname                        |
| xdmcp.length              | Message length      | Unsigned 16-bit integer | Length of the remaining message |
| xdmcp.opcode              | Opcode              | Unsigned 16-bit integer | Opcode                          |
| xdmcp.session_id          | Session ID          | Unsigned 32-bit integer | Session identifier              |
| xdmcp.status              | Status              | String                  | Status                          |
| xdmcp.version             | Version             | Unsigned 16-bit integer | Protocol version                |

## X.25 (x.25)

Table A-386. X.25 (x.25)

| Field    | Field Name      | Type                    | Description                                    |
|----------|-----------------|-------------------------|--|
| x.25.a   | A Bit           | Boolean                 | Address Bit                                    |
| x.25.d   | D Bit           | Boolean                 | Delivery Confirmation Bit                      |
| x.25.gfi | GFI             | Unsigned 16-bit integer | General format identifier                      |
| x.25.lcn | Logical Channel | Unsigned 16-bit integer | Logical Channel Number                         |
| x.25.m   | M Bit           | Boolean                 | More Bit                                       |
| x.25.mod | Modulo          | Unsigned 16-bit integer | Specifies whether the frame is modulo 8 or 128 |



| Field                         | Field Name                           | Type                   | Description  |
|-------------------------------|--------------------------------------|------------------------|--|
| x.25.p_r                      | P(R)                                 | Unsigned 8-bit integer | Packet Receive Sequence Number                         |
| x.25.p_s                      | P(S)                                 | Unsigned 8-bit integer | Packet Send Sequence Number                            |
| x.25.q                        | Q Bit                                | Boolean                | Qualifier Bit  |
| x.25.type                     | Packet Type                          | Unsigned 8-bit integer | Packet Type  |
| x25.fragment                  | X.25 Fragment                        |                        | X25 Fragment   |
| x25.fragment.error            | Defragmentation error                |                        | Defragmentation error due to illegal fragments         |
| x25.fragment.multipletails    | Multiple tail fragments found        | Boolean                | Several tails were found when defragmenting the packet |
| x25.fragment.overlap          | Fragment overlap                     | Boolean                | Fragment overlaps with other fragments                 |
| x25.fragment.overlap.conflict | Conflicting data in fragment overlap | Boolean                | Overlapping fragments contained conflicting data       |
| x25.fragment.toolongfragment  | Fragment too long                    | Boolean                | Fragment contained data past end of packet             |
| x25.fragments                 | X.25 Fragments                       | No value               | X.25 Fragments   |

### X.25 over TCP (xot)

Table A-387. X.25 over TCP (xot)

| Field       | Field Name | Type                    | Description                       |
|-------------|------------|-------------------------|-----------------------------------|
| xot.length  | Length     | Unsigned 16-bit integer | Length of X.25 over TCP packet    |
| xot.version | Version    | Unsigned 16-bit integer | Version of X.25 over TCP protocol |

### X.29 (x.29)

Table A-388. X.29 (x.29)

| Field            | Field Name      | Type                   | Description                       |
|------------------|-----------------|------------------------|-----------------------------------|
| x29.error_type   | Error type      | Unsigned 8-bit integer | X.29 error PAD message error type |
| x29.inv_msg_code | Invalid message | Unsigned 8-bit         | X.29 Error PAD                    |

| Field        | Field Name   | Type                      | Description                     |
|--------------|--------------|---------------------------|---------------------------------|
|              | code         | integer                   | message invalid<br>message code |
| x29.msg_code | Message code | Unsigned 8-bit<br>integer | X.29 PAD message<br>code        |

## X11 (x11)

Table A-389. X11 (x11)

| Field                        | Field Name               | Type                       | Description                                    |
|------------------------------|--------------------------|----------------------------|--|
| x11.acceleration-denominator | acceleration-denominator | Signed 16-bit<br>integer   |  |
| x11.acceleration-numerator   | acceleration-numerator   | Signed 16-bit<br>integer   |  |
| x11.access-mode              | access-mode              | Unsigned 8-bit<br>integer  |  |
| x11.address                  | address                  | Byte array                 |  |
| x11.address-length           | address-length           | Unsigned 16-bit<br>integer |  |
| x11.alloc                    | alloc                    | Unsigned 8-bit<br>integer  |  |
| x11.allow-events-mode        | allow-events-mode        | Unsigned 8-bit<br>integer  |  |
| x11.allow-exposures          | allow-exposures          | Unsigned 8-bit<br>integer  |  |
| x11.arc                      | arc                      | No value                   |  |
| x11.arc.angle1               | angle1                   | Signed 16-bit<br>integer   |  |
| x11.arc.angle2               | angle2                   | Signed 16-bit<br>integer   |  |
| x11.arc.height               | height                   | Unsigned 16-bit<br>integer |  |
| x11.arc.mode                 | mode                     | Unsigned 8-bit<br>integer  | Tell us if we're<br>drawing an arc or<br>a pie |
| x11.arc.width                | width                    | Unsigned 16-bit<br>integer |  |
| x11.arc.x                    | x                        | Signed 16-bit<br>integer   |  |
| x11.arc.y                    | y                        | Signed 16-bit<br>integer   |  |
| x11.arcs                     | arcs                     | No value                   |  |

| <b>Field</b>                           | <b>Field Name</b>                  | <b>Type</b>             | <b>Description</b>                  |
|--|------------------------------------|-------------------------|-------------------------------------|
| x11.atom                               | atom                               | Unsigned 32-bit integer |                                     |
| x11.authorization-protocol-data        | authorization-protocol-data        | String                  |                                     |
| x11.authorization-protocol-data-length | authorization-protocol-data-length | Unsigned 16-bit integer |                                     |
| x11.authorization-protocol-name        | authorization-protocol-name        | String                  |                                     |
| x11.authorization-protocol-name-length | authorization-protocol-name-length | Unsigned 16-bit integer |                                     |
| x11.auto-repeat-mode                   | auto-repeat-mode                   | Unsigned 8-bit integer  |                                     |
| x11.back-blue                          | back-blue                          | Unsigned 16-bit integer | Background blue value for a cursor  |
| x11.back-green                         | back-green                         | Unsigned 16-bit integer | Background green value for a cursor |
| x11.back-red                           | back-red                           | Unsigned 16-bit integer | Background red value for a cursor   |
| x11.background                         | background                         | Unsigned 32-bit integer | Background color                    |
| x11.background-pixel                   | background-pixel                   | Unsigned 32-bit integer | Background color for a window       |
| x11.background-pixmap                  | background-pixmap                  | Unsigned 32-bit integer | Background pixmap for a window      |
| x11.backing-pixel                      | backing-pixel                      | Unsigned 32-bit integer |                                     |
| x11.backing-planes                     | backing-planes                     | Unsigned 32-bit integer |                                     |
| x11.backing-store                      | backing-store                      | Unsigned 8-bit integer  |                                     |
| x11.bell-duration                      | bell-duration                      | Signed 16-bit integer   |                                     |
| x11.bell-percent                       | bell-percent                       | Signed 8-bit integer    |                                     |
| x11.bell-pitch                         | bell-pitch                         | Signed 16-bit integer   |                                     |
| x11.bit-gravity                        | bit-gravity                        | Unsigned 8-bit          |                                     |

Appendix A. Ethereal Display Filter Fields

| Field                | Field Name       | Type                    | Description |
|----------------------|------------------|-------------------------|-------------|
|                      |                  | integer                 |             |
| x11.bit-plane        | bit-plane        | Unsigned 32-bit integer |             |
| x11.blue             | blue             | Unsigned 16-bit integer |             |
| x11.blues            | blues            | Unsigned 16-bit integer |             |
| x11.border-pixel     | border-pixel     | Unsigned 32-bit integer |             |
| x11.border-pixmap    | border-pixmap    | Unsigned 32-bit integer |             |
| x11.border-width     | border-width     | Unsigned 16-bit integer |             |
| x11.button           | button           | Unsigned 8-bit integer  |             |
| x11.byte-order       | byte-order       | Unsigned 8-bit integer  |             |
| x11.cap-style        | cap-style        | Unsigned 8-bit integer  |             |
| x11.change-host-mode | change-host-mode | Unsigned 8-bit integer  |             |
| x11.cid              | cid              | Unsigned 32-bit integer |             |
| x11.class            | class            | Unsigned 8-bit integer  |             |
| x11.clip-mask        | clip-mask        | Unsigned 32-bit integer |             |
| x11.clip-x-origin    | clip-x-origin    | Signed 16-bit integer   |             |
| x11.clip-y-origin    | clip-y-origin    | Signed 16-bit integer   |             |
| x11.close-down-mode  | close-down-mode  | Unsigned 8-bit integer  |             |
| x11.cmap             | cmap             | Unsigned 32-bit integer |             |
| x11.color-items      | color-items      | No value                |             |
| x11.coloritem        | coloritem        | No value                |             |
| x11.coloritem.blue   | blue             | Unsigned 16-bit integer |             |

| <b>Field</b>                           | <b>Field Name</b>     | <b>Type</b>             | <b>Description</b>                    |
|--|-----------------------|-------------------------|---------------------------------------|
| x11.coloritem.flags                    | flags                 | Unsigned 8-bit integer  |                                       |
| x11.coloritem.flags.do-blue            | do-blue               | Boolean                 |                                       |
| x11.coloritem.flags.do-green           | do-green              | Boolean                 |                                       |
| x11.coloritem.flags.do-red             | do-red                | Boolean                 |                                       |
| x11.coloritem.flags.unused             | unused                | Boolean                 |                                       |
| x11.coloritem.green                    | green                 | Unsigned 16-bit integer |                                       |
| x11.coloritem.pixel                    | pixel                 | Unsigned 32-bit integer |                                       |
| x11.coloritem.red                      | red                   | Unsigned 16-bit integer |                                       |
| x11.coloritem.unused                   | unused                | No value                |                                       |
| x11.colormap                           | colormap              | Unsigned 32-bit integer |                                       |
| x11.colors                             | colors                | Unsigned 16-bit integer | The number of color cells to allocate |
| x11.configure-window-mask              | configure-window-mask | Unsigned 16-bit integer |                                       |
| x11.configure-window-mask.border-width | border-width          | Boolean                 |                                       |
| x11.configure-window-mask.height       | height                | Boolean                 |                                       |
| x11.configure-window-mask.sibling      | sibling               | Boolean                 |                                       |
| x11.configure-window-mask.stack-mode   | stack-mode            | Boolean                 |                                       |
| x11.configure-window-mask.width        | width                 | Boolean                 |                                       |

Appendix A. Ethereal Display Filter Fields

| Field                                   | Field Name            | Type                    | Description                        |
|---|-----------------------|-------------------------|------------------------------------|
| x11.configure-window-mask.x             | x                     | Boolean                 |                                    |
| x11.configure-window-mask.y             | y                     | Boolean                 |                                    |
| x11.confine-to                          | confine-to            | Unsigned 32-bit integer |                                    |
| x11.contiguous                          | contiguous            | Boolean                 |                                    |
| x11.coordinate-mode                     | coordinate-mode       | Unsigned 8-bit integer  |                                    |
| x11.count                               | count                 | Unsigned 8-bit integer  |                                    |
| x11.cursor                              | cursor                | Unsigned 32-bit integer |                                    |
| x11.dash-offset                         | dash-offset           | Unsigned 16-bit integer |                                    |
| x11.dashes                              | dashes                | Byte array              |                                    |
| x11.dashes-length                       | dashes-length         | Unsigned 16-bit integer |                                    |
| x11.data                                | data                  | Byte array              |                                    |
| x11.data-length                         | data-length           | Unsigned 32-bit integer |                                    |
| x11.delete                              | delete                | Boolean                 | Delete this property after reading |
| x11.delta                               | delta                 | Signed 16-bit integer   |                                    |
| x11.depth                               | depth                 | Unsigned 8-bit integer  |                                    |
| x11.direction                           | direction             | Unsigned 8-bit integer  |                                    |
| x11.do-acceleration                     | do-acceleration       | Boolean                 |                                    |
| x11.do-not-propagate-mask               | do-not-propagate-mask | Unsigned 32-bit integer |                                    |
| x11.do-not-propagate-mask.Button1Motion | Button1Motion         | Boolean                 |                                    |
| x11.do-not-propagate-                   | Button2Motion         | Boolean                 |                                    |

| Field                                    | Field Name     | Type                    | Description |
|--|----------------|-------------------------|-------------|
| mask.Button2Motion                       |                |                         |             |
| x11.do-not-propagate-mask.Button3Motion  | Button3Motion  | Boolean                 |             |
| x11.do-not-propagate-mask.Button4Motion  | Button4Motion  | Boolean                 |             |
| x11.do-not-propagate-mask.Button5Motion  | Button5Motion  | Boolean                 |             |
| x11.do-not-propagate-mask.ButtonMotion   | ButtonMotion   | Boolean                 |             |
| x11.do-not-propagate-mask.ButtonPress    | ButtonPress    | Boolean                 |             |
| x11.do-not-propagate-mask.ButtonRelease  | ButtonRelease  | Boolean                 |             |
| x11.do-not-propagate-mask.KeyPress       | KeyPress       | Boolean                 |             |
| x11.do-not-propagate-mask.KeyRelease     | KeyRelease     | Boolean                 |             |
| x11.do-not-propagate-mask.PointerMotion  | PointerMotion  | Boolean                 |             |
| x11.do-not-propagate-mask.erroneous-bits | erroneous-bits | Boolean                 |             |
| x11.do-threshold                         | do-threshold   | Boolean                 |             |
| x11.drawable                             | drawable       | Unsigned 32-bit integer |             |
| x11.dst-drawable                         | dst-drawable   | Unsigned 32-bit         |             |

Appendix A. Ethereal Display Filter Fields

| Field                         | Field Name     | Type                    | Description |
|-------------------------------|----------------|-------------------------|-------------|
|                               |                | integer                 |             |
| x11.dst-gc                    | dst-gc         | Unsigned 32-bit integer |             |
| x11.dst-window                | dst-window     | Unsigned 32-bit integer |             |
| x11.dst-x                     | dst-x          | Signed 16-bit integer   |             |
| x11.dst-y                     | dst-y          | Signed 16-bit integer   |             |
| x11.event-mask                | event-mask     | Unsigned 32-bit integer |             |
| x11.event-mask.Button1Motion  | Button1Motion  | Boolean                 |             |
| x11.event-mask.Button2Motion  | Button2Motion  | Boolean                 |             |
| x11.event-mask.Button3Motion  | Button3Motion  | Boolean                 |             |
| x11.event-mask.Button4Motion  | Button4Motion  | Boolean                 |             |
| x11.event-mask.Button5Motion  | Button5Motion  | Boolean                 |             |
| x11.event-mask.ButtonMotion   | ButtonMotion   | Boolean                 |             |
| x11.event-mask.ButtonPress    | ButtonPress    | Boolean                 |             |
| x11.event-mask.ButtonRelease  | ButtonRelease  | Boolean                 |             |
| x11.event-mask.ColormapChange | ColormapChange | Boolean                 |             |
| x11.event-mask.EnterWindow    | EnterWindow    | Boolean                 |             |
| x11.event-mask.Exposure       | Exposure       | Boolean                 |             |



| Field                               | Field Name           | Type    | Description |
|-------------------------------------|----------------------|---------|-------------|
| x11.event-mask.FocusChange          | FocusChange          | Boolean |             |
| x11.event-mask.KeyPress             | KeyPress             | Boolean |             |
| x11.event-mask.KeyRelease           | KeyRelease           | Boolean |             |
| x11.event-mask.KeymapState          | KeymapState          | Boolean |             |
| x11.event-mask.LeaveWindow          | LeaveWindow          | Boolean |             |
| x11.event-mask.OwnerGrabButton      | OwnerGrabButton      | Boolean |             |
| x11.event-mask.PointerMotion        | PointerMotion        | Boolean |             |
| x11.event-mask.PointerMotionHint    | PointerMotionHint    | Boolean |             |
| x11.event-mask.PropertyChange       | PropertyChange       | Boolean |             |
| x11.event-mask.ResizeRedirect       | ResizeRedirect       | Boolean |             |
| x11.event-mask.StructureNotify      | StructureNotify      | Boolean |             |
| x11.event-mask.SubstructureNotify   | SubstructureNotify   | Boolean |             |
| x11.event-mask.SubstructureRedirect | SubstructureRedirect | Boolean |             |
| x11.event-mask.VisibilityChange     | VisibilityChange     | Boolean |             |
| x11.event-mask.erroneous-bits       | erroneous-bits       | Boolean |             |

Appendix A. Ethereal Display Filter Fields

| Field                        | Field Name    | Type                    | Description |
|------------------------------|---------------|-------------------------|-------------|
| x11.exposures                | exposures     | Boolean                 |             |
| x11.family                   | family        | Unsigned 8-bit integer  |             |
| x11.fid                      | fid           | Unsigned 32-bit integer | Font id     |
| x11.fill-rule                | fill-rule     | Unsigned 8-bit integer  |             |
| x11.fill-style               | fill-style    | Unsigned 8-bit integer  |             |
| x11.first-keycode            | first-keycode | Unsigned 8-bit integer  |             |
| x11.focus                    | focus         | Unsigned 8-bit integer  |             |
| x11.font                     | font          | Unsigned 32-bit integer |             |
| x11.fore-blue                | fore-blue     | Unsigned 16-bit integer |             |
| x11.fore-green               | fore-green    | Unsigned 16-bit integer |             |
| x11.fore-red                 | fore-red      | Unsigned 16-bit integer |             |
| x11.foreground               | foreground    | Unsigned 32-bit integer |             |
| x11.format                   | format        | Unsigned 8-bit integer  |             |
| x11.function                 | function      | Unsigned 8-bit integer  |             |
| x11.gc                       | gc            | Unsigned 32-bit integer |             |
| x11.gc-dashes                | gc-dashes     | Unsigned 8-bit integer  |             |
| x11.gc-value-mask            | gc-value-mask | Unsigned 32-bit integer |             |
| x11.gc-value-mask.arc-mode   | arc-mode      | Boolean                 |             |
| x11.gc-value-mask.background | background    | Boolean                 |             |
| x11.gc-value-mask.cap-style  | cap-style     | Boolean                 |             |

| <b>Field</b>                          | <b>Field Name</b>   | <b>Type</b> | <b>Description</b> |
|---------------------------------------|---------------------|-------------|--------------------|
| x11.gc-value-mask.clip-mask           | clip-mask           | Boolean     |                    |
| x11.gc-value-mask.clip-x-origin       | clip-x-origin       | Boolean     |                    |
| x11.gc-value-mask.clip-y-origin       | clip-y-origin       | Boolean     |                    |
| x11.gc-value-mask.dash-offset         | dash-offset         | Boolean     |                    |
| x11.gc-value-mask.fill-rule           | fill-rule           | Boolean     |                    |
| x11.gc-value-mask.fill-style          | fill-style          | Boolean     |                    |
| x11.gc-value-mask.font                | font                | Boolean     |                    |
| x11.gc-value-mask.foreground          | foreground          | Boolean     |                    |
| x11.gc-value-mask.function            | function            | Boolean     |                    |
| x11.gc-value-mask.gc-dashes           | gc-dashes           | Boolean     |                    |
| x11.gc-value-mask.graphics-exposures  | graphics-exposures  | Boolean     |                    |
| x11.gc-value-mask.join-style          | join-style          | Boolean     |                    |
| x11.gc-value-mask.line-style          | line-style          | Boolean     |                    |
| x11.gc-value-mask.line-width          | line-width          | Boolean     |                    |
| x11.gc-value-mask.plane-mask          | plane-mask          | Boolean     |                    |
| x11.gc-value-mask.stipple             | stipple             | Boolean     |                    |
| x11.gc-value-mask.subwindow-mode      | subwindow-mode      | Boolean     |                    |
| x11.gc-value-mask.tile                | tile                | Boolean     |                    |
| x11.gc-value-mask.tile-stipple-origin | tile-stipple-origin | Boolean     |                    |

Appendix A. Ethereal Display Filter Fields

| Field                                    | Field Name            | Type                    | Description |
|--|-----------------------|-------------------------|-------------|
| x-origin                                 |                       |                         |             |
| x11.gc-value-mask.tile-stipple-y-origin  | tile-stipple-y-origin | Boolean                 |             |
| x11.get-property-type                    | get-property-type     | Unsigned 32-bit integer |             |
| x11.grab_window                          | grab_window           | Unsigned 32-bit integer |             |
| x11.graphics-exposures                   | graphics-exposures    | Boolean                 |             |
| x11.green                                | green                 | Unsigned 16-bit integer |             |
| x11.greens                               | greens                | Unsigned 16-bit integer |             |
| x11.height                               | height                | Unsigned 16-bit integer |             |
| x11.image-format                         | image-format          | Unsigned 8-bit integer  |             |
| x11.image-pixmap-format                  | image-pixmap-format   | Unsigned 8-bit integer  |             |
| x11.interval                             | interval              | Signed 16-bit integer   |             |
| x11.ip-address                           | ip-address            | IPv4 address            |             |
| x11.items                                | items                 | No value                |             |
| x11.join-style                           | join-style            | Unsigned 8-bit integer  |             |
| x11.key                                  | key                   | Unsigned 8-bit integer  |             |
| x11.key-click-percent                    | key-click-percent     | Signed 8-bit integer    |             |
| x11.keyboard-key                         | keyboard-key          | Unsigned 8-bit integer  |             |
| x11.keyboard-mode                        | keyboard-mode         | Unsigned 8-bit integer  |             |
| x11.keyboard-value-mask                  | keyboard-value-mask   | Unsigned 32-bit integer |             |
| x11.keyboard-value-mask.auto-repeat-mode | auto-repeat-mode      | Boolean                 |             |

| Field                                     | Field Name            | Type                    | Description |
|---|-----------------------|-------------------------|-------------|
| x11.keyboard-value-mask.bell-duration     | bell-duration         | Boolean                 |             |
| x11.keyboard-value-mask.bell-percent      | bell-percent          | Boolean                 |             |
| x11.keyboard-value-mask.bell-pitch        | bell-pitch            | Boolean                 |             |
| x11.keyboard-value-mask.key-click-percent | key-click-percent     | Boolean                 |             |
| x11.keyboard-value-mask.keyboard-key      | keyboard-key          | Boolean                 |             |
| x11.keyboard-value-mask.led               | led                   | Boolean                 |             |
| x11.keyboard-value-mask.led-mode          | led-mode              | Boolean                 |             |
| x11.keycode-count                         | keycode-count         | Unsigned 8-bit integer  |             |
| x11.keycodes                              | keycodes              | No value                |             |
| x11.keycodes-per-modifier                 | keycodes-per-modifier | Unsigned 8-bit integer  |             |
| x11.keycodes.item                         | item                  | Byte array              |             |
| x11.keysyms                               | keysyms               | No value                |             |
| x11.keysyms-per-keycode                   | keysyms-per-keycode   | Unsigned 8-bit integer  |             |
| x11.keysyms.item                          | item                  | No value                |             |
| x11.keysyms.item.keysym                   | keysym                | Unsigned 32-bit integer |             |
| x11.led                                   | led                   | Unsigned 8-bit integer  |             |
| x11.led-mode                              | led-mode              | Unsigned 8-bit integer  |             |
| x11.left-pad                              | left-pad              | Unsigned 8-bit integer  |             |
| x11.line-style                            | line-style            | Unsigned 8-bit          |             |

Appendix A. Ethereal Display Filter Fields

| Field                          | Field Name     | Type                    | Description                                       |
|--------------------------------|----------------|-------------------------|---|
|                                |                | integer                 |   |
| x11.line-width                 | line-width     | Unsigned 16-bit integer |   |
| x11.long-length                | long-length    | Unsigned 32-bit integer | The maximum length of the property in bytes       |
| x11.long-offset                | long-offset    | Unsigned 32-bit integer | The starting position in the property bytes array |
| x11.map                        | map            | Byte array              |   |
| x11.map-length                 | map-length     | Unsigned 8-bit integer  |   |
| x11.mask                       | mask           | Unsigned 32-bit integer |   |
| x11.mask-char                  | mask-char      | Unsigned 16-bit integer |   |
| x11.mask-font                  | mask-font      | Unsigned 32-bit integer |   |
| x11.max-names                  | max-names      | Unsigned 16-bit integer |   |
| x11.mid                        | mid            | Unsigned 32-bit integer |   |
| x11.mode                       | mode           | Unsigned 8-bit integer  |   |
| x11.modifiers-mask             | modifiers-mask | Unsigned 16-bit integer |   |
| x11.modifiers-mask.AnyModifier | AnyModifier    | Unsigned 16-bit integer |   |
| x11.modifiers-mask.Control     | Control        | Boolean                 |   |
| x11.modifiers-mask.Lock        | Lock           | Boolean                 |   |
| x11.modifiers-mask.Mod1        | Mod1           | Boolean                 |   |
| x11.modifiers-mask.Mod2        | Mod2           | Boolean                 |   |
| x11.modifiers-mask.Mod3        | Mod3           | Boolean                 |   |
| x11.modifiers-                 | Mod4           | Boolean                 |   |

| Field                             | Field Name        | Type                    | Description   |
|-----------------------------------|-------------------|-------------------------|---|
| mask.Mod4                         |                   |                         |   |
| x11.modifiers-mask.Mod5           | Mod5              | Boolean                 |   |
| x11.modifiers-mask.Shift          | Shift             | Boolean                 |   |
| x11.modifiers-mask.erroneous-bits | erroneous-bits    | Boolean                 |   |
| x11.name                          | name              | String                  |   |
| x11.name-length                   | name-length       | Unsigned 16-bit integer |   |
| x11.odd-length                    | odd-length        | Boolean                 |   |
| x11.only-if-exists                | only-if-exists    | Boolean                 |   |
| x11.opcode                        | opcode            | Unsigned 8-bit integer  |   |
| x11.ordering                      | ordering          | Unsigned 8-bit integer  |   |
| x11.override-redirect             | override-redirect | Boolean                 | Window manager doesn't manage this window when true |
| x11.owner                         | owner             | Unsigned 32-bit integer |   |
| x11.owner-events                  | owner-events      | Boolean                 |   |
| x11.parent                        | parent            | Unsigned 32-bit integer |   |
| x11.path                          | path              | No value                |   |
| x11.path.string                   | string            | String                  |   |
| x11.pattern                       | pattern           | String                  |   |
| x11.pattern-length                | pattern-length    | Unsigned 16-bit integer |   |
| x11.percent                       | percent           | Unsigned 8-bit integer  |   |
| x11.pid                           | pid               | Unsigned 32-bit integer |   |
| x11.pixel                         | pixel             | Unsigned 32-bit integer |   |
| x11.pixels                        | pixels            | No value                |   |

Appendix A. *Ethereal Display Filter Fields*

| Field                                | Field Name         | Type                    | Description |
|--------------------------------------|--------------------|-------------------------|-------------|
| x11.pixels_item                      | pixels_item        | Unsigned 32-bit integer |             |
| x11.pixmap                           | pixmap             | Unsigned 32-bit integer |             |
| x11.plane-mask                       | plane-mask         | Unsigned 32-bit integer |             |
| x11.planes                           | planes             | Unsigned 16-bit integer |             |
| x11.point                            | point              | No value                |             |
| x11.point-x                          | point-x            | Signed 16-bit integer   |             |
| x11.point-y                          | point-y            | Signed 16-bit integer   |             |
| x11.pointer-event-mask               | pointer-event-mask | Unsigned 16-bit integer |             |
| x11.pointer-event-mask.Button1Motion | Button1Motion      | Boolean                 |             |
| x11.pointer-event-mask.Button2Motion | Button2Motion      | Boolean                 |             |
| x11.pointer-event-mask.Button3Motion | Button3Motion      | Boolean                 |             |
| x11.pointer-event-mask.Button4Motion | Button4Motion      | Boolean                 |             |
| x11.pointer-event-mask.Button5Motion | Button5Motion      | Boolean                 |             |
| x11.pointer-event-mask.ButtonMotion  | ButtonMotion       | Boolean                 |             |
| x11.pointer-event-mask.ButtonPress   | ButtonPress        | Boolean                 |             |
| x11.pointer-event-mask.ButtonRelease | ButtonRelease      | Boolean                 |             |
| x11.pointer-event-mask.EnterWindow   | EnterWindow        | Boolean                 |             |



| Field                                    | Field Name             | Type                    | Description |
|--|------------------------|-------------------------|-------------|
| x11.pointer-event-mask.KeymapState       | KeymapState            | Boolean                 |             |
| x11.pointer-event-mask.LeaveWindow       | LeaveWindow            | Boolean                 |             |
| x11.pointer-event-mask.PointerMotion     | PointerMotion          | Boolean                 |             |
| x11.pointer-event-mask.PointerMotionHint | PointerMotionHint      | Boolean                 |             |
| x11.pointer-event-mask.erroneous-bits    | erroneous-bits         | Boolean                 |             |
| x11.pointer-mode                         | pointer-mode           | Unsigned 8-bit integer  |             |
| x11.points                               | points                 | No value                |             |
| x11.prefer-blanking                      | prefer-blanking        | Unsigned 8-bit integer  |             |
| x11.properties                           | properties             | No value                |             |
| x11.properties.item                      | item                   | Unsigned 32-bit integer |             |
| x11.property                             | property               | Unsigned 32-bit integer |             |
| x11.property-number                      | property-number        | Unsigned 16-bit integer |             |
| x11.protocol-major-version               | protocol-major-version | Unsigned 16-bit integer |             |
| x11.protocol-minor-version               | protocol-minor-version | Unsigned 16-bit integer |             |
| x11.rectangle                            | rectangle              | No value                |             |
| x11.rectangle-height                     | rectangle-height       | Unsigned 16-bit integer |             |
| x11.rectangle-width                      | rectangle-width        | Unsigned 16-bit integer |             |
| x11.rectangle-x                          | rectangle-x            | Signed 16-bit integer   |             |
| x11.rectangle-y                          | rectangle-y            | Signed 16-bit integer   |             |

Appendix A. Ethereal Display Filter Fields

| Field                 | Field Name        | Type                    | Description    |
|-----------------------|-------------------|-------------------------|----------------|
| x11.rectangles        | rectangles        | No value                |                |
| x11.red               | red               | Unsigned 16-bit integer |                |
| x11.reds              | reds              | Unsigned 16-bit integer |                |
| x11.request           | request           | Unsigned 8-bit integer  |                |
| x11.request-length    | request-length    | Unsigned 16-bit integer | Request length |
| x11.requestor         | requestor         | Unsigned 32-bit integer |                |
| x11.resource          | resource          | Unsigned 32-bit integer |                |
| x11.revert-to         | revert-to         | Unsigned 8-bit integer  |                |
| x11.save-set-mode     | save-set-mode     | Unsigned 8-bit integer  |                |
| x11.save-under        | save-under        | Boolean                 |                |
| x11.screen-saver-mode | screen-saver-mode | Unsigned 8-bit integer  |                |
| x11.segment           | segment           | No value                |                |
| x11.segment_x1        | segment_x1        | Signed 16-bit integer   |                |
| x11.segment_x2        | segment_x2        | Signed 16-bit integer   |                |
| x11.segment_y1        | segment_y1        | Signed 16-bit integer   |                |
| x11.segment_y2        | segment_y2        | Signed 16-bit integer   |                |
| x11.segments          | segments          | No value                |                |
| x11.selection         | selection         | Unsigned 32-bit integer |                |
| x11.shape             | shape             | Unsigned 8-bit integer  |                |
| x11.sibling           | sibling           | Unsigned 32-bit integer |                |
| x11.source-char       | source-char       | Unsigned 16-bit integer |                |
| x11.source-font       | source-font       | Unsigned 32-bit         |                |

| Field                  | Field Name         | Type                    | Description |
|------------------------|--------------------|-------------------------|-------------|
|                        |                    | integer                 |             |
| x11.source-pixmap      | source-pixmap      | Unsigned 32-bit integer |             |
| x11.src-cmap           | src-cmap           | Unsigned 32-bit integer |             |
| x11.src-drawable       | src-drawable       | Unsigned 32-bit integer |             |
| x11.src-gc             | src-gc             | Unsigned 32-bit integer |             |
| x11.src-height         | src-height         | Unsigned 16-bit integer |             |
| x11.src-width          | src-width          | Unsigned 16-bit integer |             |
| x11.src-window         | src-window         | Unsigned 32-bit integer |             |
| x11.src-x              | src-x              | Signed 16-bit integer   |             |
| x11.src-y              | src-y              | Signed 16-bit integer   |             |
| x11.stack-mode         | stack-mode         | Unsigned 8-bit integer  |             |
| x11.start              | start              | Unsigned 32-bit integer |             |
| x11.stipple            | stipple            | Unsigned 32-bit integer |             |
| x11.stop               | stop               | Unsigned 32-bit integer |             |
| x11.str-number-in-path | str-number-in-path | Unsigned 16-bit integer |             |
| x11.string             | string             | String                  |             |
| x11.string-length      | string-length      | Unsigned 32-bit integer |             |
| x11.string16           | string16           | String                  |             |
| x11.string16.bytes     | bytes              | Byte array              |             |
| x11.subwindow-mode     | subwindow-mode     | Unsigned 8-bit integer  |             |
| x11.target             | target             | Unsigned 32-bit integer |             |
| x11.textitem           | textitem           | No value                |             |

| Field                              | Field Name              | Type                    | Description                |
|------------------------------------|-------------------------|-------------------------|----------------------------|
| x11.textitem.font                  | font                    | Unsigned 32-bit integer |                            |
| x11.textitem.string                | string                  | No value                |                            |
| x11.textitem.string.delta          | delta                   | Signed 8-bit integer    |                            |
| x11.textitem.string.string16       | string16                | String                  |                            |
| x11.textitem.string.string16.bytes | bytes                   | Byte array              |                            |
| x11.textitem.string.string8        | string8                 | String                  |                            |
| x11.threshold                      | threshold               | Signed 16-bit integer   |                            |
| x11.tile                           | tile                    | Unsigned 32-bit integer |                            |
| x11.tile-stipple-x-origin          | tile-stipple-x-origin   | Signed 16-bit integer   |                            |
| x11.tile-stipple-y-origin          | tile-stipple-y-origin   | Signed 16-bit integer   |                            |
| x11.time                           | time                    | Unsigned 32-bit integer |                            |
| x11.timeout                        | timeout                 | Signed 16-bit integer   |                            |
| x11.type                           | type                    | Unsigned 32-bit integer |                            |
| x11.undecoded                      | undecoded               | No value                | Yet undecoded by dissector |
| x11.unused                         | unused                  | No value                |                            |
| x11.visual                         | visual                  | Unsigned 32-bit integer |                            |
| x11.visualid                       | visualid                | Unsigned 32-bit integer |                            |
| x11.warp-pointer-dst-window        | warp-pointer-dst-window | Unsigned 32-bit integer |                            |
| x11.warp-pointer-src-window        | warp-pointer-src-window | Unsigned 32-bit integer |                            |
| x11.wid                            | wid                     | Unsigned 32-bit integer | Window id                  |
| x11.width                          | width                   | Unsigned 16-bit         |                            |

| Field                                   | Field Name        | Type                    | Description  |
|---|-------------------|-------------------------|--------------|
|   |                   | integer                 |              |
| x11.win-gravity                         | win-gravity       | Unsigned 8-bit integer  |              |
| x11.window                              | window            | Unsigned 32-bit integer |              |
| x11.window-class                        | window-class      | Unsigned 16-bit integer | Window class |
| x11.window-value-mask                   | window-value-mask | Unsigned 32-bit integer |              |
| x11.window-value-mask.background-pixel  | background-pixel  | Boolean                 |              |
| x11.window-value-mask.background-pixmap | background-pixmap | Boolean                 |              |
| x11.window-value-mask.backing-pixel     | backing-pixel     | Boolean                 |              |
| x11.window-value-mask.backing-planes    | backing-planes    | Boolean                 |              |
| x11.window-value-mask.backing-store     | backing-store     | Boolean                 |              |
| x11.window-value-mask.bit-gravity       | bit-gravity       | Boolean                 |              |
| x11.window-value-mask.border-pixel      | border-pixel      | Boolean                 |              |
| x11.window-value-mask.border-pixmap     | border-pixmap     | Boolean                 |              |
| x11.window-value-mask.colormap          | colormap          | Boolean                 |              |
| x11.window-                             | cursor            | Boolean                 |              |

| Field                                       | Field Name            | Type                  | Description |
|---|-----------------------|-----------------------|-------------|
| value-mask.cursor                           |                       |                       |             |
| x11.window-value-mask.do-not-propagate-mask | do-not-propagate-mask | Boolean               |             |
| x11.window-value-mask.event-mask            | event-mask            | Boolean               |             |
| x11.window-value-mask.override-redirect     | override-redirect     | Boolean               |             |
| x11.window-value-mask.save-under            | save-under            | Boolean               |             |
| x11.window-value-mask.win-gravity           | win-gravity           | Boolean               |             |
| x11.x                                       | x                     | Signed 16-bit integer |             |
| x11.y                                       | y                     | Signed 16-bit integer |             |

### Xyplex (xyplex)

Table A-390. Xyplex (xyplex)

| Field              | Field Name         | Type                    | Description        |
|--------------------|--------------------|-------------------------|--------------------|
| xyplex.pad         | Pad                | Unsigned 8-bit integer  | Padding            |
| xyplex.reply       | Registration Reply | Unsigned 16-bit integer | Registration reply |
| xyplex.reserved    | Reserved field     | Unsigned 16-bit integer | Reserved field     |
| xyplex.return_port | Return Port        | Unsigned 16-bit integer | Return port        |
| xyplex.server_port | Server Port        | Unsigned 16-bit integer | Server port        |
| xyplex.type        | Type               | Unsigned 8-bit integer  | Protocol type      |

### Yahoo Messenger Protocol (yhoo)

**Table A-391. Yahoo Messenger Protocol (yhoo)**

| Field              | Field Name          | Type                    | Description                |
|--------------------|---------------------|-------------------------|----------------------------|
| yhoo.connection_id | Connection ID       | Unsigned 32-bit integer | Connection ID              |
| yhoo.content       | Content             | String                  | Data portion of the packet |
| yhoo.len           | Packet Length       | Unsigned 32-bit integer | Packet Length              |
| yhoo.magic_id      | Magic ID            | Unsigned 32-bit integer | Magic ID                   |
| yhoo.msgtype       | Message Type        | Unsigned 32-bit integer | Message Type Flags         |
| yhoo.nick1         | Real Nick (nick1)   | String                  | Real Nick (nick1)          |
| yhoo.nick2         | Active Nick (nick2) | String                  | Active Nick (nick2)        |
| yhoo.service       | Service Type        | Unsigned 32-bit integer | Service Type               |
| yhoo.unknown1      | Unknown 1           | Unsigned 32-bit integer | Unknown 1                  |
| yhoo.version       | Version             | String                  | Packet version identifier  |

**Yahoo YMSG Messenger Protocol (ymsg)****Table A-392. Yahoo YMSG Messenger Protocol (ymsg)**

| Field           | Field Name    | Type                    | Description                |
|-----------------|---------------|-------------------------|----------------------------|
| ymsg.content    | Content       | String                  | Data portion of the packet |
| ymsg.len        | Packet Length | Unsigned 16-bit integer | Packet Length              |
| ymsg.service    | Service       | Unsigned 16-bit integer | Service Type               |
| ymsg.session_id | Session ID    | Unsigned 32-bit integer | Connection ID              |
| ymsg.status     | Status        | Unsigned 32-bit integer | Message Type Flags         |
| ymsg.version    | Version       | Unsigned 32-bit integer | Packet version identifier  |

**Yellow Pages Bind (ypbind)****Table A-393. Yellow Pages Bind (ypbind)**

| Field | Field Name | Type | Description |
|-------|------------|------|-------------|
|-------|------------|------|-------------|

| Field                   | Field Name    | Type                    | Description               |
|-------------------------|---------------|-------------------------|---------------------------|
| yplibind.addr           | IP Addr       | IPv4 address            | IP Address of server      |
| yplibind.domain         | Domain        | String                  | Name of the NIS/YP Domain |
| yplibind.error          | Error         | Unsigned 32-bit integer | YPBIND Error code         |
| yplibind.port           | Port          | Unsigned 32-bit integer | Port to use               |
| yplibind.procedure_v1   | V1 Procedure  | Unsigned 32-bit integer | V1 Procedure              |
| yplibind.procedure_v2   | V2 Procedure  | Unsigned 32-bit integer | V2 Procedure              |
| yplibind.resp_type      | Response Type | Unsigned 32-bit integer | Response type             |
| yplibind.setdom.version | Version       | Unsigned 32-bit integer | Version of setdom         |

### Yellow Pages Passwd (yppasswd)

Table A-394. Yellow Pages Passwd (yppasswd)

| Field                 | Field Name   | Type                    | Description            |
|-----------------------|--------------|-------------------------|------------------------|
| yppasswd.newpw        | newpw        | No value                | New passwd entry       |
| yppasswd.newpw.dir    | dir          | String                  | Home Directory         |
| yppasswd.newpw.gecos  | gecos        | String                  | In real life name      |
| yppasswd.newpw.gid    | gid          | Unsigned 32-bit integer | GroupID                |
| yppasswd.newpw.name   | name         | String                  | Username               |
| yppasswd.newpw.passwd | passwd       | String                  | Encrypted passwd       |
| yppasswd.newpw.shell  | shell        | String                  | Default shell          |
| yppasswd.newpw.uid    | uid          | Unsigned 32-bit integer | UserID                 |
| yppasswd.oldpass      | oldpass      | String                  | Old encrypted password |
| yppasswd.procedure_v1 | V1 Procedure | Unsigned 32-bit integer | V1 Procedure           |



| Field           | Field Name | Type                    | Description            |
|-----------------|------------|-------------------------|------------------------|
| yppasswd.status | status     | Unsigned 32-bit integer | YPPasswd update status |

## Yellow Pages Service (ypserv)

Table A-395. Yellow Pages Service (ypserv)

| Field               | Field Name        | Type                    | Description                               |
|---------------------|-------------------|-------------------------|---|
| ypserv.domain       | Domain            | String                  | Domain                                    |
| ypserv.key          | Key               | String                  | Key                                       |
| ypserv.map          | Map Name          | String                  | Map Name                                  |
| ypserv.map_params   | YP Map Parameters | No value                | YP Map Parameters                         |
| ypserv.more         | More              | Boolean                 | More                                      |
| ypserv.ordernum     | Order Number      | Unsigned 32-bit integer | Order Number for XFR                      |
| ypserv.peer         | Peer Name         | String                  | Peer Name                                 |
| ypserv.port         | Port              | Unsigned 32-bit integer | Port to use for XFR Callback              |
| ypserv.procedure_v1 | V1 Procedure      | Unsigned 32-bit integer | V1 Procedure                              |
| ypserv.procedure_v2 | V2 Procedure      | Unsigned 32-bit integer | V2 Procedure                              |
| ypserv.prog         | Program Number    | Unsigned 32-bit integer | Program Number to use for XFR Callback    |
| ypserv.servesdomain | Serves Domain     | Boolean                 | Serves Domain                             |
| ypserv.status       | Status            | Signed 32-bit integer   | Status                                    |
| ypserv.transid      | Host Transport ID | IPv4 address            | Host Transport ID to use for XFR Callback |
| ypserv.value        | Value             | String                  | Value                                     |
| ypserv.xfrstat      | Xfrstat           | Signed 32-bit integer   | Xfrstat                                   |

## Yellow Pages Transfer (ypxfr)

Table A-396. Yellow Pages Transfer (ypxfr)

| Field             | Field Name   | Type            | Description  |
|-------------------|--------------|-----------------|--------------|
| ypxfr.procedure_v | V1 Procedure | Unsigned 32-bit | V1 Procedure |

| Field | Field Name | Type    | Description |
|-------|------------|---------|-------------|
| 1     |            | integer |             |

## Zebra Protocol (zebra)

Table A-397. Zebra Protocol (zebra)

| Field                  | Field Name       | Type                    | Description                     |
|------------------------|------------------|-------------------------|---------------------------------|
| zebra.bandwidth        | Bandwidth        | Unsigned 32-bit integer | Bandwidth of interface          |
| zebra.command          | Command          | Unsigned 8-bit integer  | ZEBRA command                   |
| zebra.dest4            | Destination      | IPv4 address            | Destination IPv4 field          |
| zebra.dest6            | Destination      | IPv6 address            | Destination IPv6 field          |
| zebra.distance         | Distance         | Unsigned 8-bit integer  | Distance of route               |
| zebra.family           | Family           | Unsigned 32-bit integer | Family of IP address            |
| zebra.index            | Index            | Unsigned 32-bit integer | Index of interface              |
| zebra.indexnum         | Index Number     | Unsigned 8-bit integer  | Number of indices for route     |
| zebra.interface        | Interface        | String                  | Interface name of ZEBRA request |
| zebra.intflags         | Flags            | Unsigned 32-bit integer | Flags of interface              |
| zebra.len              | Length           | Unsigned 16-bit integer | Length of ZEBRA request         |
| zebra.message          | Message          | Unsigned 8-bit integer  | Message type of route           |
| zebra.message.distance | Message Distance | Boolean                 | Message contains distance       |
| zebra.message.index    | Message Index    | Boolean                 | Message contains index          |
| zebra.message.metric   | Message Metric   | Boolean                 | Message contains metric         |
| zebra.message.nexthop  | Message Nexthop  | Boolean                 | Message contains nexthop        |
| zebra.metric           | Metric           | Unsigned 32-bit integer | Metric of interface or route    |
| zebra.mtu              | MTU              | Unsigned 32-bit integer | MTU of interface                |

| Field            | Field Name     | Type                    | Description                 |
|------------------|----------------|-------------------------|-----------------------------|
|                  |                | integer                 |                             |
| zebra.nexthop4   | Nexthop        | IPv4 address            | Nexthop IPv4 field of route |
| zebra.nexthop6   | Nexthop        | IPv6 address            | Nexthop IPv6 field of route |
| zebra.nexthopnum | Nexthop Number | Unsigned 8-bit integer  | Number of nexthops in route |
| zebra.prefix4    | Prefix         | IPv4 address            | Prefix IPv4                 |
| zebra.prefix6    | Prefix         | IPv6 address            | Prefix IPv6                 |
| zebra.prefixlen  | Prefix length  | Unsigned 32-bit integer | Prefix length               |
| zebra.request    | Request        | Boolean                 | TRUE if ZEBRA request       |
| zebra.rtfags     | Flags          | Unsigned 8-bit integer  | Flags of route              |
| zebra.type       | Type           | Unsigned 8-bit integer  | Type of route               |

### Zone Information Protocol (zip)

Table A-398. Zone Information Protocol (zip)

| Field                   | Field Name    | Type                    | Description  |
|-------------------------|---------------|-------------------------|--|
| zip.atp_function        | Function      | Unsigned 8-bit integer  |  |
| zip.count               | Count         | Unsigned 16-bit integer |  |
| zip.default_zone        | Default zone  | String                  |  |
| zip.flags               | Flags         | Boolean                 |  |
| zip.flags.only_one_zone | Only one zone | Boolean                 |  |
| zip.flags.use_broadcast | Use broadcast | Boolean                 |  |
| zip.flags.zone_invalid  | Zone invalid  | Boolean                 |  |
| zip.function            | Function      | Unsigned 8-bit integer  | ZIP function   |
| zip.last_flag           | Last Flag     | Boolean                 | Non zero if contains last zone name in the zone list |

| Field                 | Field Name        | Type                    | Description              |
|-----------------------|-------------------|-------------------------|--------------------------|
| zip.multicast_address | Multicast address | Byte array              | Multicast address        |
| zip.multicast_length  | Multicast length  | Unsigned 8-bit integer  | Multicast address length |
| zip.network           | Network           | Unsigned 16-bit integer |                          |
| zip.network_count     | Count             | Unsigned 8-bit integer  |                          |
| zip.network_end       | Network end       | Unsigned 16-bit integer |                          |
| zip.network_start     | Network start     | Unsigned 16-bit integer |                          |
| zip.start_index       | Start index       | Unsigned 16-bit integer |                          |
| zip.zero_value        | Pad (0)           | Byte array              | Pad                      |
| zip.zone_name         | Zone              | String                  |                          |

## iSCSI (iscsi)

Table A-399. iSCSI (iscsi)

| Field                   | Field Name        | Type                    | Description                      |
|-------------------------|-------------------|-------------------------|----------------------------------|
| iscsi.I                 | I                 | Boolean                 | Immediate delivery               |
| iscsi.X                 | X                 | Boolean                 | Command Retry                    |
| iscsi.ahs               | AHS               | Byte array              | Additional header segment        |
| iscsi.asyncEvent        | AsyncEvent        | Unsigned 8-bit integer  | Async event type                 |
| iscsi.asyncmessageData  | AsyncMessageData  | Byte array              | Async Message Data               |
| iscsi.bufferOffset      | BufferOffset      | Unsigned 32-bit integer | Buffer offset                    |
| iscsi.cid               | CID               | Unsigned 16-bit integer | Connection identifier            |
| iscsi.cmdsn             | CmdSN             | Unsigned 32-bit integer | Sequence number for this command |
| iscsi.dataDigest        | DataDigest        | Byte array              | Data Digest                      |
| iscsi.dataDigest32      | DataDigest        | Unsigned 32-bit integer | Data Digest                      |
| iscsi.dataSegmentLength | DataSegmentLength | Unsigned 32-bit         | Data segment                     |

| Field                 | Field Name        | Type                    | Description                              |
|-----------------------|-------------------|-------------------------|--|
| ength                 | h                 | integer                 | length (bytes)                           |
| iscsi.datasn          | DataSN            | Unsigned 32-bit integer | Data sequence number                     |
| iscsi.desiredlength   | DesiredDataLength | Unsigned 32-bit integer | Desired data length (bytes)              |
| iscsi.errorpdudata    | ErrorPDUData      | Byte array              | Error PDU Data                           |
| iscsi.eventvendorcode | EventVendorCode   | Unsigned 8-bit integer  | Event vendor code                        |
| iscsi.expcmdsn        | ExpCmdSN          | Unsigned 32-bit integer | Next expected command sequence number    |
| iscsi.expdatasn       | ExpDataSN         | Unsigned 32-bit integer | Next expected data sequence number       |
| iscsi.expstatsn       | ExpStatSN         | Unsigned 32-bit integer | Next expected status sequence number     |
| iscsi.flags           | Flags             | Unsigned 8-bit integer  | Opcode specific flags                    |
| iscsi.headerdigest    | HeaderDigest      | Byte array              | Header Digest                            |
| iscsi.headerdigest32  | HeaderDigest      | Unsigned 32-bit integer | Header Digest                            |
| iscsi.immediatedata   | ImmediateData     | Byte array              | Immediate Data                           |
| iscsi.initcmdsn       | InitCmdSN         | Unsigned 32-bit integer | Initial command sequence number          |
| iscsi.initiatorstag   | InitiatorTaskTag  | Unsigned 32-bit integer | Initiator's task tag                     |
| iscsi.initstatsn      | InitStatSN        | Unsigned 32-bit integer | Initial status sequence number           |
| iscsi.isid            | ISID              | Unsigned 16-bit integer | Initiator part of session identifier     |
| iscsi.isid.a          | ISID_a            | Unsigned 8-bit integer  | Initiator part of session identifier - a |
| iscsi.isid.b          | ISID_b            | Unsigned 16-bit integer | Initiator part of session identifier - b |
| iscsi.isid.c          | ISID_c            | Unsigned 8-bit integer  | Initiator part of session identifier - c |

| Field                      | Field Name           | Type                    | Description   |
|----------------------------|----------------------|-------------------------|---|
| iscsi.isid.d               | ISID_d               | Unsigned 16-bit integer | Initiator part of session identifier - d                |
| iscsi.isid.namingauthority | ISID_NamingAuthority | Unsigned 24-bit integer | Initiator part of session identifier - naming authority |
| iscsi.isid.qualifier       | ISID_Qualifier       | Unsigned 8-bit integer  | Initiator part of session identifier - qualifier        |
| iscsi.isid.t               | ISID_t               | Unsigned 8-bit integer  | Initiator part of session identifier - t                |
| iscsi.isid.type            | ISID_Type            | Unsigned 8-bit integer  | Initiator part of session identifier - type             |
| iscsi.keyvalue             | KeyValue             | String                  | Key/value pair  |
| iscsi.login.C              | C                    | Boolean                 | Text incomplete   |
| iscsi.login.T              | T                    | Boolean                 | Transit to next login stage                             |
| iscsi.login.X              | X                    | Boolean                 | Restart Connection                                      |
| iscsi.login.csg            | CSG                  | Unsigned 8-bit integer  | Current stage   |
| iscsi.login.nsg            | NSG                  | Unsigned 8-bit integer  | Next stage  |
| iscsi.login.status         | Status               | Unsigned 16-bit integer | Status class and detail                                 |
| iscsi.logout.reason        | Reason               | Unsigned 8-bit integer  | Reason for logout                                       |
| iscsi.logout.response      | Response             | Unsigned 8-bit integer  | Logout response   |
| iscsi.lun                  | LUN                  | Byte array              | Logical Unit Number                                     |
| iscsi.maxcmdsn             | MaxCmdSN             | Unsigned 32-bit integer | Maximum acceptable command sequence number              |
| iscsi.opcode               | Opcode               | Unsigned 8-bit integer  | Opcode  |
| iscsi.padding              | Padding              | Byte array              | Padding to 4 byte boundary                              |

| Field  | Field Name                 | Type                    | Description                                       |
|--|----------------------------|-------------------------|---|
| iscsi.parameter1                             | Parameter1                 | Unsigned 16-bit integer | Parameter 1                                       |
| iscsi.parameter2                             | Parameter2                 | Unsigned 16-bit integer | Parameter 2                                       |
| iscsi.parameter3                             | Parameter3                 | Unsigned 16-bit integer | Parameter 3                                       |
| iscsi.pingdata                               | PingData                   | Byte array              | Ping Data   |
| iscsi.r2tsn                                  | R2TSN                      | Unsigned 32-bit integer | R2T PDU Number                                    |
| iscsi.readdata                               | ReadData                   | Byte array              | Read Data   |
| iscsi.refcmdsn                               | RefCmdSN                   | Unsigned 32-bit integer | Command sequence number for command to be aborted |
| iscsi.reject.reason                          | Reason                     | Unsigned 8-bit integer  | Reason for command rejection                      |
| iscsi.scsicommand.F                          | F                          | Boolean                 | PDU completes command                             |
| iscsi.scsicommand.R                          | R                          | Boolean                 | Command reads from SCSI target                    |
| iscsi.scsicommand.W                          | W                          | Boolean                 | Command writes to SCSI target                     |
| iscsi.scsicommand.addcdb                     | AddCDB                     | Unsigned 8-bit integer  | Additional CDB length (in 4 byte units)           |
| iscsi.scsicommand.attr                       | Attr                       | Unsigned 8-bit integer  | SCSI task attributes                              |
| iscsi.scsicommand.crn                        | CRN                        | Unsigned 8-bit integer  | SCSI command reference number                     |
| iscsi.scsicommand.expecteddatatransferlength | ExpectedDataTransferLength | Unsigned 32-bit integer | Expected length of data transfer                  |
| iscsi.scsidata.A                             | A                          | Boolean                 | Acknowledge Requested                             |
| iscsi.scsidata.F                             | F                          | Boolean                 | Final PDU   |
| iscsi.scsidata.O                             | O                          | Boolean                 | Residual overflow                                 |
| iscsi.scsidata.S                             | S                          | Boolean                 | PDU Contains SCSI command status                  |
| iscsi.scsidata.U                             | U                          | Boolean                 | Residual  |

| Field                                    | Field Name            | Type                    | Description  |
|--|-----------------------|-------------------------|--|
|  |                       |                         | underflow  |
| iscsi.scsidata.readresidualcount         | ResidualCount         | Unsigned 32-bit integer | Residual count                                       |
| iscsi.scsiresponse.O                     | O                     | Boolean                 | Residual overflow                                    |
| iscsi.scsiresponse.U                     | U                     | Boolean                 | Residual underflow                                   |
| iscsi.scsiresponse.bidireadresidualcount | BidiReadResidualCount | Unsigned 32-bit integer | Bi-directional read residual count                   |
| iscsi.scsiresponse.o                     | o                     | Boolean                 | Bi-directional read residual overflow                |
| iscsi.scsiresponse.readresidualcount     | ResidualCount         | Unsigned 32-bit integer | Residual count                                       |
| iscsi.scsiresponse.response              | Response              | Unsigned 8-bit integer  | SCSI command response value                          |
| iscsi.scsiresponse.senselength           | SenseLength           | Unsigned 16-bit integer | Sense data length                                    |
| iscsi.scsiresponse.status                | Status                | Unsigned 8-bit integer  | SCSI command status value                            |
| iscsi.scsiresponse.u                     | u                     | Boolean                 | Bi-directional read residual underflow               |
| iscsi.snack.begrun                       | BegRun                | Unsigned 32-bit integer | First missed DataSN or StatSN                        |
| iscsi.snack.runlength                    | RunLength             | Unsigned 32-bit integer | Number of additional missing status PDUs in this run |
| iscsi.snack.type                         | S                     | Unsigned 8-bit integer  | Type of SNACK requested                              |
| iscsi.statsn                             | StatSN                | Unsigned 32-bit integer | Status sequence number                               |
| iscsi.targettransfer tag                 | TargetTransferTag     | Unsigned 32-bit integer | Target transfer tag                                  |
| iscsi.taskmanfunction                    | Function              | Unsigned 8-bit integer  | Requested task function                              |
| iscsi.taskmanfunction.referencedtasktag  | ReferencedTaskTag     | Unsigned 32-bit integer | Referenced task tag                                  |
| iscsi.taskmanfunction.response           | Response              | Unsigned 8-bit integer  | Response   |



| Field                    | Field Name         | Type                    | Description   |
|--------------------------|--------------------|-------------------------|---|
| iscsi.text.C             | C                  | Boolean                 | Text incomplete                                       |
| iscsi.text.F             | F                  | Boolean                 | Final PDU in text sequence                            |
| iscsi.time2retain        | Time2Retain        | Unsigned 16-bit integer | Time2Retain   |
| iscsi.time2wait          | Time2Wait          | Unsigned 16-bit integer | Time2Wait   |
| iscsi.totalahslength     | TotalAHSLength     | Unsigned 8-bit integer  | Total additional header segment length (4 byte words) |
| iscsi.tsid               | TSID               | Unsigned 16-bit integer | Target part of session identifier                     |
| iscsi.tsih               | TSIH               | Unsigned 16-bit integer | Target session identifying handle                     |
| iscsi.vendorspecificdata | VendorSpecificData | Byte array              | Vendor Specific Data                                  |
| iscsi.versionactive      | VersionActive      | Unsigned 8-bit integer  | Negotiated protocol version                           |
| iscsi.versionmax         | VersionMax         | Unsigned 8-bit integer  | Maximum supported protocol version                    |
| iscsi.versionmin         | VersionMin         | Unsigned 8-bit integer  | Minimum supported protocol version                    |
| iscsi.writedata          | WriteData          | Byte array              | Write Data  |

## Appendix B. Ethereal Error Messages

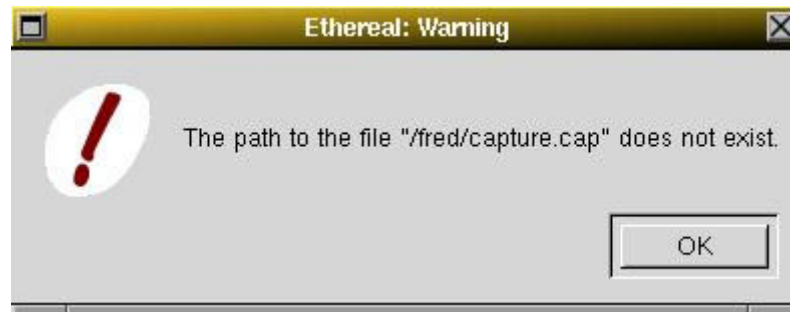
### Capture file format not understood

If `Ethereal` cannot decode the capture file format of the file you have asked it to load, you will receive a warning box similar to that shown in Figure B-1.

Figure B-1. Ethereal Read Format warning

### Save file error

If `Ethereal` cannot open the file you requested it to save captured packets in, you will receive a warning box similar to that shown in Figure B-2.



## Appendix C. The GNU Free Document Public Licence

### Copyright

Version 1.1, March 2000

Copyright (C) 2000 Free Software Foundation, Inc. 59 Temple Place, Suite 330, Boston, MA 02111-1307 USA Everyone is permitted to copy and distribute verbatim copies of this license document, but changing it is not allowed.

### Preamble

The purpose of this License is to make a manual, textbook, or other written document "free" in the sense of freedom: to assure everyone the effective freedom to copy and redistribute it, with or without modifying it, either commercially or noncommercially. Secondly, this License preserves for the author and publisher a way to get credit for their work, while not being considered responsible for modifications made by others.

This License is a kind of "copyleft", which means that derivative works of the document must themselves be free in the same sense. It complements the GNU General Public License, which is a copyleft license designed for free software.

We have designed this License in order to use it for manuals for free software, because free software needs free documentation: a free program should come with manuals providing the same freedoms that the software does. But this License is not limited to software manuals; it can be used for any textual work, regardless of subject matter or whether it is published as a printed book. We recommend this License principally for works whose purpose is instruction or reference.

### Applicability and Definitions

This License applies to any manual or other work that contains a notice placed by the copyright holder saying it can be distributed under the terms of this License. The "Document", below, refers to any such manual or work. Any member of the public is a licensee, and is addressed as "you".

A "Modified Version" of the Document means any work containing the Document or a portion of it, either copied verbatim, or with modifications and/or translated into another language.

A "Secondary Section" is a named appendix or a front-matter section of the Document that deals exclusively with the relationship of the publishers or authors of the Document to the Document's overall subject (or to related matters) and contains nothing that could fall directly within that overall subject. (For example, if the Document is in part a textbook of mathematics, a Secondary Section may not explain any mathematics.) The relationship could be a matter of historical connection with the subject or with related matters, or of legal, commercial, philosophical, ethical or political position regarding them.

The "Invariant Sections" are certain Secondary Sections whose titles are designated, as being those of Invariant Sections, in the notice that says that the Document is released under this License.

The "Cover Texts" are certain short passages of text that are listed, as Front-Cover Texts or Back-Cover Texts, in the notice that says that the Document is released under this License.

A "Transparent" copy of the Document means a machine-readable copy, represented in a format whose specification is available to the general public, whose

contents can be viewed and edited directly and straightforwardly with generic text editors or (for images composed of pixels) generic paint programs or (for drawings) some widely available drawing editor, and that is suitable for input to text formatters or for automatic translation to a variety of formats suitable for input to text formatters. A copy made in an otherwise Transparent file format whose markup has been designed to thwart or discourage subsequent modification by readers is not Transparent. A copy that is not "Transparent" is called "Opaque".

Examples of suitable formats for Transparent copies include plain ASCII without markup, Texinfo input format, LaTeX input format, SGML or XML using a publicly available DTD, and standard-conforming simple HTML designed for human modification. Opaque formats include PostScript, PDF, proprietary formats that can be read and edited only by proprietary word processors, SGML or XML for which the DTD and/or processing tools are not generally available, and the machine-generated HTML produced by some word processors for output purposes only.

The "Title Page" means, for a printed book, the title page itself, plus such following pages as are needed to hold, legibly, the material this License requires to appear in the title page. For works in formats which do not have any title page as such, "Title Page" means the text near the most prominent appearance of the work's title, preceding the beginning of the body of the text.

## **Verbatim Copying**

You may copy and distribute the Document in any medium, either commercially or noncommercially, provided that this License, the copyright notices, and the license notice saying this License applies to the Document are reproduced in all copies, and that you add no other conditions whatsoever to those of this License. You may not use technical measures to obstruct or control the reading or further copying of the copies you make or distribute. However, you may accept compensation in exchange for copies. If you distribute a large enough number of copies you must also follow the conditions in section 3.

You may also lend copies, under the same conditions stated above, and you may publicly display copies.

## **Copying in Quantity**

If you publish printed copies of the Document numbering more than 100, and the Document's license notice requires Cover Texts, you must enclose the copies in covers that carry, clearly and legibly, all these Cover Texts: Front-Cover Texts on the front cover, and Back-Cover Texts on the back cover. Both covers must also clearly and legibly identify you as the publisher of these copies. The front cover must present the full title with all words of the title equally prominent and visible. You may add other material on the covers in addition. Copying with changes limited to the covers, as long as they preserve the title of the Document and satisfy these conditions, can be treated as verbatim copying in other respects.

If the required texts for either cover are too voluminous to fit legibly, you should put the first ones listed (as many as fit reasonably) on the actual cover, and continue the rest onto adjacent pages.

If you publish or distribute Opaque copies of the Document numbering more than 100, you must either include a machine-readable Transparent copy along with each Opaque copy, or state in or with each Opaque copy a publicly-accessible computer-network location containing a complete Transparent copy of the Document, free of added material, which the general network-using public has access to download anonymously at no charge using public-standard network protocols. If you use the

latter option, you must take reasonably prudent steps, when you begin distribution of Opaque copies in quantity, to ensure that this Transparent copy will remain thus accessible at the stated location until at least one year after the last time you distribute an Opaque copy (directly or through your agents or retailers) of that edition to the public.

It is requested, but not required, that you contact the authors of the Document well before redistributing any large number of copies, to give them a chance to provide you with an updated version of the Document.

## Modifications

You may copy and distribute a Modified Version of the Document under the conditions of sections 2 and 3 above, provided that you release the Modified Version under precisely this License, with the Modified Version filling the role of the Document, thus licensing distribution and modification of the Modified Version to whoever possesses a copy of it. In addition, you must do these things in the Modified Version:

- Use in the Title Page (and on the covers, if any) a title distinct from that of the Document, and from those of previous versions (which should, if there were any, be listed in the History section of the Document). You may use the same title as a previous version if the original publisher of that version gives permission.
- List on the Title Page, as authors, one or more persons or entities responsible for authorship of the modifications in the Modified Version, together with at least five of the principal authors of the Document (all of its principal authors, if it has less than five).
- State on the Title page the name of the publisher of the Modified Version, as the publisher.
- Preserve all the copyright notices of the Document.
- Add an appropriate copyright notice for your modifications adjacent to the other copyright notices.
- Include, immediately after the copyright notices, a license notice giving the public permission to use the Modified Version under the terms of this License, in the form shown in the Addendum below.
- Preserve in that license notice the full lists of Invariant Sections and required Cover Texts given in the Document's license notice.
- Include an unaltered copy of this License.
- Preserve the section entitled "History", and its title, and add to it an item stating at least the title, year, new authors, and publisher of the Modified Version as given on the Title Page. If there is no section entitled "History" in the Document, create one stating the title, year, authors, and publisher of the Document as given on its Title Page, then add an item describing the Modified Version as stated in the previous sentence.
- Preserve the network location, if any, given in the Document for public access to a Transparent copy of the Document, and likewise the network locations given in the Document for previous versions it was based on. These may be placed in the "History" section. You may omit a network location for a work that was published at least four years before the Document itself, or if the original publisher of the version it refers to gives permission.

- In any section entitled "Acknowledgements" or "Dedications", preserve the section's title, and preserve in the section all the substance and tone of each of the contributor acknowledgements and/or dedications given therein.
- Preserve all the Invariant Sections of the Document, unaltered in their text and in their titles. Section numbers or the equivalent are not considered part of the section titles.
- Delete any section entitled "Endorsements". Such a section may not be included in the Modified Version.
- Do not retitle any existing section as "Endorsements" or to conflict in title with any Invariant Section.

If the Modified Version includes new front-matter sections or appendices that qualify as Secondary Sections and contain no material copied from the Document, you may at your option designate some or all of these sections as invariant. To do this, add their titles to the list of Invariant Sections in the Modified Version's license notice. These titles must be distinct from any other section titles.

You may add a section entitled "Endorsements", provided it contains nothing but endorsements of your Modified Version by various parties—for example, statements of peer review or that the text has been approved by an organization as the authoritative definition of a standard.

You may add a passage of up to five words as a Front-Cover Text, and a passage of up to 25 words as a Back-Cover Text, to the end of the list of Cover Texts in the Modified Version. Only one passage of Front-Cover Text and one of Back-Cover Text may be added by (or through arrangements made by) any one entity. If the Document already includes a cover text for the same cover, previously added by you or by arrangement made by the same entity you are acting on behalf of, you may not add another; but you may replace the old one, on explicit permission from the previous publisher that added the old one.

The author(s) and publisher(s) of the Document do not by this License give permission to use their names for publicity for or to assert or imply endorsement of any Modified Version.

## Combining Documents

You may combine the Document with other documents released under this License, under the terms defined in section 4 above for modified versions, provided that you include in the combination all of the Invariant Sections of all of the original documents, unmodified, and list them all as Invariant Sections of your combined work in its license notice.

The combined work need only contain one copy of this License, and multiple identical Invariant Sections may be replaced with a single copy. If there are multiple Invariant Sections with the same name but different contents, make the title of each such section unique by adding at the end of it, in parentheses, the name of the original author or publisher of that section if known, or else a unique number. Make the same adjustment to the section titles in the list of Invariant Sections in the license notice of the combined work.

In the combination, you must combine any sections entitled "History" in the various original documents, forming one section entitled "History"; likewise combine any sections entitled "Acknowledgements", and any sections entitled "Dedications". You must delete all sections entitled "Endorsements."

## Collections of Documents

You may make a collection consisting of the Document and other documents released under this License, and replace the individual copies of this License in the various documents with a single copy that is included in the collection, provided that you follow the rules of this License for verbatim copying of each of the documents in all other respects.

You may extract a single document from such a collection, and distribute it individually under this License, provided you insert a copy of this License into the extracted document, and follow this License in all other respects regarding verbatim copying of that document.

## Aggregation with Independent Works

A compilation of the Document or its derivatives with other separate and independent documents or works, in or on a volume of a storage or distribution medium, does not as a whole count as a Modified Version of the Document, provided no compilation copyright is claimed for the compilation. Such a compilation is called an "aggregate", and this License does not apply to the other self-contained works thus compiled with the Document, on account of their being thus compiled, if they are not themselves derivative works of the Document.

If the Cover Text requirement of section 3 is applicable to these copies of the Document, then if the Document is less than one quarter of the entire aggregate, the Document's Cover Texts may be placed on covers that surround only the Document within the aggregate. Otherwise they must appear on covers around the whole aggregate.

## Translation

Translation is considered a kind of modification, so you may distribute translations of the Document under the terms of section 4. Replacing Invariant Sections with translations requires special permission from their copyright holders, but you may include translations of some or all Invariant Sections in addition to the original versions of these Invariant Sections. You may include a translation of this License provided that you also include the original English version of this License. In case of a disagreement between the translation and the original English version of this License, the original English version will prevail.

## Termination

You may not copy, modify, sublicense, or distribute the Document except as expressly provided for under this License. Any other attempt to copy, modify, sublicense or distribute the Document is void, and will automatically terminate your rights under this License. However, parties who have received copies, or rights, from you under this License will not have their licenses terminated so long as such parties remain in full compliance.

## Future Revisions of this License

The Free Software Foundation may publish new, revised versions of the GNU Free Documentation License from time to time. Such new versions will be similar in spirit to the present version, but may differ in detail to address new problems or concerns. See <http://www.gnu.org/copyleft/>.

Each version of the License is given a distinguishing version number. If the Document specifies that a particular numbered version of this License "or any later version" applies to it, you have the option of following the terms and conditions either of that specified version or of any later version that has been published (not

as a draft) by the Free Software Foundation. If the Document does not specify a version number of this License, you may choose any version ever published (not as a draft) by the Free Software Foundation.