                      Internet Official Protocol Standards

Status of this Memo

Copyright Notice

Abstract

   This memo describes the current state of standardization of protocols
   used in the Internet as determined by the Internet Engineering Task
   Force (IETF). Sections 3.1 - 3.6 contain the lists of protocols in
   each stage of standardization - Standard, Draft Standard, Proposed
   Standard, Experimental and Historic. Protocols that are new to this
   document or have been moved from one protocol level to another, or
   differ from the previous edition of this document are marked.
   Informational Request for Comments (RFCs) are not included. This
   memo lists the current protocols; it is not a complete index to RFCs.

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1. Overview

   This memo describes the current state of standardization of protocols
   used in the Internet as determined by the Internet Engineering Task
   Force (IETF). Sections 3.1 - 3.6 contain the lists of protocols in
   each stage of standardization - Standard, Draft Standard, Proposed
   Standard, Experimental and Historic. Protocols that are new to this
   document or have been moved from one protocol level to another, or
   differ from the previous edition of this document are marked.
   Informational Request for Comments (RFCs) are not included. This
   memo lists the current protocols; it is not a complete index to RFCs.

   This memo is published by the RFC Editor in accordance with Section
   2.1 of "The Internet Standards Process -- Revision 3", RFC 2026,
   which specifies the rules and procedures by which all Internet
   standards are set. This memo is prepared by the RFC Editor for the
   IESG and IAB. Please see http://www.rfc-editor.org for later updates
   to this document.

2. Contacts

   This section contains important contact information, for reference.

2.1. IAB, IETF, and IRTF Contacts

   Internet Architecture Board (IAB) Contact: www.iab.org

   Internet Engineering Task Force (IETF) Contact: www.ietf.org

   Internet Research Task Force (IRTF) Contact: www.irtf.org

2.2. Internet Assigned Numbers Authority (IANA) Contact

   See: www.iana.org

2.3. Request for Comments Editor (RFC Editor) Contact

   See: www.rfc-editor.org

   The RFC Editor publishes documents that are the output of the IETF
   process or are submitted individually via electronic mail. Further
   information about the RFC series is contained in section 2.1, RFC
   2026 and at http://www.rfc-editor.org. How to obtain the most recent
   edition of this "Internet Official Protocol Standards" memo:

      The file "in-notes/std/std1.txt" may be copied via FTP from the
      FTP.RFC-EDITOR.ORG computer using the FTP username "anonymous" and
      password "name@host.domain".

2.4. Requests for Comments Distribution Contact

   RFCs can be obtained via FTP from FTP.RFC-EDITOR.ORG, with the
   pathname in-notes/rfcnnnn.txt (where "nnnn" refers to the number of
   the RFC). Login with FTP username "anonymous" and password
   "name@host.domain", or via the RFC Editor's web page: www.rfc-
   editor.org

   RFCs can also be obtained via electronic mail from ISI.EDU by using
   the RFC-INFO service. Address the request to "rfc-info@rfc-
   editor.org" with a message body of:

           Retrieve: RFC
             Doc-ID: RFCnnnn

   (Where "nnnn" refers to the number of the RFC (always use 4 digits -
   the DOC-ID of RFC 822 is "RFC0822")). The RFC-INFO@RFC-EDITOR.ORG
   server provides other ways of selecting RFCs based on keywords and

such; for more information send a message to "rfc-info@isi.edu" with
the message body "help: help".

2.5. Sources for Requests for Comments

Details on many sources of RFCs via FTP or EMAIL may be obtained by
sending an EMAIL message to "rfc-info@ISI.EDU" with the message body
"help: ways_to_get_rfcs". For example:

        To: rfc-info@ISI.EDU
        Subject: getting rfcs

        help: ways_to_get_rfcs

3. Current Technical Specifications

3.1. Standard Protocols Ordered by STD


```
Mnemonic    Title                                           RFC# STD#
-------------------------------------------------------------------------
--------     Internet Official Protocol Standards            2700  1
--------     Assigned Numbers                                1700  2
--------     Requirements for Internet hosts - communication 1122  3*
                layers
--------     Requirements for Internet hosts - application   1123  3*
                and support
IP           Internet Protocol                                791  5
ICMP         Internet Control Message Protocol                792  5
---------    Broadcasting Internet Datagrams                  919  5
---------    Broadcasting Internet datagrams in the presence  922  5
                of subnets
--------     Internet Standard Subnetting Procedure           950  5
IGMP         Host extensions for IP multicasting             1112  5
UDP          User Datagram Protocol                           768  6
TCP          Transmission Control Protocol                    793  7
TELNET       Telnet Protocol Specification                    854  8
TELNET       Telnet Option Specifications                     855  8
FTP          File Transfer Protocol                           959  9
SMTP         Simple Mail Transfer Protocol                    821  10
SMTP-EXT     SMTP Service Extensions                          1869  10
SMTP-SIZE    SMTP Service Extension for Message Size Declaration 1870 10
MAIL         Standard for the format of ARPA Internet text    822  11
                messages
DOMAIN       Domain names - concepts and facilities          1034  13
DOMAIN       Domain names - implementation and specification 1035  13
DNS-MX       Mail routing and the domain system               974  14
SNMP         Simple Network Management Protocol (SNMP)       1157  15
SMI          Structure and identification of management      1155  16
                information for TCP/IP-based internets
Concise-MI   Concise MIB definitions                         1212  16
MIB-II       Management Information Base for Network Management 1213 17
                of TCP/IP-based internets:MIB-II
NETBIOS      Protocol standard for a NetBIOS service on      1001  19
                a TCP/UDP transport
NETBIOS      Protocol standard for a NetBIOS service on      1002  19
                a TCP/UDP transport
ECHO         Echo Protocol                                    862  20
DISCARD      Discard Protocol                                 863  21
CHARGEN      Character Generator Protocol                     864  22
QUOTE        Quote of the Day Protocol                        865  23
USERS        Active users                                     866  24
```

```
DAYTIME      Daytime Protocol                               867  25
TIME         Time Protocol                                  868  26
TOPT-BIN     Telnet Binary Transmission                     856  27
TOPT-ECHO    Telnet Echo Option                             857  28
TOPT-SUPP    Telnet Suppress Go Ahead Option                858  29
TOPT-STAT    Telnet Status Option                           859  30
TOPT-TIM     Telnet Timing Mark Option                      860  31
TOPT-EXTOP   Telnet Extended Options                        861  32
TFTP         The TFTP Protocol (Revision 2)                1350  33
TP-TCP       ISO transport services on top of the TCP      1006  35
IP-FDDI      Transmission of IP and ARP over FDDI Networks 1390  36
ARP          Ethernet Address Resolution Protocol           826  37
RARP         Reverse Address Resolution Protocol            903  38
IP-WB        Host Access Protocol specification             907  40*
IP-E         Standard for the transmission of IP datagrams  894  41
                over Ethernet networks
IP-EE        Standard for the transmission of IP datagrams  895  42
                over experimental Ethernet networks
IP-IEEE      Standard for the transmission of IP datagrams 1042  43
                over IEEE 802 networks
IP-DC        DCN local-network protocols                    891  44
IP-HC        Internet Protocol on Network System's HYPERchannel 1044  45
IP-ARC       Transmitting IP traffic over ARCNET networks  1201  46
IP-SLIP      Nonstandard for transmission of IP datagrams  1055  47
                over serial lines
IP-NETBIOS   Standard for the transmission of IP datagrams 1088  48
                over NetBIOS networks
IP-IPX       Standard for the transmission of 802.2 packets 1132  49
                over IPX networks
ETHER-MIB    Definitions of Managed Objects for the Ethernet- 1643  50
                like Interface Types
PPP          The Point-to-Point Protocol (PPP)             1661  51
PPP-HDLC     PPP in HDLC-like Framing                      1662  51
IP-SMDS      Transmission of IP datagrams over the SMDS Service 1209  52
POP3         Post Office Protocol - Version 3              1939  53
OSPF2        OSPF Version 2                                2328  54
IP-FR        Multiprotocol Interconnect over Frame Relay   2427  55
RIP2         RIP Version 2                                 2453  56
RIP2-APP     RIP Version 2 Protocol Applicability Statement 1722  57
SMIv2        Structure of Management Information Version   2578  58
                2 (SMIv2)
CONV-MIB     Textual Conventions for SMIv2                 2579  58
CONF-MIB     Conformance Statements for SMIv2              2580  58
RMON-MIB     Remote Network Monitoring Management Information 2819  59*
                Base
```

[Note: an asterisk at the end of a line indicates a change from the
previous edition of this document.]

3.2. Standard Protocols Ordered by RFC


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Mnemonic    Title                                               RFC#
-------------------------------------------------------------------------
RMON-MIB    Remote Network Monitoring Management Information Base  2819*
--------    Internet Official Protocol Standards                 2600
CONF-MIB    Conformance Statements for SMIv2                     2580
CONV-MIB    Textual Conventions for SMIv2                        2579
SMIv2       Structure of Management Information Version 2 (SMIv2) 2578
RIP2        RIP Version 2                                        2453
IP-FR       Multiprotocol Interconnect over Frame Relay          2427
OSPF2       OSPF Version 2                                       2328
POP3        Post Office Protocol - Version 3                     1939
SMTP-SIZE   SMTP Service Extension for Message Size Declaration  1870
SMTP-EXT    SMTP Service Extensions                              1869
RIP2-APP    RIP Version 2 Protocol Applicability Statement       1722
--------    Assigned Numbers                                     1700
PPP-HDLC    PPP in HDLC-like Framing                             1662
PPP         The Point-to-Point Protocol (PPP)                    1661
ETHER-MIB   Definitions of Managed Objects for the Ethernet-     1643
               like Interface Types
IP-FDDI     Transmission of IP and ARP over FDDI Networks        1390
TFTP        The TFTP Protocol (Revision 2)                       1350
MIB-II      Management Information Base for Network Management    1213
               of TCP/IP-based internets:MIB-II
Concise-MI  Concise MIB definitions                              1212
IP-SMDS     Transmission of IP datagrams over the SMDS Service   1209
IP-ARC      Transmitting IP traffic over ARCNET networks         1201
SNMP        Simple Network Management Protocol (SNMP)            1157
SMI         Structure and identification of management information 1155
               for TCP/IP-based internets
IP-IPX      Standard for the transmission of 802.2 packets       1132
               over IPX networks
--------    Requirements for Internet hosts - application        1123*
               and support
--------    Requirements for Internet hosts - communication layers 1122*
IGMP        Host extensions for IP multicasting                  1112
IP-NETBIOS  Standard for the transmission of IP datagrams        1088
               over NetBIOS networks
IP-SLIP     Nonstandard for transmission of IP datagrams over    1055
               serial lines
IP-HC       Internet Protocol on Network System's HYPERchannel   1044
IP-IEEE     Standard for the transmission of IP datagrams        1042
               over IEEE 802 networks
DOMAIN      Domain names - implementation and specification      1035
DOMAIN      Domain names - concepts and facilities               1034
TP-TCP      ISO transport services on top of the TCP             1006
```

```
NETBIOS    Protocol standard for a NetBIOS service on a TCP/UDP   1002
               transport
NETBIOS    Protocol standard for a NetBIOS service on a TCP/UDP   1001
               transport
DNS-MX     Mail routing and the domain system                     974
FTP        File Transfer Protocol                                 959
--------   Internet Standard Subnetting Procedure                 950
---------  Broadcasting Internet datagrams in the presence        922
               of subnets
---------  Broadcasting Internet Datagrams                        919
IP-WB      Host Access Protocol specification                     907*
RARP       Reverse Address Resolution Protocol                    903
IP-EE      Standard for the transmission of IP datagrams          895
               over experimental Ethernet networks
IP-E       Standard for the transmission of IP datagrams          894
               over Ethernet networks
IP-DC      DCN local-network protocols                            891
TIME       Time Protocol                                          868
DAYTIME    Daytime Protocol                                       867
USERS      Active users                                           866
QUOTE      Quote of the Day Protocol                              865
CHARGEN    Character Generator Protocol                           864
DISCARD    Discard Protocol                                       863
ECHO       Echo Protocol                                          862
TOPT-EXTOP Telnet Extended Options                                861
TOPT-TIM   Telnet Timing Mark Option                              860
TOPT-STAT  Telnet Status Option                                   859
TOPT-SUPP  Telnet Suppress Go Ahead Option                        858
TOPT-ECHO  Telnet Echo Option                                     857
TOPT-BIN   Telnet Binary Transmission                             856
TELNET     Telnet Option Specifications                           855
TELNET     Telnet Protocol Specification                          854
ARP        Ethernet Address Resolution Protocol                   826
MAIL       Standard for the format of ARPA Internet text messages 822
SMTP       Simple Mail Transfer Protocol                          821
TCP        Transmission Control Protocol                          793
ICMP       Internet Control Message Protocol                      792
IP         Internet Protocol                                      791
UDP        User Datagram Protocol                                 768
--------   Status Telnet Option                                    30
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[Note: an asterisk at the end of a line indicates a change from the
previous edition of this document.]

3.3. Draft Standard Protocols


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Mnemonic    Title                                                   RFC#
-----------------------------------------------------------------------------
RADIUS      Remote Authentication Dial In User Service (RADIUS)     2865*
INTERGRMIB  The Interfaces Group MIB                                2863*
--------    Host Resources MIB                                      2790
--------    HTTP Authentication                                     2617*
--------    Hypertext Transfer Protocol -- HTTP/1.1                 2616*
VACM-SNMP   View-based Access Control Model (VACM) for the          2575
              Simple Network Management Protocol (SNMP)
USM-SNMPV3  User-based Security Model (USM) for version 3           2574
              of the Simple Network Management Protocol (SNMPv3)
SNMP-APP    SNMP Applications                                       2573
MPD-SNMP    Message Processing and Dispatching for the Simple       2572
              Network Management Protocol (SNMP)
ARCH-SNMP   An Architecture for Describing SNMP Management          2571
              Frameworks
ICMPv6      Internet Control Message Protocol (ICMPv6) for          2463
              the Internet Protocol Version 6 (IPv6) Specification
IPV6-AUTO   IPv6 Stateless Address Autoconfiguration                2462
IPV6-ND     Neighbor Discovery for IP Version 6 (IPv6)              2461
IPV6        Internet Protocol, Version 6 (IPv6) Specification       2460
URI-GEN     Uniform Resource Identifiers (URI)                      2396
IARP        Inverse Address Resolution Protocol                     2390
TN3270E     TN3270 Enhancements                                     2355
TFTP-Opt    TFTP Timeout Interval and Transfer Size Options         2349
TFTP-Blk    TFTP Blocksize Option                                   2348
TFTP-Ext    TFTP Option Extension                                   2347
ONE-PASS    A One-Time Password System                              2289
UTF-8       UTF-8, a transformation format of ISO 10646             2279
SMTP-Pipe   SMTP Service Extension for Command Pipelining           2197
DHCP-BOOTP  DHCP Options and BOOTP Vendor Extensions                2132
DHCP        Dynamic Host Configuration Protocol                     2131
FRAME-MIB   Management Information Base for Frame Relay DTEs         2115
              Using SMIv2
IP-HIPPI    IP over HIPPI                                           2067
MIME-CONF   Multipurpose Internet Mail Extensions (MIME) Part Five  2049
MIME-MSG    MIME (Multipurpose Internet Mail Extensions) Part       2047
              Three
MIME-MEDIA  Multipurpose Internet Mail Extensions (MIME) Part Two   2046
MIME        Multipurpose Internet Mail Extensions (MIME) Part One   2045
PPP-CHAP    PPP Challenge Handshake Authentication Protocol (CHAP)  1994
PPP-MP      The PPP Multilink Protocol (MP)                         1990
PPP-LINK    PPP Link Quality Monitoring                             1989
SNMPv2-MIB  Management Information Base for Version 2 of the        1907
              Simple Network Management Protocol (SNMPv2)
```

```
TRANS-MIB   Transport Mappings for Version 2 of the Simple        1906
                Network Management Protocol (SNMPv2)
OPS-MIB     Protocol Operations for Version 2 of the Simple       1905
                Network Management Protocol (SNMPv2)
CON-MD5     The Content-MD5 Header Field                          1864
OSPF-MIB    OSPF Version 2 Management Information Base             1850
RPC         XDR                                                   1832
X.500syn    The String Representation of Standard Attribute       1778
                Syntaxes
X.500lite   Lightweight Directory Access Protocol                 1777
BGP-4-APP   Application of the Border Gateway Protocol in         1772
                the Internet
BGP-4       A Border Gateway Protocol 4 (BGP-4)                   1771
PPP-DNCP    The PPP DECnet Phase IV Control Protocol (DNCP)       1762
802.5-MIB   IEEE 802.5 MIB using SMIv2                            1748
RIP2-MIB    RIP Version 2 MIB Extension                           1724
SIP-MIB     Definitions of Managed Objects for SMDS Interfaces    1694
                using SMIv2
--------    Definitions of Managed Objects for Parallel-printer-  1660
                like Hardware Devices using SMIv2
--------    Definitions of Managed Objects for RS-232-like        1659
                Hardware Devices using SMIv2
--------    Definitions of Managed Objects for Character Stream    1658
                Devices using SMIv2
BGP-4-MIB   Definitions of Managed Objects for the Fourth         1657
                Version of the Border Gateway Protocol (BGP-
                4) using SMIv2
SMTP-8BIT   SMTP Service Extension for 8bit-MIMEtransport         1652
OSI-NSAP    Guidelines for OSI NSAP Allocation in the Internet    1629
ISO-TS-ECH  An Echo Function for CLNP (ISO 8473)                  1575
DECNET-MIB  DECnet Phase IV MIB Extensions                        1559
--------    Clarifications and Extensions for the Bootstrap       1542
                Protocol
DHCP-BOOTP  Interoperation Between DHCP and BOOTP                 1534
BRIDGE-MIB  Definitions of Managed Objects for Bridges            1493
IP-X.25     Multiprotocol Interconnect on X.25 and ISDN in        1356
                the Packet Mode
NTPV3       Network Time Protocol (Version 3) Specification,      1305
                Implementation
FINGER      The Finger User Information Protocol                  1288
IP-MTU      Path MTU discovery                                    1191
TOPT-LINE   Telnet Linemode Option                                1184
NICNAME     NICNAME/WHOIS                                          954
BOOTP       Bootstrap Protocol                                     951
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[Note: an asterisk at the end of a line indicates a change from the
previous edition of this document.]

3.4. Proposed Standard Protocols


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Mnemonic    Title                                                   RFC#
-----------------------------------------------------------------------------
--------    Router Renumbering for IPv6                             2894*
TRANS-IPV6  Transition Mechanisms for IPv6 Hosts and Routers        2893*
--------    LDAP Control Extension for Server Side Sorting          2891*
               of Search Results
--------    Key and Sequence Number Extensions to GRE               2890*
--------    Megaco Errata                                           2886*
--------    Megaco Protocol 0.8                                     2885*
--------    An Extension to the Selective Acknowledgement           2883*
               (SACK) Option for TCP
--------    Content Feature Schema for Internet Fax (V2)            2879*
--------    PPP Bridging Control Protocol (BCP)                     2878*
--------    Diffie-Hellman Proof-of-Possession Algorithms           2875*
--------    DNS Extensions to Support IPv6 Address Aggregation      2874*
               and Renumbering
--------    TCP Processing of the IPv4 Precedence Field             2873*
RADIUS      RADIUS Accounting Modifications for Tunnel Protocol     2867*
               Support
--------    The Inverted Stack Table Extension to the Interfaces    2864*
               Group MIB
--------    RTP Payload Format for Real-Time Pointers               2862*
MEXT-BGP4   Multiprotocol Extensions for BGP-4                      2858*
--------    The Use of HMAC-RIPEMD-160-96 within ESP and AH         2857*
SNMP        Textual Conventions for Additional High Capacity        2856*
               Data Types
--------    DHCP for IEEE 1394                                      2855*
--------    Generic Security Service API Version 2                  2853*
--------    Deliver By SMTP Service Extension                       2852*
--------    Textual Conventions for Internet Network Addresses      2851*
--------    The LDAP Data Interchange Format (LDIF) - Technical     2849*
               Specification
--------    The PINT Service Protocol                               2848*
--------    LIPKEY - A Low Infrastructure Public Key Mechanism      2847*
               Using SPKM
--------    GSTN Address Element Extensions in E-mail Services      2846*
--------    Secret Key Transaction Authentication for DNS (TSIG)    2845*
--------    OSPF over ATM and Proxy-PAR                             2844*
--------    Capabilities Advertisement with BGP-4                   2842*
--------    Definitions of Managed Objects for the Fabric           2837*
               Element in Fibre Channel Standard
--------    Per Hop Behavior Identification Codes                   2836*
--------    IP and ARP over HIPPI-6400 (GSN)                        2835*
--------    ARP and IP Broadcast over HIPPI-800                     2834*
```

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--------   RTP Payload for DTMF Digits, Telephony Tones and      2833*
              Telephony Signals
HTTP       Using Digest Authentication as a SASL Mechanism       2831*
LDAP       Lightweight Directory Access Protocol (v3)            2830*
--------   Authentication Methods for LDAP                       2829*
--------   Integrated Service Mappings on IEEE 802 Networks      2815*
--------   SBM (Subnet Bandwidth Manager)                        2814*
--------   URLs for Telephone Calls                              2806*
--------   Certificate Management Messages over CMS              2797*
--------   BGP Route Reflection - An Alternative to Full         2796*
              Mesh IBGP
--------   RTP Payload for Text Conversation                     2793*
--------   Mail Monitoring MIB                                   2789
--------   Network Services Monitoring MIB                       2788
--------   Definitions of Managed Objects for the Virtual        2787
              Router Redundancy Protocol
--------   Generic Routing Encapsulation (GRE)                   2784
--------   Multicast-Scope Zone Announcement Protocol (MZAP)     2776
RPSL       Routing Policy System Replication                     2769
--------   Network Address Translation - Protocol Translation    2766
              (NAT-PT)
--------   Stateless IP/ICMP Translation Algorithm (SIIT)        2765
--------   Identity Representation for RSVP                      2752
RSVP       Signaled Preemption Priority Policy Element           2751
--------   RSVP Extensions for Policy Control                    2750
--------   COPS usage for RSVP                                   2749
QOS        The COPS (Common Open Policy Service) Protocol        2748
--------   RSVP Cryptographic Authentication                     2747
--------   RSVP Operation Over IP Tunnels                        2746
--------   RSVP Diagnostic Messages                              2745
GSS-API    Generic Security Service API Version 2                2744
GSS-API    Generic Security Service Application Program Interface 2743
              Version 2, Update 1
--------   Definitions of Managed Objects for Extensible         2742
              SNMP Agents
SNMP       Agent Extensibility (AgentX) Protocol Version 1       2741
--------   OSPF for IPv6                                         2740
--------   Calendar Attributes for vCard and LDAP                2739
--------   Corrections to "A Syntax for Describing Media         2738
              Feature Sets"
--------   Entity MIB (Version 2)                                2737
--------   NHRP Support for Virtual Private Networks             2735
--------   IPv4 over IEEE 1394                                   2734
--------   An RTP Payload Format for Generic Forward Error       2733
              Correction
--------   Format for Literal IPv6 Addresses in URL's            2732
--------   Multicast Address Dynamic Client Allocation Protocol  2730
              (MADCAP)
```

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FTP         Internationalization of the File Transfer Protocol   2640
--------    Enhanced Security Services for S/MIME                2634
--------    S/MIME Version 3 Message Specification               2633
--------    S/MIME Version 3 Certificate Handling                2632
--------    Diffie-Hellman Key Agreement Method                  2631
--------    Cryptographic Message Syntax                         2630
--------    IP and ARP over Fibre Channel                        2625
--------    NFS Version 2 and Version 3 Security Issues and      2623
               the NFS Protocol's Use of RPCSEC_GSS and Kerberos V5
--------    Routing Policy Specification Language (RPSL           2622
--------    RADIUS Authentication Server MIB                     2619
--------    RADIUS Authentication Client MIB                     2618
--------    PPP over SONET/SDH                                   2615
--------    Remote Network Monitoring MIB Extensions for Switched 2613
               Networks Version 1.0
SLP         DHCP Options for Service Location Protocol           2610
--------    Service Templates and Service                        2609
SLP         Service Location Protocol, Version 2                 2608
--------    Directory Server Monitoring MIB                      2605
--------    ILMI-Based Server Discovery for NHRP                 2603
--------    ILMI-Based Server Discovery for MARS                 2602
--------    ILMI-Based Server Discovery for ATMARP               2601
--------    An Expedited Forwarding PHB                          2598
--------    Assured Forwarding PHB Group                         2597
--------    Use of Language Codes in LDAP                        2596
--------    Using TLS with IMAP, POP3 and ACAP                   2595
--------    Definitions of Managed Objects for WWW Services      2594
MIB         Definitions of Managed Objects for the Delegation    2592
               of Management Script
MIB         Definitions of Managed Objects for Scheduling        2591
               Management Operations
LDAPv3      Lightweight Directory Access Protocol (v3)           2589
--------    Internet X.509 Public Key Infrastructure LDAPv2 Schema 2587
--------    Internet X.509 Public Key Infrastructure Operational 2585
               Protocols
--------    Definitions of Managed Objects for APPN/HPR in       2584
               IP Networks
TCP-CC      TCP Congestion Control                               2581
SNMP        Coexistence between Version 1, Version 2, and        2576
               Version 3 of the Internet-standard Network
               Management Framework
APP-MIB     Application Management MIB                           2564
--------    DHCP Option to Disable Stateless Auto-Configuration  2563
               in IPv4 Clients
--------    Definitions of Protocol and Managed Objects for      2562
               TN3270E Response Time Collection Using SMIv2
               (TN3270E-RT-MIB)
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PPP-FUNI   PPP Over FUNI                                          2363
IMAP4UIDPL IMAP4 UIDPLUS extension                                2359
MOBILIPREV Reverse Tunneling for Mobile IP                        2344
IMAP4NAME  IMAP4 Namespace                                        2342
VRRP       Virtual Router Redundancy Protocol                     2338
NHRP-SCSP  A Distributed NHRP Service Using SCSP                  2335
SCSP       Server Cache Synchronization Protocol (SCSP)           2334
--------   NHRP Protocol Applicability Statement                  2333*
NHRP       NBMA Next Hop Resolution Protocol (NHRP)               2332
UNI-SIG    ATM Signalling Support for IP over ATM - UNI Signalling 2331
              4.0 Update
SDP        SDP                                                    2327
RTSP       Real Time Streaming Protocol (RTSP)                    2326
IPOA-MIB   Definitions of Managed Objects for Classical IP        2320
              and ARP Over ATM Using SMIv2 (IPOA-MIB)
DNS-NCACHE Negative Caching of DNS Queries (DNS NCACHE)            2308
SMFAX-IM   A Simple Mode of Facsimile Using Internet Mail         2305
MINFAX-IM  Minimal FAX address format in Internet Mail            2304
MIN-PSTN   Minimal PSTN address format in Internet Mail           2303
TIFF       Tag Image File Format (TIFF) - image/tiff MIME         2302
              Sub-type Registration
FFIF       File Format for Internet Fax                           2301
EMF-MDN    An Extensible Message Format for Message Disposition   2298
              Notifications
OR-ADD     Representing the O/R Address hierarchy in the          2294
              X.500 Directory Information Tree
SUBTABLE   Representing Tables and Subtrees in the X.500          2293
              Directory
--------   Mobile-IPv4 Configuration Option for PPP IPCP          2290
SLM-APP    Definitions of System-Level Managed Objects for        2287
              Applications
PPP-EAP    PPP Extensible Authentication Protocol (EAP)           2284
--------   Definitions of Managed Objects for IEEE 802.12         2266
              Repeater Devices
--------   A Summary of the X.500(96) User Schema for use         2256
              with LDAPv3
LDAP-URL   The LDAP URL Format                                    2255
STR-LDAP   The String Representation of LDAP Search Filters       2254
LDAP3-UTF8 Lightweight Directory Access Protocol (v3)             2253
LDAP3-ATD  Lightweight Directory Access Protocol (v3)             2252
LDAPV3     Lightweight Directory Access Protocol (v3)             2251
RTP-MPEG   RTP Payload Format for MPEG1/MPEG2 Video               2250
---------  Using Domains in LDAP/X.500 Distinguished Names        2247
transport  The TLS Protocol Version 1.0                           2246
SASL-ANON  Anonymous SASL Mechanism                               2245
ACAP       ACAP -- Application Configuration Access Protocol      2244
OTP-ER     OTP Extended Responses                                 2243
NETWAREIP  NetWare/IP Domain Name and Information                 2242
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MIXER       MIXER (Mime Internet X.400 Enhanced Relay)        2156
MAIL-SERV   Mailbox Names for Common Services, Roles and Functions  2142
URN-SYNTAX  URN Syntax                                        2141
SDNSDU      Secure Domain Name System Dynamic Update          2137
DNS-UPDATE  Dynamic Updates in the Domain Name System (DNS UPDATE)  2136
DC-MIB      Dial Control Management Information Base using SMIv2    2128
ISDN-MIB    ISDN Management Information Base using SMIv2       2127
ITOT        ISO Transport Service on top of TCP (ITOT)        2126
BAP-BACP    The PPP Bandwidth Allocation Protocol (BAP) /     2125
              The PPP Bandwidth Allocation Control Protocol (BACP)
VEMMI-URL   VEMMI URL Specification                           2122
ROUT-ALERT  IP Router Alert Option                            2113
HTTP-STATE  HTTP State Management Mechanism                   2109
802.3-MIB   Definitions of Managed Objects for IEEE 802.3     2108
              Repeater Devices using SMIv2
PPP-NBFCP   The PPP NetBIOS Frames Control Protocol (NBFCP)   2097
TABLE-MIB   IP Forwarding Table MIB                           2096
RIP-TRIG    Triggered Extensions to RIP to Support Demand Circuits  2091
IMAP4-LIT   IMAP4 non-synchronizing literals                  2088
IMAP4-QUO   IMAP4 QUOTA extension                             2087
IMAP4-ACL   IMAP4 ACL extension                               2086
HMAC-MD5    HMAC-MD5 IP Authentication with Replay Prevention  2085
RIP2-MD5    RIP-2 MD5 Authentication                          2082
RIPNG-IPV6  RIPng for IPv6                                    2080
URI-ATT     Definition of an X.500 Attribute Type and an Object  2079
              Class to Hold Uniform Resource Identifiers (URIs)
MIME-MODEL  The Model Primary Content Type for Multipurpose   2077
              Internet Mail Extensions
RMON-MIB    Remote Network Monitoring MIB Protocol Identifiers  2074
IMAPV4      Internet Message Access Protocol - Version 4rev1  2060
URLZ39.50   Uniform Resource Locators for Z39.50              2056
SNANAU-APP  Definitions of Managed Objects for APPC using SMIv2  2051*
PPP-SNACP   The PPP SNA Control Protocol (SNACP)              2043
SMTP-ENH    SMTP Service Extension for Returning Enhanced     2034
              Error Codes
RTP-H.261   RTP Payload Format for H.261 Video Streams        2032
RTP-CELLB   RTP Payload Format of Sun's CellB Video Encoding  2029
SPKM        The Simple Public-Key GSS-API Mechanism (SPKM)    2025
DLSW-MIB    Definitions of Managed Objects for Data Link Switching  2024
              using SMIv2
MULTI-UNI   Support for Multicast over UNI 3.0/3.1 based ATM  2022
              Networks
RMON-MIB    Remote Network Monitoring Management Information  2021
              Base Version 2 using SMIv2
802.12-MIB  IEEE 802.12 Interface MIB                         2020
TCP-ACK     TCP Selective Acknowledgement Options             2018
URL-ACC     Definition of the URL MIME External-Body Access-Type  2017
MIME-PGP    MIME Security with Pretty Good Privacy (PGP)      2015
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MIB-UDP    SNMPv2 Management Information Base for the User       2013
              Datagram Protocol using SMIv2
MIB-TCP    SNMPv2 Management Information Base for the Transmission 2012
              Control Protocol using SMIv2
MIB-IP     SNMPv2 Management Information Base for the Internet   2011
              Protocol using SMIv2
MOBILEIPMI The Definitions of Managed Objects for IP Mobility    2006
              Support using SMIv2
--------   Applicability Statement for IP Mobility Support       2005*
MINI-IP    Minimal Encapsulation within IP                       2004
IPENCAPIP  IP Encapsulation within IP                            2003
MOBILEIPSU IP Mobility Support                                   2002
BGP-COMM   BGP Communities Attribute                             1997
DNS-NOTIFY A Mechanism for Prompt Notification of Zone Changes   1996
              (DNS NOTIFY)
DNS-IZT    Incremental Zone Transfer in DNS                      1995
SMTP-ETRN  SMTP Service Extension for Remote Message Queue       1985
              Starting
SNA        Serial Number Arithmetic                              1982
MTU-IPV6   Path MTU Discovery for IP version 6                   1981
PPP-FRAME  PPP in Frame Relay                                    1973
PPP-ECP    The PPP Encryption Control Protocol (ECP)             1968
GSSAPI-KER The Kerberos Version 5 GSS-API Mechanism              1964
PPP-CCP    The PPP Compression Control Protocol (CCP)            1962
GSSAPI-SOC GSS-API Authentication Method for SOCKS Version 5     1961
AUTH-SOCKS Username/Password Authentication for SOCKS V5         1929
SOCKSV5    SOCKS Protocol Version 5                              1928
WHOIS++M   How to Interact with a Whois++ Mesh                   1914
WHOIS++A   Architecture of the Whois++ Index Service            1913
DSN        An Extensible Message Format for Delivery Status      1894
              Notifications
EMS-CODE   Enhanced Mail System Status Codes                     1893
MIME-RPT   The Multipart/Report Content Type for the Reporting   1892
              of Mail System Administrative Messages
SMTP-DSN   SMTP Service Extension for Delivery Status Notifications1891
RTP-AV     RTP Profile for Audio and Video Conferences with      1890
              Minimal Control
RTP        RTP                                                   1889
DNS-IPV6   DNS Extensions to support IP version 6                1886
MIME-Sec   MIME Object Security Services                         1848
MIME-Encyp Security Multiparts for MIME                          1847
WHOIS++    Architecture of the WHOIS++ service                   1835
--------   Binding Protocols for ONC RPC Version 2               1833
RPC        RPC                                                   1831
--------   The ESP DES-CBC Transform                             1829
--------   IP Authentication using Keyed MD5                     1828
R          Requirements for IP Version 4 Routers                 1812
URL        Relative Uniform Resource Locators                    1808
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--------   Applicability Statement for OSPF                   1370*
SNMP-PARTY Definitions of Managed Objects for Administration   1353
              of SNMP Parties
SNMP-SEC   SNMP Security Protocols                             1352
SNMP-ADMIN SNMP Administrative Model                           1351
PPP-IPCP   The PPP Internet Protocol Control Protocol (IPCP)  1332
--------   X.400 1988 to 1984 downgrading                     1328
TCP-EXT    TCP Extensions for High Performance                1323
NETFAX     A File Format for the Exchange of Images in the    1314
              Internet
FDDI-MIB   FDDI Management Information Base                    1285
--------   Encoding Network Addresses to Support Operation    1277
              over Non-OSI Lower Layers
--------   Replication and Distributed Operations extensions  1276
              to provide an Internet Directory using X.500
--------   The COSINE and Internet X.500 Schema               1274
BGP-MIB    Definitions of Managed Objects for the Border      1269
              Gateway Protocol
ICMP-ROUT  ICMP Router Discovery Messages                     1256
OSI-UDP    OSI connectionless transport services on top of UDP 1240
STD-MIBs   Reassignment of experimental MIBs to standard MIBs 1239
IPX-IP     Tunneling IPX traffic through IP networks          1234
IS-IS      Use of OSI IS-IS for routing in TCP/IP and dual    1195
              environments
IP-CMPRS   Compressing TCP/IP headers for low-speed serial links 1144
TOPT-XDL   Telnet X display location option                   1096
TOPT-TERM  Telnet terminal-type option                        1091
TOPT-TS    Telnet terminal speed option                       1079
TOPT-NAWS  Telnet window size option                          1073
TOPT-X.3   Telnet X.3 PAD option                              1053
TOPT-DATA  Telnet Data Entry Terminal option                 1043*
TOPT-3270  Telnet 3270 regime option                          1041
NNTP       Network News Transfer Protocol                      977
TOPT-TLN   Telnet terminal location number option              946
TOPT-OM    Output marking Telnet option                        933
TOPT-TACAC TACACS user identification Telnet option            927
TOPT-EOR   Telnet end of record option                         885
TOPT-SNDL  Telnet send-location option                         779
TOPT-SUPO  Telnet SUPDUP-Output option                         749
TOPT-SUP   Telnet SUPDUP option                                736
TOPT-BYTE  Revised Telnet byte macro option                    735
TOPT-LOGO  Telnet logout option                                727
TOPT-REM   Remote Controlled Transmission and Echoing Telnet   726
              option
TOPT-EXT   Telnet extended ASCII option                        698
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[Note: an asterisk at the end of a line indicates a change from the
previous edition of this document.]

3.5. Experimental Protocols


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Mnemonic    Title                                                     RFC#
--------------------------------------------------------------------------
--------    TCP Congestion Window Validation                         2861*
--------    A Time Sliding Window Three Colour Marker (TSWTCM)        2859*
point-to-p  PPP over Simple Data Link (SDL) using SONET/SDH           2823*
               with ATM-like framing
--------    Diffie-Helman USM Key Management Information Base         2786
               and Textual Convention
--------    An HTTP Extension Framework                               2774
-------     Encryption using KEA and SKIPJACK                         2773
-------     GLOP Addressing in 233/8                                  2770
-------     Sampling of the Group Membership in RTP                   2762
--------    Definitions of Managed Objects for Service Level          2758
               Agreements Performance Monitoring
HTTP        Hyper Text Caching Protocol (HTCP/0.0)                    2756
--------    RTFM                                                      2724
--------    PPP EAP TLS Authentication Protocol                       2716
SPKI        SPKI Certificate Theory                                   2693
SKPI        SPKI Requirements                                         2692
--------    QoS Routing Mechanisms and OSPF Extensions                2676
--------    The Secure HyperText Transfer Protocol                    2660
--------    Security Extensions For HTML                              2659
--------    LDAPv2 Client vs. the Index Mesh                          2657
--------    Registration Procedures for SOIF Template Types           2656
--------    CIP Index Object Format for SOIF Objects                  2655
CIP         A Tagged Index Object for use in the Common Indexing      2654
               Protocol
--------    An LDAP Control and Schema for Holding Operation          2649
               Signatures
--------    Script MIB Extensibility Protocol Version 1.0             2593
--------    The NewReno Modification to TCP's Fast Recovery           2582
               Algorithm
--------    Mapping between LPD and IPP Protocols                     2569
IPP-RAT     Rationale for the Structure of the Model and Protocol     2568
               for the Internet Printing Protocol
IPP-DG      Design Goals for an Internet Printing Protocol            2567
IPP-M-S     Internet Printing Protocol/1.0                            2566
IPP-E-T     Internet Printing Protocol/1.0                            2565
DNS-INFO    Detached Domain Name System (DNS) Information             2540
PHOTURIS-E  Photuris                                                  2523
PHOTURIS-S  Photuris                                                  2522
ICMP-SEC    ICMP Security Failures Messages                          2521
NHRP-MNHCS  NHRP with Mobile NHCs                                     2520
--------    URI Resolution Services Necessary for URN Resolution      2483
```

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SGML-MT     SGML Media Types                                      1874
CONT-MT     Message/External-Body Content-ID Access Type          1873
UNARP       ARP Extension - UNARP                                 1868
--------    A BGP/IDRP Route Server alternative to a full         1863
               mesh routing
--------    IP Authentication using Keyed SHA                     1852
ESP3DES     The ESP Triple DES Transform                          1851
--------    SMTP 521 Reply Code                                   1846
--------    SMTP Service Extension for Checkpoint/Restart         1845
--------    SMTP Service Extensions for Transmission of Large     1830
               and Binary MIME Messages
ST2         Internet Stream Protocol Version 2 (ST2) Protocol     1819
               Specification - Version ST2+
--------    Communicating Presentation Information in Internet    1806
               Messages
--------    Schema Publishing in X.500 Directory                  1804
--------    MHS use of the X.500 Directory to support MHS Routing 1801
--------    Class A Subnet Experiment                             1797
TCP/IPXMIB  TCP/IPX Connection Mib Specification                  1792
--------    TCP And UDP Over IPX Networks With Fixed Path MTU      1791
ICMP-DM     ICMP Domain Name Messages                             1788
CLNP-MULT   Host Group Extensions for CLNP Multicasting           1768
OSPF-OVFL   OSPF Database Overflow                                1765
RWP         Remote Write Protocol - Version 1.0                   1756
NARP        NBMA Address Resolution Protocol (NARP)               1735
DNS-ENCODE  DNS Encoding of Geographical Location                 1712
TCP-POS     An Extension to TCP                                   1693
T/TCP       T/TCP -- TCP Extensions for Transactions Functional   1644
               Specification
MIME-UNI    Using Unicode with MIME                               1641
FOOBAR      FTP Operation Over Big Address Records (FOOBAR)       1639
X500-CHART  Charting Networks in the X.500 Directory              1609
X500-DIR    Representing IP Information in the X.500 Directory     1608
SNMP-DPI    Simple Network Management Protocol Distributed        1592
               Protocol Interface Version 2.0
CLNP-TUBA   Use of ISO CLNP in TUBA Environments                  1561
REM-PRINT   Principles of Operation for the TPC.INT Subdomain     1528
DASS        DASS - Distributed Authentication Security Service    1507
EHF-MAIL    Encoding Header Field for Internet Messages           1505
RAP         RAP                                                   1476
TP/IX       TP/IX                                                 1475
X400        Routing Coordination for X.400 MHS Services Within    1465
               a Multi Protocol / Multi Network Environment
               Table Format V3 for Static Routing
DNS         Using the Domain Name System To Store Arbitrary       1464
               String Attributes
IRCP        Internet Relay Chat Protocol                          1459
SIFT/UFT    SIFT/UFT                                              1440
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DIR-ARP     Directed ARP                                        1433
TOPT-AUTH   Telnet Authentication Option                        1416
TEL-SPX     Telnet Authentication                               1412
TEL-KER     Telnet Authentication                               1411
TRACE-IP    Traceroute Using an IP Option                       1393
DNS-IP      An Experiment in DNS Based IP Routing               1383
RMCP        Remote Mail Checking Protocol                       1339
MSP2        Message Send Protocol 2                             1312
DSLCP       Dynamically Switched Link Control Protocol          1307
--------    X.500 and Domains                                   1279
IN-ENCAP    Scheme for an internet encapsulation protocol       1241
CLNS-MIB    CLNS MIB for use with Connectionless Network Protocol  1238
               (ISO 8473) and End System to Intermediate
               System (ISO 9542)
CFDP        Coherent File Distribution Protocol                 1235
IP-AX.25    Internet protocol encapsulation of AX.25 frames     1226
ALERTS      Techniques for managing asynchronously generated    1224
               alerts
MPP         Message Posting Protocol (MPP)                      1204
SNMP-BULK   Bulk Table Retrieval with the SNMP                  1187
DNS-RR      New DNS RR Definitions                              1183
IMAP2       Interactive Mail Access Protocol                    1176
NTP-OSI     Network Time Protocol (NTP) over the OSI Remote     1165
               Operations Service
--------    Message Send Protocol                               1159
DMF-MAIL    Digest message format                               1153
RDP         Version 2 of the Reliable Data Protocol (RDP)       1151
--------    Standard for the transmission of IP datagrams       1149
               on avian carriers
TCP-ACO     TCP alternate checksum options                      1146
--------    The Q Method of Implementing TELNET Option Negotiation  1143
IP-DVMRP    Distance Vector Multicast Routing Protocol          1075
VMTP        VMTP                                                1045
COOKIE-JAR  Distributed-protocol authentication scheme          1004
NETBLT      NETBLT                                               998
IRTP        Internet Reliable Transaction Protocol functional    938
               and interface specification
LDP         Loader Debugger Protocol                             909
RDP         Reliable Data Protocol                              908
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previous edition of this document.]

3.6. Historic Protocols

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Mnemonic    Title                                                   RFC#
--------------------------------------------------------------------------
L2F         Cisco Layer Two Forwarding (Protocol) "L2F"             2341
IPV6-UNI    An IPv6 Provider-Based Unicast Address Format           2073
HTML-INT    Internationalization of the Hypertext Markup Language   2070*
HTML-TBL    HTML Tables                                             1942*
--------    RIPv1 Applicability Statement for Historic Status       1923*
--------    Internet Official Protocol Standards                    1920
IPV6-Addr   IP Version 6 Addressing Architecture                    1884
--------    Form-based File Upload in HTML                          1867*
HTML        Hypertext Markup Language - 2.0                         1866*
SNMPv2      Manager-to-Manager Management Information Base          1451
SNMPv2      Party MIB for version 2 of the Simple Network           1447
               Management Protocol (SNMPv2)
SNMPv2      Security Protocols for version 2 of the Simple          1446
               Network Management Protocol (SNMPv2)
SNMPv2      Administrative Model for version 2 of the Simple        1445
               Network Management Protocol (SNMPv2)
TOPT-ENVIR  Telnet Environment Option                               1408
BGP3        Application of the Border Gateway Protocol in           1268
               the Internet
BGP3        Border Gateway Protocol 3 (BGP-3)                       1267
802.4-MIP   IEEE 802.4 Token Bus MIB                                1230
SNMP-MUX    SNMP MUX protocol and MIB                               1227
OIM-MIB-II  OSI internet management                                 1214
IMAP3       Interactive Mail Access Protocol                        1203
CMOT        Common Management Information Services and Protocols     1189
               for the Internet (CMOT and CMIP)
BGP         Application of the Border Gateway Protocol in           1164
               the Internet
BGP         Border Gateway Protocol (BGP)                           1163
MIB-I       Management Information Base for network management       1156
               of TCP/IP-based internets
--------    Mapping between full RFC 822 and RFC 822 with           1137
               restricted encoding
--------    Privacy enhancement for Internet electronic mail        1115
--------    Privacy enhancement for Internet electronic mail        1114
--------    Privacy enhancement for Internet electronic mail        1113
IPSO        U.S. Department of Defense Security Options for         1108
               the Internet Protocol
RIP         Routing Information Protocol                            1058
SUN-RPC     RPC                                                     1050
CONTENT     Content-type header field for Internet messages         1049
NFILE       NFILE - a file access protocol                         1037
SGMP        Simple Gateway Monitoring Protocol                      1028
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HEMS       High-level Entity Management System (HEMS)           1021
--------   Requirements for Internet gateways                   1009
STATSRV    Statistics server                                     996
HOSTNAME   Hostname Server                                       953
POP2       Post Office Protocol                                  937
HFEP       Proposed Host-Front End Protocol                      929
RATP       Reliable Asynchronous Transfer Protocol (RATP)        916
THINWIRE   Thinwire protocol for connecting personal computers   914
              to the Internet
SFTP       Simple File Transfer Protocol                         913
EGP        Exterior Gateway Protocol formal specification        904
HMP        Host Monitoring Protocol                              869
GGP        DARPA Internet gateway                                823
RTELNET    Remote User Telnet service                            818
CLOCK      DCNET Internet Clock Service                          778
MPM        Internet Message Protocol                             759
NETRJS     NETRJS Protocol                                       740
SUPDUP     SUPDUP Protocol                                       734
TOPT-OLD   Telnet output linefeed disposition                    658
TOPT-OVTD  Telnet output vertical tab disposition option         657
TOPT-OVT   Telnet output vertical tabstops option                656
TOPT-OFD   Telnet output formfeed disposition option             655
TOPT-OHTD  Telnet output horizontal tab disposition option       654
TOPT-OHT   Telnet output horizontal tabstops option              653
TOPT-OCRD  Telnet output carriage-return disposition option      652
NETED      NETED                                                 569
RJE        Remote Job Entry Protocol                             407
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[Note: an asterisk at the end of a line indicates a change from the
previous edition of this document.]

4. Security Coniderations

   This memo does not affect the technical security of the Internet, but
   it does cite a number of important security specifications.

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6. Full Copyright Statement

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