                     Internet Official Protocol Standards

Status of this Memo

   This memo is an Internet Standard. Distribution of this memo is
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Abstract

   This memo contains a snapshot of the state of standardization of
   protocols used in the Internet as of October 24, 2002. It lists
   official protocol standards and Best Current Practice RFCs; it is not
   a complete index to the RFC series. The latest version of this memo
   is designated STD 1.

Table of Contents

1. Overview

   This memo contains a snapshot of the state of standardization of
   protocols used in the Internet, as determined by the Internet
   Engineering Task Force (IETF). It is an October 24, 2002 snapshot of
   the current official protocol standards list and the Best Current
   Practice list, which is updated daily and is available from the RFC
   Editor Web site.

   The RFC Editor publishes Request for Comments (RFC) 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.

   This memo is published by the RFC Editor for the IESG and IAB 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. Sections 3.1 - 3.6 of this
   memo contain the lists of protocols in each stage of standardization
   - Standard, Draft Standard, Proposed Standard, Experimental,
   Historic, as well as Best Current Practice documents. Protocols that
   are new to this document or have been moved from one protocol level
   to another, or that differ from the previous edition of this document
   are marked with an asterisk. Informational RFCs are not included.
   This memo lists the current standards track, Best Current Practice,
   Experimental, and Historic protocols; it is not a complete index to
   RFCs.

2. Resources

   This section contains important contact information, for reference.

2.1. Internet-Related Organizations

   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

   Internet Assigned Numbers Authority (IANA) Contact: www.iana.org

2.2. Request for Comments Editor (RFC Editor) Web Pages

   The RFC Editor maintains the official repository of all RFCs and
   indexes to them. The RFC Editor web site is:

      http://www.rfc-editor.org.

   At this URL, a user can:

   (a) Obtain the current "Internet Official Protocol Standards" list.
       See:

          http://www.rfc-editor.org/rfcxx00.html

       This hyper-linked listing is updated daily.

   (b) Retrieve the latest version of this STD 1 memo. See:

          http://www.rfc-editor.org/go.html, and select STD and "1".

   (c) Retrieve text of any RFC. See:

          http://www.rfc-editor.org/go.html

   (d) Search for RFCs by category. See:

          http://www.rfc-editor.org/category.html

   (e) Search the RFC index for document number, author, title, and/or
       keywords, and retrieve the text of any matching documents. See:

          http://www.rfc-editor.org/rfcsearch.html

   RFC information can also be retrieved using FTP or email.

2.3 Retrieval using FTP

   RFC-related files may be copied via FTP from the FTP.RFC-EDITOR.ORG
   computer using the FTP username "anonymous" and password
   "name@host.domain". An FTP user can:

   (a) Retrieve the latest version of this STD 1 memo.

          File: "in-notes/std/std1.txt"

   (b) Retrieve text of any RFC.

       File: "in-notes/rfcnnnn.txt" will retrieve the ASCII version.
       Some RFCs also have secondary Postscript and/or PDF versions,
       available from File: "in-notes/rfcnnnn.ps" and/or
       "in-notes/rfcnnnn.pdf", respectively.

       Here "nnnn" is a 1-4 digit RFC number, with no leading zeros.

2.4 Search and Retrieval Using Email

   To use the RFC Editor's email-based RFC-INFO service, send a request
   to:

      RFC-INFO@RFC-EDITOR.ORG

   In the message body, include your information request. For example,
   the following message bodies may be used.

   (a) To retrieve the latest version of this STD 1 memo:

          Retrieve: STD
            Doc-ID: STD0001

   (b) To retrieve ASCII text of any RFC:

          Retrieve: RFC
            Doc-ID: RFCnnnn

       Here "nnnn" must be filled with leading zeros to 4 digits.

   (c) The RFC-INFO@RFC-EDITOR.ORG server provides other capabilities,
       e.g., search and retrieval based on author, title, and/or
       keyword. For more information, send the following message body
       to the server:

          help: help

   The server will email back the results.

3. Current Technical Specifications

3.1. Standard Protocols Ordered by STD

Mnemonic	Title	RFC#	STD#
--------	Internet Official Protocol Standards	3003	1*
--------	[Reserved for Assigned Numbers. See RFC 1700 and RFC 3232.]		2
--------	Requirements for Internet Hosts - Communication Layers	1122	3
--------	Requirements for Internet Hosts - Application and Support	1123	3
--------	[Reserved for Router Requirements. See RFC 1812.]		4
IP	Internet Protocol	791	5
ICMP	Internet Control Message Protocol	792	5
---------	Broadcasting Internet Datagrams	919	5
---------	Broadcasting Internet datagrams in the presence of subnets	922	5
--------	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-SIZE	SMTP Service Extension for Message Size Declaration	1870	10
MAIL	Standard for the format of ARPA Internet text messages	822	11
--------	[Reserved for Network Time Protocol (NTP). See RFC 1305.]		12
DOMAIN	Domain names - concepts and facilities	1034	13
DOMAIN	Domain names - implementation and specification	1035	13
--------	[Was Mail Routing and the Domain System. Now Historic.]		14
SNMP	Simple Network Management Protocol (SNMP)	1157	15
SMI	Structure and identification of management information for TCP/IP-based internets	1155	16
Concise-MI	Concise MIB definitions	1212	16
MIB-II	Management Information Base for Network Management of TCP/IP-based internets:MIB-II	1213	17
--------	[Was Exterior Gateway Protocol (RFC 904). Now Historic.]		18
NETBIOS	Protocol standard for a NetBIOS service on a TCP/UDP transport: Concepts and methods	1001	19
NETBIOS	Protocol standard for a NetBIOS service on a TCP/UDP transport: Detailed specifications	1002	19

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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: List Option           861  32
TFTP       The TFTP Protocol (Revision 2)                1350  33
--------   [Was Routing Information Protocol (RIP).  Replaced   34
              by STD 56.]
TP-TCP     ISO transport services on top of the TCP:     1006  35
              Version 3
IP-FDDI    Transmission of IP and ARP over FDDI Networks 1390  36
ARP        Ethernet Address Resolution Protocol: Or converting 826  37
              network protocol addresses to 48.bit Ethernet
              address for transmission on Ethernet hardware
RARP       Reverse Address Resolution Protocol            903  38
IP-ARPA    [Was BBN Report 1822 (IMP/Host Interface).           39
              Now Historic.]
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
              Protocol specification
IP-ARC     Transmitting IP traffic over ARCNET networks  1201  46
IP-SLIP    Nonstandard for transmission of IP datagrams  1055  47
              over serial lines: SLIP
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
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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
SMTP-Pipe  SMTP Service Extension for Command Pipelining      2920  60
ONE-PASS   A One-Time Password System                        2289  61
```

   [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

```
Mnemonic    Title                                              STD# RFC#
-----------------------------------------------------------------------------
--------    Internet Official Protocol Standards                1* 3003*
SMTP-Pipe   SMTP Service Extension for Command Pipelining       60 2920
RMON-MIB    Remote Network Monitoring Management Information    59 2819
               Base
CONF-MIB    Conformance Statements for SMIv2                    58 2580
CONV-MIB    Textual Conventions for SMIv2                       58 2579
SMIv2       Structure of Management Information Version         58 2578
               2 (SMIv2)
RIP2        RIP Version 2                                       56 2453
IP-FR       Multiprotocol Interconnect over Frame Relay         55 2427
OSPF2       OSPF Version 2                                      54 2328
ONE-PASS    A One-Time Password System                          61 2289
POP3        Post Office Protocol - Version 3                    53 1939
SMTP-SIZE   SMTP Service Extension for Message Size Declaration 10 1870
RIP2-APP    RIP Version 2 Protocol Applicability Statement      57 1722
PPP-HDLC    PPP in HDLC-like Framing                            51 1662
PPP         The Point-to-Point Protocol (PPP)                   51 1661
ETHER-MIB   Definitions of Managed Objects for the Ethernet-    50 1643
               like Interface Types
IP-FDDI     Transmission of IP and ARP over FDDI Networks       36 1390
TFTP        The TFTP Protocol (Revision 2)                      33 1350
MIB-II      Management Information Base for Network Management   17 1213
               of TCP/IP-based internets:MIB-II
Concise-MI  Concise MIB definitions                             16 1212
IP-SMDS     Transmission of IP datagrams over the SMDS Service  52 1209
IP-ARC      Transmitting IP traffic over ARCNET networks        46 1201
SNMP        Simple Network Management Protocol (SNMP)           15 1157
SMI         Structure and identification of management          16 1155
               information for TCP/IP-based internets
IP-IPX      Standard for the transmission of 802.2 packets      49 1132
               over IPX networks
--------    Requirements for Internet Hosts - Application        3 1123
               and Support
--------    Requirements for Internet Hosts - Communication      3 1122
               Layers
IGMP        Host extensions for IP multicasting                  5 1112
IP-NETBIOS  Standard for the transmission of IP datagrams       48 1088
               over NetBIOS networks
IP-SLIP     Nonstandard for transmission of IP datagrams        47 1055
               over serial lines: SLIP
IP-HC       Internet Protocol on Network System's HYPERchannel: 45 1044
               Protocol specification
IP-IEEE     Standard for the transmission of IP datagrams       43 1042
               over IEEE 802 networks
```

```
DOMAIN     Domain names - implementation and specification  13 1035
DOMAIN     Domain names - concepts and facilities           13 1034
TP-TCP     ISO transport services on top of the TCP:        35 1006
              Version 3
NETBIOS    Protocol standard for a NetBIOS service on       19 1002
              a TCP/UDP transport: Detailed specifications
NETBIOS    Protocol standard for a NetBIOS service on       19 1001
              a TCP/UDP transport: Concepts and methods
FTP        File Transfer Protocol                            9  959
--------   Internet Standard Subnetting Procedure            5  950
---------  Broadcasting Internet datagrams in the presence   5  922
              of subnets
---------  Broadcasting Internet Datagrams                   5  919
IP-WB      Host Access Protocol specification               40  907
RARP       Reverse Address Resolution Protocol              38  903
IP-EE      Standard for the transmission of IP datagrams    42  895
              over experimental Ethernet networks
IP-E       Standard for the transmission of IP datagrams    41  894
              over Ethernet networks
IP-DC      DCN local-network protocols                      44  891
TIME       Time Protocol                                    26  868
DAYTIME    Daytime Protocol                                 25  867
USERS      Active users                                     24  866
QUOTE      Quote of the Day Protocol                        23  865
CHARGEN    Character Generator Protocol                     22  864
DISCARD    Discard Protocol                                 21  863
ECHO       Echo Protocol                                    20  862
TOPT-EXTOP Telnet Extended Options: List Option             32  861
TOPT-TIM   Telnet Timing Mark Option                        31  860
TOPT-STAT  Telnet Status Option                             30  859
TOPT-SUPP  Telnet Suppress Go Ahead Option                  29  858
TOPT-ECHO  Telnet Echo Option                               28  857
TOPT-BIN   Telnet Binary Transmission                       27  856
TELNET     Telnet Option Specifications                      8  855
TELNET     Telnet Protocol Specification                     8  854
ARP        Ethernet Address Resolution Protocol: Or converting 37 826
              network protocol addresses to 48.bit Ethernet
              address for transmission on Ethernet hardware
MAIL       Standard for the format of ARPA Internet text    11  822
              messages
SMTP       Simple Mail Transfer Protocol                    10  821
TCP        Transmission Control Protocol                     7  793
ICMP       Internet Control Message Protocol                 5  792
IP         Internet Protocol                                 5  791
UDP        User Datagram Protocol                            6  768
```

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

3.3. Draft Standard Protocols

```
Mnemonic   Title                                                    RFC#
----------------------------------------------------------------------------
--------   Content Language Headers                                 3282*
--------   (Extensible Markup Language) XML-Signature               3275*
              Syntax and Processing
MINFAX-IM  Minimal FAX address format in Internet Mail              3192*
MIN-PSTN   Minimal GSTN address format in Internet Mail             3191*
RADIUS     Remote Authentication Dial In User Service (RADIUS)      2865
INTERGRMIB The Interfaces Group MIB                                 2863
--------   Host Resources MIB                                       2790
SNMP       Definitions of Managed Objects for Extensible            2742*
              SNMP Agents
--------   Agent Extensibility (AgentX) Protocol Version 1          2741*
--------   HTTP Authentication: Basic and Digest Access             2617
              Authentication
HTTP       Hypertext Transfer Protocol -- HTTP/1.1                  2616
VACM-SNMP  View-based Access Control Model (VACM) for               2575
              the Simple Network Management Protocol (SNMP)
USM-SNMPV3 User-based Security Model (USM) for version              2574
              3 of the Simple Network Management Protocol (SNMPv3)
SNMP-APP   SNMP Applications                                        2573
MPD-SNMP   Message Processing and Dispatching for the               2572
              Simple Network Management Protocol (SNMP)
ARCH-SNMP  An Architecture for Describing SNMP Management           2571
              Frameworks
ICMPv6     Internet Control Message Protocol (ICMPv6)               2463
              for 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): Generic Syntax       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
UTF-8      UTF-8, a transformation format of ISO 10646              2279
DHCP-BOOTP DHCP Options and BOOTP Vendor Extensions                 2132
DHCP       Dynamic Host Configuration Protocol                      2131
FRAME-MIB  Management Information Base for Frame Relay              2115
              DTEs Using SMIv2
IP-HIPPI   IP over HIPPI                                            2067
MIME-CONF  Multipurpose Internet Mail Extensions (MIME)             2049
              Part Five: Conformance Criteria and Examples
```

```
MIME-MSG   MIME (Multipurpose Internet Mail Extensions)        2047
              Part Three: Message Header Extensions for
              Non-ASCII Text
MIME-MEDIA Multipurpose Internet Mail Extensions (MIME)        2046
              Part Two: Media Types
MIME       Multipurpose Internet Mail Extensions (MIME)        2045
              Part One: Format of Internet Message Bodies
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            1907
              of the 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
XDR        XDR: External Data Representation Standard           1832
--------   The String Representation of Standard Attribute     1778
              Syntaxes
--------   Lightweight Directory Access Protocol               1777
BGP-4-APP  Application of the Border Gateway Protocol          1772
              in 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-        1660
              printer-like Hardware Devices using SMIv2
--------   Definitions of Managed Objects for RS-232-          1659
              like Hardware Devices using SMIv2
--------   Definitions of Managed Objects for Character        1658
              Stream 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 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        1356
               in 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
--------    Proposed Standard for the Transmission of           1188
               IP Datagrams over FDDI Networks
TOPT-LINE   Telnet Linemode Option                              1184
NICNAME     NICNAME/WHOIS                                        954
BOOTP       Bootstrap Protocol                                   951
```

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

3.4. Proposed Standard Protocols

```
Mnemonic    Title                                                  RFC#
---------------------------------------------------------------------------
--------    Session Description Protocol (SDP) Simple Capability   3407*
               Declaration
NAPTR       Dynamic Delegation Discovery System (DDDS) Part        3404*
               Four: The Uniform Resource Identifiers (URI)
NAPTR       Dynamic Delegation Discovery System (DDDS) Part        3403*
               Three: The Domain Name System (DNS) Database
NAPTR       Dynamic Delegation Discovery System (DDDS) Part        3402*
               Two: The Algorithm
RMON-MIB    Remote Network Monitoring MIB Protocol Identifier      3395*
               Reference Extensions
--------    Real-time Transport Protocol (RTP) Payload for         3389*
               Comfort Noise (CN)
IPP-E-T     Internet Printing Protocol (IPP): The 'collection'     3382*
               attribute syntax
IPP-E-T     Internet Printing Protocol (IPP): Job Progress         3381*
               Attributes
IPP-E-T     Internet Printing Protocol (IPP): Job and Printer      3380*
               Set Operations
--------    Delegated Path Validation and Delegated Path Discovery 3379*
               Protocol Requirements
--------    Lightweight Directory Access Protocol (v3): Technical  3377*
               Specification
IGMP        Internet Group Management Protocol, Version 3          3376*
--------    Layer Two Tunneling Protocol "L2TP" Management         3371*
               Information Base
--------    Cryptographic Message Syntax (CMS) Algorithms          3370*
--------    Cryptographic Message Syntax (CMS)                     3369*
--------    The 'go' URI Scheme for the Common Name Resolution     3368*
               Protocol
--------    Common Name Resolution Protocol (CNRP)                 3367*
--------    Real-time Facsimile (T.38) - image/t38 MIME Sub-       3362*
               type Registration
--------    Dynamic Host Configuration Protocol (DHCP-for-IPv4)    3361*
               Option for Session Initiation Protocol (SIP) Servers
--------    Layer Two Tunnelling Protocol (L2TP) Over ATM          3355*
               Adaptation Layer 5 (AAL5)
--------    Small Computer Systems Interface protocol over         3347*
               the Internet (iSCSI) Requirements and Design
               Considerations
MOBILEIPSU  IP Mobility Support for IPv4                           3344*
--------    The Application Exchange (APEX) Option Party Pack,     3342*
               Part Deux!
--------    The Application Exchange (APEX) Access Service         3341*
--------    The Application Exchange Core                          3340*
```

```
--------   Date and Time on the Internet: Timestamps       3339*
--------   MIME-based Secure Peer-to-Peer Business Data     3335*
              Interchange over the Internet
--------   Signaling System 7 (SS7) Message Transfer Part   3332*
              3 (MTP3) - User Adaptation Layer (M3UA)
--------   Signaling System 7 (SS7) Message Transfer Part   3331*
              2 (MTP2) - User Adaptation Layer
--------   Integration of Resource Management and Session   3312*
              Initiation Protocol (SIP)
--------   The Session Initiation Protocol (SIP) UPDATE Method  3311*
--------   Stream Control Transmission Protocol (SCTP) Checksum  3309*
              Change
--------   Allocation Guidelines for IPv6 Multicast Addresses  3307*
--------   Unicast-Prefix-based IPv6 Multicast Addresses    3306*
TIFF       Tag Image File Format (TIFF) - image/tiff MIME   3302*
              Sub-type Registration
--------   Layer Two Tunnelling Protocol (L2TP): ATM access  3301*
              network extensions
--------   Content Negotiation for Messaging Services based  3297*
              on Email
--------   Named Subordinate References in Lightweight Directory  3296*
              Access Protocol (LDAP) Directories
--------   Definitions of Managed Objects for the General   3295*
              Switch Management Protocol (GSMP)
--------   General Switch Management Protocol (GSMP) Packet   3293*
              Encapsulations for Asynchronous Transfer Mode
              (ATM), Ethernet and Transmission Control Protocol
              (TCP)
--------   General Switch Management Protocol (GSMP) V3      3292*
--------   Textual Conventions for Internet Network Addresses  3291*
--------   Management Information Base for the Differentiated  3289*
              Services Architecture
--------   Using the Simple Object Access Protocol (SOAP)    3288*
              in Blocks Extensible Exchange Protocol (BEEP)
--------   Remote Monitoring MIB Extensions for Differentiated  3287*
              Services
--------   The VCDIFF Generic Differencing and Compression   3284*
              Data Format
--------   An Internet Attribute Certificate Profile for     3281*
              Authorization
--------   Internet X.509 Public Key Infrastructure Certificate  3280*
              and Certificate Revocation List (CRL) Profile
--------   Algorithms and Identifiers for the Internet X.509  3279*
              Public Key Infrastructure Certificate and
              Certificate Revocation List (CRL) Profile
```

```
--------  Definitions of Managed Objects for High Bit-Rate    3276*
             DSL - 2nd generation (HDSL2) and Single-Pair
             High-Speed Digital Subscriber Line (SHDSL) Lines
             Processing
--------  Compressed Data Content Type for Cryptographic      3274*
             Message Syntax (CMS)
--------  Remote Network Monitoring Management Information     3273*
             Base for High Capacity Networks
--------  Multi-Protocol Label Switching (MPLS) Support of     3270*
             Differentiated Services
--------  Advanced Encryption Standard (AES) Ciphersuites      3268*
             for Transport Layer Security (TLS)
--------  Real-Time Transport Protocol (RTP) Payload Format    3267*
             and File Storage Format for the Adaptive Multi-
             Rate (AMR) and Adaptive Multi-Rate Wideband
             (AMR-WB) Audio Codecs
--------  Support for IPv6 in Session Description Protocol     3266*
             (SDP)
SIP       Session Initiation Protocol (SIP)-Specific Event     3265*
             Notification
SIP       An Offer/Answer Model with Session Description       3264*
             Protocol (SDP)
SIP       Session Initiation Protocol (SIP): Locating SIP      3263*
             Servers
SIP       Reliability of Provisional Responses in Session      3262*
             Initiation Protocol (SIP)
SIP       SIP: Session Initiation Protocol                     3261*
--------  The DOCSIS (Data-Over-Cable Service Interface        3256*
             Specifications) Device Class DHCP (Dynamic Host
             Configuration Protocol) Relay Agent Information
             Sub-option
--------  Extending Point-to-Point Protocol (PPP) over         3255*
             Synchronous Optical NETwork/Synchronous Digital
             Hierarchy (SONET/SDH) with virtual concatenation,
             high order and low order payloads
--------  Versioning Extensions to WebDAV (Web Distributed     3253*
             Authoring and Versioning)
FFIF      Tag Image File Format Fax eXtended (TIFF-FX) -       3250*
             image/tiff-fx MIME Sub-type Registration
--------  An Expedited Forwarding PHB (Per-Hop Behavior)       3246*
--------  RObust Header Compression (ROHC): A Link-Layer       3242*
             Assisted Profile for IP/UDP/RTP
--------  Robust Header Compression (ROHC) over PPP            3241*
--------  Definitions of Managed Objects for Scheduling        3231*
             Management Operations
--------  Instance Digests in HTTP                             3230*
--------  Delta encoding in HTTP                               3229*
```

```
COPS        The COPS (Common Open Policy Service) Protocol      2748
--------    RSVP Cryptographic Authentication                   2747
--------    RSVP Operation Over IP Tunnels                      2746
--------    RSVP Diagnostic Messages                            2745
--------    Generic Security Service API Version 2 : C-bindings 2744
--------    Generic Security Service Application Program Interface 2743
               Version 2, Update 1
--------    OSPF for IPv6                                        2740
--------    Calendar Attributes for vCard and LDAP              2739
--------    Corrections to "A Syntax for Describing Media Feature 2738
               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
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MIB-UDP     SNMPv2 Management Information Base for the User       2013
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MIB-TCP     SNMPv2 Management Information Base for the            2012
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MIB-IP      SNMPv2 Management Information Base for the Internet   2011
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--------  Congestion Control Principles                        41  2914
--------  Root Name Server Operational Requirements            40  2870
--------  Charter of the Internet Architecture Board (IAB)     39  2850
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   [Note: an asterisk at the end of a line indicates a change from the
   previous edition of this document.]

3.7. Experimental Protocols

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Mnemonic    Title                                                  RFC#
------------------------------------------------------------------------------
--------    Dual Stack Hosts Using "Bump-in-the-API" (BIA)         3338*
--------    Policy-Based Accounting                                3334*
--------    PGM Reliable Transport Protocol Specification          3208*
--------    Domain Security Services using S/MIME                  3183
SMX         Script MIB Extensibility Protocol Version 1.1          3179
--------    ISO/IEC 9798-3 Authentication SASL Mechanism           3163
--------    Electronic Signature Policies                          3125
--------    A DNS RR Type for Lists of Address Prefixes (APL RR)   3123
--------    Finding an RSIP Server with SLP                        3105
--------    RSIP Support for End-to-end IPsec                      3104
--------    Realm Specific IP: Protocol Specification              3103
--------    Realm Specific IP: Framework                           3102
--------    OpenLDAP Root Service An experimental LDAP referral    3088
               service
--------    Notification and Subscription for SLP                  3082
--------    MPLS Loop Prevention Mechanism                         3063
--------    Internet X.509 Public Key Infrastructure Data          3029
               Validation and Certification Server Protocols
--------    Unified Memory Space Protocol Specification            3018
SAP         Session Announcement Protocol                          2974
--------    Protocol Independent Multicast MIB for IPv4            2934
MASC        The Multicast Address-Set Claim (MASC) Protocol        2909
--------    Generic AAA Architecture                               2903
--------    DNS Extensions to Support IPv6 Address Aggregation     2874*
               and Renumbering
--------    TCP Congestion Window Validation                       2861
TSWTCM      A Time Sliding Window Three Colour Marker (TSWTCM)      2859
--------    OSPF over ATM and Proxy-PAR                            2844
PPP-SDL     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
--------    Sampling of the Group Membership in RTP                2762
--------    Definitions of Managed Objects for Service Level       2758
               Agreements Performance Monitoring
HTCP        Hyper Text Caching Protocol (HTCP/0.0)                 2756
--------    RTFM: New Attributes for Traffic Flow Measurement      2724
--------    PPP EAP TLS Authentication Protocol                    2716
--------    SPKI Certificate Theory                                2693
--------    SPKI Requirements                                      2692
--------    QoS Routing Mechanisms and OSPF Extensions             2676
DNS         Binary Labels in the Domain Name System                2673*
```

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--------   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
--------   A Tagged Index Object for use in the Common Indexing  2654
              Protocol
--------   An LDAP Control and Schema for Holding Operation   2649
              Signatures
--------   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
DNS-INFO   Detached Domain Name System (DNS) Information       2540
PHOTURIS-E  Photuris: Extended Schemes and Attributes          2523
PHOTURIS-S Photuris: Session-Key Management Protocol           2522
ICMP-SEC   ICMP Security Failures Messages                     2521
NHRP-MNHCS NHRP with Mobile NHCs                                2520
--------   URI Resolution Services Necessary for URN Resolution  2483
--------   IPv6 Testing Address Allocation                     2471
MARS-SCSP  A Distributed MARS Service Using SCSP               2443
TCP-WIN    Increasing TCP's Initial Window                     2414
PIM-SM     Protocol Independent Multicast-Sparse Mode (PIM-    2362
              SM): Protocol Specification
--------   Domain Names and Company Name Retrieval             2345
RTP-MPEG   RTP Payload Format for Bundled MPEG                 2343
--------   Intra-LIS IP multicast among routers over ATM      2337
              using Sparse Mode PIM
--------   The Safe Response Header Field                      2310
LDAP-NIS   An Approach for Using LDAP as a Network Information  2307
              Service
HTTP-RVSA  HTTP Remote Variant Selection Algorithm -- RVSA/1.0  2296
TCN-HTTP   Transparent Content Negotiation in HTTP             2295
TOPT-COMPO Telnet Com Port Control Option                      2217
--------   Core Based Trees (CBT) Multicast Routing Architecture  2201
--------   Core Based Trees (CBT version 2) Multicast Routing  2189
              -- Protocol Specification --
--------   A Trivial Convention for using HTTP in URN Resolution  2169
MAP-MAIL   MaXIM-11 - Mapping between X.400 / Internet mail    2162
              and  Mail-11 mail
MIME-ODA   A MIME Body Part for ODA                            2161
OSPF-DIG   OSPF with Digital Signatures                        2154
IP-SCSI    Encapsulating IP with the Small Computer System    2143
              Interface
X.500-NAME Managing the X.500 Root Naming Context             2120
GKMP-ARCH  Group Key Management Protocol (GKMP) Architecture   2094
```

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GKMP-SPEC  Group Key Management Protocol (GKMP) Specification  2093
TFTP-MULTI TFTP Multicast Option                              2090
IP-Echo    IP Echo Host Service                               2075
TOPT-CHARS TELNET CHARSET Option                              2066
URAS       Uniform Resource Agents (URAs)                     2016
GPS-AR     GPS-Based Addressing and Routing                   2009
ETFTP      Experiments with a Simple File Transfer Protocol   1986
              for Radio Links using Enhanced Trivial File
              Transfer Protocol (ETFTP)
BGP-RR     BGP Route Reflection An alternative to full mesh IBGP 1966
SMKD       Scalable Multicast Key Distribution                1949
SNMPV2SM   User-based Security Model for SNMPv2               1910
SNMPV2AI   An Administrative Infrastructure for SNMPv2        1909
SNMPV2CB   Introduction to Community-based SNMPv2             1901
--------   OSI NSAPs and IPv6                                 1888
DNS-LOC    A Means for Expressing Location Information in     1876
              the Domain Name System
SGML-MT    SGML Media Types                                   1874
CONT-MT    Message/External-Body Content-ID Access Type       1873
UNARP      ARP Extension - UNARP                              1868
BGP-IDRP   A BGP/IDRP Route Server alternative to a full      1863
              mesh routing
ESP3DES    The ESP Triple DES Transform                       1851
--------   SMTP 521 Reply Code                                1846
--------   SMTP Service Extension for Checkpoint/Restart      1845
ST2        Internet Stream Protocol Version 2 (ST2) Protocol  1819
              Specification - Version ST2+
--------   Communicating Presentation Information in Internet 1806
              Messages: The Content-Disposition Header
--------   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 : Partial Order Service        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
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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
               Remote Printing -- Technical Procedures
DASS        DASS - Distributed Authentication Security Service   1507
EHF-MAIL    Encoding Header Field for Internet Messages          1505
RAP         RAP: Internet Route Access Protocol                  1476
TP-IX       TP/IX: The Next Internet                             1475
--------    Routing Coordination for X.400 MHS Services Within   1465
               a Multi Protocol / Multi Network Environment
               Table Format V3 for Static Routing
--------    Using the Domain Name System To Store Arbitrary      1464
               String Attributes
IRCP        Internet Relay Chat Protocol                         1459
SIFT        SIFT/UFT: Sender-Initiated/Unsolicited File Transfer 1440
DIR-ARP     Directed ARP                                         1433
TEL-SPX     Telnet Authentication: SPX                           1412
TEL-KER     Telnet Authentication: Kerberos Version 4            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
               Version 1
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: Version 2          1176
NTP-OSI     Network Time Protocol (NTP) over the OSI Remote      1165
               Operations Service
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: Versatile Message Transaction Protocol         1045
```

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COOKIE-JAR Distributed-protocol authentication scheme        1004
NETBLT     NETBLT: A bulk data transfer protocol             998
IRTP       Internet Reliable Transaction Protocol functional 938
              and interface specification
LDP        Loader Debugger Protocol                          909
RDP        Reliable Data Protocol                            908
```

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

3.8. Historic Protocols

```
Mnemonic   Title                                                    RFC#
---------------------------------------------------------------------------
IP-MAC     IP Authentication using Keyed SHA1 with Interleaved      2841
              Padding (IP-MAC)
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
--------   A Proposed Extension to HTML : Client-Side Image Maps     1980
HTML-TBL   HTML Tables                                              1942
IPV6-Addr  IP Version 6 Addressing Architecture                     1884
--------   Form-based File Upload in HTML                           1867
HTML       Hypertext Markup Language - 2.0                          1866
BGP4/IDRP  BGP4/IDRP for IP---OSPF Interaction                      1745
--------   Assigned Numbers                                         1700*
--------   Definitions of Managed Objects for the Ethernet-         1623
              like Interface Types
DNS-R-MIB  DNS Resolver MIB Extensions                              1612*
DNS-S-MIB  DNS Server MIB Extensions                                1611*
--------   Manager-to-Manager Management Information Base           1451
--------   Party MIB for version 2 of the Simple Network            1447
              Management Protocol (SNMPv2)
--------   Security Protocols for version 2 of the Simple           1446
              Network Management Protocol (SNMPv2)
--------   Administrative Model for version 2 of the Simple         1445
              Network Management Protocol (SNMPv2)
TOPT-ENVIR Telnet Environment Option                                1408
BGP-OSPF   BGP OSPF Interaction                                     1403
SNMP-PARTY Definitions of Managed Objects for Administration        1353
              of SNMP Parties
SNMP-SEC   SNMP Security Protocols                                  1352
SNMP-ADMIN SNMP Administrative Model                                1351
--------   Application of the Border Gateway Protocol in            1268
              the Internet
BGP3       Border Gateway Protocol 3 (BGP-3)                        1267
OSI-UDP    OSI connectionless transport services on top of          1240
              UDP: Version 1
802.4-MIP  IEEE 802.4 Token Bus MIB                                 1230
SNMP-MUX   SNMP MUX protocol and MIB                                1227
OIM-MIB-II OSI internet management: Management Information Base      1214
IMAP3      Interactive Mail Access Protocol: Version 3              1203
CMOT       Common Management Information Services and Protocols      1189
              for the Internet (CMOT and CMIP)
--------   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
                Part III - algorithms, modes, and identifiers
--------    Privacy enhancement for Internet electronic mail:      1114
                Part II - certificate-based key management
--------    Privacy enhancement for Internet electronic mail:      1113
                Part I - message encipherment and authentication
                procedures
IPSO        U.S. Department of Defense Security Options for        1108
                the Internet Protocol
RIP         Routing Information Protocol                           1058
---------   Standard for the transmission of IP datagrams          1051
                and ARP packets over ARCNET networks
SUN-RPC     RPC: Remote Procedure Call Protocol specification      1050
CONTENT     Content-type header field for Internet messages        1049
NFILE       NFILE - a file access protocol                        1037
SGMP        Simple Gateway Monitoring Protocol                    1028
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: Version 2                        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: A Common Editor for the ARPA Network   569
RJE   Remote Job Entry Protocol   407

   [Note: an asterisk at the end of a line indicates a change from the
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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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