

Network Working Group

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Internet Engineering Task Force

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Editors

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Internet Official Protocol Standards

Status of this Memo

This memo describes the state of standardization of protocols used in the Internet as determined by the Internet Engineering Task Force (IETF). This memo is an Internet Standard. Distribution of this memo is unlimited.

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Overview

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.

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1. Contacts

This section contains important contact information, for reference.

1.1. 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

1.2. Internet Assigned Numbers Authority (IANA) Contact

See: www.iana.org

1.3. 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.ISI.EDU computer using the FTP username "anonymous" and FTP password "guest".

1.4. Requests for Comments Distribution Contact

RFCs can be obtained via FTP from FTP.ISI.EDU, 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".

RFCs can also be obtained via electronic mail from ISI.EDU by using the RFC-INFO service. Address the request to "rfc-info@isi.edu" 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@ISI.EDU 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".

contact: RFC-Manager@ISI.EDU

1.5. 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
```

2. Current Technical Specifications

2.1. Standard Protocols Ordered by STD

| Mnemonic | Title | RFC# | STD# |
|------------|--|------|------|
| ----- | Internet Official Protocol Standards | 2600 | 1 |
| ----- | Assigned Numbers | 1700 | 2 |
| ----- | Host Requirements - Applications | 1123 | 3 |
| ----- | Host Requirements - Communications | 1122 | 3 |
| ----- | Requirements for Internet gateways (Historic) | 1009 | 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-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 messages | 822 | 11 |
| NTPV2 | Network Time Protocol (version 2) specification and implementation | 1119 | 12 |
| 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 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 |
| EGP | Exterior Gateway Protocol formal specification (Historic) | 904 | 18 |
| NETBIOS | Protocol standard for a NetBIOS service on a TCP/UDP transport | 1001 | 19 |
| NETBIOS | Protocol standard for a NetBIOS service on a TCP/UDP transport | 1002 | 19 |
| 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 |
| RIP | Routing Information Protocol (Historic) | 1058 | 34 |
| 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* |
| BBN1822 | Internet Protocol on ARPANET | BBN1822 | 39 |
| IP-WB | Host Access Protocol specification | 907 | 40* |
| IP-E | Standard for the transmission of IP datagrams over Ethernet networks | 894 | 41* |
| IP-EE | Standard for the transmission of IP datagrams over experimental Ethernet networks | 895 | 42* |
| IP-IEEE | Standard for the transmission of IP datagrams over IEEE 802 networks | 1042 | 43* |
| 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 over serial lines | 1055 | 47* |
| IP-NETBIOS | Standard for the transmission of IP datagrams over NetBIOS networks | 1088 | 48* |
| IP-IPX | Standard for the transmission of 802.2 packets over IPX networks | 1132 | 49* |
| ETHER-MIB | Definitions of Managed Objects for the Ethernet- like Interface Types | 1643 | 50 |
| 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 2 (SMIv2) | 2578 | 58 |
| CONV-MIB | Textual Conventions for SMIv2 | 2579 | 58 |
| CONF-MIB | Conformance Statements for SMIv2 | 2580 | 58 |

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

2.2. Standard Protocols Ordered by RFC

| Mnemonic | Title | RFC# |
|------------|---|-------|
| CONF-MIB | Conformance Statements for SMIV2 | 2580 |
| CONV-MIB | Textual Conventions for SMIV2 | 2579 |
| SMIV2 | Structure of Management Information Version 2 (SMIV2) | 2578 |
| ----- | Internet Official Protocol Standards | 2500 |
| 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-like Interface Types | 1643 |
| 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 of TCP/IP-based internets:MIB-II | 1213 |
| 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 for TCP/IP-based internets | 1155* |
| IP-IPX | Standard for the transmission of 802.2 packets over IPX networks | 1132* |
| ----- | Host Requirements - Applications | 1123 |
| ----- | Host Requirements - Communications | 1122 |
| NTPV2 | Network Time Protocol (version 2) specification and implementation | 1119* |
| IGMP | Host extensions for IP multicasting | 1112 |
| IP-NETBIOS | Standard for the transmission of IP datagrams over NetBIOS networks | 1088* |
| RIP | Routing Information Protocol (Historic) | 1058 |
| IP-SLIP | Nonstandard for transmission of IP datagrams over serial lines | 1055* |
| IP-HC | Internet Protocol on Network System's HYPERchannel | 1044* |
| IP-IEEE | Standard for the transmission of IP datagrams over IEEE 802 networks | 1042* |
| DOMAIN | Domain names - implementation and specification | 1035 |
| DOMAIN | Domain names - concepts and facilities | 1034 |

| | | |
|------------|---|---------|
| ----- | Requirements for Internet gateways (Historic) | 1009 |
| TP-TCP | ISO transport services on top of the TCP | 1006 |
| NETBIOS | Protocol standard for a NetBIOS service on a TCP/UDP transport | 1002 |
| NETBIOS | Protocol standard for a NetBIOS service on a TCP/UDP transport | 1001 |
| 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 of subnets | 922 |
| ----- | Broadcasting Internet Datagrams | 919 |
| IP-WB | Host Access Protocol specification | 907* |
| EGP | Exterior Gateway Protocol formal specification(Historic) | 904 |
| RARP | Reverse Address Resolution Protocol | 903* |
| IP-EE | Standard for the transmission of IP datagrams over experimental Ethernet networks | 895* |
| IP-E | Standard for the transmission of IP datagrams over Ethernet networks | 894* |
| 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 |
| BBN1822 | Internet Protocol on ARPANET | BBN1822 |

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

2.3. Draft Standard Protocols

| Mnemonic | Title | RFC# |
|------------|---|-------|
| VACM-SNMP | View-based Access Control Model (VACM) for the Simple Network Management Protocol (SNMP) | 2575 |
| USM-SNMPV3 | User-based Security Model (USM) for version 3 of the Simple Network Management Protocol (SNMPv3) | 2574 |
| SNMP-APP | SNMP Applications | 2573 |
| MPD-SNMP | Message Processing and Dispatching for the Simple Network Management Protocol (SNMP) | 2572 |
| ARCH-SNMP | An Architecture for Describing SNMP Management Frameworks | 2571 |
| ICMPv6 | Internet Control Message Protocol (ICMPv6) for the Internet Protocol Version 6 (IPv6) Specification | 2463 |
| 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 Using SMIV2 | 2115 |
| IP-HIPPI | IP over HIPPI | 2067* |
| MIME-CONF | Multipurpose Internet Mail Extensions (MIME) Part File | 2049 |
| MIME-MSG | MIME (Multipurpose Internet Mail Extensions) Part Three | 2047 |
| 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 |
| COEX-MIB | Coexistence between Version 1 and Version 2 of the Internet-standard Network Management Framework | 1908 |
| SNMPv2-MIB | Management Information Base for Version 2 of the Simple Network Management Protocol (SNMPv2) | 1907 |
| TRANS-MIB | Transport Mappings for Version 2 of the Simple Network Management Protocol (SNMPv2) | 1906 |

| | | |
|------------|--|-------|
| OPS-MIB | Protocol Operations for Version 2 of the Simple Network Management Protocol (SNMPv2) | 1905 |
| CON-MD5 | The Content-MD5 Header Field | 1864 |
| OSPF-MIB | OSPF Version 2 Management Information Base | 1850 |
| RPC | XDR | 1832* |
| STR-REP | A String Representation of Distinguished Names | 1779 |
| X.500syn | The String Representation of Standard Attribute Syntaxes | 1778 |
| X.500lite | Lightweight Directory Access Protocol | 1777 |
| BGP-4-APP | Application of the Border Gateway Protocol in the Internet | 1772 |
| BGP-4 | A Border Gateway Protocol 4 (BGP-4) | 1771 |
| PPP-DNCP | The PPP DECnet Phase IV Control Protocol (DNCP) | 1762 |
| RMON-MIB | Remote Network Monitoring Management Information Base | 1757 |
| 802.5-MIB | IEEE 802.5 MIB using SMIV2 | 1748 |
| RIP2-MIB | RIP Version 2 MIB Extension | 1724 |
| ----- | RIP Version 2 Protocol Applicability Statement | 1722 |
| SIP-MIB | Definitions of Managed Objects for SMDS Interfaces using SMIV2 | 1694 |
| ----- | Definitions of Managed Objects for Parallel-printer-like Hardware Devices using SMIV2 | 1660 |
| ----- | Definitions of Managed Objects for RS-232-like Hardware Devices using SMIV2 | 1659 |
| ----- | Definitions of Managed Objects for Character Stream Devices using SMIV2 | 1658 |
| BGP-4-MIB | Definitions of Managed Objects for the Fourth Version of the Border Gateway Protocol (BGP-4) using SMIV2 | 1657 |
| 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 Protocol | 1542 |
| 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 the Packet Mode | 1356* |
| NTPV3 | Network Time Protocol (Version 3) Specification, Implementation | 1305 |
| 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 |

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

2.4. Proposed Standard Protocols

| Mnemonic | Title | RFC# |
|----------|--|-------|
| ----- | Generic Routing Encapsulation (GRE) | 2784* |
| ----- | A DNS RR for specifying the location of services (DNS SRV) | 2782* |
| ----- | Multicast-Scope Zone Announcement Protocol (MZAP) | 2776* |
| RPSL | Routing Policy System Replication | 2769* |
| ----- | Network Address Translation - Protocol Translation (NAT-PT) | 2766* |
| ----- | 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 Version 2, Update 1 | 2743* |
| ----- | Definitions of Managed Objects for Extensible SNMP Agents | 2742* |
| 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 Feature Sets" | 2738* |
| ----- | 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 Correction | 2733* |
| ----- | Format for Literal IPv6 Addresses in URL's | 2732* |
| ----- | Multicast Address Dynamic Client Allocation Protocol (MADCAP) | 2730* |
| ----- | The Transmission of IP Over the Vertical Blanking Interval of a Television Signal | 2728* |
| ----- | PGP Authentication for RIPE Database Updates | 2726* |
| ----- | Routing Policy System Security | 2725* |
| ----- | Traffic Flow Measurement | 2720* |
| ----- | Addition of Kerberos Cipher Suites to Transport Layer Security (TLS) | 2712* |
| ----- | IPv6 Router Alert Option | 2711* |
| ----- | Multicast Listener Discovery (MLD) for IPv6 | 2710* |

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|----------|--|-------|
| ----- | Integrated Services Mappings for Low Speed Networks | 2688* |
| PPP | PPP in a Real-time Oriented HDLC-like Framing | 2687* |
| PPP | The Multi-Class Extension to Multi-Link PPP | 2686* |
| IP | Virtual Private Networks Identifier | 2685* |
| ----- | Multiprotocol Encapsulation over ATM Adaptation Layer5 | 2684* |
| ----- | A Round-trip Delay Metric for IPPM | 2681* |
| ----- | A One-way Packet Loss Metric for IPPM | 2680* |
| ----- | A One-way Delay Metric for IPPM | 2679* |
| IPPM-MET | IPPM Metrics for Measuring Connectivity | 2678* |
| ----- | Definitions of Managed Objects for the NBMA Next Hop Resolution Protocol (NHRP) | 2677* |
| ----- | IPv6 Jumbograms | 2675* |
| ----- | Definitions of Managed Objects for Bridges with Traffic Classes, Multicast Filtering and Virtual LAN Extensions | 2674* |
| DNS | Binary Labels in the Domain Name System | 2673* |
| ----- | Non-Terminal DNS Name Redirection | 2672* |
| ----- | Extension Mechanisms for DNS (EDNS0) | 2671* |
| ----- | Radio Frequency (RF) Interface Management Information Base for MCNS/DOCSIS compliant RF interfaces | 2670* |
| ----- | DOCSIS Cable Device MIB Cable Device Management Information Base for DOCSIS compliant Cable Modems and Cable Modem Termination Systems | 2669* |
| ----- | Definitions of Managed Objects for IEEE 802.3 Medium Attachment Units (MAUs) | 2668* |
| ----- | IP Tunnel MIB | 2667* |
| ----- | Definitions of Managed Objects for the Ethernet-like Interface Types | 2665* |
| ----- | Definitions of Managed Objects for the ADSL Lines | 2662* |
| PPP | Layer Two Tunneling Protocol "L2TP" | 2661* |
| ----- | RTP Payload Format for PureVoice(tm) Audio | 2658* |
| ----- | CIP Transport Protocols | 2653* |
| ----- | MIME Object Definitions for the Common Indexing Protocol (CIP) | 2652* |
| ----- | The Architecture of the Common Indexing Protocol (CIP) | 2651* |
| ----- | The Text/Plain Format Parameter | 2646* |
| ----- | ON-DEMAND MAIL RELAY (ODMR) SMTP with Dynamic IP Addresses | 2645* |
| INT-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 the NFS Protocol's Use of RPCSEC_GSS and Kerberos V5 | 2623* |
| ----- | Routing Policy Specification Language (RPSL) | 2622* |

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|----------|---|-------|
| ----- | RADIUS Authentication Server MIB | 2619* |
| ----- | RADIUS Authentication Client MIB | 2618* |
| DAA | HTTP Authentication: Basic and Digest Access Authentication | 2617* |
| HTTP-1.1 | Hypertext Transfer Protocol -- HTTP/1.1 | 2616* |
| ----- | PPP over SONET/SDH | 2615* |
| ----- | Remote Network Monitoring MIB Extensions for Switched Networks Version 1.0 | 2613* |
| DHCP-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* |
| ----- | Definitions of Managed Objects for the Delegation of Management Script | 2592* |
| ----- | Definitions of Managed Objects for Scheduling Management Operations | 2591* |
| ----- | Transmission of IPv6 Packets over Frame Relay | 2590* |
| LDAPv3 | Lightweight Directory Access Protocol (v3) | 2589* |
| ----- | Internet X.509 Public Key Infrastructure LDAPv2 Schema | 2587* |
| ----- | Internet X.509 Public Key Infrastructure Operational Protocols | 2585 |
| ----- | Definitions of Managed Objects for APPN/HPR in IP Networks | 2584 |
| TCP-CC | TCP Congestion Control | 2581 |
| ----- | Coexistence between Version 1, Version 2, and Version 3 of the Internet-standard Network Management Framework | 2576* |
| APP-MIB | Application Management MIB | 2564 |
| ----- | DHCP Option to Disable Stateless Auto-Configuration in IPv4 Clients | 2563 |
| ----- | Definitions of Protocol and Managed Objects for TN3270E Response Time Collection Using SMIV2 (TN3270E-RT-MIB) | 2562 |
| ----- | Base Definitions of Managed Objects for TN3270E Using SMIV2 | 2561 |
| PKIX | X.509 Internet Public Key Infrastructure Online Certificate Status Protocol - OCSP | 2560* |
| ----- | Internet X.509 Public Key Infrastructure Operational Protocols - LDAPv2 | 2559 |
| ----- | Definitions of Managed Objects for the SONET/SDH | 2558 |

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| | Interface Type | |
| MHTML | MIME Encapsulation of Aggregate Documents, such as HTML (MHTML) | 2557 |
| ----- | SMTP Service Extension for Authentication | 2554 |
| ----- | Use of BGP-4 Multiprotocol Extensions for IPv6 Inter-Domain Routing | 2545 |
| SIP | SIP | 2543 |
| DHK-DNS | Storage of Diffie-Hellman Keys in the Domain Name System (DNS) | 2539 |
| SC-DNS | Storing Certificates in the Domain Name System (DNS) | 2538 |
| ----- | RSA/MD5 KEYS and SIGs in the Domain Name System (DNS) | 2537 |
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| RTSP | Real Time Streaming Protocol (RTSP) | 2326 |
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| NSM-MIB | Network Services Monitoring MIB | 2248 |
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| ACAP | ACAP -- Application Configuration Access Protocol | 2244 |
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| RSVP-MIB | RSVP Management Information Base using SMIV2 | 2206 |
| RSVP | Resource ReSerVation Protocol (RSVP) -- Version 1 Functional Specification | 2205 |
| RPCSEC-GSS | RPCSEC_GSS Protocol Specification | 2203 |
| RTP-RAD | RTP Payload for Redundant Audio Data | 2198 |
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| 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) / The PPP Bandwidth Allocation Control Protocol (BACP) | 2125 |
| 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 Repeater Devices using SMIV2 | 2108 |
| 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 Class to Hold Uniform Resource Identifiers (URIs) | 2079 |
| MIME-MODEL | The Model Primary Content Type for Multipurpose Internet Mail Extensions | 2077 |
| RMON-MIB | Remote Network Monitoring MIB Protocol Identifiers | 2074 |
| HTML-INT | Internationalization of the Hypertext Markup Language | 2070 |
| IMAP-OS | Internet Message Access Protocol - Obsolete Syntax | 2062 |
| 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 Error Codes | 2034 |
| 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 using SMIV2 | 2024 |
| MULTI-UNI | Support for Multicast over UNI 3.0/3.1 based ATM Networks | 2022 |
| RMON-MIB | Remote Network Monitoring Management Information Base Version 2 using SMIV2 | 2021 |
| 802.12-MIB | IEEE 802.12 Interface MIB | 2020 |
| TCP-ACK | TCP Selective Acknowledgement Options | 2018 |

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| URL-ACC | Definition of the URL MIME External-Body Access-Type | 2017 |
| MIME-PGP | MIME Security with Pretty Good Privacy (PGP) | 2015 |
| MIB-UDP | SNMPv2 Management Information Base for the User Datagram Protocol using SMIPv2 | 2013 |
| MIB-TCP | SNMPv2 Management Information Base for the Transmission Control Protocol using SMIPv2 | 2012 |
| MIB-IP | SNMPv2 Management Information Base for the Internet Protocol using SMIPv2 | 2011 |
| MOBILEIPMI | The Definitions of Managed Objects for IP Mobility Support using SMIPv2 | 2006 |
| ----- | 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 (DNS NOTIFY) | 1996 |
| DNS-IZT | Incremental Zone Transfer in DNS | 1995 |
| SMTP-ETRN | SMTP Service Extension for Remote Message Queue Starting | 1985 |
| 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 |
| TRANS-IPV6 | Transition Mechanisms for IPv6 Hosts and Routers | 1933 |
| AUTH-SOCKS | Username/Password Authentication for SOCKS V5 | 1929 |
| SOCKSV5 | SOCKS Protocol Version 5 | 1928 |
| ----- | How to Interact with a Whois++ Mesh | 1914 |
| ----- | Architecture of the Whois++ Index Service | 1913 |
| DSN | An Extensible Message Format for Delivery Status Notifications | 1894 |
| EMS-CODE | Enhanced Mail System Status Codes | 1893 |
| MIME-RPT | The Multipart/Report Content Type for the Reporting of Mail System Administrative Messages | 1892 |
| SMTP-DSN | SMTP Service Extension for Delivery Status Notifications | 1891 |
| RTP-AV | RTP Profile for Audio and Video Conferences with Minimal Control | 1890 |
| RTP | Real-time Transport Protocol | 1889 |
| DNS-IPV6 | DNS Extensions to support IP version 6 | 1886 |
| HTML | Hypertext Markup Language - 2.0 | 1866 |
| 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 |

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| RPC | RPC | 1831 |
| ----- | The ESP DES-CBC Transform | 1829 |
| ----- | IP Authentication using Keyed MD5 | 1828 |
| ----- | Requirements for IP Version 4 Routers | 1812 |
| URL | Relative Uniform Resource Locators | 1808 |
| CLDAP | Connection-less Lightweight X.500 Directory Access Protocol | 1798 |
| OSPF-DC | Extending OSPF to Support Demand Circuits | 1793 |
| OSI-DIR | Using the OSI Directory to Achieve User Friendly Naming | 1781 |
| MIME-EDI | MIME Encapsulation of EDI Objects | 1767 |
| LANG-TAG | Tags for the Identification of Languages | 1766 |
| XNSCP | The PPP XNS IDP Control Protocol (XNSCP) | 1764 |
| BVCP | The PPP Banyan Vines Control Protocol (BVCP) | 1763 |
| Print-MIB | Printer MIB | 1759 |
| ATM-SIG | ATM Signaling Support for IP over ATM | 1755 |
| IPNG | The Recommendation for the IP Next Generation Protocol | 1752 |
| 802.5-SSR | IEEE 802.5 Station Source Routing MIB using SMIV2 | 1749 |
| SDLC SMIV2 | Definitions of Managed Objects for SNA Data Link Control (SDLC) using SMIV2 | 1747 |
| BGP4/IDRP | BGP4/IDRP for IP---OSPF Interaction | 1745 |
| AT-MIB | AppleTalk Management Information Base II | 1742 |
| MACMIME | MIME Encapsulation of Macintosh Files - MacMIME | 1740 |
| URL | Uniform Resource Locators (URL) | 1738 |
| POP3-AUTH | POP3 AUTHentication command | 1734 |
| IMAP4-AUTH | IMAP4 Authentication Mechanisms | 1731 |
| RDBMS-MIB | Relational Database Management System (RDBMS) Management Information Base (MIB) using SMIV2 | 1697 |
| MODEM-MIB | Modem Management Information Base (MIB) using SMIV2 | 1696 |
| TMUX | Transport Multiplexing Protocol (TMux) | 1692 |
| SNANAU-MIB | Definitions of Managed Objects for SNA NAUs using SMIV2 | 1666 |
| PPP-TRANS | PPP Reliable Transmission | 1663 |
| ----- | Postmaster Convention for X.400 Operations | 1648 |
| PPP-BCP | PPP Bridging Control Protocol (BCP) | 1638 |
| PPP-ISDN | PPP over ISDN | 1618 |
| DNS-R-MIB | DNS Resolver MIB Extensions | 1612 |
| DNS-S-MIB | DNS Server MIB Extensions | 1611 |
| FR-MIB | Definitions of Managed Objects for Frame Relay Service | 1604 |
| PPP-X25 | PPP in X.25 | 1598 |
| OSPF-NSSA | The OSPF NSSA Option | 1587 |
| OSPF-Multi | Multicast Extensions to OSPF | 1584 |
| RIP-DC | Extensions to RIP to Support Demand Circuits | 1582 |
| TOPT-ENVIR | Telnet Environment Option | 1572 |
| PPP-LCP | PPP LCP Extensions | 1570 |
| CIPX | Compressing IPX Headers Over WAN Media (CIPX) | 1553 |
| IPXCP | The PPP Internetworking Packet Exchange Control Protocol (IPXCP) | 1552 |

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| SRB-MIB | Definitions of Managed Objects for Source Routing Bridges | 1525 |
| CIDR-STRA | Classless Inter-Domain Routing (CIDR) | 1519 |
| CIDR-ARCH | An Architecture for IP Address Allocation with CIDR | 1518 |
| ----- | Applicability Statement for the Implementation of Classless Inter-Domain Routing (CIDR) | 1517 |
| ----- | Definitions of Managed Objects for IEEE 802.3 Medium Attachment Units (MAUs) | 1515 |
| HOST-MIB | Host Resources MIB | 1514 |
| ----- | Token Ring Extensions to the Remote Network Monitoring MIB | 1513 |
| FDDI-MIB | FDDI Management Information Base | 1512 |
| KERBEROS | The Kerberos Network Authentication Service (V5) | 1510 |
| ----- | X.400 Use of Extended Character Sets | 1502 |
| HARPOON | Rules for downgrading messages from X.400/88 to X.400/84 when MIME content-types are present in the messages | 1496 |
| ----- | Equivalences between 1988 X.400 and RFC-822 Message Bodies | 1494 |
| IDPR | Inter-Domain Policy Routing Protocol Specification | 1479 |
| IDPR-ARCH | An Architecture for Inter-Domain Policy Routing | 1478 |
| PPP/Bridge | The Definitions of Managed Objects for the Bridge Network Control Protocol of the Point-to-Point Protocol | 1474 |
| PPP/IPMIB | The Definitions of Managed Objects for the IP Network Control Protocol of the Point-to-Point Protocol | 1473 |
| PPP/SECMIB | The Definitions of Managed Objects for the Security Protocols of the Point-to-Point Protocol | 1472 |
| PPP/LCPMIB | The Definitions of Managed Objects for the Link Control Protocol of the Point-to-Point Protocol | 1471 |
| IP-TR-MC | IP Multicast over Token-Ring Local Area Networks | 1469* |
| X25-MIB | SNMP MIB extension for Multiprotocol Interconnect over X.25 | 1461 |
| SNMPv2 | Introduction to version 2 of the Internet-standard Network Management Framework | 1441 |
| PEM-KEY | Privacy Enhancement for Internet Electronic Mail | 1424 |
| PEM-ALG | Privacy Enhancement for Internet Electronic Mail | 1423 |
| PEM-CKM | Privacy Enhancement for Internet Electronic Mail | 1422 |
| PEM-ENC | Privacy Enhancement for Internet Electronic Mail | 1421 |
| SNMP-IPX | SNMP over IPX | 1420 |
| SNMP-AT | SNMP over AppleTalk | 1419 |
| SNMP-OSI | SNMP over OSI | 1418 |
| FTP-FTAM | FTP-FTAM Gateway Specification | 1415 |
| IDENT-MIB | Identification MIB | 1414 |
| IDENT | Identification Protocol | 1413 |
| BGP-OSPF | BGP OSPF Interaction | 1403 |
| ----- | Default Route Advertisement In BGP2 and BGP3 Version of The Border Gateway Protocol | 1397 |
| SNMP-X.25 | SNMP MIB Extension for the X.25 Packet Layer | 1382 |

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| SNMP-LAPB | SNMP MIB Extension for X.25 LAPB | 1381 |
| PPP-ATCP | The PPP AppleTalk Control Protocol (ATCP) | 1378 |
| PPP-OSINLC | The PPP OSI Network Layer Control Protocol (OSINLCP) | 1377 |
| ----- | IP and ARP on HIPPI | 1374 |
| TOPT-RFC | Telnet Remote Flow Control Option | 1372 |
| ----- | Applicability Statement for OSPF | 1370 |
| TOS | Type of Service in the Internet Protocol Suite | 1349 |
| 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 Internet | 1314 |
| FDDI-MIB | FDDI Management Information Base | 1285 |
| ----- | Encoding Network Addresses to Support Operation over Non-OSI Lower Layers | 1277 |
| ----- | Replication and Distributed Operations extensions to provide an Internet Directory using X.500 | 1276 |
| ----- | The COSINE and Internet X.500 Schema | 1274 |
| BGP-MIB | Definitions of Managed Objects for the Border Gateway Protocol | 1269 |
| ICMP-ROUT | ICMP Router Discovery Messages | 1256 |
| 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 environments | 1195 |
| 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 Opt | 726 |
| TOPT-EXT | Telnet extended ASCII option | 698 |

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

2.5. Experimental Protocols

| Mnemonic | Title | RFC# |
|------------|--|-------|
| ----- | Diffie-Helman USM Key Management Information Base and Textual Convention | 2786* |
| ----- | 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 Agreements Performance Monitoring | 2758* |
| 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 Protocol | 2654* |
| ----- | An LDAP Control and Schema for Holding Operation Signatures | 2649* |
| ----- | Script MIB Extensibility Protocol Version 1.0 | 2593* |
| ----- | The NewReno Modification to TCP's Fast Recovery Algorithm | 2582 |
| ----- | Mapping between LPD and IPP Protocols | 2569 |
| IPP-RAT | Rationale for the Structure of the Model and Protocol for the Internet Printing Protocol | 2568 |
| 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 |
| IPPM-MET | IPPM Metrics for Measuring Connectivity | 2498 |
| ----- | URI Resolution Services Necessary for URN Resolution | 2483 |
| ECN-IP | A Proposal to add Explicit Congestion Notification (ECN) to IP | 2481 |
| ----- | IPv6 Testing Address Allocation | 2471 |
| ----- | A Distributed MARS Service Using SCSP | 2443* |

| | | |
|------------|--|-------|
| TCP-WIN | Increasing TCP's Initial Window | 2414 |
| PIM-SM | Protocol Independent Multicast-Sparse Mode (PIM-SM) | 2362 |
| ----- | Domain Names and Company Name Retrieval | 2345 |
| RTP-MPEG | RTP Payload Format for Bundled MPEG | 2343 |
| ----- | Intra-LIS IP multicast among routers over ATM using Sparse Mode PIM | 2337 |
| ----- | The Safe Response Header Field | 2310 |
| LDAP-NIS | An Approach for Using LDAP as a Network Information Service | 2307 |
| 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 |
| ----- | A Trivial Convention for using HTTP in URN Resolution | 2169 |
| ----- | Resolution of Uniform Resource Identifiers using the Domain Name System | 2168 |
| MAP-MAIL | MaXIM-11 - Mapping between X.400 / Internet mail and Mail-11 mail | 2162 |
| 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 Interface | 2143 |
| X.500-NAME | Managing the X.500 Root Naming Context | 2120 |
| GKMP-ARCH | Group Key Management Protocol (GKMP) Architecture | 2094 |
| 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 |
| METER-MIB | Traffic Flow Measurement | 2064 |
| TFM-ARCH | Traffic Flow Measurement | 2063 |
| DNS-SRV | A DNS RR for specifying the location of services (DNS SRV) | 2052 |
| URAS | Uniform Resource Agents (URAs) | 2016 |
| GPS-AR | GPS-Based Addressing and Routing | 2009 |
| ETFTP | Experiments with a Simple File Transfer Protocol for Radio Links using Enhanced Trivial File Transfer Protocol (ETFTP) | 1986 |
| BGP-RR | BGP Route Reflection An alternative to full mesh IBGP | 1966 |
| BGP-ASC | Autonomous System Confederations for BGP | 1965 |
| SMKD | Scalable Multicast Key Distribution | 1949 |
| HTML-TBL | HTML Tables | 1942 |
| SNMPV2SM | User-based Security Model for SNMPv2 | 1910 |
| SNMPV2AI | An Administrative Infrastructure for SNMPv2 | 1909 |
| SNMPV2CB | Introduction to Community-based SNMPv2 | 1901 |
| ----- | IPv6 Testing Address Allocation | 1897 |
| ----- | OSI NSAPs and IPv6 | 1888* |

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|------------|--|-------|
| DNS-LOC | A Means for Expressing Location Information in the Domain Name System | 1876 |
| SGML-MT | SGML Media Types | 1874 |
| CONT-MT | Message/External-Body Content-ID Access Type | 1873 |
| UNARP | ARP Extension - UNARP | 1868 |
| ----- | Form-based File Upload in HTML | 1867 |
| ----- | A BGP/IDRP Route Server alternative to a full mesh routing | 1863 |
| ----- | IP Authentication using Keyed SHA | 1852 |
| ESP3DES | The ESP Triple DES Transform | 1851 |
| ----- | SMTP 521 Reply Code | 1846 |
| ----- | SMTP Service Extension for Checkpoint/Restart Directory | 1845 |
| ----- | Representing the O/R Address hierarchy in the X.500 Directory Information Tree | 1836 |
| ----- | SMTP Service Extensions for Transmission of Large and Binary MIME Messages | 1830 |
| ST2 | Internet Stream Protocol Version 2 (ST2) Protocol Specification - Version ST2+ | 1819 |
| ----- | Communicating Presentation Information in Internet Messages | 1806 |
| ----- | 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 Specification | 1644 |
| 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 Protocol Interface Version 2.0 | 1592 |
| 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 |

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|------------|--|-------|
| X400 | Routing Coordination for X.400 MHS Services Within a Multi Protocol / Multi Network Environment Table Format V3 for Static Routing | 1465 |
| DNS | Using the Domain Name System To Store Arbitrary String Attributes | 1464 |
| IRCP | Internet Relay Chat Protocol | 1459 |
| TOS-LS | Physical Link Security Type of Service | 1455 |
| SIFT/UFT | SIFT/UFT | 1440 |
| 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 (ISO 8473) and End System to Intermediate System (ISO 9542) | 1238 |
| CFDP | Coherent File Distribution Protocol | 1235 |
| IP-AX.25 | Internet protocol encapsulation of AX.25 frames | 1226 |
| ALERTS | Techniques for managing asynchronously generated alerts | 1224 |
| 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 Operations Service | 1165 |
| ----- | Message Send Protocol | 1159* |
| DMF-MAIL | Digest message format | 1153 |
| RDP | Version 2 of the Reliable Data Protocol (RDP) | 1151 |
| 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 and interface specification | 938 |

| | | |
|--------|--------------------------|----------|
| LDP | Loader Debugger Protocol | 909 |
| RDP | Reliable Data Protocol | 908 |
| NVP-II | Network Voice Protocol | ISI-memo |
| PVP | Packet Video Protocol | ISI-memo |

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

2.6. Historic Protocols

| Mnemonic | Title | RFC# |
|------------|---|-------|
| L2F | Cisco Layer Two Forwarding (Protocol) "L2F" | 2341 |
| IPV6-UNI | An IPv6 Provider-Based Unicast Address Format | 2073 |
| ----- | RIPv1 Applicability Statement for Historic Status | 1923 |
| IPV6-Addr | IP Version 6 Addressing Architecture | 1884 |
| SNMPv2 | Manager-to-Manager Management Information Base | 1451 |
| SNMPv2 | Party MIB for version 2 of the Simple Network Management Protocol (SNMPv2) | 1447 |
| SNMPv2 | Security Protocols for version 2 of the Simple Network Management Protocol (SNMPv2) | 1446 |
| SNMPv2 | Administrative Model for version 2 of the Simple Network Management Protocol (SNMPv2) | 1445 |
| TOPT-ENVIR | Telnet Environment Option | 1408 |
| SNMP-PARTY | Definitions of Managed Objects for Administration of SNMP Parties | 1353* |
| SNMP-SEC | SNMP Security Protocols | 1352* |
| SNMP-ADMIN | SNMP Administrative Model | 1351* |
| BGP3 | Application of the Border Gateway Protocol in the Internet | 1268 |
| BGP3 | Border Gateway Protocol 3 (BGP-3) | 1267 |
| OSI-UDP | OSI connectionless transport services on top of UDP | 1240* |
| 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 for the Internet (CMOT and CMIP) | 1189 |
| BGP | Application of the Border Gateway Protocol in the Internet | 1164 |
| BGP | Border Gateway Protocol (BGP) | 1163 |
| MIB-I | Management Information Base for network management of TCP/IP-based internets | 1156 |
| ----- | Mapping between full RFC 822 and RFC 822 with restricted encoding | 1137 |
| ----- | 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 the Internet Protocol | 1108 |
| RIP | Routing Information Protocol (STD34) | 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 |
| HEMS | High-level Entity Management System (HEMS) | 1021 |
| ----- | Requirements for Internet gateways (STD4) | 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 | 916 |
| THINWIRE | Thinwire protocol for connecting personal computers to the Internet | 914 |
| SFTP | Simple File Transfer Protocol | 913 |
| EGP | Exterior Gateway Protocol formal specification (STD18) | 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 |
| XNET | Cross Net Debugger | IEN-158 |
| NAMESERVER | Host Name Server Protocol | IEN-116 |
| MUX | Multiplexing Protocol | IEN-90 |
| GRAPHICS | Graphics Protocol | NIC-24308 |

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

3. Security Considerations

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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