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Internet Engineering Task Force  
J. Reynolds  
R. Braden  
S. Ginoza  
Editors  
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## Internet Official Protocol Standards

### Status of this Memo

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

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### Abstract

This memo contains a snapshot of the state of standardization of protocols used in the Internet as of April 17, 2001. It lists only official protocol standards 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 . . . . .   | 2  |
| 2. Contacts . . . . .   | 2  |
| 2.1. Internet-Related Organizations . . . . .                 | 2  |
| 2.2. Request for Comments Editor (RFC Editor) Web Pages . . . | 2  |
| 2.3. Retrieval using FTP . . . . .                            | 3  |
| 2.4. Search and Retrieval Using Email . . . . .               | 4  |
| 3. Current Technical Specifications . . . . .                 | 5  |
| 3.1. Standard Protocols Ordered by STD . . . . .              | 5  |
| 3.2. Standard Protocols Ordered by RFC . . . . .              | 8  |
| 3.3. Draft Standard Protocols . . . . .                       | 10 |
| 3.4. Proposed Standard Protocols . . . . .                    | 13 |
| 3.5. Experimental Protocols . . . . .                         | 30 |
| 3.6. Historic Protocols . . . . .                             | 35 |
| 4. Security Considerations . . . . .                          | 37 |
| 5. Editors' Addresses . . . . .                               | 37 |
| 6. Full Copyright Statement . . . . .                         | 38 |

## 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 April 17, 2001 snapshot of the current official protocol standards 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 and Historic. 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, 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](http://www.iab.org)

Internet Engineering Task Force (IETF) Contact: [www.ietf.org](http://www.ietf.org)

Internet Research Task Force (IRTF) Contact: [www.irtf.org](http://www.irtf.org)

Internet Assigned Numbers Authority (IANA) Contact: [www.iana.org](http://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  | 2800 | 1*   |
| -----      | Assigned Numbers  | 1700 | 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       | [Reserved for Simple Mail Transfer Protocol (SMTP). See RFC 2821.]                      |      | 10*  |
| SMTP-SIZE  | SMTP Service Extension for Message Size Declaration                                     | 1870 | 10   |
| MAIL       | [Reserved for Internet Message Format. See RFC 2822.]                                   |      | 11*  |
| NTP        | [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   |
| DNS-MX     | [Was Mail Routing and the Domain System (RFC974). 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   |
| EGP        | [Was Exterior Gateway Protocol (RFC904). 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   |

|            |   |      |     |
|------------|---|------|-----|
| 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  |
| RIP1       | [Was Routing Information Protocol (RIP). Replaced by STD 56.]   |      | 34* |
| TP-TCP     | ISO transport services on top of the TCP: Version 3   | 1006 | 35  |
| IP-FDDI    | Transmission of IP and ARP over FDDI Networks   | 1390 | 36  |
| ARP        | Ethernet Address Resolution Protocol: Or converting network protocol addresses to 48.bit Ethernet address for transmission on Ethernet hardware | 826  | 37  |
| RARP       | Reverse Address Resolution Protocol   | 903  | 38  |
| -----      | [Was BBN Report 1822 (IMP/Host Interface). Now Historic.]   |      | 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: Protocol specification  | 1044 | 45  |
| IP-ARC     | Transmitting IP traffic over ARCNET networks  | 1201 | 46  |
| IP-SLIP    | Nonstandard for transmission of IP datagrams over serial lines: SLIP  | 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<br>2 (SMIv2) | 2578 | 58  |
| CONV-MIB  | Textual Conventions for SMIv2                            | 2579 | 58  |
| CONF-MIB  | Conformance Statements for SMIv2                         | 2580 | 58  |
| RMON-MIB  | Remote Network Monitoring Management Information<br>Base | 2819 | 59  |
| 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#  |
|------------|---|------|-------|
| SMTP-Pipe  | SMTP Service Extension for Command Pipelining                                       | 60*  | 2920* |
| RMON-MIB   | Remote Network Monitoring Management Information Base                               | 59   | 2819  |
| IAB        | Internet Official Protocol Standards  | 1*   | 2800* |
| CONF-MIB   | Conformance Statements for SMIV2  | 58   | 2580  |
| CONV-MIB   | Textual Conventions for SMIV2   | 58   | 2579  |
| SMIV2      | Structure of Management Information Version 2 (SMIV2)                               | 58   | 2578  |
| 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  |
| -----      | Assigned Numbers  | 2    | 1700  |
| 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-like Interface Types                | 50   | 1643  |
| 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 of TCP/IP-based internets:MIB-II | 17   | 1213  |
| 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 information for TCP/IP-based internets   | 16   | 1155  |
| IP-IPX     | Standard for the transmission of 802.2 packets over IPX networks                    | 49   | 1132  |
| -----      | Requirements for Internet Hosts - Application and Support                           | 3    | 1123  |
| -----      | Requirements for Internet Hosts - Communication Layers                              | 3    | 1122  |
| IGMP       | Host extensions for IP multicasting   | 5    | 1112  |
| IP-NETBIOS | Standard for the transmission of IP datagrams over NetBIOS networks                 | 48   | 1088  |
| IP-SLIP    | Nonstandard for transmission of IP datagrams over serial lines: SLIP                | 47   | 1055  |
| IP-HC      | Internet Protocol on Network System's HYPERchannel: Protocol specification          | 45   | 1044  |

|            |   |     |      |
|------------|---|-----|------|
| IP-IEEE    | Standard for the transmission of IP datagrams over IEEE 802 networks  | 43  | 1042 |
| 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: Version 3   | 35  | 1006 |
| NETBIOS    | Protocol standard for a NetBIOS service on a TCP/UDP transport: Detailed specifications   | 19  | 1002 |
| NETBIOS    | Protocol standard for a NetBIOS service on a TCP/UDP transport: Concepts and methods  | 19  | 1001 |
| FTP        | File Transfer Protocol  | 9   | 959  |
| -----      | Internet Standard Subnetting Procedure  | 5   | 950  |
| -----      | Broadcasting Internet datagrams in the presence of subnets  | 5   | 922  |
| -----      | 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 over experimental Ethernet networks   | 42  | 895  |
| IP-E       | Standard for the transmission of IP datagrams over Ethernet networks  | 41  | 894  |
| 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 network protocol addresses to 48.bit Ethernet address for transmission on Ethernet hardware | 37  | 826  |
| 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# |
|------------|---|------|
| RADIUS     | Remote Authentication Dial In User Service (RADIUS)   | 2865 |
| INTERGRMIB | The Interfaces Group MIB  | 2863 |
| -----      | Host Resources MIB  | 2790 |
| -----      | HTTP Authentication: Basic and Digest Access Authentication   | 2617 |
| HTTP       | Hypertext Transfer Protocol -- HTTP/1.1   | 2616 |
| 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): 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 DTEs Using SMiv2  | 2115 |
| IP-HIPPI   | IP over HIPPI   | 2067 |
| MIME-CONF  | Multipurpose Internet Mail Extensions (MIME) Part Five: Conformance Criteria and Examples             | 2049 |
| MIME-MSG   | MIME (Multipurpose Internet Mail Extensions) Part Three: Message Header Extensions for Non-ASCII Text | 2047 |
| MIME-MEDIA | Multipurpose Internet Mail Extensions (MIME) Part Two: Media Types                                    | 2046 |
| MIME       | Multipurpose Internet Mail Extensions (MIME) Part One: Format of Internet Message Bodies              | 2045 |
| PPP-CHAP   | PPP Challenge Handshake Authentication Protocol (CHAP)  | 1994 |
| PPP-MP     | The PPP Multilink Protocol (MP)   | 1990 |

|            |   |       |
|------------|---|-------|
| PPP-LINK   | PPP Link Quality Monitoring   | 1989  |
| SNMPv2-MIB | Management Information Base for Version 2<br>of the Simple Network Management Protocol (SNMPv2)                 | 1907  |
| TRANS-MIB  | Transport Mappings for Version 2 of the Simple<br>Network Management Protocol (SNMPv2)                          | 1906  |
| OPS-MIB    | Protocol Operations for Version 2 of the Simple<br>Network Management Protocol (SNMPv2)                         | 1905  |
| 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<br>Syntaxes   | 1778  |
| -----      | Lightweight Directory Access Protocol   | 1777  |
| BGP-4-APP  | Application of the Border Gateway Protocol<br>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  |
| 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<br>using SMIV2   | 1694  |
| -----      | Definitions of Managed Objects for Parallel-<br>printer-like Hardware Devices using SMIV2                       | 1660  |
| -----      | Definitions of Managed Objects for RS-232-<br>like Hardware Devices using SMIV2                                 | 1659  |
| -----      | Definitions of Managed Objects for Character<br>Stream Devices using SMIV2                                      | 1658  |
| BGP-4-MIB  | Definitions of Managed Objects for the Fourth<br>Version of the Border Gateway Protocol (BGP-<br>4) using SMIV2 | 1657  |
| -----      | 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<br>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<br>in the Packet Mode   | 1356  |
| NTPV3      | Network Time Protocol (Version 3) Specification,<br>Implementation  | 1305  |
| FINGER     | The Finger User Information Protocol  | 1288  |
| IP-MTU     | Path MTU discovery  | 1191  |
| -----      | Proposed Standard for the Transmission of<br>IP Datagrams over FDDI Networks                                    | 1188* |

|           |                        |      |
|-----------|------------------------|------|
| 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#  |
|----------|--|-------|
| -----    | Mobile IP Vendor/Organization-Specific Extensions  | 3115* |
| -----    | DNS Security Extension Clarification on Zone Status  | 3090* |
| COPS-PR  | COPS Usage for Policy Provisioning (COPS-PR)   | 3084* |
| -----    | Mapping the BEEP Core onto TCP   | 3081* |
| BEEP     | The Blocks Extensible Exchange Protocol Core   | 3080* |
| -----    | A Link-Layer Tunneling Mechanism for Unidirectional Links  | 3077* |
| -----    | XML-Signature Syntax and Processing  | 3075* |
| -----    | DHC Load Balancing Algorithm   | 3074* |
| L2TP-FR  | Layer Two Tunneling Protocol (L2TP) over Frame Relay   | 3070* |
| BGP-ASC  | Autonomous System Confederations for BGP   | 3065* |
| -----    | LDAP Password Modify Extended Operation  | 3062* |
| CIM      | Policy Core Information Model -- Version 1 Specification   | 3060* |
| SLPv2    | Attribute List Extension for the Service Location Protocol   | 3059* |
| -----    | ISDN Q.921-User Adaptation Layer   | 3057* |
| -----    | Connection of IPv6 Domains via IPv4 Clouds   | 3056* |
| -----    | Management Information Base for the PINT Services Architecture   | 3055* |
| -----    | TN3270E Service Location and Session Balancing   | 3049* |
| -----    | RTP Payload Format for ITU-T Recommendation G.722.1  | 3047* |
| -----    | DHCP Relay Agent Information Option  | 3046* |
| -----    | Enhancing TCP's Loss Recovery Using Limited Transmit   | 3042* |
| -----    | Privacy Extensions for Stateless Address Autoconfiguration in IPv6   | 3041* |
| -----    | Internet X.509 Public Key Infrastructure Qualified Certificates Profile  | 3039* |
| -----    | VCID Notification over ATM link for LDP  | 3038* |
| -----    | LDP Specification  | 3036* |
| -----    | MPLS using LDP and ATM VC Switching  | 3035* |
| -----    | Use of Label Switching on Frame Relay Networks Specification   | 3034* |
| -----    | The Assignment of the Information Field and Protocol Identifier in the Q.2941 Generic Identifier and Q.2957 User-to-user Signaling for the Internet Protocol | 3033* |
| -----    | MPLS Label Stack Encoding  | 3032* |
| MPLS     | Multiprotocol Label Switching Architecture   | 3031* |
| -----    | SMTP Service Extensions for Transmission of Large and Binary MIME Messages   | 3030* |
| -----    | Sieve: A Mail Filtering Language   | 3028* |
| -----    | Reverse Tunneling for Mobile IP, revised   | 3024* |
| -----    | XML Media Types  | 3023* |

|        |   |       |
|--------|---|-------|
| -----  | Using 31-Bit Prefixes on IPv4 Point-to-Point Links  | 3021* |
| -----  | Definitions of Managed Objects for Monitoring and<br>Controlling the UNI/NNI Multilink Frame Relay<br>Function            | 3020* |
| -----  | IP Version 6 Management Information Base for The<br>Multicast Listener Discovery Protocol                                 | 3019* |
| -----  | XML DTD for Roaming Access Phone Book   | 3017* |
| -----  | RTP Payload Format for MPEG-4 Audio/Visual Streams  | 3016* |
| MEGACO | Megaco Protocol Version 1.0   | 3015* |
| -----  | Notification Log MIB  | 3014* |
| -----  | Mobile IPv4 Challenge/Response Extensions   | 3012* |
| -----  | The IPv4 Subnet Selection Option for DHCP   | 3011* |
| NFSV4  | NFS version 4 Protocol  | 3010* |
| -----  | Registration of parityfec MIME types  | 3009* |
| DNSSEC | Domain Name System Security (DNSSEC) Signing Authority  | 3008* |
| -----  | Secure Domain Name System (DNS) Dynamic Update  | 3007* |
| -----  | Integrated Services in the Presence of Compressible<br>Flows  | 3006* |
| -----  | The User Class Option for DHCP  | 3004* |
| -----  | The audio/mpeg Media Type   | 3003* |
| -----  | Specification of the Null Service Type  | 2997* |
| -----  | Format of the RSVP DCLASS Object  | 2996* |
| -----  | Computing TCP's Retransmission Timer  | 2988* |
| -----  | Registration of Charset and Languages Media Features<br>Tags  | 2987* |
| -----  | Use of the CAST-128 Encryption Algorithm in CMS   | 2984* |
| -----  | Distributed Management Expression MIB   | 2982* |
| -----  | Event MIB   | 2981* |
| -----  | The SIP INFO Method   | 2976* |
| -----  | IMAP4 ID extension  | 2971* |
| -----  | HTTP State Management Mechanism   | 2965* |
| -----  | Stream Control Transmission Protocol  | 2960* |
| -----  | Real-Time Transport Protocol Management Information<br>Base   | 2959* |
| -----  | Definitions of Managed Objects for Monitoring and<br>Controlling the Frame Relay/ATM PVC Service<br>Interworking Function | 2955* |
| FR-MIB | Definitions of Managed Objects for Frame Relay<br>Service   | 2954* |
| -----  | Telnet Encryption: CAST-128 64 bit Cipher Feedback  | 2950* |
| -----  | Telnet Encryption: CAST-128 64 bit Output Feedback  | 2949* |
| -----  | Telnet Encryption: DES3 64 bit Output Feedback  | 2948* |
| -----  | Telnet Encryption: DES3 64 bit Cipher Feedback  | 2947* |
| -----  | Telnet Data Encryption Option   | 2946* |
| -----  | The SRP Authentication and Key Exchange System  | 2945* |
| -----  | Telnet Authentication: SRP  | 2944* |
| -----  | TELNET Authentication Using DSA   | 2943* |
| -----  | Telnet Authentication: Kerberos Version 5   | 2942* |

|            |  |       |
|------------|--|-------|
| TOPT-AUTH  | Telnet Authentication Option                           | 2941* |
| -----      | Definitions of Managed Objects for Common Open         | 2940* |
|            | Policy Service (COPS) Protocol Clients                 |       |
| -----      | Identifying Composite Media Features                   | 2938* |
| -----      | The Name Service Search Option for DHCP                | 2937* |
| IOTP-HTTP  | Internet Open Trading Protocol (IOTP) HTTP Supplement  | 2935* |
| -----      | Internet Group Management Protocol MIB                 | 2933* |
| -----      | IPv4 Multicast Routing MIB                             | 2932* |
| -----      | DNS Request and Transaction Signatures ( SIG(0)s )     | 2931* |
| TKEY-RR    | Secret Key Establishment for DNS (TKEY RR)             | 2930* |
| -----      | Definitions of Managed Objects for Remote Ping,        | 2925* |
|            | Traceroute, and Lookup Operations                      |       |
| -----      | Route Refresh Capability for BGP-4                     | 2918* |
| -----      | E.164 number and DNS                                   | 2916* |
| NAPTR      | The Naming Authority Pointer (NAPTR) DNS Resource      | 2915* |
|            | Record   |       |
| -----      | MIME Content Types in Media Feature Expressions        | 2913* |
| -----      | Indicating Media Features for MIME Content             | 2912* |
| IPP-M-S    | Internet Printing Protocol/1.1: Model and Semantics    | 2911* |
| IPP-E-T    | Internet Printing Protocol/1.1: Encoding and Transport | 2910* |
| -----      | MADCAP Multicast Scope Nesting State Option            | 2907* |
| RMON-MIB   | Remote Network Monitoring MIB Protocol Identifier      | 2895* |
|            | Reference  |       |
| -----      | Router Renumbering for IPv6                            | 2894  |
| TRANS-IPV6 | Transition Mechanisms for IPv6 Hosts and Routers       | 2893  |
| -----      | LDAP Control Extension for Server Side Sorting         | 2891  |
|            | of Search Results                                      |       |
| -----      | Key and Sequence Number Extensions to GRE              | 2890  |
| SACK       | An Extension to the Selective Acknowledgement (SACK)   | 2883  |
|            | Option for TCP   |       |
| -----      | Content Feature Schema for Internet Fax (V2)           | 2879  |
| PPP-BCP    | PPP Bridging Control Protocol (BCP)                    | 2878  |
| -----      | Diffie-Hellman Proof-of-Possession Algorithms          | 2875  |
| -----      | DNS Extensions to Support IPv6 Address Aggregation     | 2874  |
|            | and Renumbering  |       |
| -----      | TCP Processing of the IPv4 Precedence Field            | 2873  |
| -----      | Application and Sub Application Identity Policy        | 2872  |
|            | Element for Use with                                   |       |
| -----      | The Inverted Stack Table Extension to the Interfaces   | 2864  |
|            | Group MIB  |       |
| -----      | RTP Payload Format for Real-Time Pointers              | 2862  |
| MEXT-BGP4  | Multiprotocol Extensions for BGP-4                     | 2858  |
| -----      | The Use of HMAC-RIPEMD-160-96 within ESP and AH        | 2857  |
| SNMP       | Textual Conventions for Additional High Capacity       | 2856  |
|            | Data Types   |       |
| -----      | DHCP for IEEE 1394                                     | 2855  |
| -----      | Generic Security Service API Version 2 : Java Bindings | 2853  |
| -----      | Deliver By SMTP Service Extension                      | 2852  |

|          |  |      |
|----------|--|------|
| -----    | Textual Conventions for Internet Network Addresses   | 2851 |
| LDIF     | The LDAP Data Interchange Format (LDIF) - Technical Specification  | 2849 |
| -----    | The PINT Service Protocol: Extensions to SIP and SDP for IP Access to Telephone Call Services            | 2848 |
| LIPKEY   | LIPKEY - A Low Infrastructure Public Key Mechanism Using SPKM  | 2847 |
| -----    | GSTN Address Element Extensions in E-mail Services   | 2846 |
| TSIG     | Secret Key Transaction Authentication for DNS (TSIG)   | 2845 |
| -----    | Capabilities Advertisement with BGP-4  | 2842 |
| -----    | Definitions of Managed Objects for the Fabric Element in Fibre Channel Standard                          | 2837 |
| -----    | Per Hop Behavior Identification Codes  | 2836 |
| GSN      | IP and ARP over HIPPI-6400 (GSN)   | 2835 |
| -----    | ARP and IP Broadcast over HIPPI-800  | 2834 |
| -----    | RTP Payload for DTMF Digits, Telephony Tones and Telephony Signals                                       | 2833 |
| -----    | Using Digest Authentication as a SASL Mechanism  | 2831 |
| LDAP     | Lightweight Directory Access Protocol (v3): Extension for Transport Layer Security                       | 2830 |
| -----    | Authentication Methods for LDAP  | 2829 |
| -----    | Integrated Service Mappings on IEEE 802 Networks   | 2815 |
| -----    | SBM (Subnet Bandwidth Manager): A Protocol for RSVP-based Admission Control over IEEE 802-style networks | 2814 |
| -----    | URLs for Telephone Calls   | 2806 |
| -----    | Certificate Management Messages over CMS   | 2797 |
| -----    | BGP Route Reflection - An Alternative to Full Mesh IBGP  | 2796 |
| -----    | Mobile IP Network Access Identifier Extension for IPv4   | 2794 |
| -----    | RTP Payload for Text Conversation  | 2793 |
| -----    | Mail Monitoring MIB  | 2789 |
| -----    | Network Services Monitoring MIB  | 2788 |
| -----    | Definitions of Managed Objects for the Virtual Router Redundancy Protocol                                | 2787 |
| GRE      | Generic Routing Encapsulation (GRE)  | 2784 |
| DNS-SRV  | A DNS RR for specifying the location of services (DNS SRV)   | 2782 |
| MZAP     | Multicast-Scope Zone Announcement Protocol (MZAP)  | 2776 |
| RPSL     | Routing Policy System Replication  | 2769 |
| NAT-PT   | Network Address Translation - Protocol Translation (NAT-PT)  | 2766 |
| SIIT     | 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-RSV | COPS usage for RSVP  | 2749 |
| 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<br>Version 2, Update 1   | 2743 |
| -----    | Definitions of Managed Objects for Extensible SNMP<br>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<br>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<br>Correction   | 2733 |
| -----    | Format for Literal IPv6 Addresses in URL's  | 2732 |
| MADCAP   | Multicast Address Dynamic Client Allocation Protocol<br>(MADCAP)  | 2730 |
| -----    | The Transmission of IP Over the Vertical Blanking<br>Interval of a Television Signal                                  | 2728 |
| -----    | PGP Authentication for RIPE Database Updates  | 2726 |
| -----    | Routing Policy System Security  | 2725 |
| -----    | Traffic Flow Measurement: Meter MIB   | 2720 |
| TLS      | Addition of Kerberos Cipher Suites to Transport<br>Layer Security (TLS)   | 2712 |
| -----    | IPv6 Router Alert Option  | 2711 |
| MLD-IPv6 | Multicast Listener Discovery (MLD) for IPv6   | 2710 |
| -----    | Integrated Services Mappings for Low Speed Networks   | 2688 |
| -----    | PPP in a Real-time Oriented HDLC-like Framing   | 2687 |
| -----    | The Multi-Class Extension to Multi-Link PPP   | 2686 |
| VPNI     | Virtual Private Networks Identifier   | 2685 |
| -----    | Multiprotocol Encapsulation over ATM Adaptation<br>Layer 5  | 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 |
| NHRP-MIB | Definitions of Managed Objects for the NBMA Next<br>Hop Resolution Protocol (NHRP)                                    | 2677 |
| -----    | IPv6 Jumbograms   | 2675 |
| -----    | Definitions of Managed Objects for Bridges with<br>Traffic Classes, Multicast Filtering and Virtual<br>LAN Extensions | 2674 |
| DNS      | Binary Labels in the Domain Name System   | 2673 |
| -----    | Non-Terminal DNS Name Redirection   | 2672 |

|          |  |      |
|----------|--|------|
| EDNS0    | Extension Mechanisms for DNS (EDNS0)                   | 2671 |
| -----    | Radio Frequency (RF) Interface Management Information  | 2670 |
|          | Base for MCNS/DOCSIS compliant RF interfaces           |      |
| -----    | DOCSIS Cable Device MIB Cable Device Management        | 2669 |
|          | Information Base for DOCSIS compliant Cable            |      |
|          | Modems and Cable Modem Termination Systems             |      |
| MAU-MIB  | Definitions of Managed Objects for IEEE 802.3 Medium   | 2668 |
|          | Attachment Units (MAUs)                                |      |
| -----    | IP Tunnel MIB  | 2667 |
| -----    | Definitions of Managed Objects for the Ethernet-       | 2665 |
|          | like Interface Types                                   |      |
| -----    | Definitions of Managed Objects for the ADSL Lines      | 2662 |
| L2TP     | 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        | 2652 |
|          | Protocol (CIP)   |      |
| CIP      | The Architecture of the Common Indexing Protocol (CIP) | 2651 |
| -----    | The Text/Plain Format Parameter                        | 2646 |
| ODMR-SMT | ON-DEMAND MAIL RELAY (ODMR) SMTP with Dynamic IP       | 2645 |
|          | Addresses  |      |
| -----    | Internationalization of the File Transfer Protocol     | 2640 |
| -----    | Enhanced Security Services for S/MIME                  | 2634 |
| -----    | S/MIME Version 3 Message Specification                 | 2633 |
| -----    | S/MIME Version 3 Certificate Handling                  | 2632 |
| -----    | Diffie-Hellman Key Agreement Method                    | 2631 |
| -----    | Cryptographic Message Syntax                           | 2630 |
| -----    | IP and ARP over Fibre Channel                          | 2625 |
| -----    | NFS Version 2 and Version 3 Security Issues and        | 2623 |
|          | the NFS Protocol's Use of RPCSEC_GSS and Kerberos      |      |
|          | V5   |      |
| RPSL     | Routing Policy Specification Language (RPSL)           | 2622 |
| -----    | RADIUS Authentication Server MIB                       | 2619 |
| -----    | RADIUS Authentication Client MIB                       | 2618 |
| -----    | PPP over SONET/SDH                                     | 2615 |
| -----    | Remote Network Monitoring MIB Extensions for Switched  | 2613 |
|          | Networks Version 1.0                                   |      |
| -----    | DHCP Options for Service Location Protocol             | 2610 |
| -----    | Service Templates and Service: Schemes                 | 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<br>of Management Script   | 2592  |
| -----      | Definitions of Managed Objects for Scheduling<br>Management Operations  | 2591  |
| -----      | Transmission of IPv6 Packets over Frame Relay Networks<br>Specification   | 2590* |
| LDAPv3     | Lightweight Directory Access Protocol (v3): Extensions<br>for Dynamic Directory Services                            | 2589  |
| -----      | Internet X.509 Public Key Infrastructure LDAPv2 Schema  | 2587  |
| -----      | Internet X.509 Public Key Infrastructure Operational<br>Protocols: FTP and HTTP                                     | 2585  |
| -----      | Definitions of Managed Objects for APPN/HPR in<br>IP Networks   | 2584  |
| TCP-CC     | TCP Congestion Control  | 2581  |
| SNMP       | Coexistence between Version 1, Version 2, and Version<br>3 of the Internet-standard Network Management<br>Framework | 2576  |
| APP-MIB    | Application Management MIB  | 2564  |
| -----      | DHCP Option to Disable Stateless Auto-Configuration<br>in IPv4 Clients  | 2563  |
| TN3270E-R  | Definitions of Protocol and Managed Objects for<br>TN3270E Response Time Collection Using SMIV2<br>(TN3270E-RT-MIB) | 2562  |
| -----      | Base Definitions of Managed Objects for TN3270E<br>Using SMIV2  | 2561  |
| PKIX       | X.509 Internet Public Key Infrastructure Online<br>Certificate Status Protocol - OCSP                               | 2560  |
| -----      | Internet X.509 Public Key Infrastructure Operational<br>Protocols - LDAPv2  | 2559  |
| -----      | Definitions of Managed Objects for the SONET/SDH<br>Interface Type  | 2558  |
| MHTML      | MIME Encapsulation of Aggregate Documents, such<br>as HTML (MHTML)  | 2557  |
| -----      | SMTP Service Extension for Authentication   | 2554  |
| -----      | Use of BGP-4 Multiprotocol Extensions for IPv6<br>Inter-Domain Routing  | 2545  |
| SIP        | SIP: Session Initiation Protocol  | 2543  |
| DHK-DNS    | Storage of Diffie-Hellman Keys in the Domain Name<br>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  |
| -----      | DSA KEYS and SIGs in the Domain Name System (DNS)   | 2536  |
| DNS-SECEXT | Domain Name System Security Extensions  | 2535  |
| -----      | Media Features for Display, Print, and Fax  | 2534  |
| -----      | A Syntax for Describing Media Feature Sets  | 2533  |
| -----      | Extended Facsimile Using Internet Mail  | 2532  |

|            |   |      |
|------------|---|------|
| -----      | Indicating Supported Media Features Using Extensions to DSN and MDN   | 2530 |
| -----      | Transmission of IPv6 over IPv4 Domains without Explicit Tunnels   | 2529 |
| -----      | Reserved IPv6 Subnet Anycast Addresses  | 2526 |
| WEBDAV     | HTTP Extensions for Distributed Authoring -- WEBDAV   | 2518 |
| ATM-MIBMAN | Definitions of Managed Objects for ATM Management   | 2515 |
| ATM-TC-OID | Definitions of Textual Conventions and OBJECT-IDENTITIES for ATM Management   | 2514 |
| -----      | Managed Objects for Controlling the Collection and Storage of Accounting Information for Connection-Oriented Networks | 2513 |
| -----      | Accounting Information for ATM Networks   | 2512 |
| X.509-CRMF | Internet X.509 Certificate Request Message Format   | 2511 |
| PKICMP     | Internet X.509 Public Key Infrastructure Certificate Management Protocols   | 2510 |
| IPCOM-PPP  | IP Header Compression over PPP  | 2509 |
| -----      | Compressing IP/UDP/RTP Headers for Low-Speed Serial Links   | 2508 |
| -----      | IP Header Compression   | 2507 |
| -----      | Transmission of IPv6 Packets over ARCnet Networks   | 2497 |
| DS3-E3-MIB | Definitions of Managed Object for the DS3/E3 Interface Type   | 2496 |
| -----      | Definitions of Managed Objects for the DS1, E1, DS2 and E2 Interface Types  | 2495 |
| -----      | Definitions of Managed Objects for the DS0 and DS0 Bundle Interface Type  | 2494 |
| -----      | Textual Conventions for MIB Modules Using Performance History Based on 15 Minute Intervals                            | 2493 |
| IPv6ATMNET | IPv6 over ATM Networks  | 2492 |
| IPv6-NBMA  | IPv6 over Non-Broadcast Multiple Access (NBMA) networks   | 2491 |
| SMTP-TLS   | SMTP Service Extension for Secure SMTP over TLS   | 2487 |
| NAI        | The Network Access Identifier   | 2486 |
| -----      | DHCP Option for The Open Group's User Authentication Protocol   | 2485 |
| -----      | PPP LCP Internationalization Configuration Option   | 2484 |
| -----      | Gateways and MIME Security Multiparts   | 2480 |
| -----      | The Simple and Protected GSS-API Negotiation Mechanism  | 2478 |
| -----      | Message Submission  | 2476 |
| -----      | Definition of the Differentiated Services Field (DS Field) in the IPv4 and IPv6 Headers                               | 2474 |
| -----      | Generic Packet Tunneling in IPv6 Specification  | 2473 |
| IPv6-PPP   | IP Version 6 over PPP   | 2472 |
| -----      | Transmission of IPv6 Packets over Token Ring Networks   | 2470 |
| -----      | Transmission of IPv6 Packets over FDDI Networks   | 2467 |
| ICMPv6-MIB | Management Information Base for IP Version 6: ICMPv6 Group  | 2466 |

|            |  |      |
|------------|--|------|
| -----      | Management Information Base for IP Version 6: Textual Conventions and General Group                                      | 2465 |
| -----      | Transmission of IPv6 Packets over Ethernet Networks  | 2464 |
| -----      | Internet X.509 Public Key Infrastructure Certificate and CRL Profile   | 2459 |
| EBN-MIB    | Definitions of Managed Objects for Extended Border Node  | 2457 |
| -----      | Definitions of Managed Objects for APPN TRAPS  | 2456 |
| APPN-MIB   | Definitions of Managed Objects for APPN  | 2455 |
| -----      | IP Version 6 Management Information Base for the User Datagram Protocol  | 2454 |
| -----      | IP Version 6 Management Information Base for the Transmission Control Protocol   | 2452 |
| -----      | The ESP CBC-Mode Cipher Algorithms   | 2451 |
| POP3-EXT   | POP3 Extension Mechanism   | 2449 |
| IMIP       | iCalendar Message-Based Interoperability Protocol (iMIP)   | 2447 |
| ITIP       | iCalendar Transport-Independent Interoperability Protocol (iTIP) Scheduling Events, BusyTime, To-dos and Journal Entries | 2446 |
| ICALNDAR   | Internet Calendaring and Scheduling Core Object Specification (iCalendar)  | 2445 |
| OTP-SASL   | The One-Time-Password SASL Mechanism   | 2444 |
| -----      | OpenPGP Message Format   | 2440 |
| -----      | BGP Route Flap Damping   | 2439 |
| -----      | RTP Payload Format for JPEG-compressed Video   | 2435 |
| -----      | RTP Payload Format for BT.656 Video Encoding   | 2431 |
| -----      | RTP Payload Format for the 1998 Version of ITU-T Rec. H.263 Video (H.263+)   | 2429 |
| -----      | FTP Extensions for IPv6 and NATs   | 2428 |
| MIME-VCARD | vCard MIME Directory Profile   | 2426 |
| TXT-DIR    | A MIME Content-Type for Directory Information  | 2425 |
| CONT-DUR   | Content Duration MIME Header Definition  | 2424 |
| MIME-VPIM  | VPIM Voice Message MIME Sub-type Registration  | 2423 |
| MIME-ADPCM | Toll Quality Voice - 32 kbit/s ADPCM MIME Sub-type Registration  | 2422 |
| MIME-VP2   | Voice Profile for Internet Mail - version 2  | 2421 |
| 3DESE      | The PPP Triple-DES Encryption Protocol (3DESE)   | 2420 |
| DESE-bis   | The PPP DES Encryption Protocol, Version 2 (DESE-bis)  | 2419 |
| -----      | Definitions of Managed Objects for Multicast over UNI 3.0/3.1 based ATM Networks   | 2417 |
| -----      | The NULL Encryption Algorithm and Its Use With IPsec   | 2410 |
| IKE        | The Internet Key Exchange (IKE)  | 2409 |
| ISAKMP     | Internet Security Association and Key Management Protocol (ISAKMP)   | 2408 |
| ISAKMPSEC  | The Internet IP Security Domain of Interpretation for ISAKMP   | 2407 |
| ESP        | IP Encapsulating Security Payload (ESP)  | 2406 |

|            |  |      |
|------------|--|------|
| ESPDES-CBC | The ESP DES-CBC Cipher Algorithm With Explicit IV  | 2405 |
| -----      | The Use of HMAC-SHA-1-96 within ESP and AH   | 2404 |
| -----      | The Use of HMAC-MD5-96 within ESP and AH   | 2403 |
| IP-AUTH    | IP Authentication Header   | 2402 |
| IPSEC      | Security Architecture for the Internet Protocol  | 2401 |
| DATA-URL   | The "data" URL scheme  | 2397 |
| IPCOMP     | IP Payload Compression Protocol (IPComp)   | 2393 |
| CIDMID-URL | Content-ID and Message-ID Uniform Resource Locators  | 2392 |
| -----      | Feature negotiation mechanism for the File Transfer Protocol   | 2389 |
| -----      | Returning Values from Forms: multipart/form-data   | 2388 |
| MIME-RELAT | The MIME Multipart/Related Content-type  | 2387 |
| -----      | Protection of BGP Sessions via the TCP MD5 Signature Option  | 2385 |
| POP-URL    | POP URL Scheme   | 2384 |
| -----      | Interoperation of Controlled-Load Service and Guaranteed Service with ATM                                    | 2381 |
| -----      | RSVP over ATM Implementation Requirements  | 2380 |
| -----      | An IPv6 Aggregatable Global Unicast Address Format   | 2374 |
| -----      | IP Version 6 Addressing Architecture   | 2373 |
| TIPV3      | Transaction Internet Protocol Version 3.0  | 2371 |
| OSPF-LSA   | The OSPF Opaque LSA Option   | 2370 |
| -----      | The Use of URLs as Meta-Syntax for Core Mail List Commands and their Transport through Message Header Fields | 2369 |
| URLMAILTO  | The mailto URL scheme  | 2368 |
| PPP-AAL    | PPP Over AAL5  | 2364 |
| PPP-FUNI   | PPP Over FUNI  | 2363 |
| IMAP4UIDPL | IMAP4 UIDPLUS extension  | 2359 |
| IMAP4NAME  | IMAP4 Namespace  | 2342 |
| VRRP       | Virtual Router Redundancy Protocol   | 2338 |
| NHRP-SCSP  | A Distributed NHRP Service Using SCSP  | 2335 |
| SCSP       | Server Cache Synchronization Protocol (SCSP)   | 2334 |
| -----      | NHRP Protocol Applicability Statement  | 2333 |
| NHRP       | NBMA Next Hop Resolution Protocol (NHRP)   | 2332 |
| UNI-SIG    | ATM Signalling Support for IP over ATM - UNI Signalling 4.0 Update   | 2331 |
| SDP        | SDP: Session Description Protocol  | 2327 |
| RTSP       | Real Time Streaming Protocol (RTSP)  | 2326 |
| IPOA-MIB   | Definitions of Managed Objects for Classical IP and ARP Over ATM Using SMIPv2 (IPOA-MIB)                     | 2320 |
| DNS-NCACHE | Negative Caching of DNS Queries (DNS NCACHE)   | 2308 |
| SMFAX-IM   | A Simple Mode of Facsimile Using Internet Mail   | 2305 |
| MINFAX-IM  | Minimal FAX address format in Internet Mail  | 2304 |
| MIN-PSTN   | Minimal PSTN address format in Internet Mail   | 2303 |
| TIFF       | Tag Image File Format (TIFF) - image/tiff MIME Sub-type Registration   | 2302 |
| FFIF       | File Format for Internet Fax   | 2301 |

|            |  |      |
|------------|--|------|
| EMF-MDN    | An Extensible Message Format for Message Disposition Notifications                             | 2298 |
| OR-ADD     | Representing the O/R Address hierarchy in the X.500 Directory Information Tree                 | 2294 |
| SUBTABLE   | Representing Tables and Subtrees in the X.500 Directory  | 2293 |
| -----      | Mobile-IPv4 Configuration Option for PPP IPCP  | 2290 |
| SLM-APP    | Definitions of System-Level Managed Objects for Applications                                   | 2287 |
| PPP-EAP    | PPP Extensible Authentication Protocol (EAP)   | 2284 |
| -----      | Definitions of Managed Objects for IEEE 802.12 Repeater Devices                                | 2266 |
| -----      | A Summary of the X.500(96) User Schema for use with LDAPv3                                     | 2256 |
| LDAP-URL   | The LDAP URL Format  | 2255 |
| STR-LDAP   | The String Representation of LDAP Search Filters   | 2254 |
| LDAP3-UTF8 | Lightweight Directory Access Protocol (v3): UTF-8 String Representation of Distinguished Names | 2253 |
| LDAP3-ATD  | Lightweight Directory Access Protocol (v3): Attribute Syntax Definitions                       | 2252 |
| LDAPV3     | Lightweight Directory Access Protocol (v3)   | 2251 |
| RTP-MPEG   | RTP Payload Format for MPEG1/MPEG2 Video   | 2250 |
| -----      | Using Domains in LDAP/X.500 Distinguished Names  | 2247 |
| -----      | The TLS Protocol Version 1.0   | 2246 |
| SASL-ANON  | Anonymous SASL Mechanism   | 2245 |
| ACAP       | ACAP -- Application Configuration Access Protocol  | 2244 |
| OTP-ER     | OTP Extended Responses   | 2243 |
| NETWAREIP  | NetWare/IP Domain Name and Information   | 2242 |
| DHCP-NDS   | DHCP Options for Novell Directory Services   | 2241 |
| HPR-MIB    | Definitions of Managed Objects for HPR using SMIV2   | 2238 |
| IGMP       | Internet Group Management Protocol, Version 2  | 2236 |
| ABNF       | Augmented BNF for Syntax Specifications: ABNF  | 2234 |
| DLUR-MIB   | Definitions of Managed Objects for DLUR using SMIV2  | 2232 |
| MIME-EXT   | MIME Parameter Value and Encoded Word Extensions: Character Sets, Languages, and Continuations | 2231 |
| FTPSECEXT  | FTP Security Extensions  | 2228 |
| -----      | Simple Hit-Metering and Usage-Limiting for HTTP  | 2227 |
| -----      | IP Broadcast over ATM Networks   | 2226 |
| IP-ATM     | Classical IP and ARP over ATM  | 2225 |
| SASL       | Simple Authentication and Security Layer (SASL)  | 2222 |
| IMAP4LOGIN | IMAP4 Login Referrals  | 2221 |
| -----      | A Common Schema for the Internet White Pages Service   | 2218 |
| -----      | General Characterization Parameters for Integrated Service Network Elements                    | 2215 |
| -----      | Integrated Services Management Information Base Guaranteed Service Extensions using SMIV2      | 2214 |
| -----      | Integrated Services Management Information Base using SMIV2                                    | 2213 |
| GQOS       | Specification of Guaranteed Quality of Service   | 2212 |

|            |  |      |
|------------|--|------|
| -----      | Specification of the Controlled-Load Network Element Service                                       | 2211 |
| RSVP-IS    | The Use of RSVP with IETF Integrated Services  | 2210 |
| RSVP-IPSEC | RSVP Extensions for IPSEC Data Flows   | 2207 |
| 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 |
| IMAPPOPAU  | IMAP/POP AUTHorize Extension for Simple Challenge/Response   | 2195 |
| IMAP4MAIL  | IMAP4 Mailbox Referrals  | 2193 |
| IMAP-URL   | IMAP URL Scheme  | 2192 |
| -----      | RTP Payload Format for H.263 Video Streams   | 2190 |
| -----      | Communicating Presentation Information in Internet Messages: The Content-Disposition Header Field  | 2183 |
| DNS-CLAR   | Clarifications to the DNS Specification  | 2181 |
| IMAP4-IDLE | IMAP4 IDLE command   | 2177 |
| SLP        | Service Location Protocol  | 2165 |
| -----      | Use of an X.500/LDAP directory to support MIXER address mapping                                    | 2164 |
| DNS-MCGAM  | Using the Internet DNS to Distribute MIXER Conformant Global Address Mapping (MCGAM)               | 2163 |
| -----      | Carrying PostScript in X.400 and MIME  | 2160 |
| -----      | A MIME Body Part for FAX   | 2159 |
| -----      | X.400 Image Body Parts   | 2158 |
| -----      | Mapping between X.400 and RFC-822/MIME Message Bodies  | 2157 |
| MIXER      | MIXER (Mime Internet X.400 Enhanced Relay): Mapping between X.400 and RFC 822/MIME                 | 2156 |
| MAIL-SERV  | Mailbox Names for Common Services, Roles and Functions   | 2142 |
| URN-SYNTAX | URN Syntax   | 2141 |
| DNS-UPDATE | Dynamic Updates in the Domain Name System (DNS UPDATE)   | 2136 |
| DC-MIB     | Dial Control Management Information Base using SMIV2   | 2128 |
| ISDN-MIB   | ISDN Management Information Base using SMIV2   | 2127 |
| ITOT       | ISO Transport Service on top of TCP (ITOT)   | 2126 |
| BAP-BACP   | The PPP Bandwidth Allocation Protocol (BAP) / The PPP Bandwidth Allocation Control Protocol (BACP) | 2125 |
| VEMMI-URL  | VEMMI URL Specification  | 2122 |
| ROUT-ALERT | IP Router Alert Option   | 2113 |
| 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  |
| 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  |
| 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 SMIV2                         | 2013  |
| MIB-TCP    | SNMPv2 Management Information Base for the Transmission Control Protocol using SMIV2                  | 2012  |
| MIB-IP     | SNMPv2 Management Information Base for the Internet Protocol using SMIV2                              | 2011  |
| MOBILEIPMI | The Definitions of Managed Objects for IP Mobility Support using SMIV2                                | 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  |

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|------------|--|------|
| PPP-CCP    | The PPP Compression Control Protocol (CCP)   | 1962 |
| GSSAPI-SOC | GSS-API Authentication Method for SOCKS Version 5  | 1961 |
| AUTH-SOCKS | Username/Password Authentication for SOCKS V5  | 1929 |
| SOCKSV5    | SOCKS Protocol Version 5   | 1928 |
| WHOIS++M   | How to Interact with a Whois++ Mesh  | 1914 |
| WHOIS++A   | Architecture of the Whois++ Index Service  | 1913 |
| DSN        | An Extensible Message Format for Delivery Status 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        | RTP: A Transport Protocol for Real-Time Applications                                       | 1889 |
| DNS-IPV6   | DNS Extensions to support IP version 6   | 1886 |
| MIME-Sec   | MIME Object Security Services  | 1848 |
| MIME-Encyp | Security Multiparts for MIME: Multipart/Signed and Multipart/Encrypted                     | 1847 |
| WHOIS++    | Architecture of the WHOIS++ service  | 1835 |
| ONC-RPC    | Binding Protocols for ONC RPC Version 2  | 1833 |
| RPC        | RPC: Remote Procedure Call Protocol Specification Version 2                                | 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 |
| XNSCP      | The PPP XNS IDP Control Protocol (XNSCP)   | 1764 |
| BVCP       | The PPP Banyan Vines Control Protocol (BVCP)   | 1763 |
| Print-MIB  | Printer MIB  | 1759 |
| ATM        | 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 |

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|------------|--|-------|
| RDBMS-MIB  | Relational Database Management System (RDBMS)<br>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<br>SMIV2   | 1666  |
| PPP-TRANS  | PPP Reliable Transmission  | 1663  |
| -----      | Postmaster Convention for X.400 Operations   | 1648  |
| UPS-MIB    | UPS Management Information Base  | 1628  |
| PPP-ISDN   | PPP over ISDN  | 1618  |
| DNS-R-MIB  | DNS Resolver MIB Extensions  | 1612  |
| DNS-S-MIB  | DNS Server MIB Extensions  | 1611  |
| 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<br>Protocol (IPXCP)  | 1552  |
| SRB-MIB    | Definitions of Managed Objects for Source Routing<br>Bridges   | 1525  |
| CIDR-STRA  | Classless Inter-Domain Routing (CIDR): an Address<br>Assignment and Aggregation Strategy                           | 1519  |
| CIDR-ARCH  | An Architecture for IP Address Allocation with CIDR  | 1518  |
| CIDR       | Applicability Statement for the Implementation<br>of Classless Inter-Domain Routing (CIDR)                         | 1517  |
| -----      | Definitions of Managed Objects for IEEE 802.3 Medium<br>Attachment Units (MAUs)                                    | 1515  |
| -----      | Token Ring Extensions to the Remote Network Monitoring<br>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<br>X.400/84 when MIME content-types are present<br>in the messages | 1496  |
| -----      | Equivalences between 1988 X.400 and RFC-822 Message<br>Bodies  | 1494  |
| IDPR       | Inter-Domain Policy Routing Protocol Specification:<br>Version 1   | 1479  |
| IDPR-ARCH  | An Architecture for Inter-Domain Policy Routing  | 1478  |
| PPP/Bridge | The Definitions of Managed Objects for the Bridge<br>Network Control Protocol of the Point-to-Point<br>Protocol    | 1474  |
| PPP/IPMIB  | The Definitions of Managed Objects for the IP Network<br>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: Part IV                                       | 1424 |
| PEM-ALG    | Privacy Enhancement for Internet Electronic Mail: Part III                                      | 1423 |
| PEM-CKM    | Privacy Enhancement for Internet Electronic Mail: Part II                                       | 1422 |
| PEM-ENC    | Privacy Enhancement for Internet Electronic Mail: Part I  | 1421 |
| SNMP-IPX   | SNMP over IPX   | 1420 |
| SNMP-AT    | SNMP over AppleTalk   | 1419 |
| SNMP-OSI   | SNMP over OSI   | 1418 |
| FTP        | 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 |
| 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 |
| TOPT-RFC   | Telnet Remote Flow Control Option   | 1372 |
| -----      | Applicability Statement for OSPF  | 1370 |
| 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: Version 3                       | 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 |

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|------------|--|-------|
| 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: DODIIS implementation     | 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 option     | 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.]

## 3.5. Experimental Protocols

| Mnemonic | Title   | RFC#  |
|----------|---|-------|
| -----    | OpenLDAP Root Service An experimental LDAP referral service                                 | 3088* |
| -----    | Notification and Subscription for SLP   | 3082* |
| -----    | MPLS Loop Prevention Mechanism  | 3063* |
| -----    | Internet X.509 Public Key Infrastructure Data Validation and Certification Server Protocols | 3029* |
| -----    | 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* |
| -----    | 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 with ATM-like framing                       | 2823  |
| -----    | 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  |
| 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  |
| -----    | 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 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  |

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|------------|--|------|
| IPP-RAT    | Rationale for the Structure of the Model and Protocol<br>for the Internet Printing Protocol                                  | 2568 |
| 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 |
| ECN-IP     | A Proposal to add Explicit Congestion Notification<br>(ECN) to IP  | 2481 |
| -----      | 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-<br>SM): Protocol Specification  | 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<br>using Sparse Mode PIM   | 2337 |
| -----      | The Safe Response Header Field   | 2310 |
| LDAP-NIS   | An Approach for Using LDAP as a Network Information<br>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<br>the Domain Name System   | 2168 |
| MAP-MAIL   | MaXIM-11 - Mapping between X.400 / Internet mail<br>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<br>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 |
| URAS       | Uniform Resource Agents (URAs)   | 2016 |
| GPS-AR     | GPS-Based Addressing and Routing   | 2009 |
| ETFTP      | Experiments with a Simple File Transfer Protocol<br>for Radio Links using Enhanced Trivial File<br>Transfer Protocol (ETFTP) | 1986 |

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|------------|--|------|
| 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<br>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 |
| BGP-IDRP   | A BGP/IDRP Route Server alternative to a full<br>mesh routing                                  | 1863 |
| 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<br>Specification - Version ST2+              | 1819 |
| -----      | Communicating Presentation Information in Internet<br>Messages: The Content-Disposition Header | 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 : Partial Order Service  | 1693 |
| T/TCP      | T/TCP -- TCP Extensions for Transactions Functional<br>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<br>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:<br>Remote Printing -- Technical Procedures  | 1528 |
| 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<br>a Multi Protocol / Multi Network Environment<br>Table Format V3 for Static Routing | 1465 |
| -----      | Using the Domain Name System To Store Arbitrary<br>String Attributes   | 1464 |
| 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:<br>Version 1  | 1241 |
| CLNS-MIB   | CLNS MIB for use with Connectionless Network Protocol<br>(ISO 8473) and End System to Intermediate<br>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<br>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: Version 2  | 1176 |
| NTP-OSI    | Network Time Protocol (NTP) over the OSI Remote<br>Operations Service  | 1165 |
| -----      | Message Send Protocol  | 1159 |
| DMF-MAIL   | Digest message format  | 1153 |
| RDP        | Version 2 of the Reliable Data Protocol (RDP)  | 1151 |
| -----      | Standard for the transmission of IP datagrams<br>on avian carriers   | 1149 |
| 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 |
| COOKIE-JAR | Distributed-protocol authentication scheme   | 1004 |
| NETBLT     | NETBLT: A bulk data transfer protocol  | 998  |

|      |  |     |
|------|--|-----|
| IRTP | Internet Reliable Transaction Protocol functional<br>and interface specification | 938 |
| 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.]

## 3.6. Historic Protocols

| Mnemonic   | Title   | RFC#  |
|------------|---|-------|
| IP-MAC     | IP Authentication using Keyed SHA1 with Interleaved Padding (IP-MAC)                            | 2841* |
| 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  |
| -----      | Definitions of Managed Objects for the Ethernet-like Interface Types                            | 1623* |
| -----      | Manager-to-Manager Management Information Base  | 1451  |
| -----      | Party MIB for version 2 of the Simple Network Management Protocol (SNMPv2)                      | 1447  |
| -----      | Security Protocols for version 2 of the Simple Network Management Protocol (SNMPv2)             | 1446  |
| -----      | 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* |
| -----      | 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: Version 1                                  | 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: Management Information Base  | 1214  |
| IMAP3      | Interactive Mail Access Protocol: Version 3   | 1203  |
| CMOT       | Common Management Information Services and Protocols for the Internet (CMOT and CMIP)           | 1189  |
| -----      | 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: Part III - algorithms, modes, and identifiers | 1115  |

|           |   |      |
|-----------|---|------|
| -----     | Privacy enhancement for Internet electronic mail:<br>Part II - certificate-based key management                     | 1114 |
| -----     | Privacy enhancement for Internet electronic mail:<br>Part I - message encipherment and authentication<br>procedures | 1113 |
| IPSO      | U.S. Department of Defense Security Options for<br>the Internet Protocol  | 1108 |
| RIP       | Routing Information Protocol  | 1058 |
| -----     | Standard for the transmission of IP datagrams<br>and ARP packets over ARCNET networks                               | 1051 |
| 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<br>to the Internet  | 914  |
| 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 previous edition of this document.]

#### 4. Security Considerations

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

#### 5. Editors' Addresses

Joyce K. Reynolds  
USC/Information Sciences Institute  
4676 Admiralty Way  
Marina del Rey, CA 90292

Phone: +1 310-822-1511  
Fax: +1 310-823-6714  
EMail: JKRey@ISI.EDU

Robert Braden  
USC/Information Sciences Institute  
4676 Admiralty Way  
Marina del Rey, CA 90292

Phone: +1 310-822-1511  
Fax: +1 310-823-6714  
EMail: Braden@ISI.EDU

Sandy Ginoza  
USC/Information Sciences Institute  
4676 Admiralty Way  
Marina del Rey, CA 90292

Phone: +1 310-822-1511  
Fax: +1 310-823-6714  
EMail: Ginoza@ISI.EDU

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