Network Working Group   Internet Architecture Board
Request for Comments: 1410   J. Postel, Editor
Obsoletes: RFCs 1360, 1280, 1250,   March 1993
1100, 1083, 1130, 1140, 1200
STD: 1

                    IAB 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 Architecture Board (IAB).
   Distribution of this memo is unlimited.

Table of Contents

Introduction

     Discussion of the standardization process and the RFC document series
     is presented first, followed by an explanation of the terms.
     Sections 6.2 - 6.9 contain the lists of protocols in each stage of
     standardization. Finally come pointers to references and contacts
     for further information.

     This memo is intended to be issued approximately quarterly; please be
     sure the copy you are reading is current. Current copies may be
     obtained from the Network Information Center or from the Internet
     Assigned Numbers Authority (see the contact information at the end of
     this memo). Do not use this edition after 31-July-93.

     See Section 6.1 for a description of recent changes. In the official
     lists in sections 6.2 - 6.9, an asterisk (*) next to a protocol
     denotes that it is new to this document or has been moved from one
     protocol level to another, or differs from the previous edition of
     this document.

1. The Standardization Process

     The Internet Architecture Board maintains this list of documents that
     define standards for the Internet protocol suite. See RFC-1358 for
     the charter of the IAB and RFC-1160 for an explanation of the role
     and organization of the IAB and its subsidiary groups, the Internet
     Engineering Task Force (IETF) and the Internet Research Task Force
     (IRTF). Each of these groups has a steering group called the IESG
     and IRSG, respectively. The IAB provides these standards with the

goal of co-ordinating the evolution of the Internet protocols; this
co-ordination has become quite important as the Internet protocols
are increasingly in general commercial use. The definitive
description of the Internet standards process is found in RFC-1310.

The majority of Internet protocol development and standardization
activity takes place in the working groups of the Internet
Engineering Task Force.

Protocols which are to become standards in the Internet go through a
series of states or maturity levels (proposed standard, draft
standard, and standard) involving increasing amounts of scrutiny and
testing. When a protocol completes this process it is assigned a STD
number (see RFC-1311). At each step, the Internet Engineering
Steering Group (IESG) of the IETF must make a recommendation for
advancement of the protocol and the IAB must ratify it. If a
recommendation is not ratified, the protocol is remanded to the IETF
for further work.

To allow time for the Internet community to consider and react to
standardization proposals, the IAB imposes a minimum delay of 6
months before a proposed standard can be advanced to a draft standard
and 4 months before a draft standard can be promoted to standard.

It is general IAB practice that no proposed standard can be promoted
to draft standard without at least two independent implementations
(and the recommendation of the IESG). Promotion from draft standard
to standard generally requires operational experience and
demonstrated interoperability of two or more implementations (and the
recommendation of the IESG).

In cases where there is uncertainty as to the proper decision
concerning a protocol the IAB may convene a special review committee
consisting of experts from the IETF, IRTF and the IAB with the
purpose of recommending an explicit action to the IAB.

Advancement of a protocol to proposed standard is an important step
since it marks a protocol as a candidate for eventual standardization
(it puts the protocol "on the standards track"). Advancement to
draft standard is a major step which warns the community that, unless
major objections are raised or flaws are discovered, the protocol is
likely to be advanced to standard in six months.

Some protocols have been superseded by better ones or are otherwise
unused. Such protocols are still documented in this memorandum with
the designation "historic".

Because the IAB believes it is useful to document the results of

early protocol research and development work, some of the RFCs
document protocols which are still in an experimental condition. The
protocols are designated "experimental" in this memorandum. They
appear in this report as a convenience to the community and not as
evidence of their standardization.

Other protocols, such as those developed by other standards
organizations, or by particular vendors, may be of interest or may be
recommended for use in the Internet. The specifications of such
protocols may be published as RFCs for the convenience of the
Internet community. These protocols are labeled "informational" in
this memorandum.

In addition to the working groups of the IETF, protocol development
and experimentation may take place as a result of the work of the
research groups of the Internet Research Task Force, or the work of
other individuals interested in Internet protocol development. The
IAB encourages the documentation of such experimental work in the RFC
series, but none of this work is considered to be on the track for
standardization until the IESG has made a recommendation to advance
the protocol to the proposed standard state, and the IAB has approved
this step.

A few protocols have achieved widespread implementation without the
approval of the IESG and the IAB. For example, some vendor protocols
have become very important to the Internet community even though they
have not been recommended by the IESG or ratified by the IAB.
However, the IAB strongly recommends that the IAB standards process
be used in the evolution of the protocol suite to maximize
interoperability (and to prevent incompatible protocol requirements
from arising). The IAB reserves the use of the terms "standard",
"draft standard", and "proposed standard" in any RFC or other
publication of Internet protocols to only those protocols which the
IAB has approved.

In addition to a state (like "Proposed Standard"), a protocol is also
assigned a status, or requirement level, in this document. The
possible requirement levels ("Required", "Recommended", "Elective",
"Limited Use", and "Not Recommended") are defined in Section 4.2.
When a protocol is on the standards track, that is in the proposed
standard, draft standard, or standard state (see Section 5), the
status shown in Section 6 is the current status. For a proposed or
draft standard, however, the IAB will also endeavor to indicate the
eventual status this protocol will have after adoption as a standard.

Few protocols are required to be implemented in all systems; this is
because there is such a variety of possible systems, for example,
gateways, terminal servers, workstations, and multi-user hosts. The

requirement level shown in this document is only a one word label,
which may not be sufficient to characterize the implementation
requirements for a protocol in all situations. For some protocols,
this document contains an additional status paragraph (an
applicability statement). In addition, more detailed status
information is contained in separate requirements documents (see
Section 3).

2. The Request for Comments Documents

The documents called Request for Comments (or RFCs) are the working
notes of the "Network Working Group", that is the Internet research
and development community. A document in this series may be on
essentially any topic related to computer communication, and may be
anything from a meeting report to the specification of a standard.

Notice:

    All standards are published as RFCs, but not all RFCs specify
    standards.

Anyone can submit a document for publication as an RFC. Submissions
must be made via electronic mail to the RFC Editor (see the contact
information at the end of this memo, and see RFC 1111).

While RFCs are not refereed publications, they do receive technical
review from the task forces, individual technical experts, or the RFC
Editor, as appropriate.

The RFC series comprises a wide range of documents, ranging from
informational documents of general interests to specifications of
standard Internet protocols. In cases where submission is intended
to document a proposed standard, draft standard, or standard
protocol, the RFC Editor will publish the document only with the
approval of both the IESG and the IAB. For documents describing
experimental work, the RFC Editor will notify the IESG before
publication, allowing for the possibility of review by the relevant
IETF working group or IRTF research group and provide those comments
to the author. See Section 5.1 for more detail.

Once a document is assigned an RFC number and published, that RFC is
never revised or re-issued with the same number. There is never a
question of having the most recent version of a particular RFC.
However, a protocol (such as File Transfer Protocol (FTP)) may be
improved and re-documented many times in several different RFCs. It
is important to verify that you have the most recent RFC on a
particular protocol. This "IAB Official Protocol Standards" memo is
the reference for determining the correct RFC for the current

specification of each protocol.

The RFCs are available from the Network Information Center at SRI International, and a number of other sites. For more information about obtaining RFCs, see Sections 7.4 and 7.5.

3. Other Reference Documents

There are three other reference documents of interest in checking the current status of protocol specifications and standardization. These are the Assigned Numbers, the Gateway Requirements, and the Host Requirements. Note that these documents are revised and updated at different times; in case of differences between these documents, the most recent must prevail.

Also, one should be aware of the MIL-STD publications on IP, TCP, Telnet, FTP, and SMTP. These are described in Section 3.4.

3.1. Assigned Numbers

This document lists the assigned values of the parameters used in the various protocols. For example, IP protocol codes, TCP port numbers, Telnet Option Codes, ARP hardware types, and Terminal Type names. Assigned Numbers was most recently issued as RFC-1340.

Another document, Internet Numbers, lists the assigned IP network numbers, and the autonomous system numbers. Internet Numbers was most recently issued as RFC-1166.

3.2. Gateway Requirements

This document reviews the specifications that apply to gateways and supplies guidance and clarification for any ambiguities. Gateway Requirements is RFC-1009. A working group of the IETF is actively preparing a revision.

3.3. Host Requirements

This pair of documents reviews and updates the specifications that apply to hosts, and it supplies guidance and clarification for any ambiguities. Host Requirements was issued as RFC-1122 and RFC-1123.

3.4. The MIL-STD Documents

The Internet community specifications for IP (RFC-791) and TCP (RFC-793) and the DoD MIL-STD specifications are intended to describe exactly the same protocols. Any difference in the protocols specified by these sets of documents should be reported to DCA and to

the IAB. The RFCs and the MIL-STDs for IP and TCP differ in style
and level of detail. It is strongly advised that the two sets of
documents be used together, along with RFC-1122 and RFC-1123.

The IAB and the DoD MIL-STD specifications for the FTP, SMTP, and
Telnet protocols are essentially the same documents (RFCs 765, 821,
854). The MIL-STD versions have been edited slightly. Note that the
current Internet specification for FTP is RFC-959 (as modified by
RFC-1123).

Note that these MIL-STD are now somewhat out of date. The Gateway
Requirements (RFC-1009) and Host Requirements (RFC-1122, RFC-1123)
take precedence over both earlier RFCs and the MIL-STDs.

```
        Internet Protocol (IP)                      MIL-STD-1777
        Transmission Control Protocol (TCP)         MIL-STD-1778
        File Transfer Protocol (FTP)                MIL-STD-1780
        Simple Mail Transfer Protocol (SMTP)        MIL-STD-1781
        Telnet Protocol and Options (TELNET)        MIL-STD-1782
```

These documents are available from the Naval Publications and Forms
Center. Requests can be initiated by telephone, telegraph, or mail;
however, it is preferred that private industry use form DD1425, if
possible.

```
        Naval Publications and Forms Center, Code 3015
        5801 Tabor Ave
        Philadelphia, PA 19120
        Phone: 1-215-697-3321 (order tape)
               1-215-697-4834 (conversation)
```

4. Explanation of Terms

   There are two independent categorization of protocols. The first is
   the "maturity level" or STATE of standardization, one of "standard",
   "draft standard", "proposed standard", "experimental",
   "informational" or "historic". The second is the "requirement level"
   or STATUS of this protocol, one of "required", "recommended",
   "elective", "limited use", or "not recommended".

   The status or requirement level is difficult to portray in a one word
   label. These status labels should be considered only as an
   indication, and a further description, or applicability statement,
   should be consulted.

   When a protocol is advanced to proposed standard or draft standard,
   it is labeled with a current status and when possible, the IAB also
   notes the status that the protocol is expected to have when it

reaches the standard state.

At any given time a protocol occupies a cell of the following matrix.
Protocols are likely to be in cells in about the following
proportions (indicated by the relative number of Xs). A new protocol
is most likely to start in the (proposed standard, elective) cell, or
the (experimental, not recommended) cell.

```
                          S T A T U S
                   Req   Rec   Ele   Lim   Not
                 +-----+-----+-----+-----+-----+
         Std     |  X  | XXX | XXX |     |     |
     S           +-----+-----+-----+-----+-----+
         Draft   |  X  |  X  | XXX |     |     |
     T           +-----+-----+-----+-----+-----+
         Prop    |     |  X  | XXX |     |     |
     A           +-----+-----+-----+-----+-----+
         Info    |     |     |     |     |     |
     T           +-----+-----+-----+-----+-----+
         Expr    |     |     |     | XXX |     |
     E           +-----+-----+-----+-----+-----+
         Hist    |     |     |     |     | XXX |
                 +-----+-----+-----+-----+-----+
```

What is a "system"?

Some protocols are particular to hosts and some to gateways; a few
protocols are used in both. The definitions of the terms below
will refer to a "system" which is either a host or a gateway (or
both). It should be clear from the context of the particular
protocol which types of systems are intended.

4.1. Definitions of Protocol State

Every protocol listed in this document is assigned to a "maturity
level" or STATE of standardization: "standard", "draft standard",
"proposed standard", "experimental", or "historic".

4.1.1. Standard Protocol

The IAB has established this as an official standard protocol for
the Internet. These protocols are assigned STD numbers (see RFC-
1311). These are separated into two groups: (1) IP protocol and
above, protocols that apply to the whole Internet; and (2)
network-specific protocols, generally specifications of how to do
IP on particular types of networks.

4.1.2. Draft Standard Protocol

The IAB is actively considering this protocol as a possible
Standard Protocol. Substantial and widespread testing and comment
are desired. Comments and test results should be submitted to the
IAB. There is a possibility that changes will be made in a Draft
Standard Protocol before it becomes a Standard Protocol.

4.1.3. Proposed Standard Protocol

These are protocol proposals that may be considered by the IAB for
standardization in the future. Implementation and testing by
several groups is desirable. Revision of the protocol
specification is likely.

4.1.4. Experimental Protocol

A system should not implement an experimental protocol unless it
is participating in the experiment and has coordinated its use of
the protocol with the developer of the protocol.

Typically, experimental protocols are those that are developed as
part of an ongoing research project not related to an operational
service offering. While they may be proposed as a service
protocol at a later stage, and thus become proposed standard,
draft standard, and then standard protocols, the designation of a
protocol as experimental may sometimes be meant to suggest that
the protocol, although perhaps mature, is not intended for
operational use.

4.1.5. Informational Protocol

Protocols developed by other standard organizations, or vendors,
or that are for other reasons outside the purview of the IAB, may
be published as RFCs for the convenience of the Internet community
as informational protocols.

4.1.6. Historic Protocol

These are protocols that are unlikely to ever become standards in
the Internet either because they have been superseded by later
developments or due to lack of interest.

4.2. Definitions of Protocol Status

This document lists a "requirement level" or STATUS for each
protocol. The status is one of "required", "recommended",
"elective", "limited use", or "not recommended".

   4.2.1. Required Protocol

      A system must implement the required protocols.

   4.2.2. Recommended Protocol

      A system should implement the recommended protocols.

   4.2.3. Elective Protocol

      A system may or may not implement an elective protocol. The
      general notion is that if you are going to do something like this,
      you must do exactly this. There may be several elective protocols
      in a general area, for example, there are several electronic mail
      protocols, and several routing protocols.

   4.2.4. Limited Use Protocol

      These protocols are for use in limited circumstances. This may be
      because of their experimental state, specialized nature, limited
      functionality, or historic state.

   4.2.5. Not Recommended Protocol

      These protocols are not recommended for general use. This may be
      because of their limited functionality, specialized nature, or
      experimental or historic state.

5. The Standards Track

   This section discusses in more detail the procedures used by the RFC
   Editor and the IAB in making decisions about the labeling and
   publishing of protocols as standards.

5.1. The RFC Processing Decision Table

   Here is the current decision table for processing submissions by the
   RFC Editor. The processing depends on who submitted it, and the
   status they want it to have.

```
+==============================================================+
|**************|                 S O U R C E                   |
+==============================================================+
| Desired      |   IAB   |  IESG   |  IRSG   |  Other  |
| Status       |         |         |         |         |
+==============================================================+
|              |         |         |         |         |
| Standard     | Publish |  Vote   |  Bogus  |  Bogus  |
| or           |   (1)   |   (3)   |   (2)   |   (2)   |
| Draft        |         |         |         |         |
| Standard     |         |         |         |         |
+--------------+---------+---------+---------+---------+
|              |         |         |         |         |
|              | Publish |  Vote   |  Refer  |  Refer  |
| Proposed     |   (1)   |   (3)   |   (4)   |   (4)   |
| Standard     |         |         |         |         |
|              |         |         |         |         |
+--------------+---------+---------+---------+---------+
|              |         |         |         |         |
|              | Publish | Notify  | Notify  | Notify  |
| Experimental |   (1)   |   (5)   |   (5)   |   (5)   |
| Protocol     |         |         |         |         |
|              |         |         |         |         |
+--------------+---------+---------+---------+---------+
|              |         |         |         |         |
| Information  | Publish |Discretion|Discretion|Discretion|
| or Opinion   |   (1)   |   (6)   |   (6)   |   (6)   |
| Paper        |         |         |         |         |
|              |         |         |         |         |
+==============================================================+
```

(1) Publish.

(2) Bogus. Inform the source of the rules. RFCs specifying
    Standard, or Draft Standard must come from the IAB, only.

(3) Vote by the IAB. If approved then do Publish (1), else do
    Refer (4).

(4) Refer to an Area Director for review by a WG. Expect to see
    the document again only after approval by the IESG and the
    IAB.

(5) Notify both the IESG and IRSG. If no concerns are raised in
    two weeks then do Discretion (6), else RFC Editor to resolve
    the concerns or do Refer (4).

(6) RFC Editor's discretion. The RFC Editor decides if a review

is needed and if so by whom. RFC Editor decides to publish or
not.

Of course, in all cases the RFC Editor can request or make minor
changes for style, format, and presentation purposes.

The IESG has designated the IESG Secretary as its agent for
forwarding documents with IESG approval and for registering concerns
in response to notifications (5) to the RFC Editor. Documents from
Area Directors or Working Group Chairs may be considered in the same
way as documents from "other".

5.2. The Standards Track Diagram

There is a part of the STATUS and STATE categorization that is called
the standards track. Actually, only the changes of state are
significant to the progression along the standards track, though the
status assignments may be changed as well.

The states illustrated by single line boxes are temporary states,
those illustrated by double line boxes are long term states. A
protocol will normally be expected to remain in a temporary state for
several months (minimum six months for proposed standard, minimum
four months for draft standard). A protocol may be in a long term
state for many years.

A protocol may enter the standards track only on the recommendation
of the IESG and by action of the IAB; and may move from one state to
another along the track only on the recommendation of the IESG and by
action of the IAB. That is, it takes both the IESG and the IAB to
either start a protocol on the track or to move it along.

Generally, as the protocol enters the standards track a decision is
made as to the eventual STATUS, requirement level or applicability
(elective, recommended, or required) the protocol will have, although
a somewhat less stringent current status may be assigned, and it then
is placed in the the proposed standard STATE with that status. So
the initial placement of a protocol is into state 1. At any time the
STATUS decision may be revisited.

```
        |
        +<----------------------------------------------+
        |                                               ^
        V    0                                          |    4
 +----------+                               +==========+
 |  enter   |-->---------------+----------->|experiment |
 +----------+                  |            +=====+=====+
                               |                  |
                               V    1             |
                         +----------+             V
                         | proposed |------------->+
                   +--->+-----+-----+             |
                   |          |                   |
                   |          V    2              |
                   +<---+-----+-----+             V
                   |    | draft std |------------->+
                   +--->+-----+-----+             |
                   |          |                   |
                   |          V    3              |
                   +<---+=====+=====+             V
                        | standard |------------->+
                        +=====+=====+             |
                                                  |
                                                  V    5
                                           +=====+=====+
                                           | historic  |
                                           +===========+
```
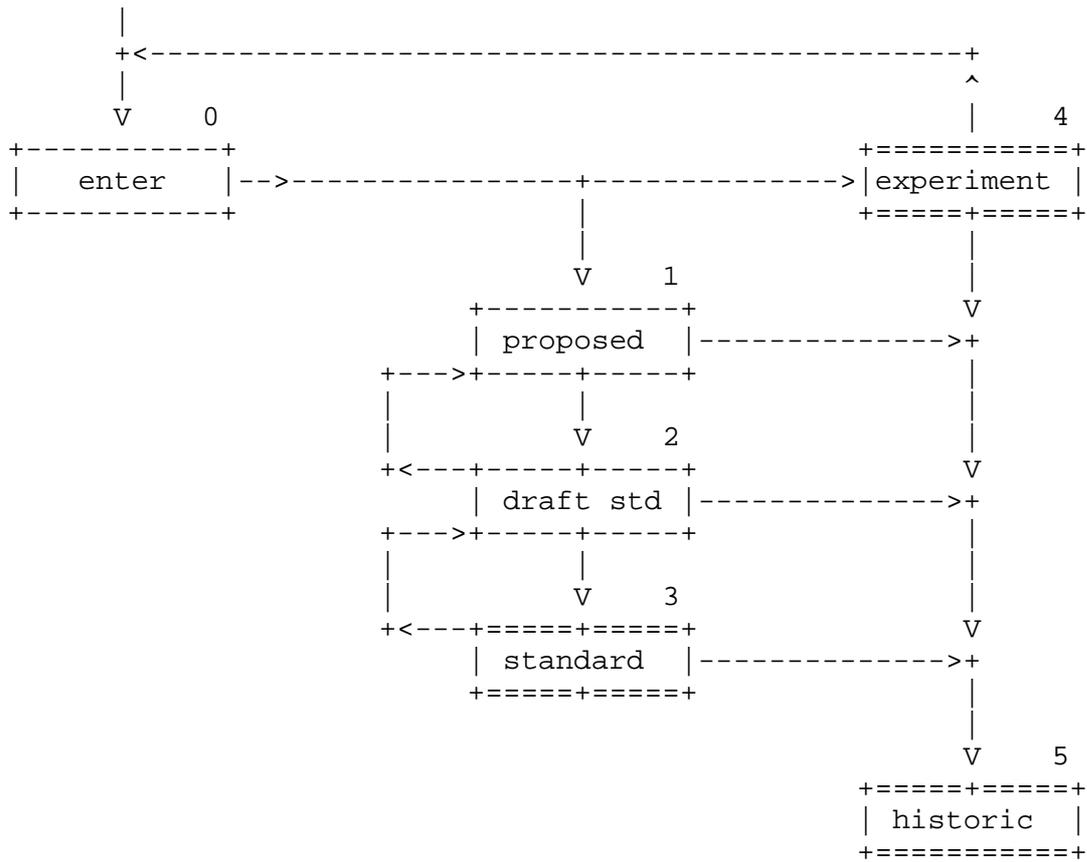
The transition from proposed standard (1) to draft standard (2) can
only be by action of the IAB on the recommendation of the IESG and
only after the protocol has been proposed standard (1) for at least
six months.

The transition from draft standard (2) to standard (3) can only be by
action of the IAB on the recommendation of the IESG and only after
the protocol has been draft standard (2) for at least four months.

Occasionally, the decision may be that the protocol is not ready for
standardization and will be assigned to the experimental state (4).
This is off the standards track, and the protocol may be resubmitted
to enter the standards track after further work. There are other
paths into the experimental and historic states that do not involve
IAB action.

Sometimes one protocol is replaced by another and thus becomes
historic, or it may happen that a protocol on the standards track is
in a sense overtaken by another protocol (or other events) and
becomes historic (state 5).

6. The Protocols

   Subsection 6.1 lists recent RFCs and other changes. Subsections 6.2
   - 6.9 list the standards in groups by protocol state.

6.1. Recent Changes

6.1.1. New RFCs:

      1436 - The Internet Gopher Protocol

            This is an information document and does not specify any
            level of standard.

      1435 - IESG Advice from Experience with Path MTU Discovery

            This is an information document and does not specify any
            level of standard.

      1434 - Data Link Switching: Switch-to-Switch Protocol

            This is an information document and does not specify any
            level of standard.

      1433 - Directed ARP

            An Experimental protocol.

      1432 - Recent Internet Books

            This is an information document and does not specify any
            level of standard.

      1431 - DUA Metrics

            This is an information document and does not specify any
            level of standard.

      1430 - A Strategic Plan for Deploying an Internet X.500 Directory
             Service

            This is an information document and does not specify any
            level of standard.

      1429 - Listserv Distribute Protocol

            This is an information document and does not specify any
            level of standard.

1428 - Transition of Internet Mail from Just-Send-8 to 8bit-
       SMTP/MIME

       This is an information document and does not specify any
       level of standard.

1427 - SMTP Service Extension for Message Size Declaration

       A Proposed Standard protocol.

1426 - SMTP Service Extension for 8bit-MIMEtransport

       A Proposed Standard protocol.

1425 - SMTP Service Extensions

       A Proposed Standard protocol.

1424 - Privacy Enhancement for Internet Electronic Mail: Part IV:
       Key Certification and Related Services

       A Proposed Standard protocol.

1423 - Privacy Enhancement for Internet Electronic Mail: Part III:
       Algorithms, Modes, and Identifiers

       A Proposed Standard protocol.

1422 - Privacy Enhancement for Internet Electronic Mail: Part II:
       Certificate-Based Key Management

       A Proposed Standard protocol.

1421 - Privacy Enhancement for Internet Electronic Mail: Part I:
       Message Encryption and Authentication Procedures

       A Proposed Standard protocol.

1420 - SNMP over IPX

       A Proposed Standard protocol.

1419 - SNMP over AppleTalk

       A Proposed Standard protocol.

1418 - SNMP over OSI

     A Proposed Standard protocol.

1417 - NADF Standing Documents: A Brief Overview

     This is an information document and does not specify any
     level of standard.

1416 - Telnet Authentication Option

     An Experimental protocol.

1415 - FTP-FTAM Gateway Specification

     A Proposed Standard protocol.

1414 - Identification MIB

     A Proposed Standard protocol.

1413 - Identification Protocol

     A Proposed Standard protocol.

1412 - Telnet Authentication: SPX

     An Experimental protocol.

1411 - Telnet Authentication: Kerberos Version 4

     An Experimental protocol.

1410 - This memo.

1409 - Telnet Authentication Option

     An Experimental protocol.

1408 - Telnet Environment Option

     A Proposed Standard protocol.

1407 - Definitions of Managed Objects for the DS3/E3 Interface
     Type

     A Proposed Standard protocol.

      1406 - Definitions of Managed Objects for the DS1 and E1 Interface
             Types

             A Proposed Standard protocol.

      1405 - Mapping between X.400(1984/1988) and Mail-11 (DECnet mail)

             An Experimental protocol.

      1404 - A Model for Common Operational Statistics

             This is an information document and does not specify any
             level of standard.

      1403 - BGP OSPF Interaction

             A Proposed Standard protocol.

      1402 - There's Gold in them thar Networks! or Searching for
             Treasure in all the Wrong Places

             This is an information document and does not specify any
             level of standard.

      1401 - Correspondence between the IAB and DISA on the use of DNS
             throughout the Internet

             This is an information document and does not specify any
             level of standard.

      1400 - Not yet issued.

      1399 - Not yet issued.

      1398 - Definitions of Managed Objects for the Ethernet-like
             Interface Types

             A Draft Standard protocol.

      1397 - Default Route Advertisement In BGP2 And BGP3 Versions Of
             The Border Gateway Protocol

             A Proposed Standard protocol.

1396 - The Process for Organization of Internet Standards Working
       Group (POISED), Steve Crocker, Chair

       This is an information document and does not specify any
       level of standard.

1395 - BOOTP Vendor Information Extensions

       This is a status report.

1394 - Relationship of Telex Answerback Codes to Internet Domains

       This is an information document and does not specify any
       level of standard.

1393 - Traceroute Using an IP Option

       An Experimental protocol.

1392 - Internet Users' Glossary

       This is an information document and does not specify any
       level of standard.

1391 - The Tao of IETF - A Guide for New Attendees of the Internet
       Engineering Task Force

       This is an information document and does not specify any
       level of standard.

1390 - Transmission of IP and ARP over FDDI Networks

       A full Standard protocol.

1389 - RIP Version 2 MIB Extension

       A Proposed Standard protocol.

1388 - RIP Version 2 - Carrying Additional Information

       A Proposed Standard protocol.

1387 - RIP Version 2 Protocol Analysis

       This is an information document and does not specify any
       level of standard.

1386 - The US Domain

        This is an information document and does not specify any
        level of standard.

1385 - EIP: The Extended Internet Protocol A Framework for
       Maintaining Backward Compatibility

        This is an information document and does not specify any
        level of standard.

1384 - Naming Guidelines for Directory Pilots

        This is an information document and does not specify any
        level of standard.

1383 - An Experiment in DNS Based IP Routing

        An Experimental protocol.

1382 - SNMP MIB Extension for the X.25 Packet Layer

        A Proposed Standard protocol.

1381 - SNMP MIB Extension for X.25 LAPB

        A Proposed Standard protocol.

1380 - IESG Deliberations on Routing and Addressing

        This is an information document and does not specify any
        level of standard.

1379 - Extending TCP for Transactions -- Concepts

        This is an information document and does not specify any
        level of standard.

1378 - The PPP AppleTalk Control Protocol (ATCP)

        A Proposed Standard protocol.

1377 - The PPP OSI Network Layer Control Protocol (OSINLCP)

        A Proposed Standard protocol.

   1376 - The PPP DECnet Phase IV Control Protocol (DNCP)

        A Proposed Standard protocol.

   1375 - Suggestion for New Classes of IP Addresses

        This is an information document and does not specify any
        level of standard.

   1374 - IP and ARP on HIPPI

        A Proposed Standard protocol.

   1373 - PORTABLE DUAs

        This is an information document and does not specify any
        level of standard.

   1372 - Telnet Remote Flow Control Option

        A Proposed Standard protocol.

   1371 - Choosing a "Common IGP" for the IP Internet (The IESG's
          Recommendation to the IAB)

        This is an information document and does not specify any
        level of standard.

   1370 - Applicability Statement for OSPF

        A Proposed Standard protocol.

   1369 - Implementation Notes and Experience for The Internet
          Ethernet MIB

        This is an information document and does not specify any
        level of standard.

   1368 - Definitions of Managed Objects for IEEE 802.3 Repeater
          Devices

        A Proposed Standard protocol.

   1367 - Schedule for IP Address Space Management Guidelines

        This is an information document and does not specify any
        level of standard.

1366 - Guidelines for Management of IP Address Space

This is an information document and does not specify any
level of standard.

1365 - An IP Address Extension Proposal

This is an information document and does not specify any
level of standard.

1364 - BGP OSPF Interaction

A Proposed Standard protocol.

1363 - A Proposed Flow Specification

This is an information document and does not specify any
level of standard.

1362 - Novell IPX Over Various WAN Media (IPXWAN)

This is an information document and does not specify any
level of standard.

1334 - PPP Authentication Protocols

A Proposed Standard protocol.

6.1.2. Other Changes:

The following are changes to protocols listed in the previous
edition.

1305 - Network Time Protocol (Version 3) Specification,
Implementation and Analysis

Elevated to Draft Standard.

1230 - IEEE 802.4 Token Bus MIB

Moved to Historic.

1212 - Concise MIB Definitions

Elevated to full Standard.

     1191 - Path MTU Discovery

          Elevated to Draft Standard.

     1189 - The Common Management Information Services and Protocols
            for the Internet (CMOT and CMIP)

          Moved to Historic.

6.2. Standard Protocols

```
Protocol    Name                                    Status      RFC STD *
========    =====================================   ======== ==== === =
--------    IAB Official Protocol Standards         Req         1360   1
--------    Assigned Numbers                        Req         1340   2
--------    Host Requirements - Communications      Req         1122   3
--------    Host Requirements - Applications        Req         1123   3
--------    Gateway Requirements                    Req         1009   4
IP          Internet Protocol                       Req          791   5
             as amended by:--------
--------       IP Subnet Extension                  Req          950   5
--------       IP Broadcast Datagrams               Req          919   5
--------       IP Broadcast Datagrams with Subnets  Req          922   5
ICMP        Internet Control Message Protocol       Req          792   5
IGMP        Internet Group Multicast Protocol       Rec         1112   5
UDP         User Datagram Protocol                  Rec          768   6
TCP         Transmission Control Protocol           Rec          793   7
TELNET      Telnet Protocol                         Rec      854,855   8
FTP         File Transfer Protocol                  Rec          959   9
SMTP        Simple Mail Transfer Protocol           Rec          821  10
MAIL        Format of Electronic Mail Messages      Rec          822  11
CONTENT     Content Type Header Field               Rec         1049  11
NTPV2       Network Time Protocol (Version 2)       Rec         1119  12
DOMAIN      Domain Name System                      Rec    1034,1035  13
DNS-MX      Mail Routing and the Domain System      Rec          974  14
SNMP        Simple Network Management Protocol      Rec         1157  15
SMI         Structure of Management Information     Rec         1155  16
Concise-MIB Concise MIB Definitions                 Rec         1212  16 *
MIB-II      Management Information Base-II           Rec         1213  17
EGP         Exterior Gateway Protocol               Rec          904  18
NETBIOS     NetBIOS Service Protocols               Ele    1001,1002  19
ECHO        Echo Protocol                           Rec          862  20
DISCARD     Discard Protocol                        Ele          863  21
CHARGEN     Character Generator Protocol            Ele          864  22
QUOTE       Quote of the Day Protocol               Ele          865  23
USERS       Active Users Protocol                   Ele          866  24
DAYTIME     Daytime Protocol                        Ele          867  25
TIME        Time Server Protocol                    Ele          868  26
```

```
TFTP        Trivial File Transfer Protocol          Ele     1350  33
RIP         Routing Information Protocol             Ele     1058  34
TP-TCP      ISO Transport Service on top of the TCP  Ele     1006  35 *
```

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

Applicability Statements:

   IGMP -- The Internet Architecture Board intends to move towards
   general adoption of IP multicasting, as a more efficient solution
   than broadcasting for many applications. The host interface has been
   standardized in RFC-1112; however, multicast-routing gateways are in
   the experimental stage and are not widely available. An Internet
   host should support all of RFC-1112, except for the IGMP protocol
   itself which is optional; see RFC-1122 for more details. Even
   without IGMP, implementation of RFC-1112 will provide an important
   advance: IP-layer access to local network multicast addressing. It
   is expected that IGMP will become recommended for all hosts and
   gateways at some future date.

   SMI, MIB-II SNMP -- The Internet Architecture Board recommends that
   all IP and TCP implementations be network manageable. At the current
   time, this implies implementation of the Internet MIB-II (RFC-1213),
   and at least the recommended management protocol SNMP (RFC-1157).

   RIP -- The Routing Information Protocol (RIP) is widely implemented
   and used in the Internet. However, both implementors and users
   should be aware that RIP has some serious technical limitations as a
   routing protocol. The IETF is currently developing several
   candidates for a new standard "open" routing protocol with better
   properties than RIP. The IAB urges the Internet community to track
   these developments, and to implement the new protocol when it is
   standardized; improved Internet service will result for many users.

   TP-TCP -- As OSI protocols become more widely implemented and used,
   there will be an increasing need to support interoperation with the
   TCP/IP protocols. The Internet Engineering Task Force is formulating
   strategies for interoperation. RFC-1006 provides one interoperation
   mode, in which TCP/IP is used to emulate TP0 in order to support OSI
   applications. Hosts that wish to run OSI connection-oriented
   applications in this mode should use the procedure described in RFC-
   1006. In the future, the IAB expects that a major portion of the
   Internet will support both TCP/IP and OSI (inter-)network protocols
   in parallel, and it will then be possible to run OSI applications
   across the Internet using full OSI protocol "stacks".

6.3. Network-Specific Standard Protocols

All Network-Specific Standards have Elective status.

```
Protocol   Name                                    State   RFC   STD *
========   ====================================    =====   =====   === =
IP-FDDI    Transmission of IP and ARP over FDDI Net Std    1390     36 *
IP-HIPPI   IP and ARP on HIPPI                     Prop    1374        *
IP-X.25    X.25 and ISDN in the Packet Mode        Prop    1356
IP-FR      Multiprotocol over Frame Relay          Prop    1294
IP-SMDS    IP Datagrams over the SMDS Service       Prop    1209
IP-ARCNET  Transmitting IP Traffic over ARCNET Nets Prop   1201
ARP        Address Resolution Protocol             Std      826     37
RARP       A Reverse Address Resolution Protocol   Std      903     38
IP-ARPA    Internet Protocol on ARPANET            Std BBN1822
IP-WB      Internet Protocol on Wideband Network   Std      907
IP-E       Internet Protocol on Ethernet Networks  Std      894
IP-EE      Internet Protocol on Exp. Ethernet Nets Std      895
IP-IEEE    Internet Protocol on IEEE 802           Std     1042
IP-DC      Internet Protocol on DC Networks        Std      891
IP-HC      Internet Protocol on Hyperchannel       Std     1044
IP-ARC     Internet Protocol on ARCNET             Std     1051
IP-SLIP    Transmission of IP over Serial Lines    Std     1055
IP-NETBIOS Transmission of IP over NETBIOS         Std     1088
IP-IPX     Transmission of 802.2 over IPX Networks Std     1132
```

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

Applicability Statements:

   It is expected that a system will support one or more physical
   networks and for each physical network supported the appropriate
   protocols from the above list must be supported. That is, it is
   elective to support any particular type of physical network, and for
   the physical networks actually supported it is required that they be
   supported exactly according to the protocols in the above list. See
   also the Host and Gateway Requirements RFCs for more specific
   information on network-specific ("link layer") protocols.

6.4. Draft Standard Protocols

```
Protocol   Name                                   Status         RFC
========   ====================================   ============== =====
ETHER-MIB  Ethernet MIB                           Elective       1398*
NTPV3      Network Time Protocol (Version 3)      Elective       1305*
IP-MTU     Path MTU Discovery                     Elective       1191*
FINGER     Finger Protocol                        Elective       1288
BGP3       Border Gateway Protocol 3 (BGP-3)      Elective   1267,1268
OSPF2      Open Shortest Path First Routing V2    Elective       1247
POP3       Post Office Protocol, Version 3        Elective       1225
IP-FDDI    Internet Protocol on FDDI Networks     Elective       1188
PPP        Point to Point Protocol                Elective       1171
BOOTP      Bootstrap Protocol                     Recommended 951,1395*
NICNAME    WhoIs Protocol                         Elective        954
```

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

Applicability Statements:

   PPP -- Point to Point Protocol is a method of sending IP over serial
   lines, which are a type of physical network. It is anticipated that
   PPP will be advanced to the network-specifics standard protocol state
   in the future.

6.5. Proposed Standard Protocols

```
Protocol   Name                                   Status         RFC
========   ====================================   ============== =====
SMTP-SIZE  SMTP Service Ext for Message Size      Elective       1427*
SMTP-8BIT  SMTP Service Ext or 8bit-MIMEtransport Elective       1426*
SMTP-EXT   SMTP Service Extensions                Elective       1425*
PEM-KEY    PEM - Key Certification                Elective       1424*
PEM-ALG    PEM - Algorithms, Modes, and Identifiers Elective     1423*
PEM-CKM    PEM - Certificate-Based Key Management  Elective      1422*
PEM-ENC    PEM - Message Encryption and Auth      Elective       1421*
SNMP-IPX   SNMP over IPX                          Elective       1420*
SNMP-AT    SNMP over AppleTalk                    Elective       1419*
SNMP-OSI   SNMP over OSI                          Elective       1418*
FTP-FTAM   FTP-FTAM Gateway Specification         Elective       1415*
IDENT-MIB  Identification MIB                     Elective       1414*
IDENT      Identification MIB                     Elective       1413*
DS3/E3-MIB DS3/E3 Interface Type                  Elective       1407*
DS1/E1-MIB DS1/E1 Interface Type                  Elective       1406*
BGP-OSPF   BGP OSPF Interaction                   Elective       1403*
--------   Route Advertisement In BGP2 And BGP3   Elective       1397*
RIP2-MIB   RIP Version 2 MIB Extension            Elective       1389*
```

```
RIP2         RIP Version 2-Carrying Additional Info.  Elective      1388*
SNMP-X.25    SNMP MIB Extension for X.25 Packet Layer  Elective     1382*
SNMP-LAPB    SNMP MIB Extension for X.25 LAPB         Elective      1381*
PPP-ATCP     PPP AppleTalk Control Protocol           Elective      1378*
PPP-OSINLCP  PPP OSI Network Layer Control Protocol   Elective      1377*
PP-DNCP      PPP DECnet Phase IV Control Protocol      Elective     1376*
802.3-MIB    IEEE 802.3 Repeater MIB                  Elective      1368*
BGP-OSPF     BGP OSPF Interaction                     Elective      1364*
TABLE-MIB    IP Forwarding Table MIB                  Elective      1354
SNMP-PARTY-MIB Administration of SNMP                 Elective      1353
SNMP-SEC     SNMP Security Protocols                  Elective      1352
SNMP-ADMIN   SNMP Administrative Model                Elective      1351
TOS          Type of Service in the Internet          Elective      1349
-------      Representation of Non-ASCII Text         Elective      1342
MIME         Multipurpose Internet Mail Extensions    Elective      1341
PPP-AUTH     PPP Authentication                       Elective      1334*
PPP-LINK     PPP Link Quality Monitoring              Elective      1333
PPP-IPCP     PPP Control Protocol                     Elective      1332
PPP          Point-to-Point Protocol (PPP)            Elective      1331
-------      X.400 1988 to 1984 downgrading           Elective      1328
-------      Mapping between X.400(1988)              Elective      1327
TCP-EXT      TCP Extensions for High Performance      Elective      1323
-------      Def. Man. Objs Parallel-printer-like     Elective      1318
-------      Def. Man Objs RS-232-like                Elective      1317
-------      Def. Man. Objs. Character Stream         Elective      1316
FRAME-MIB    Management Information Base for Frame     Elective      1315
NETFAX       File Format for the Exchange of Images   Elective      1314
SIP-MIB      SIP Interface Type MIB                   Elective      1304
IARP         Inverse Address Resolution Protocol      Elective      1293
DECNET-MIB   DECNET MIB                               Elective      1289
BRIDGE-MIB   BRIDGE-MIB                               Elective      1286
FDDI-MIB     FDDI-MIB                                 Elective      1285
ETHER-MIB    Ethernet MIB                             Elective      1284
-------      Encoding Network Addresses               Elective      1277
-------      Replication and Distributed Operations   Elective      1276
-------      COSINE and Internet X.500 Schema         Elective      1274
RMON-MIB     Remote Network Monitoring MIB            Elective      1271
BGP-MIB      Border Gateway Protocol MIB (Version 3)  Elective      1269
ICMP-ROUT    ICMP Router Discovery Messages           Elective      1256
OSPF-MIB     OSPF Version 2 MIB                       Elective      1253
IPSO         DoD Security Options for IP              Elective      1108
AT-MIB       Appletalk MIB                            Elective      1243
OSI-UDP      OSI TS on UDP                            Elective      1240
STD-MIBs     Reassignment of Exp MIBs to Std MIBs     Elective      1239
OSI-NSAP     Guidelines for OSI NSAP Allocation       Elective      1237
IPX-IP       Tunneling IPX Traffic through IP Nets    Elective      1234
DS3-MIB      DS3 Interface Objects                    Elective      1233
DS1-MIB      DS1 Interface Objects                    Elective      1232
```

```
802.5-MIB  IEEE 802.5 Token Ring MIB             Elective      1231
GINT-MIB   Extensions to the Generic-Interface MIB  Elective   1229
PPP-EXT    PPP Extensions for Bridging            Elective      1220
OIM-MIB-II OSI Internet Management: MIB-II         Elective      1214
IS-IS      OSI IS-IS for TCP/IP Dual Environments  Elective     1195
IP-CMPRS   Compressing TCP/IP Headers             Elective      1144
ISO-TS-ECHO Echo for ISO-8473                      Elective      1139
SUN-NFS    Network File System Protocol           Elective      1094
SUN-RPC    Remote Procedure Call Protocol         Elective      1057
-------    Mapping Between X.400(1984)             Elective  1026,987
NNTP       Network News Transfer Protocol         Elective       977
```

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

Applicability Statements:

   OSPF - RFC 1370 is an applicability statement for OSPF.

6.6. Telnet Options

For convenience, all the Telnet Options are collected here with both
their state and status.

```
Protocol   Name                               Number  State Status  RFC STD
========   ==================================  =====  ======  ==== ====
TOPT-BIN   Binary Transmission                    0  Std   Rec     856  27
TOPT-ECHO  Echo                                   1  Std   Rec     857  28
TOPT-RECN  Reconnection                           2  Prop  Ele     ...
TOPT-SUPP  Suppress Go Ahead                      3  Std   Rec     858  29
TOPT-APRX  Approx Message Size Negotiation        4  Prop  Ele     ...
TOPT-STAT  Status                                 5  Std   Rec     859  30
TOPT-TIM   Timing Mark                            6  Std   Rec     860  31
TOPT-REM   Remote Controlled Trans and Echo       7  Prop  Ele     726
TOPT-OLW   Output Line Width                      8  Prop  Ele     ...
TOPT-OPS   Output Page Size                       9  Prop  Ele     ...
TOPT-OCRD  Output Carriage-Return Disposition 10  Prop  Ele     652
TOPT-OHT   Output Horizontal Tabstops            11  Prop  Ele     653
TOPT-OHTD  Output Horizontal Tab Disposition     12  Prop  Ele     654
TOPT-OFD   Output Formfeed Disposition           13  Prop  Ele     655
TOPT-OVT   Output Vertical Tabstops              14  Prop  Ele     656
TOPT-OVTD  Output Vertical Tab Disposition       15  Prop  Ele     657
TOPT-OLD   Output Linefeed Disposition           16  Prop  Ele     658
TOPT-EXT   Extended ASCII                        17  Prop  Ele     698
TOPT-LOGO  Logout                                18  Prop  Ele     727
TOPT-BYTE  Byte Macro                            19  Prop  Ele     735
TOPT-DATA  Data Entry Terminal                   20  Prop  Ele     1043
TOPT-SUP   SUPDUP                                21  Prop  Ele     736
```

```
TOPT-SUPO   SUPDUP Output                     22  Prop  Ele    749
TOPT-SNDL   Send Location                     23  Prop  Ele    779
TOPT-TERM   Terminal Type                     24  Prop  Ele   1091
TOPT-EOR    End of Record                     25  Prop  Ele    885
TOPT-TACACS  TACACS User Identification       26  Prop  Ele    927
TOPT-OM     Output Marking                    27  Prop  Ele    933
TOPT-TLN    Terminal Location Number          28  Prop  Ele    946
TOPT-3270   Telnet 3270 Regime                29  Prop  Ele   1041
TOPT-X.3    X.3 PAD                           30  Prop  Ele   1053
TOPT-NAWS   Negotiate About Window Size       31  Prop  Ele   1073
TOPT-TS     Terminal Speed                    32  Prop  Ele   1079
TOPT-RFC    Remote Flow Control               33  Prop  Ele   1372*
TOPT-LINE   Linemode                          34  Draft Ele   1184
TOPT-XDL    X Display Location                35  Prop  Ele   1096
TOPT-ENVIR  Telnet Environment Option         36  Prop  Ele   1408*
TOPT-AUTH   Telnet Authentication Option      37  Exp   Ele   1416*
TOPT-EXTOP  Extended-Options-List            255  Std   Rec    861  32
```

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

6.7. Experimental Protocols

All Experimental protocols have the Limited Use status.

```
Protocol    Name                                              RFC
========    ======================================           =====
DIR-ARP     Directed ARP                                      1433*
TEL-SPX     Telnet Authentication: SPX                        1412*
TEL-KER     Telnet Authentication: Kerberos V4                1411*
MAP-MAIL    X.400 Mapping and Mail-11                         1405*
TRACE-IP    Traceroute Using an IP Option                     1393*
DNS-IP      Experiment in DNS Based IP Routing                1383*
DNS NSAP    DNS NSAP RRs                                       1348
RMCP        Remote Mail Checking Protocol                     1339
MSP2        Message Send Protocol 2                           1312
DSLCP       Dynamically Switched Link Control                 1307
--------    X.500 and Domains                                 1279
SNMP-OSI    SNMP over OSI                                     1283
IN-ENCAP    Internet Encapsulation Protocol                   1241
CLNS-MIB    CLNS-MIB                                          1238
CFDP        Coherent File Distribution Protocol               1235
SNMP-DPI    SNMP Distributed Program Interface                1228
SNMP-MUX    SNMP MUX Protocol and MIB                         1227
IP-AX.25    IP Encapsulation of AX.25 Frames                  1226
ALERTS      Managing Asynchronously Generated Alerts          1224
MPP         Message Posting Protocol                          1204
ST-II       Stream Protocol                                   1190
```

```
SNMP-BULK   Bulk Table Retrieval with the SNMP                   1187
DNS-RR      New DNS RR Definitions                               1183
NTP-OSI     NTP over OSI Remote Operations                       1165
EHF-MAIL    Encoding Header Field for Mail                       1154
DMF-MAIL    Digest Message Format for Mail                       1153
RDP         Reliable Data Protocol                          908,1151
--------    Mapping between X.400(88) and RFC-822                1148
TCP-ACO     TCP Alternate Checksum Option                        1146
--------    Mapping full 822 to Restricted 822                   1137
IP-DVMRP    IP Distance Vector Multicast Routing                 1075
TCP-LDP     TCP Extensions for Long Delay Paths                  1072
IMAP2       Interactive Mail Access Protocol                1176,1064
IMAP3       Interactive Mail Access Protocol                     1203
VMTP        Versatile Message Transaction Protocol               1045
COOKIE-JAR  Authentication Scheme                                1004
NETBLT      Bulk Data Transfer Protocol                           998
IRTP        Internet Reliable Transaction Protocol                938
AUTH        Authentication Service                                931
LDP         Loader Debugger Protocol                              909
RLP         Resource Location Protocol                            887
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.]

6.8. Informational Protocols

Information protocols have no status.

```
Protocol    Name                                              RFC
=======     ===================================               =====
GOPHER      The Internet Gopher Protocol                      1436*
-------     Data Link Switching: Switch-to-Switch Protocol    1434*
LISTSERV    Listserv Distribute Protocol                      1429*
-------     Replication Requirements                          1275
PCMAIL      Pcmail Transport Protocol                         1056
MTP         Multicast Transport Protocol                      1301
SNMP-IPX    SNMP over IPX                                     1298
BSD Login   BSD Login                                        1282
DIXIE       DIXIE Protocol Specification                      1249
IP-X.121    IP to X.121 Address Mapping for DDN               1236
OSI-HYPER   OSI and LLC1 on HYPERchannel                      1223
HAP2        Host Access Protocol                              1221
SUBNETASGN  On the Assignment of Subnet Numbers               1219
SNMP-TRAPS  Defining Traps for use with SNMP                  1215
DAS         Directory Assistance Service                      1202
MD4         MD4 Message Digest Algorithm                      1186
```

LPDP   Line Printer Daemon Protocol   1179

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

6.9. Historic Protocols

All Historic protocols have Not Recommended status.

```
Protocol   Name                                            RFC
========   ===================================             =====
802.4-MIP  IEEE 802.4 Token Bus MIB                        1230*
CMOT       Common Management Information Services          1189*
PPP-INIT   PPP Initial Configuration Options               1172
MSP        Message Send Protocol                           1159
--------   Mail Privacy: Procedures                        1113
--------   Mail Privacy: Key Management                    1114
--------   Mail Privacy: Algorithms                        1115
NFILE      A File Access Protocol                          1037
HOSTNAME   HOSTNAME Protocol                                953
SFTP       Simple File Transfer Protocol                    913
SUPDUP     SUPDUP Protocol                                  734
BGP        Border Gateway Protocol                    1163,1164
MIB-I      MIB-I                                           1156
SGMP       Simple Gateway Monitoring Protocol             1028
HEMS       High Level Entity Management Protocol          1021
STATSRV    Statistics Server                               996
POP2       Post Office Protocol, Version 2                 937
RATP       Reliable Asynchronous Transfer Protocol         916
HFEP       Host - Front End Protocol                       929
THINWIRE   Thinwire Protocol                               914
HMP        Host Monitoring Protocol                        869
GGP        Gateway Gateway Protocol                        823
RTELNET    Remote Telnet Service                           818
CLOCK      DCNET Time Server Protocol                      778
MPM        Internet Message Protocol                       759
NETRJS     Remote Job Service                              740
NETED      Network Standard Text Editor                    569
RJE        Remote Job Entry                                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.]

7. Contacts

7.1. IAB, IETF, and IRTF Contacts

   7.1.1. Internet Architecture Board (IAB) Contact

   Please send your comments about this list of protocols and especially
   about the Draft Standard Protocols to the Internet Architecture Board
   care of Bob Braden, IAB Executive Director.

      Contacts:

         Bob Braden
         Executive Director of the IAB
         USC/Information Sciences Institute
         4676 Admiralty Way
         Marina del Rey, CA 90292-6695

         1-310-822-1511

         Braden@ISI.EDU

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         Chair of the IAB
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         Cambridge, MA 02140

         1-617-873-3133

         Lyman@BBN.COM

   7.1.2. Internet Engineering Task Force (IETF) Contact

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          Reston, VA 22091

          1-703-620-8990

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     7.1.3. Internet Research Task Force (IRTF) Contact

        Contact:

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          1-310-822-1511

          Postel@ISI.EDU

7.2. Internet Assigned Numbers Authority Contact

         Contact:

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            Internet Assigned Numbers Authority
            USC/Information Sciences Institute
            4676 Admiralty Way
            Marina del Rey, CA 90292-6695

            1-310-822-1511

            IANA@ISI.EDU

      The protocol standards are managed for the IAB by the Internet
      Assigned Numbers Authority.

      Please refer to the document "Assigned Numbers" (RFC-1340) for
      further information about the status of protocol documents. There
      are two documents that summarize the requirements for host and
      gateways in the Internet, "Host Requirements" (RFC-1122 and RFC-1123)
      and "Gateway Requirements" (RFC-1009).

         How to obtain the most recent edition of this "IAB Official
         Protocol Standards" memo:

            The file "in-notes/iab-standards.txt" may be copied via FTP
            from the VENERA.ISI.EDU computer using the FTP username
            "anonymous" and FTP password "guest".

7.3. Request for Comments Editor Contact

        Contact:

            Jon Postel
            RFC Editor
            USC/Information Sciences Institute
            4676 Admiralty Way
            Marina del Rey, CA 90292-6695

            1-310-822-1511

            RFC-Editor@ISI.EDU

    Documents may be submitted via electronic mail to the RFC Editor for
    consideration for publication as RFC. If you are not familiar with
    the format or style requirements please request the "Instructions for
    RFC Authors". In general, the style of any recent RFC may be used as
    a guide.

7.4. The Network Information Center and
      Requests for Comments Distribution Contact

        Contact:

            Network Solutions
            Attn: Network Information Center
            14200 Park Meadow Drive
            Suite 200
            Chantilly, VA 22021

            Help Desk Hours of Operation: 7:00 am to 7:00 pm Eastern Time

            1-800-365-3642 (1-800-365-DNIC)
            1-703-802-4535
            Fax Number: 1-703-802-8376

            NIC@NIC.DDN.MIL

    The Network Information Center (NIC) provides many information
    services for the Internet community. Among them is maintaining the
    Requests for Comments (RFC) library.

7.5. Sources for Requests for Comments

   Details on obtaining 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

8. Security Considerations

   Security issues are not addressed in this memo.

9. Author's Address

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