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Internet Architecture Board and  
Internet Engineering Steering Group  
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## The Internet Standards Process -- Revision 2

### Status of this Memo

This memo provides information for the Internet community. This memo does not specify an Internet standard of any kind. Distribution of this memo is unlimited.

### Notice

This informational memo presents the current procedures for creating and documenting Internet Standards. This document is provisional, pending legal review and concurrence of the Internet Society Trustees. It is being published in this form to keep the Internet Community informed as to the current status of policies and procedures for Internet Standards work.

### Abstract

This document is a revision of RFC 1310, which defined the official procedures for creating and documenting Internet Standards.

This revision (revision 2) includes the following major changes:

- (a) The new management structure arising from the POISED Working Group is reflected. These changes were agreed to by the IETF plenary and by the IAB and IESG in November 1992 and accepted by the ISOC Board of Trustees at their December 1992 meeting.
- (b) Prototype status is added to the non-standards track maturity levels (Section 2.4.1).
- (c) The Intellectual Property Rights section is completely revised, in accordance with legal advice. Section 5 of this document replaces Sections 5 and 6 of RFC-1310. The new section 5 has been reviewed by legal counsel to the Internet Society.

- (d) An appeals procedure is added (Section 3.6).
- (e) The wording of sections 1 and 1.2 has been changed to clarify the relationships that exist between the Internet Society and the IAB, the IESG, the IETF, and the Internet Standards process.
- (f) An Appendix B has been added, listing the contact points for the RFC editor, the IANA, the IESG, the IAB and the ISOC. The "future issues" are now listed in Appendix C.

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## 1. INTRODUCTION

This memo documents the process currently used by the Internet community for the standardization of protocols and procedures. The Internet Standards process is an activity of the Internet Society that is organized and managed on behalf of the Internet community by the Internet Architecture Board (IAB) and the Internet Engineering Steering Group.

## 1.1 Internet Standards

The Internet, a loosely-organized international collaboration of autonomous, interconnected networks, supports host-to-host communication through voluntary adherence to open protocols and procedures defined by Internet Standards. There are also many isolated internets, i.e., sets of interconnected networks, which are not connected to the Internet but use the Internet Standards.

Internet Standards were once limited to those protocols composing what has been commonly known as the "TCP/IP protocol suite". However, the Internet has been evolving towards the support of multiple protocol suites, especially the Open Systems Interconnection (OSI) suite. The Internet Standards process described in this document is concerned with all protocols, procedures, and conventions that are used in or by the Internet, whether or not they are part of the TCP/IP protocol suite. In the case of protocols developed and/or standardized by non-Internet organizations, however, the Internet Standards process may apply only to the application of the protocol or procedure in the Internet context, not to the specification of the protocol itself.

In general, an Internet Standard is a specification that is stable and well-understood, is technically competent, has multiple, independent, and interoperable implementations with substantial operational experience, enjoys significant public support, and is recognizably useful in some or all parts of the Internet.

The procedures described in this document are designed to be fair, open and objective; to reflect existing (proven) practice; and to be flexible.

- o These procedures are intended to provide a fair, open, and objective basis for developing, evaluating, and adopting Internet Standards. They provide ample opportunity for participation and comment by all interested parties. At each stage of the standardization process, a specification is repeatedly discussed and its merits debated in open meetings and/or public electronic mailing lists, and it is made available for review via world-wide on-line directories.
- o These procedures are explicitly aimed at recognizing and adopting generally-accepted practices. Thus, a candidate specification is implemented and tested for correct operation and interoperability by multiple independent parties and utilized in increasingly demanding environments, before it can be adopted as an Internet Standard.
- o These procedures provide a great deal of flexibility to adapt to the wide variety of circumstances that occur in the standardization process. Experience has shown this flexibility to be vital in achieving the goals listed above.

The goal of technical competence, the requirement for prior implementation and testing, and the need to allow all interested parties to comment, all require significant time and effort. On the other hand, today's rapid development of networking technology places an urgency on timely development of standards. The Internet standardization rules described here are intended to balance these conflicting goals. The process is believed to be as short and simple as possible without undue sacrifice of technical competence, prior testing, or openness and fairness.

In summary, the goals for the Internet standards process are:

- \* technical excellence;
- \* prior implementation and testing;
- \* clear, short, and easily understandable documentation;
- \* openness and fairness; and
- \* timeliness.

In outline, the process of creating an Internet Standard is straightforward: a specification undergoes a period of development and several iterations of review by the Internet community and

revision based upon experience, is adopted as a Standard by the appropriate body (see below), and is published. In practice, the process is more complicated, due to (1) the difficulty of creating specifications of high technical quality; (2) the need to consider the interests of all of the affected parties; (3) the importance of establishing widespread community consensus; and (4) the difficulty of evaluating the utility of a particular specification for the Internet community.

From its inception, the Internet has been, and is expected to remain, an evolving system whose participants regularly factor new requirements and technology into its design and implementation. Users of the Internet and providers of the equipment, software, and services that support it should anticipate and embrace this evolution as a major tenet of Internet philosophy.

The procedures described in this document are the result of three years of evolution, driven both by the needs of the growing and increasingly diverse Internet community, and by experience. Comments and suggestions are invited for improving these procedures.

The remainder of this section describes the organizations and publications involved in Internet standardization. Section 2 presents the nomenclature for different kinds and levels of Internet standard technical specifications and their applicability. Section 3 describes the process and rules for Internet standardization. Section 4 defines how relevant externally-sponsored specifications and practices, developed and controlled by other standards bodies or by vendors, are handled in the Internet standardization process. Section 5 presents the rules that are required to protect intellectual property rights and to assure unrestricted ability for all interested parties to practice Internet Standards.

## 1.2 Organizations

The following organizations are involved in the Internet standards process.

### \* IETF

The Internet Engineering Task Force (IETF) is a loosely self-organized group of people who make technical and other contributions to the engineering and evolution of the Internet and its technologies. It is the principal body

engaged in the development of new Internet Standard specifications, although it is not itself a part of the Internet Society. The IETF is composed of individual Working Groups, which are grouped into Areas, each of which is coordinated by one or more Area Directors. Nominations to the Internet Architecture Board and the Internet Engineering Steering Group are made by a nominating committee selected at random from the ranks of regular IETF meeting attendees who have volunteered to serve as nominating committee members.

\* ISOC

Internet standardization is an organized activity of the Internet Society (ISOC). The ISOC is a professional society that is concerned with the growth and evolution of the worldwide Internet, with the way in which the Internet is and can be used, and with the social, political, and technical issues that arise as a result. The ISOC Board of Trustees is responsible for approving appointments to the Internet Architecture Board from among the nominees submitted by the IETF nominating committee.

\* IESG

The Internet Engineering Steering Group (IESG) is responsible for technical management of IETF activities and the Internet Standards process. As part of the Internet Society, it administers the Internet Standards process according to the rules and procedures given in this document, which have been accepted and ratified by the Internet Society Trustees. The IESG is directly responsible for the actions associated with entry into and movement along the "standards track", as described in section 3 of this document, including final approval of specifications as Internet Standards. The IESG is composed of the IETF Area Directors and the chairperson of the IETF, who also serves as the chairperson of the IESG.

\* IAB

The Internet Architecture Board (IAB) is a technical advisory group of the Internet Society. It is chartered by the Internet Society Trustees to provide oversight of the architecture of the Internet and its protocols, and to serve in the context of the Internet Standards process as a body to which the decisions of the IESG may be appealed (as described in section 3.6 of this document). The IAB is responsible for

approving appointments to the IESG from among the nominees submitted by the IETF nominating committee.

Any member of the Internet community with the time and interest is urged to participate actively in one or more IETF Working Groups and to attend IETF meetings. In many cases, active Working Group participation is possible through email alone; furthermore, Internet video conferencing is being used experimentally to allow remote participation. Participation is by individual technical contributors rather than formal representatives of organizations. The process works because the IETF Working Groups display a spirit of cooperation as well as a high degree of technical maturity; IETF participants recognize that the greatest benefit for all members of the Internet community results from cooperative development of technically superior protocols and services.

Members of the IESG and IAB are nominated for two-year terms by a committee that is drawn from the roll of recent participation in the IETF and chartered by the ISOC Board of Trustees. The appointment of IESG and of IAB members are made from these nominations by the IAB and by the ISOC Board of Trustees, respectively.

The Internet Research Task Force (IRTF) is not directly part of the standards process. It investigates topics considered to be too uncertain, too advanced, or insufficiently well-understood to be the subject of Internet standardization. When an IRTF activity generates a specification that is sufficiently stable to be considered for Internet standardization, the specification is processed through the IETF using the rules in this document.

### 1.3 Standards-Related Publications

#### 1.3.1 Requests for Comments (RFCs)

Each distinct version of a specification is published as part of the "Request for Comments" (RFC) document series. This archival series is the official publication channel for Internet standards documents and other publications of the IESG, IAB, and Internet community. RFCs are available for anonymous FTP from a number of Internet hosts.

The RFC series of documents on networking began in 1969 as part of the original ARPA wide-area networking (ARPANET) project (see Appendix A for glossary of acronyms). RFCs cover a wide range of topics, from early discussion of new research concepts



to status memos about the Internet. RFC publication is the direct responsibility of the RFC Editor, under the general direction of the IAB.

The rules for formatting and submitting an RFC are defined in reference [5]. Every RFC is available in ASCII text, but some RFCs are also available in PostScript. The PostScript version of an RFC may contain material (such as diagrams and figures) that is not present in the ASCII version, and it may be formatted differently.

```
*****
*   A stricter requirement applies to standards-track   *
*   specifications: the ASCII text version is the       *
*   definitive reference, and therefore it must be a    *
*   complete and accurate specification of the standard,*
*   including all necessary diagrams and illustrations.  *
*                                                       *
*****
```

The status of Internet protocol and service specifications is summarized periodically in an RFC entitled "Internet Official Protocol Standards" [1]. This RFC shows the level of maturity and other helpful information for each Internet protocol or service specification. See Section 3.1.3 below.

Some RFCs document Internet standards. These RFCs form the 'STD' subseries of the RFC series [4]. When a specification has been adopted as an Internet Standard, it is given the additional label "STDxxxx", but it keeps its RFC number and its place in the RFC series.

Not all specifications of protocols or services for the Internet should or will become Internet Standards. Such non-standards track specifications are not subject to the rules for Internet standardization. Generally, they will be published directly as RFCs at the discretion of the RFC editor and the IESG. These RFCs will be marked "Prototype", "Experimental" or "Informational" as appropriate (see section 2.3).

```
*****
*   It is important to remember that not all RFCs      *
*   are standards track documents, and that not all    *
*   standards track documents reach the level of       *
*   Internet Standard.                                 *
*****
```

### 1.3.2 Internet Drafts

During the development of a specification, draft versions of the document are made available for informal review and comment by placing them in the IETF's "Internet Drafts" directory, which is replicated on a number of Internet hosts. This makes an evolving working document readily available to a wide audience, facilitating the process of review and revision.

An Internet Draft that is published as an RFC, or that has remained unchanged in the Internet Drafts directory for more than six months without being recommended by the IESG for publication as an RFC, is simply removed from the Internet Draft directory. At any time, an Internet Draft may be replaced by a more recent version of the same specification, restarting the six-month timeout period.

An Internet Draft is NOT a means of "publishing" a specification; specifications are published through the RFC mechanism described in the previous section. Internet Drafts have no formal status, are not part of the permanent archival record of Internet activity, and are subject to change or removal at any time.

```
*****
*   Under no circumstances should an Internet Draft   *
*   be referenced by any paper, report, or Request-for-*
*   Proposal, nor should a vendor claim compliance    *
*   with an Internet-Draft.                            *
*****
```

Note: It is acceptable to reference a standards-track specification that may reasonably be expected to be published as an RFC using the phrase "Work in Progress", without referencing an Internet Draft.

### 1.4 Internet Assigned Number Authority (IANA)

Many protocol specifications include numbers, keywords, and other parameters that must be uniquely assigned. Examples include version numbers, protocol numbers, port numbers, and MIB numbers. The IAB has delegated to the Internet Assigned Numbers Authority (IANA) the task of assigning such protocol parameters for the Internet. The IANA publishes tables of all currently assigned numbers and parameters in RFCs titled "Assigned Numbers" [3].

Each category of assigned numbers typically arises from some protocol that is on the standards track or is an Internet Standard. For example, TCP port numbers are assigned because TCP is a Standard. A particular value within a category may be assigned in a variety of circumstances; the specification requiring the parameter may be in the standards track, it may be Experimental, or it may be private. Note that assignment of a number to a protocol is independent of, and does not imply, acceptance of that protocol as a standard.

Chaos could result from accidental conflicts of parameter values, so we urge that every protocol parameter, for either public or private usage, be explicitly assigned by the IANA. Private protocols often become public. Programmers are often tempted to choose a "random" value or to guess the next unassigned value of a parameter; both are hazardous.

The IANA is expected to avoid frivolous assignments and to distinguish different assignments uniquely. The IANA accomplishes both goals by requiring a technical description of each protocol or service to which a value is to be assigned. Judgment on the adequacy of the description resides with the IANA. In the case of a standards track or Experimental protocol, the corresponding technical specifications provide the required documentation for IANA. For a proprietary protocol, the IANA will keep confidential any writeup that is supplied, but at least a short (2 page) writeup is still required for an assignment.

## 2. NOMENCLATURE

### 2.1 The Internet Standards Track

Specifications that are destined to become Internet Standards evolve through a set of maturity levels known as the "standards track". These maturity levels -- "Proposed Standard", "Draft Standard", and "Standard" -- are defined and discussed below in Section 3.2.

Even after a specification has been adopted as an Internet Standard, further evolution often occurs based on experience and the recognition of new requirements. The nomenclature and procedures of Internet standardization provide for the replacement of old Internet Standards with new ones, and the assignment of descriptive labels to indicate the status of "retired" Internet Standards. A set of maturity levels is defined in Section 3.3 to cover these and other "off-track" specifications.

## 2.2 Types of Specifications

Specifications subject to the Internet standardization process fall into two categories: Technical Specifications (TS) and Applicability Statements (AS).

### 2.2.1 Technical Specification (TS)

A Technical Specification is any description of a protocol, service, procedure, convention, or format. It may completely describe all of the relevant aspects of its subject, or it may leave one or more parameters or options unspecified. A TS may be completely self-contained, or it may incorporate material from other specifications by reference to other documents (which may or may not be Internet Standards).

A TS shall include a statement of its scope and the general intent for its use (domain of applicability). Thus, a TS that is inherently specific to a particular context shall contain a statement to that effect. However, a TS does not specify requirements for its use within the Internet; these requirements, which depend on the particular context in which the TS is incorporated by different system configurations, is defined by an Applicability Statement.

### 2.2.2 Applicability Statement (AS)

An Applicability Statement specifies how, and under what circumstances, one or more TSs are to be applied to support a particular Internet capability. An AS may specify uses for TSs that are not Internet Standards, as discussed in Section 4.

An AS identifies the relevant TSs and the specific way in which they are to be combined, and may also specify particular values or ranges of TS parameters or subfunctions of a TS protocol that must be implemented. An AS also specifies the circumstances in which the use of a particular TS is required, recommended, or elective.

An AS may describe particular methods of using a TS in a restricted "domain of applicability", such as Internet routers, terminal servers, Internet systems that interface to Ethernets, or datagram-based database servers.

The broadest type of AS is a comprehensive conformance specification, commonly called a "requirements document", for a

particular class of Internet systems, such as Internet routers or Internet hosts.

An AS may not have a higher maturity level in the standards track than any standards-track TS to which the AS applies. For example, a TS at Draft Standard level may be referenced by an AS at the Proposed Standard or Draft Standard level, but not by an AS at the Standard level.

An AS may refer to a TS that is either a standards-track specification or is "Informational", but not to a TS with a maturity level of "Prototype", "Experimental", or "Historic" (see section 2.4).

Although TSs and ASs are conceptually separate, in practice a standards-track document may combine an AS and one or more related TSs. For example, Technical Specifications that are developed specifically and exclusively for some particular domain of applicability, e.g., for mail server hosts, often contain within a single specification all of the relevant AS and TS information. In such cases, no useful purpose would be served by deliberately distributing the information among several documents just to preserve the formal AS/TS distinction. However, a TS that is likely to apply to more than one domain of applicability should be developed in a modular fashion, to facilitate its incorporation by multiple ASs.

## 2.3 Standards Track Maturity Levels

ASs and TSs go through stages of development, testing, and acceptance. Within the Internet standards process, these stages are formally labeled "maturity levels".

This section describes the maturity levels and the expected characteristics of specifications at each level.

### 2.3.1 Proposed Standard

The entry-level maturity for the standards track is "Proposed Standard". A Proposed Standard specification is generally stable, has resolved known design choices, is believed to be well-understood, has received significant community review, and appears to enjoy enough community interest to be considered valuable. However, further experience might result in a change or even retraction of the specification before it advances.

Usually, neither implementation nor operational experience is required for the designation of a specification as a Proposed Standard. However, such experience is highly desirable, and will usually represent a strong argument in favor of a Proposed Standard designation.

The IESG may require implementation and/or operational experience prior to granting Proposed Standard status to a specification that materially affects the core Internet protocols or that specifies behavior that may have significant operational impact on the Internet. Typically, such a specification will be published initially with Experimental or Prototype status (see below), and moved to the standards track only after sufficient implementation or operational experience has been obtained.

A Proposed Standard should have no known technical omissions with respect to the requirements placed upon it. However, the IESG may recommend that this requirement be explicitly reduced in order to allow a protocol to advance into the Proposed Standard state, when a specification is considered to be useful and necessary (and timely), even absent the missing features.

Implementors should treat Proposed Standards as immature specifications. It is desirable to implement them in order to gain experience and to validate, test, and clarify the specification. However, since the content of Proposed Standards may be changed if problems are found or better solutions are identified, deploying implementations of such standards into a disruption-sensitive customer base is not normally advisable.

### 2.3.2 Draft Standard

A specification from which at least two independent and interoperable implementations have been developed, and for which sufficient successful operational experience has been obtained, may be elevated to the "Draft Standard" level. This is a major advance in status, indicating a strong belief that the specification is mature and will be useful.

A Draft Standard must be well-understood and known to be quite stable, both in its semantics and as a basis for developing an implementation. A Draft Standard may still require additional or more widespread field experience, since it is possible for implementations based on Draft Standard specifications to

demonstrate unforeseen behavior when subjected to large-scale use in production environments.

### 2.3.3 Internet Standard

A specification for which significant implementation and successful operational experience has been obtained may be elevated to the Internet Standard level. An Internet Standard (which may simply be referred to as a Standard) is characterized by a high degree of technical maturity and by a generally held belief that the specified protocol or service provides significant benefit to the Internet community.

A Draft Standard is normally considered to be a final specification, and changes are likely to be made only to solve specific problems encountered. In most circumstances, it is reasonable for vendors to deploy implementations of draft standards into the customer base.

## 2.4 Non-Standards Track Maturity Levels

Not every TS or AS is on the standards track. A TS may not be intended to be an Internet Standard, or it may be intended for eventual standardization but not yet ready to enter the standards track. A TS or AS may have been superseded by more recent Internet Standards, or have otherwise fallen into disuse or disfavor.

Specifications not on the standards track are labeled with one of four off-track maturity levels: "Prototype", "Experimental", "Informational", and "Historic". There are no time limits associated with these non-standard track labels, and the documents bearing these labels are not Internet standards in any sense. As the Internet grows, there is a growing amount of credible technical work being submitted directly to the RFC Editor without having been gone through the IETF. It is possible that such outside submissions may overlap or even conflict with ongoing IETF activities. In order for the best technical result to emerge for the community, we believe that the such outside submissions should be given the opportunity to work within IETF to gain the broadest possible consensus.

It is also possible that supporters of a view different from the IETF may wish to publish their divergent view. For this reason, it is important that, ultimately, authors should have the opportunity to publish Informational and Experimental RFCs should

they wish to. However, it is also possible that this could open a loophole in which developers could try to bypass the IETF consensus process completely by publishing an Informational RFC (and relying on the prestige of the RFC series to gain community support for their document).

For all these reasons, the IESG and the RFC Editor have agreed to the following policy for publishing Info and Exp RFCs:

1. The RFC Editor will bring to the attention of the IESG all Informational and Experimental submissions that the RFC Editor feels may be related to, or of interest to, the IETF community.
2. The IESG will review all such referrals within a fixed length of time and make a recommendation on whether to publish, or to suggest that the author bring their work within the IETF.
3. If the IESG recommends that the work be brought within the IETF, but the author declines the invitation, the IESG may add disclaimer text into the standard boilerplate material added by the RFC Editor (e.g., "Status of this memo").

#### 2.4.1 Prototype

For new protocols which affect core services of the Internet or for which the interactions with existing protocols are too complex to fully assimilate from the written specification, the IESG may request that operational experience be obtained prior to advancement to Proposed Standard status. In these cases, the IESG will designate an otherwise complete specification as "Prototype". This status permits it to be published as an RFC before it is entered onto the standards track. In this respect, "Prototype" is similar to "Experimental", except that it indicates the protocol is specifically being developed to become a standard, while "Experimental" generally indicates a more exploratory phase of development.

#### 2.4.2 Experimental

The "Experimental" designation on a TS typically denotes a specification that is part of some research or development effort. Such a specification is published for the general information of the Internet technical community and as an



archival record of the work. An Experimental specification may be the output of an organized Internet research effort (e.g., a Research Group of the IRTF), or it may be an individual contribution.

Documents intended for Experimental status should be submitted directly to the RFC Editor for publication. The procedure is intended to expedite the publication of any responsible Experimental specification, subject only to editorial considerations, and to verification that there has been adequate coordination with the standards process.

#### 2.4.3 Informational

An "Informational" specification is published for the general information of the Internet community, and does not represent an Internet community consensus or recommendation. The Informational designation is intended to provide for the timely publication of a very broad range of responsible informational documents from many sources, subject only to editorial considerations and to verification that there has been adequate coordination with the standards process.

Specifications that have been prepared outside of the Internet community and are not incorporated into the Internet standards process by any of the provisions of Section 4 may be published as Informational RFCs, with the permission of the owner.

#### 2.4.4 Historic

A TS or AS that has been superseded by a more recent specification or is for any other reason considered to be obsolete is assigned to the "Historic" level. (Purists have suggested that the word should be "Historical"; however, at this point the use of "Historic" is historical.)

### 2.5 Requirement Levels

An AS may apply one of the following "requirement levels" to each of the TSs to which it refers:

- (a) Required: Implementation of the referenced TS, as specified by the AS, is required to achieve minimal conformance. For example, IP and ICMP must be implemented by all Internet systems using the TCP/IP Protocol Suite.
- (b) Recommended: Implementation of the referenced TS is not required for minimal conformance, but experience and/or generally accepted technical wisdom suggest its desirability in the domain of applicability of the AS. Vendors are strongly encouraged to include the functions, features, and protocols of Recommended TSs in their products, and should omit them only if the omission is justified by some special circumstance.
- (c) Elective: Implementation of the referenced TS is optional within the domain of applicability of the AS; that is, the AS creates no explicit necessity to apply the TS. However, a particular vendor may decide to implement it, or a particular user may decide that it is a necessity in a specific environment.

As noted in Section 2.4, there are TSs that are not in the standards track or that have been retired from the standards track, and are therefore not required, recommended, or elective. Two additional "requirement level" designations are available for such TSs:

- (d) Limited Use: The TS is considered appropriate for use only in limited or unique circumstances. For example, the usage of a protocol with the "Experimental" designation should generally be limited to those actively involved with the experiment.
- (e) Not Recommended: A TS that is considered to be inappropriate for general use is labeled "Not Recommended". This may be because of its limited functionality, specialized nature, or historic status.

The "Official Protocol Standards" RFC lists a general requirement level for each TS, using the nomenclature defined in this section. In many cases, more detailed descriptions of the requirement levels of particular protocols and of individual features of the protocols will be found in appropriate ASs.

### 3. THE INTERNET STANDARDS PROCESS

#### 3.1 Review and Approval

A "standards action" -- entering a particular specification into, advancing it within, or removing it from, the standards track -- must be approved by the IESG.

##### 3.1.1 Initiation of Action

Typically, a standards action is initiated by a recommendation to the appropriate IETF Area Director by the individual or group that is responsible for the specification, usually an IETF Working Group.

After completion to the satisfaction of its author and the cognizant Working Group, a document that is expected to enter or advance in the Internet standardization process shall be made available as an Internet Draft. It shall remain as an Internet Draft for a period of time that permits useful community review, at least two weeks, before submission to the IESG with a recommendation for action.

##### 3.1.2 IESG Review and Approval

The IESG shall determine whether a specification satisfies the applicable criteria for the recommended action (see Sections 3.2 and 3.3 of this document).

The IESG shall determine if an independent technical review of the specification is required, and shall commission one when necessary. This may require creating a new Working Group, or an existing group may agree to take responsibility for reviewing the specification. When a specification is sufficiently important in terms of its potential impact on the Internet or on the suite of Internet protocols, the IESG shall form an independent technical review and analysis committee to prepare an evaluation of the specification. Such a committee is commissioned to provide an objective basis for agreement within the Internet community that the specification is ready for advancement.

The IESG shall communicate its findings to the IETF to permit a final review by the general Internet community. This "last-call" notification shall be via electronic mail to the IETF mailing list. In addition, for important specifications there

shall be a presentation or statement by the appropriate Working Group or Area Director during an IETF plenary meeting. Any significant issues that have not been resolved satisfactorily during the development of the specification may be raised at this time for final resolution by the IESG.

In a timely fashion, but no sooner than two weeks after issuing the last-call notification to the IETF mailing list, the IESG shall make its final determination on whether or not to approve the standards action, and shall notify the IETF of its decision via email.

### 3.1.3 Publication

Following IESG approval and any necessary editorial work, the RFC Editor shall publish the specification as an RFC. The specification shall then be removed from the Internet Drafts directory.

An official summary of standards actions completed and pending shall appear in each issue of the Internet Society Newsletter. This shall constitute the "journal of record" for Internet standards actions. In addition, the IESG shall publish a monthly summary of standards actions completed and pending in the Internet Monthly Report, which is distributed to all members of the IETF mailing list.

Finally, the IAB shall publish quarterly an "Internet Official Protocol Standards" RFC, summarizing the status of all Internet protocol and service specifications, both within and outside the standards track.

## 3.2 Entering the Standards Track

A specification that is potentially an Internet Standard may originate from:

- (a) an ISOC-sponsored effort (typically an IETF Working Group),
- (b) independent activity by individuals, or
- (c) an external organization.

Case (a) accounts for the great majority of specifications that enter the standards track. In cases (b) and (c), the work might be tightly integrated with the work of an existing IETF Working

Group, or it might be offered for standardization without prior IETF involvement. In most cases, a specification resulting from an effort that took place outside of an IETF Working Group will be submitted to an appropriate Working Group for evaluation and refinement. If necessary, an appropriate Working Group will be created.

For externally-developed specifications that are well-integrated with existing Working Group efforts, a Working Group is assumed to afford adequate community review of the accuracy and applicability of the specification. If a Working Group is unable to resolve all technical and usage questions, additional independent review may be necessary. Such reviews may be done within a Working Group context, or by an ad hoc review committee established specifically for that purpose. Ad hoc review committees may also be convened in other circumstances when the nature of review required is too small to require the formality of Working Group creation. It is the responsibility of the appropriate IETF Area Director to determine what, if any, review of an external specification is needed and how it shall be conducted.

### 3.3 Advancing in the Standards Track

A specification shall remain at the Proposed Standard level for at least six (6) months.

A specification shall remain at the Draft Standard level for at least four (4) months, or until at least one IETF meeting has occurred, whichever comes later.

These minimum periods are intended to ensure adequate opportunity for community review without severely impacting timeliness. These intervals shall be measured from the date of publication of the corresponding RFC(s), or, if the action does not result in RFC publication, the date of IESG approval of the action.

A specification may be (indeed, is likely to be) revised as it advances through the standards track. At each stage, the IESG shall determine the scope and significance of the revision to the specification, and, if necessary and appropriate, modify the recommended action. Minor revisions are expected, but a significant revision may require that the specification accumulate more experience at its current maturity level before progressing. Finally, if the specification has been changed very significantly, the IESG may recommend that the revision be treated as a new document, re-entering the standards track at the beginning.

Change of status shall result in republication of the specification as an RFC, except in the rare case that there have been no changes at all in the specification since the last publication. Generally, desired changes will be "batched" for incorporation at the next level in the standards track. However, deferral of changes to the next standards action on the specification will not always be possible or desirable; for example, an important typographical error, or a technical error that does not represent a change in overall function of the specification, may need to be corrected immediately. In such cases, the IESG or RFC Editor may be asked to republish the RFC with corrections, and this will not reset the minimum time-at-level clock.

When a standards-track specification has not reached the Internet Standard level but has remained at the same status level for twenty-four (24) months, and every twelve (12) months thereafter until the status is changed, the IESG shall review the viability of the standardization effort responsible for that specification. Following each such review, the IESG shall approve termination or continuation of the development. This decision shall be communicated to the IETF via electronic mail to the IETF mailing list, to allow the Internet community an opportunity to comment. This provision is not intended to threaten a legitimate and active Working Group effort, but rather to provide an administrative mechanism for terminating a moribund effort.

### 3.4 Revising a Standard

A new version of an established Internet Standard must progress through the full Internet standardization process as if it were a completely new specification. Once the new version has reached the Standard level, it will usually replace the previous version, which will move to Historic status. However, in some cases both versions may remain as Internet Standards to honor the requirements of an installed base. In this situation, the relationship between the previous and the new versions must be explicitly stated in the text of the new version or in another appropriate document (e.g., an Applicability Statement; see Section 2.2.2).

### 3.5 Retiring a Standard

As the technology changes and matures, it is possible for a new Standard specification to be so clearly superior technically that one or more existing Internet Standards for the same function

should be retired. In this case, the IESG shall approve a change of status of the superseded specification(s) from Standard to Historic. This recommendation shall be issued with the same Last-Call and notification procedures used for any other standards action.

### 3.6 Conflict Resolution and Appeals

IETF Working Groups are generally able to reach consensus, which sometimes requires difficult compromises between differing technical solutions. However, there are times when even reasonable and knowledgeable people are unable to agree. To achieve the goals of openness and fairness, such conflicts must be resolved with a process of open review and discussion. Participants in a Working Group may disagree with Working Group decisions, based either upon the belief that their own views are not being adequately considered or the belief that the Working Group made a technical choice which essentially will not work. The first issue is a difficulty with Working Group process, and the latter is an assertion of technical error. These two kinds of disagreements may have different kinds of final outcome, but the resolution process is the same for both cases.

Working Group participants always should first attempt to discuss their concerns with the Working Group chair. If this proves unsatisfactory, they should raise their concerns with an IESG Area Director or other IESG member. In most cases, issues raised to the level of the IESG will receive consideration by the entire IESG, with the relevant Area Director or the IETF Chair being tasked with communicating results of the discussion.

For the general community as well as Working Group participants seeking a larger audience for their concerns, there are two opportunities for explicit comment. (1) When appropriate, a specification that is being suggested for advancement along the standards track will be presented during an IETF plenary. At that time, IETF participants may choose to raise issues with the plenary or to pursue their issues privately, with any of the relevant IETF/IESG management personnel. (2) Specifications that are to be considered by the IESG are publicly announced to the IETF mailing list, with a request for comments.

Finally, if a problem persists, the IAB may be asked to adjudicate the dispute.

- \* If a concern involves questions of adequate Working Group discussion, the IAB will attempt to determine the actual nature and extent of discussion that took place within the Working Group, based upon the Working Group's written record and upon comments of other Working Group participants.
- \* If a concern involves questions of technical adequacy, the IAB may convene an appropriate review panel, which may then recommend that the IESG and Working Group re-consider an alternate technical choice.
- \* If a concern involves a reasonable difference in technical approach, but does not substantiate a claim that the Working Group decision will fail to perform adequately, the Working Group participant may wish to pursue formation of a separate Working Group. The IESG and IAB encourage alternative points of view and the development of technical options, allowing the general Internet community to show preference by making its own choices, rather than by having legislated decisions.

#### 4. EXTERNAL STANDARDS AND SPECIFICATIONS

Many standards groups other than the IETF create and publish standards documents for network protocols and services. When these external specifications play an important role in the Internet, it is desirable to reach common agreements on their usage -- i.e., to establish Internet Standards relating to these external specifications.

There are two categories of external specifications:

##### (1) Open Standards

Accredited national and international standards bodies, such as ANSI, ISO, IEEE, and ITU-TS, develop a variety of protocol and service specifications that are similar to Technical Specifications defined here. National and international groups also publish "implementors' agreements" that are analogous to Applicability Statements, capturing a body of implementation-specific detail concerned with the practical application of their standards.



## (2) Vendor Specifications

A vendor-proprietary specification that has come to be widely used in the Internet may be treated by the Internet community as if it were a "standard". Such a specification is not generally developed in an open fashion, is typically proprietary, and is controlled by the vendor or vendors that produced it.

To avoid conflict between competing versions of a specification, the Internet community will not standardize a TS or AS that is simply an "Internet version" of an existing external specification unless an explicit cooperative arrangement to do so has been made. However, there are several ways in which an external specification that is important for the operation and/or evolution of the Internet may be adopted for Internet use.

### (a) Incorporation of an Open Standard

An Internet Standard TS or AS may incorporate an open external standard by reference. The reference must be to a specific version of the external standard, e.g., by publication date or by edition number, according to the prevailing convention of the organization that is responsible for the specification.

For example, many Internet Standards incorporate by reference the ANSI standard character set "ASCII" [2]. Whenever possible, the referenced specification shall be made available online.

### (b) Incorporation of a Vendor Specification

Vendor-proprietary specifications may be incorporated by reference to a specific version of the vendor standard. If the vendor-proprietary specification is not widely and readily available, the IESG may request that it be published as an Informational RFC.

For a vendor-proprietary specification to be incorporated within the Internet standards process, the proprietor must meet the requirements of section 5 below, and in general the specification shall be made available online.

The IESG shall not favor a particular vendor's proprietary specification over the technically equivalent and competing specifications of other vendors by making it "required" or "recommended".

(c) Assumption

An IETF Working Group may start from an external specification and develop it into an Internet TS or AS. This is acceptable if (1) the specification is provided to the Working Group in compliance with the requirements of section 5 below, and (2) change control has been conveyed to IETF by the original developer of the specification. Continued participation in the IETF work by the original owner is likely to be valuable, and is encouraged.

The following sample text illustrates how a vendor might convey change control to the Internet Society:

"XXXX Organization asserts that it has the right to transfer to the Internet Society responsibility for further evolution of the YYYY protocol documented in References (1-n) below. XXXX Organization hereby transfers to the Internet Society responsibility for all future modification and development of the YYYY protocol, without reservation or condition."

## 5. INTELLECTUAL PROPERTY RIGHTS

### 5.1. General Policy

In all matters of intellectual property rights and procedures, the intention is to benefit the Internet community and the public at large, while respecting the legitimate rights of others.

### 5.2. Definitions

As used in this section, the following terms have the indicated meanings:

- o "Trade secrets" are confidential, proprietary information.
- o "Contribution" means any disclosure of information or ideas, whether in oral, written, or other form of expression, by an individual or entity ("Contributor").
- o "Standards track documents" are specifications and other documents that have been elevated to the Internet standards track in accordance with the Internet Standards Process.

- o "Copyrights" are purportedly valid claims to copyright in all or part of a contribution to standards work, whether or not the contribution becomes a standards track document, including but not limited to any works by third parties that the contribution is based on or incorporates.
- o "ISOC" refers to the Internet Society and its trustees, officers, employees, contractors, and agents, as well as the IAB, IETF, IESG, IRTF, IRSG, and other task forces, committees, and groups coordinated by the Internet Society.
- o "Standards work" is work involved in the creation, testing, development, revision, adoption, or maintenance of an Internet standard that is carried out under the auspices of ISOC.
- o "Internet community" refers to the entire set of persons, whether individuals or entities, including but not limited to technology developers, service vendors, and researchers, who use the Internet, either directly or indirectly, and users of any other networks which implement and use Internet Standards.

### 5.3 Trade Secret Rights

Except as otherwise provided under this section, ISOC will not accept, in connection with standards work, any idea, technology, information, document, specification, work, or other contribution, whether written or oral, that is a trade secret or otherwise subject to any commitment, understanding, or agreement to keep it confidential or otherwise restrict its use or dissemination; and, specifically, ISOC does not assume any confidentiality obligation with respect to any such contribution.

### 5.4. Rights and Permissions

In the course of standards work, ISOC receives contributions in various forms and from many persons. To facilitate the wide dissemination of these contributions, it is necessary to establish specific understandings concerning any copyrights, patents, patent applications, or other rights in the contribution. The procedures set forth in this section apply to contributions submitted after 1 April 1994. For Internet standards documents published before this date (the RFC series has been published continuously since April 1969), information on rights and permissions must be sought directly from persons claiming rights therein.

#### 5.4.1. All Contributions

By submission of a contribution to ISOC, and in consideration of possible dissemination of the contribution to the Internet community, a contributor is deemed to agree to the following terms and conditions:

1. Contributor agrees to grant, and does grant to ISOC, a perpetual, non-exclusive, royalty-free, world-wide right and license under any copyrights in the contribution to reproduce, distribute, perform or display publicly and prepare derivative works that are based on or incorporate all or part of the contribution, and to reproduce, distribute and perform or display publicly any such derivative works, in any form and in all languages, and to authorize others to do so.
2. Contributor acknowledges that ISOC has no duty to publish or otherwise use or disseminate every contribution.
3. Contributor grants ISOC permission to reference the name(s) and address(s) of the contributor as well as other persons who are named as contributors.
4. Where the contribution was prepared jointly with others, or is a work for hire, the contributor represents and warrants that the other owner(s) of rights have been informed of the rights and permissions granted to ISOC and that any required authorizations have been obtained. Copies of any such required authorizations will be furnished to ISOC, upon request.
5. Contributor acknowledges and agrees that ISOC assumes no obligation to maintain any confidentiality with respect to any aspect of the contribution, and warrants that the contribution does not violate the rights of others.
6. All material objects in which contributions are submitted to ISOC become the property of ISOC and need not be returned to the contributor.

Where appropriate, written confirmation of the above terms and conditions will be obtained in writing by ISOC, usually by electronic mail; however, a decision not to obtain such confirmation in a given case shall not act to revoke the prior grant of rights and permissions with respect to the

contribution as provided herein. Except as provided below, the Executive Director of the IETF Secretariat, or a person designated by the Executive Director, will be responsible for obtaining written confirmations.

In the case of IETF Working Groups, the responsibility for identifying the principal contributor(s) for purposes of obtaining written confirmation of the above rights and permissions will be assumed by the Editor or Chair of the particular Group. While only those persons named as principal contributor(s) will generally be requested to provide written confirmation, it is the responsibility of all contributors to standards work to inform the IETF Secretariat of any proprietary claims in any contributions and to furnish the Secretariat with any required confirmation.

Where any person participating in standards work asserts any proprietary right in a contribution, it is the responsibility of such person to so inform the Editor or Chair of the group, promptly, in writing. The Editor or Chair will then determine whether to list the person as a principal contributor, or to revise the document to omit the particular contribution in question.

#### 5.4.2. Standards Track Documents

- (A) ISOC will not propose, adopt, or continue to maintain any standards, including but not limited to standards labelled Proposed, Draft or Internet Standards, which can only be practiced using technology or works that are subject to known copyrights, patents or patent applications, or other rights, except with the prior written assurance of the owner of rights that:
  - 1. ISOC may, without cost, freely implement and use the technology or works in its standards work;
  - 2. upon adoption and during maintenance of an Internet Standard, any party will be able to obtain the right to implement and use the technology or works under specified, reasonable, non-discriminatory terms; and
  - 3. the party giving the assurance has the right and power to grant the licenses and knows of no other copyrights, patents, patent applications, or other

rights that may prevent ISOC and members of the Internet community from implementing and operating under the standard.

- (B) ISOC disclaims any responsibility for identifying the existence of or for evaluating any copyrights, patents, patent applications, or other rights, on behalf of or for the benefit of any member of the Internet community, and ISOC takes no position on the validity or scope of any such rights. Further, ISOC will take no position on the ownership of inventions made during standards work, except for inventions of which an employee or agent of the Internet Society is a joint inventor. In the latter case, the Internet Society will make its rights available under license to anyone in the Internet community in accordance with the written assurances set forth below.

#### 5.5. Notices

- (A) When a written assurance has been obtained as set forth below, the relevant standards track documents shall include the following notice:

"\_\_\_\_\_(name of rights' owner) has provided written assurance to the Internet Society that any party will be able to obtain, under reasonable, nondiscriminatory terms, the right to use the technology covered by\_\_\_\_\_(list copyrights, patents, patent applications, and other rights) to practice the standard. A copy of this assurance may be obtained from the Executive Director of the IETF Secretariat. The Internet Society takes no position on the validity or scope of the copyrights, patents, patent applications, or other rights, or on the appropriateness of the terms and conditions of the assurances. The Internet Society does not make any representation there are no other rights which may apply to the practice of this standard, nor that it has made any effort to identify any such rights. For further information on the Internet Society's procedures with respect to rights in standards and standards-related documentation, see RFC\_\_\_\_\_, dated\_\_\_\_\_."

- (B) ISOC encourages all interested parties to bring to its attention, at the earliest possible time, the existence of any copyrights, patents, patent applications, or other rights

pertaining to Internet Standards. For this purpose, each standards document will include the following invitation:

"The Internet Society invites any interested party to bring to its attention any copyrights, patents or patent applications, or other proprietary rights which purport to cover technology or works that may be required to practice this standard. Please address the information to the Executive Director of the Internet Engineering Task Force Secretariat."

- (C) When applicable, the following sentence will be included in the notice:

"As of \_\_\_\_\_, no information about any copyrights, patents or patent applications, or other proprietary rights has been received."

- (D) The following copyright notice and disclaimer will be included in all ISOC standards-related documentation:

"Copyright (c) ISOC (year date). Permission is granted to reproduce, distribute, transmit and otherwise communicate to the public any material subject to copyright by ISOC, provided that credit is given to the source. For information concerning required permissions, please contact the Executive Director of the Internet Engineering Task Force Secretariat."

ISOC hereby informs the Internet community and other persons that any standards, whether or not elevated to the Internet Standard level of maturity, or any standards-related documentation made available under the auspices of ISOC are provided on an "AS IS" basis and ISOC DISCLAIMS ALL WARRANTIES, EXPRESSED OR IMPLIED, INCLUDING BUT NOT LIMITED TO ANY IMPLIED WARRANTY OF MERCHANTABILITY OR FITNESS FOR A PARTICULAR PURPOSE, OR THAT ANY STANDARD OR DOCUMENTATION DOES NOT VIOLATE THE RIGHTS OF OTHERS.

## 5.6. Assurances

The agreement on assurances set forth below will normally be entered into between the owner of rights and ISOC at the time a standards track document in which proprietary rights are claimed reaches the "Proposed Standard" stage of maturity:

This is an agreement between \_\_\_\_\_ (hereinafter called "Rights Holder") and the Internet Society on behalf of itself and its trustees, officers, employees, contractors and agents, the Internet Architecture Board, Internet Engineering Steering Group, Internet Engineering Task Force, and other task forces, committees and groups coordinated by the Internet Society (hereinafter called "ISOC"), and for the benefit of all users of the Internet and users of any other networks which implement and use Internet Standards (hereinafter together with ISOC called "Internet community"). This agreement takes effect when signed on behalf of the Rights Holder and the Internet Society.

The Rights Holder represents that it has or will have rights in patent applications, patents, copyrights, trade secrets, and other proprietary rights in various countries (hereinafter called "Rights") which may block or impede the ability of the Internet community to implement and operate under the standards set forth in ISOC standards document \_\_\_\_\_, \_\_\_\_\_, and \_\_\_\_\_ (the listed standards and any similar or related standards now existing or later developed are together hereinafter called "Standards"). The Rights as they presently exist are listed on attached Schedule A. The Rights Holder further agrees to review the Rights listed in Schedule A from time to time, and, in particular, immediately prior to the elevation of the Standards to the Internet Standard level of maturity in accordance with the Internet Standards Process, and to inform the Executive Director of the Internet Engineering Task Force Secretariat promptly upon learning of any new Rights in the Standards that should be added to the list in Schedule A.

The Rights Holder believes and affirms that it will derive benefits by permitting ISOC and the Internet community to implement and operate under the Standards without interference of any of the Rights. The policy of ISOC is not to propose, adopt, or continue to maintain the Standards unless written assurances are given by the Rights Holder with respect to proprietary rights. Accordingly, in consideration of the benefits noted above and other good and valuable consideration, the Rights Holder makes the assurances set forth herein.

The Rights Holder grants to ISOC a cost-free, perpetual, non-exclusive, world-wide license under the Rights with respect to implementing and operating under the Standards. The license extends to all activities of ISOC involving the Standards without limit, including the rights to reproduce, distribute, propose, test, develop, analyze, enhance, revise, adopt, maintain,



withdraw, perform and display publicly, and prepare derivative works in any form whatsoever and in all languages, and to authorize others to do so. The Rights Holder also grants ISOC permission to use the name and address of Rights Holder in connection with the Standards.

The Rights Holder relinquishes any right or claim in any trade secret which is part of the Rights, and makes the trade secrets available without restriction to the Internet community. The Rights Holder hereby acknowledges that ISOC assumes no obligation to maintain any confidentiality with respect to any aspect of the Standards, and warrants that the Standards do not violate the rights of others.

The Rights Holder assures ISOC that the Rights Holder shall grant to any member of the Internet community, as a beneficiary of this agreement, a non-exclusive, perpetual, world-wide license under the Rights, with respect to operating under the Standards for a reasonable royalty and under other terms which are reasonable considering the objective of ISOC to assure that all members of the Internet community will be able to operate under the Standards at a minimal cost. The license discussed in this paragraph shall permit the licensee to make, have made, test, enhance, implement, and use methods, works, computer programs, and hardware as needed or desirable for operating under the Standards. Every license shall include a clause automatically modifying the terms of the license to be as favorable as the terms of any other license under the Rights previously or later granted by the Rights Holder.

A form of the license shall always be publicly accessible on the Internet, and shall become effective immediately when the member of the Internet community executes it and posts it for delivery to the Rights Holder either by mail or electronically. The initial version of the license shall be in the form attached as Schedule B.

The Rights Holder represents and warrants that its rights are sufficient to permit it to grant the licenses and give the other assurances recited in this agreement. The Rights Holder further represents and warrants that it does not know of any rights of any other party in any country which would block or impede the ability of ISOC and the Internet community to implement or operate under the Standards, or that would prevent the Rights Holder from granting the licenses and other assurances in this agreement.

This agreement shall not be construed to obligate the ISOC to propose, adopt, develop, or maintain any of the Standards or any other standard.

## 6. REFERENCES

- [1] Postel, J., "Internet Official Protocol Standards", STD 1, RFC 1600, USC/Information Sciences Institute, March 1994.
- [2] ANSI, Coded Character Set -- 7-Bit American Standard Code for Information Interchange, ANSI X3.4-1986.
- [3] Reynolds, J., and J. Postel, "Assigned Numbers", STD 2, RFC 1340, USC/Information Sciences Institute, July 1992.
- [4] Postel, J., "Introduction to the STD Notes", RFC 1311, USC/Information Sciences Institute, March 1992.
- [5] Postel, J., "Instructions to RFC Authors", RFC 1543, USC/Information Sciences Institute, October 1993.

## APPENDIX A: GLOSSARY OF ACRONYMS

ANSI: American National Standards Institute  
ARPA: (U.S.) Advanced Research Projects Agency  
AS: Applicability Statement  
ASCII: American Standard Code for Information Interchange  
ITU-T: Telecommunications Standardization sector of the International  
Telecommunications Union (ITU), a UN treaty organization;  
ITU-T was formerly called CCITT.  
IAB: Internet Architecture Board  
IANA: Internet Assigned Numbers Authority  
IEEE: Institute of Electrical and Electronics Engineers  
ICMP: Internet Control Message Protocol  
IESG: Internet Engineering Steering Group  
IETF: Internet Engineering Task Force  
IP: Internet Protocol  
IRTF: Internet Research Task Force  
ISO: International Organization for Standardization  
ISOC: Internet Society  
MIB: Management Information Base  
OSI: Open Systems Interconnection  
RFC: Request for Comments  
TCP: Transmission Control Protocol  
TS: Technical Specification

## APPENDIX B: CONTACT POINTS

To contact the RFC Editor, send an email message to: "rfc-editor@isi.edu".

To contact the IANA for information or to request a number, keyword or parameter assignment send an email message to: "iana@isi.edu".

To contact the IESG, send an email message to: "iesg@cnri.reston.va.us".

To contact the IAB, send an email message to: "iab-contact@isi.edu".

To contact the Executive Director of the ISOC, send an email message to "amr@isoc.org".

## APPENDIX C: FUTURE ISSUES

It has been suggested that additional procedures in the following areas should be considered.

- o Policy Recommendations and Operational Guidelines

Internet standards have generally been concerned with the technical specifications for hardware and software required for computer communication across interconnected networks. The Internet itself is composed of networks operated by a great variety of organizations, with diverse goals and rules. However, good user service requires that the operators and administrators of the Internet follow some common guidelines for policies and operations. While these guidelines are generally different in scope and style from protocol standards, their establishment needs a similar process for consensus building. Specific rules for establishing policy recommendations and operational guidelines for the Internet in an open and fair fashion should be developed, published, and adopted by the Internet community.

- o Industry Consortia

The rules presented in Section 4 for external standards should be expanded to handle industry consortia.

- o Tracking Procedure

It has been suggested that there should be a formal procedure for tracking problems and change requests as a specification moves through the standards track. Such a procedure might include written responses, which were cataloged and disseminated, or simply a database that listed changes between versions. At the present time, there are not sufficient resources to administer such a procedure.

A simpler proposal is to keep a change log for documents.

- o Time Limit

An explicit time limit (e.g., 3 months) has been suggested for IESG resolution concerning a standards action under the rules of Section 3.1.2. If it were necessary to extend the time for some reason, the IETF would have to be explicitly notified.

- o Bug Reporting

There is no documented mechanism for an individual community member to use to report a problem or bug with a standards-track specification. One suggestion was that every standards RFC should include an email list for the responsible Working Group.

### Security Considerations

Security issues are not discussed in this memo.

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