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The Internet Standards Process
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Abstract

This memo documents the process used by the Internet community for the standardization of protocols and procedures. It defines the stages in the standardization process, the requirements for moving a document between stages and the types of documents used during this process. It also addresses the intellectual property rights and copyright issues associated with the standards process.

This document obsoletes RFC 2026, RFC 5657, RFC 6410, RFC 7100, RFC 7127, RFC 8789, and RFC 9282. It also includes the changes from RFC 7475. If this document and [_2418bis] are published as RFCs, then taken together the two of them make RFC 7475 obsolete.

About This Document

This note is to be removed before publishing as an RFC.

Status information for this document may be found at https://datatracker.ietf.org/doc/draft-ietf-procon-2026bis/.

Source for this draft and an issue tracker can be found at https://github.com/ietf-wg-procon/2026bis.

Status of This Memo

This Internet-Draft is submitted in full conformance with the provisions of BCP 78 and BCP 79.

Internet-Drafts are working documents of the Internet Engineering Task Force (IETF). Note that other groups may also distribute working documents as Internet-Drafts. The list of current Internet-Drafts is at https://datatracker.ietf.org/drafts/current/.

Internet-Drafts are draft documents valid for a maximum of six months and may be updated, replaced, or obsoleted by other documents at any time. It is inappropriate to use Internet-Drafts as reference material or to cite them other than as "work in progress."

This Internet-Draft will expire on 24 July 2026.

Copyright Notice

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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 (ISOC) that is organized and managed on behalf of the Internet community by the Internet Architecture Board (IAB) and the Internet Engineering Steering Group (IESG).

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 interconnected networks, which are not connected to the global Internet but use the Internet Standards.

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 normally applies 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 process described here only applies to the IETF RFC stream. See [RFC4844] for the definition of the streams and [RFC5742] for a description of the IESG responsibilities related to those streams.

1.1. Terminology

The following terms are used throughout this document. For more details about the organizations related to the IETF, see [RFC9281], Section 3.

Alternate Stream The IAB Document Stream, the IRTF Document Stream, and the Independent Submission Stream, each as defined in [RFC8729], Section 5.1, along with any future non-IETF streams that might be defined.

Area Director The manager of an IETF Area.

ARPA Advanced Research Projects Agency; an agency of the US Department of Defense.

Contribution A large category of oral, written, or electronic submissions to the IETF. See [BCP78] for the full definition.

Copyright The legal right granted to an author in a document or other work of authorship under applicable law. A "copyright" is not equivalent to a "right to copy". Rather a copyright encompasses all of the exclusive rights that an author has in a work, such as the rights to copy, publish, distribute and create derivative works of the work. An author often cedes these rights to his or her employer or other parties as a condition of employment or compensation.

Covers A valid claim of a patent or a patent application (including

a provisional patent application) in any jurisdiction, or any other Intellectual Property Right, would necessarily be infringed by the exercise of a right (e.g., making, using, selling, importing, distribution, copying, etc.) with respect to an Implementing Technology. For purposes of this definition, "valid claim" means a claim of any unexpired patent or patent application which shall not have been withdrawn, cancelled, or disclaimed, nor held invalid by a court of competent jurisdiction in an unappealed or unappealable decision.

IETF In the context of this document, the IETF includes all individuals who participate in meetings, working groups, mailing lists, functions, and other activities that are organized or initiated by ISOC, the IESG, or the IAB under the general designation of the Internet Engineering Task Force (IETF), but solely to the extent of such participation.

IETF Area A management division within the IETF. An Area consists of Working Groups related to a general topic such as routing. An Area is managed by one or more Area Directors.

IETF Documents RFCs and Internet-Drafts that are published as part of the IETF Standards Process. These are also referred to as "IETF Stream Documents" as defined in [RFC8729], Section 5.1.1.

IETF Standards Process The activities undertaken by the IETF in any of the settings described in the above definition of Contribution. The IETF Standards Process may include participation in activities and publication of documents that are not directed toward the development of IETF standards or specifications, such as the development and publication of Informational and Experimental documents (see Section 6).

IETF Intellectual Property Management Corporation (IETF IPMC) A legal entity that holds and administers intellectual property rights for the benefit of the IETF. It is the successor to the IETF Trust.

Implementing Technology A technology that implements an IETF specification or standard.

Internet-Draft A document used in the IETF and RFC Editor processes, as described in Section 4.

Internet Engineering Steering Group (IESG) A group comprised of the IETF Area Directors and the IETF Chair. The IESG is responsible for the management, along with the IAB, of the IETF and is the standards approval board for the IETF.

interoperable For the purposes of this document, "interoperable" means to be able to interoperate over a data communications path.

IPR or Intellectual Property Rights Means a patent, utility model, or similar right that may Cover an Implementing Technology, whether such rights arise from a registration or renewal thereof, or an application therefore, in each case anywhere in the world. See Section 2.1 for IPR requirements that must be met for documents used in the Internet Standards Process.

Last-Call A public comment period used to gauge the level of consensus about the reasonableness of a proposed standards action. See Section 8.1.2.

Participating in an IETF discussion or activity Making a Contribution, as described above, or in any other way acting in order to influence the outcome of a discussion relating to the IETF Standards Process. Without limiting the generality of the foregoing, acting as a Working Group Chair or Area Director constitutes "Participating" in all activities of the relevant working group(s) he or she is responsible for in an area. "Participant" and "IETF Participant" mean any individual Participating in an IETF discussion or activity.

RFC The basic publication series for the IETF.

Working Group A group chartered by the IESG and IAB to work on a specific specification, set of specifications or topic.

2. The Internet Standards Process

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.

The goals of the Internet Standards Process are:

* Technical excellence;

* Prior implementation and testing;

* Clear, concise, and easily-understood documentation;

* Openness and fairness; and

* Timeliness

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

* 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.

* These procedures are explicitly aimed at recognizing and adopting generally-accepted practices. Thus, a candidate specification must be 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.

* 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 demands timely development of standards. The Internet Standards Process is intended to balance these conflicting goals. The process is believed to be as short and simple as possible without sacrificing technical excellence, thorough testing before adoption of a standard, or openness and fairness.

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 a number of years of evolution, driven both by the needs of the growing and increasingly diverse Internet community, and by experience.

2.1. Intellectual Property Requirements

All documents used in the Internet Standards Process must meet the conditions specified in [BCP78] and [BCP79].

3. Organization of This Document

Section 4 describes the publications and archives of the Internet Standards Process. Section 5 describes the types of Internet standard specifications. Section 6 describes the Internet standards specifications track. Section 7 describes Best Current Practice RFCs. Section 8 describes the process and rules for Internet standardization. Section 9 specifies the way in which externally-sponsored specifications and practices, developed and controlled by other standards bodies or by others, are handled within the Internet Standards Process. Section 10 describes the requirements for notices and record keeping, and Section 11 defines a variance process to allow one-time exceptions to some of the requirements in this document.

4. Internet Standards-Related Publications

4.1. Requests for Comments (RFCs)

Each distinct version of an Internet standards-related 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 the Internet community. RFCs can be obtained from a number of Internet hosts using standard Internet applications such as the WWW.

The RFC series of documents on networking began in 1969 as part of the original ARPA wide-area networking (ARPANET) project. RFCs cover a wide range of topics in addition to Internet Standards, from early discussion of new research concepts to status memos about the Internet. For information about RFC publication, see [RFC9280].

The style guide for writing an RFC is [RFC7322]. The default input format is [RFCXML], RFCs are available in multiple formats as described in [RFCPAGE].

Some RFCs document Internet Standards. These RFCs form the ’STD’ subseries of the RFC series [RFC1311]. When a specification has been adopted as an Internet Standard, it is given the additional label

"STD xxx", but it keeps its RFC number and its place in the RFC series (see Section 6.1.2). The status of Internet protocol and service specifications is available from the RFC Index (https://www.rfc-editor.org/rfc-index.txt) in the RFC repository.

Some RFCs standardize the results of community deliberations about statements of principle or conclusions about what is the best way to perform some operations or IETF process function. These RFCs form the specification has been adopted as a Best Current Practice (BCP); it is given the additional label "BCP xxx", but it keeps its RFC number and its place in the RFC series. (see Section 7)

Not all specifications of protocols or services for the Internet should or will become Internet Standards or BCPs. Such non-standards track specifications are not subject to the rules for Internet standardization. Non-standards track specifications may be published directly as "Experimental" or "Informational" RFCs at the discretion of the RFC Editor in consultation with the IESG (see Section 6.2).

In addition, not all RFCs are standards track documents, and not all standards track documents reach the level of Internet Standard. In the same way, not all RFCs which describe current practices have been given the review and approval to become BCPs. See [RFC1796] for further information.

4.2. 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-Drafts 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, 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. This may also be done in a standards track document itself as long as the specification in which the reference is made would stand as a complete and understandable document with or without the reference to the "Work in Progress".

5. Internet Standard Specifications

Specifications subject to the Internet Standards Process fall into one of two categories: Technical Specification (TS) and Applicability Statement (AS).

5.1. Technical Specification

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 might or might 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, are defined by an Applicability Statement.

5.2. Applicability Statement

An Applicability Statement specifies how, and under what circumstances, one or more TSs may be applied to support a particular Internet capability. An AS may specify uses for TSs that are not Internet Standards, as discussed in Section 9.

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 (see Section 5.3).

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 on which the AS relies (see Section 6.1).

5.3. Requirement Levels

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

* Required: Implementation of the referenced TS, as specified by the AS, is required to achieve minimal conformance. For example, IP and the Internet Control Message Protocl (ICMP) must be implemented by all Internet systems using the TCP/IP Protocol Suite.

* 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. For example, the TELNET protocol should be implemented by all systems that would benefit from remote access.

* 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 6.1, 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 these TSs:

* Limited Use: The TS is considered to be 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.

* 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.

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.

6. The Internet Standards Track

Specifications that are intended to become Internet Standards evolve through a set of maturity levels known as the "standards track". These maturity levels -- "Proposed Standard" and "Internet Standard" -- are defined and discussed in Section 6.1. The way in which specifications move along the standards track is described in Section 8.

There used to be a status that came between Proposed Standard and Internet Standard called "Draft Standard." As of the writing of this document, there still exist some RFCs at that status. Documents at Draft Standard may be advanced to Internet Standard, either via the procedure described in Section 8 (if they meet the requirements of Section 6.1.1) or with the consent of the IESG. The IESG may also decide to remove the Draft Standard status from a document and mark it as either Historic or Proposed Standard.

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 6.2 to cover these and other specifications that are not considered to be on the standards track.

Note: Standards track specifications normally must not depend on other standards track specifications which are at a lower maturity level or on non standards track specifications other than referenced specifications from other standards bodies. (See Section 9.)

6.1. Standards Track Maturity Levels

Internet specifications 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.

6.1.1. Proposed Standard

The entry-level maturity for the standards track is "Proposed Standard". A specific action by the IESG is required to move a specification onto the standards track at the "Proposed Standard" level.

A Proposed Standard specification is stable, has resolved known design choices, has received significant community review, and appears to enjoy enough community interest to be considered valuable.

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.

A Proposed Standard will have no known technical omissions with respect to the requirements placed upon it. Proposed Standards are of such quality that implementations can be deployed in the Internet. However, as with all technical specifications, Proposed Standards may be revised if problems are found or better solutions are identified, when experiences with deploying implementations of such technologies at scale is gathered.

Notwithstanding the previous paragraph, the IETF may occasionally choose to publish as Proposed Standard a document that contains areas of known limitations or challenges. In such cases, any known issues with the document will be clearly and prominently communicated in the document, for example, in the abstract, the introduction, or a separate section or statement.

6.1.2. 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 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 specification that reaches the status of Internet Standard is assigned a number in the STD series while retaining its RFC number.

6.2. Non-Standards Track Maturity Levels

Not every specification is on the standards track. A specification 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 specification may have been superseded by a more recent Internet Standard, or have otherwise fallen into disuse or disfavor.

Specifications that are not on the standards track are labeled with one of three "off-track" maturity levels: "Experimental", "Informational", or "Historic". The documents bearing these labels are not Internet Standards in any sense.

Alternate streams may also use the maturity levels described here.

6.2.1. Experimental

The "Experimental" designation 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 Internet Research Task Force), an IETF Working Group, or it may be an individual contribution.

6.2.2. Informational

An "Informational" specification is published for the general information of the Internet community. The Informational designation is intended to provide for the timely publication of a very broad range of responsible informational documents from many sources.

6.2.3. Procedures for Experimental and Informational RFCs

Documents with the Experimental or Informational maturity level may be published using the process and workflow described here. Documents proposed for Experimental and Informational RFCs by IETF Working Groups go through IESG review. The review is initiated using the process described in Section 8.1.1.

The final assignment of maturity level, as with Internet Standard, is determined by the IESG.

6.2.4. Historic

A specification 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.)

7. Best Current Practice (BCP) RFCs

The BCP subseries of the RFC series is designed to be a way to standardize practices and the results of community deliberations. A BCP document is subject to the same basic set of procedures as standards track documents and thus is a vehicle by which the IETF community can define and ratify the community’s best current thinking on a statement of principle or on what is believed to be the best way to perform some operations or IETF process function.

Historically Internet standards have generally been concerned with the technical specifications for hardware and software required for computer communication across interconnected networks. However, since the Internet itself is composed of networks operated by a great variety of organizations, with diverse goals and rules, 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.

While it is recognized that entities such as the IAB and IESG are composed of individuals who may participate, as individuals, in the technical work of the IETF, it is also recognized that the entities themselves have an existence as leaders in the community. As leaders in the Internet technical community, these entities should have an outlet to propose ideas to stimulate work in a particular area, to raise the community's sensitivity to a certain issue, to make a statement of architectural principle, or to communicate their thoughts on other matters. The BCP subseries creates a smoothly structured way for these management entities to insert proposals into the consensus-building machinery of the IETF while gauging the community's view of that issue.

Finally, the BCP series may be used to document the operation of the IETF itself. For example, this document defines the IETF Standards Process and is published as a BCP.

7.1. BCP Review Process

Unlike standards-track documents, the mechanisms described in BCPs are not well suited to the phased roll-in nature of the three stage standards track and instead generally only make sense for full and immediate instantiation.

The BCP process is similar to that for proposed standards. The BCP is submitted to the IESG for review, (see Section 8.1.1) and the existing review process applies, including a Last-Call on the IETF Announce mailing list. However, once the IESG has approved the document, the process ends and the document is published. The resulting document is viewed as having the technical approval of the IETF.

Specifically, a document to be considered for the status of BCP must undergo the procedures outlined in Section 8.1, and Section 8.4 of this document. The BCP process may be appealed according to the procedures in Section 8.5.

Because BCPs are meant to express community consensus but are arrived at more quickly than standards, BCPs require particular care. Specifically, BCPs should not be viewed simply as stronger Informational RFCs, but rather should be viewed as documents suitable for a content different from Informational RFCs.

A specification, or group of specifications, that has, or have been approved as a BCP is assigned a number in the BCP series while retaining its RFC number(s).

8. The Internet Standards Process

The mechanics of the Internet Standards Process involve decisions of the IESG concerning the elevation of a specification onto the standards track or the movement of a standards-track specification from one maturity level to another. Although a number of reasonably objective criteria (described below and in Section 6) are available to guide the IESG in making a decision to move a specification onto, along, or off the standards track, there is no algorithmic guarantee of elevation to or progression along the standards track for any specification. The experienced collective judgment of the IESG concerning the technical quality of a specification proposed for elevation to or advancement in the standards track is an essential component of the decision-making process.

8.1. Standards Actions

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

8.1.1. Initiation of Action

A specification that is intended to enter or advance in the Internet standards track shall first be posted as an Internet-Draft (see Section 4.2) unless it has not changed since publication as an RFC. It shall remain as an Internet-Draft for a period of time, not less than two weeks, that permits useful community review, after which a recommendation for action may be initiated.

A standards action is initiated by a recommendation by the IETF Working group responsible for a specification to its Area Director, copied to the IETF Secretariat or, in the case of a specification not associated with a Working Group, a recommendation by an individual to the IESG.

For classification as an Internet Standard, the request for reclassification must include an explanation of how the following criteria have been met:

1. There are at least two independent interoperating implementations with widespread deployment and successful operational experience. Although not required by the IETF Standards Process, [RFC5657] can be helpful to conduct interoperability testing.

2. There are no errata against the specification that would cause a new implementation to fail to interoperate with deployed ones.

3. There are no unused features in the specification that greatly increase implementation complexity.

4. If the technology required to implement the specification requires patented or otherwise controlled technology, then the set of implementations must demonstrate at least two independent, separate and successful uses of the licensing process.

8.1.2. IESG Review and Approval

The IESG shall determine whether or not a specification submitted to it according to Section 8.1.1 satisfies the applicable criteria for the recommended action (see Section 6.1 and Section 6.2), and shall in addition determine whether or not the technical quality and clarity of the specification is consistent with that expected for the maturity level to which the specification is recommended.

The IESG is not bound by the action recommended when the specification was submitted. For example, the IESG may decide to consider the specification for publication in a different maturity level than that requested. If the IESG determines this before the Last- Call is issued then the Last-Call should reflect the IESG’s view. The IESG could also decide to change the publication maturity level based on the response to a Last-Call. If this decision would result in a specification being published at a "higher" level than the original Last-Call was for, a new Last-Call should be issued indicating the IESG recommendation. In addition, in case of significant controvery in response to the Last-Call, The IESG may decide to refer the document back to the Working Group, the authors, or hold the document for the creation of a new Working Group.

In order to obtain all of the information necessary to make these determinations, particularly when the specification is considered by the IESG to be extremely important in terms of its potential impact on the Internet or on the suite of Internet protocols, the IESG may, at its discretion, commission an independent technical review of the specification.

The IESG will send notice to the IETF of the pending IESG consideration of the document(s) to permit a final review by the general Internet community. This "Last-Call" notification shall be via electronic mail to the IETF Announce mailing list. Comments on a Last-Call shall be accepted from anyone, and should be sent as directed in the Last-Call announcement.

For a Proposed Standard, the Last-Call period shall be no shorter than two weeks except in those cases where the proposed standards action was not initiated by an IETF Working Group, such as when an AD sponsors a draft [ADSPONSOR], in which case the Last-Call period shall be no shorter than four weeks. If the IESG believes that the community interest would be served by allowing more time for comment, it may decide on a longer Last-Call period or to explicitly lengthen a current Last-Call period.

For an Internet Standard, the IESG will perform a review and consideration of any errata that have been filed. If they do not believe any of these should hold up the advancement, then the IESG, in an IETF-wide Last Call of at least four weeks, informs the community of their intent to advance a document from Proposed Standard to Internet Standard.

If there is consensus for reclassification, the RFC will be reclassified with or without publication of a new RFC.

In a timely fashion after the expiration of the Last-Call period, the IESG shall make its final determination of whether or not to approve the standards action, and shall notify the IETF of its decision via electronic mail to the IETF Announce mailing list.

In no event shall a document be published on the IETF Stream without IETF consensus.

8.1.3. Publication

If a standards action is approved, notification is sent to the RFC Editor and copied to the IETF with instructions to publish the specification as an RFC. The specification shall at that point be removed from the Internet-Drafts directory.

8.2. Advancing in the Standards Track

The procedure described in Section 8.1 is followed for each action that attends the advancement of a specification along the standards track.

A specification shall remain at the Proposed Standard level for at least six months. This minimum period is intended to ensure adequate opportunity for community review without severely impacting timeliness. The interval 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 the announcement of the 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 a new number) with corrections, and this will not reset the minimum time-at-level clock.

8.3. 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 be moved 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 5.2).

8.4. 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 standards track specifications for the same function should be retired. In this case, or when it is felt for some other reason that an existing standards track specification should be retired, the IESG shall approve a change of status of the old specification(s) to Historic. This recommendation shall be issued with the same Last-Call and notification procedures used for any other standards action. A request to retire an existing standard can originate from a Working Group, an Area Director or some other interested party.

8.5. Conflict Resolution and Appeals

Disputes are possible at various stages during the IETF process. As much as possible the process is designed so that compromises can be made, and genuine consensus achieved, however there are times when even the most reasonable and knowledgeable people are unable to agree. To achieve the goals of openness and fairness, such conflicts must be resolved by a process of open review and, where appropriate, open discussion. This section specifies the procedures that shall be followed to deal with Internet standards issues that cannot be resolved through the normal processes whereby IETF Working Groups and other Internet Standards Process participants ordinarily reach consensus.

8.5.1. Working Group Disputes

An individual (whether a participant in the relevant Working Group or not) may disagree with a Working Group recommendation based on his or her belief that either (a) his or her own views have not been adequately considered by the Working Group, or (b) the Working Group has made an incorrect technical choice which places the quality and/or integrity of the Working Group’s product(s) in significant jeopardy. The first issue is a difficulty with Working Group process; the latter is an assertion of technical error. These two types of disagreement are quite different, but both are handled by the same process of review.

A person who disagrees with a Working Group recommendation shall always first discuss the matter with the Working Group’s chair(s), who may involve other members of the Working Group (or the Working Group as a whole) in the discussion.

If the disagreement cannot be resolved in this way, any of the parties involved may bring it to the attention of the Area Director(s) for the area in which the Working Group is chartered. The treatment of any particular disagreement may be delegated to one of more Area Director(s) in this or other areas where necessary. The Area Director(s) shall attempt to resolve the dispute.

If the disagreement cannot be resolved by the Area Director(s) any of the parties involved may then appeal to the IESG as a whole. The IESG shall then review the situation and attempt to resolve it in a manner of its own choosing.

If the disagreement is not resolved to the satisfaction of the parties at the IESG level, any of the parties involved may appeal the decision to the IAB. The IAB shall then review the situation and attempt to resolve it in a manner of its own choosing.

The IAB decision is final with respect to the question of whether or not the Internet standards procedures have been followed and with respect to all questions of technical merit.

8.5.2. Process Failures

This document sets forward procedures required to be followed to ensure openness and fairness of the Internet Standards Process, and the technical viability of the standards created. The IESG is the principal agent of the IETF for this purpose, and it is the IESG that is charged with ensuring that the required procedures have been followed, and that any necessary prerequisites to a standards action have been met.

If an individual should disagree with an action taken by the IESG in this process, that person should first discuss the issue with the IESG Chair. If the IESG Chair is unable to satisfy the complainant then the IESG as a whole should re-examine the action taken, along with input from the complainant, and determine whether any further action is needed. The IESG shall issue a report on its review of the complaint to the IETF.

Should the complainant not be satisfied with the outcome of the IESG review, an appeal may be lodged to the IAB. The IAB shall then review the situation and attempt to resolve it in a manner of its own choosing and report to the IETF on the outcome of its review.

If circumstances warrant, the IAB may direct that an IESG decision be annulled, and the situation shall then be as it was before the IESG decision was taken. The IAB may also recommend an action to the IESG, or make such other recommendations as it deems fit. The IAB may not, however, pre-empt the role of the IESG by issuing a decision which only the IESG is empowered to make.

The IAB decision is final with respect to the question of whether or not the Internet standards procedures have been followed.

8.5.3. Questions of Applicable Procedure

Further recourse is available only in cases in which the procedures themselves (i.e., the procedures described in this document) are claimed to be inadequate or insufficient to the protection of the rights of all parties in a fair and open Internet Standards Process. Claims on this basis may be made to the ISOC Board of Trustees. The President of the ISOC shall acknowledge such an appeal within two weeks, and shall at the time of acknowledgment advise the petitioner of the expected duration of the Trustees' review of the appeal. The Trustees shall review the situation in a manner of its own choosing and report to the IETF on the outcome of its review.

The Trustees' decision upon completion of their review shall be final with respect to all aspects of the dispute.

8.5.4. Appeals Procedure

All appeals must include a detailed and specific description of the facts of the dispute.

All appeals must be initiated within two months of the public knowledge of the action or decision to be challenged.

At all stages of the appeals process, the individuals or bodies responsible for making the decisions have the discretion to define the specific procedures they will follow in the process of making their decision. Note that this does not require that all discussions be held in public forums.

In all cases a decision concerning the disposition of the dispute, and the communication of that decision to the parties involved, must be accomplished within a reasonable period of time.

NOTE: These procedures intentionally and explicitly do not establish a fixed maximum time period that shall be considered "reasonable" in all cases. The Internet Standards Process places a premium on consensus and efforts to achieve it, and deliberately forgoes

deterministically swift execution of procedures in favor of a latitude within which more genuine technical agreements may be reached.

9. 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:

* Open Standards: Various national and international standards bodies, such as ANSI, ISO, IEEE, and ITU-T, 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. All of these are considered to be "open external standards" for the purposes of the Internet Standards Process.

* Other Specifications: Other proprietary specifications that have come to be widely used in the Internet may be treated by the Internet community as if they were a "standards". Such a specification is not generally developed in an open fashion, is typically proprietary, and is controlled by the vendor, vendors, or organization that produced it.

9.1. Use of External Specifications

To avoid conflict between competing versions of a specification, the Internet community will not standardize a specification 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.

9.1.1. Incorporation of an Open Standard

An Internet Standard TS or AS may incorporate an open external standard by reference. For example, many Internet Standards incorporate by reference the ANSI standard character set "US-ASCII" [US-ASCII]. Whenever possible, the referenced specification shall be available without restriction or undue fee using standard Internet applications such as the WWW.

9.1.2. Incorporation of Other Specifications

Other proprietary specifications may be incorporated by reference to a version of the specification as long as the proprietor meets the requirements of Section 2.1. If the other proprietary specification is not widely and readily available, the IESG may request that it be published as an Informational RFC.

The IESG generally should not favor a particular proprietary specification over technically equivalent and competing specification(s) by making any incorporated vendor specification "required" or "recommended".

9.1.3. Assumption

An IETF Working Group may start from an external specification and develop it into an Internet specification. This is acceptable if (1) the specification is provided to the Working Group in compliance with the requirements of Section 2.1, and (2) change control has been conveyed to IETF by the original developer of the specification for the specification or for specifications derived from the original specification.

10. Notices and Record Keeping

Each of the organizations involved in the development and approval of Internet Standards shall publicly announce, and shall maintain a publicly accessible record of, every activity in which it engages, to the extent that the activity represents the prosecution of any part of the Internet Standards Process. For purposes of this section, the organizations involved in the development and approval of Internet Standards includes the IETF, the IESG, the IAB, all IETF Working Groups, and the Internet Society Board of Trustees.

For IETF and Working Group meetings announcements shall be made by electronic mail to the IETF Announce mailing list and shall be made sufficiently far in advance of the activity to permit all interested parties to effectively participate. The announcement shall contain (or provide pointers to) all of the information that is necessary to

support the participation of any interested individual. In the case of a meeting, for example, the announcement shall include an agenda that specifies the standards- related issues that will be discussed.

The formal record of an organization's standards-related activity shall include at least the following:

* The charter of the organization (or a defining document equivalent to a charter);

* Complete and accurate minutes of meetings;

* The archives of Working Group electronic mail mailing lists; and

* All written contributions from participants that pertain to the organization's standards-related activity.

As a practical matter, the formal record of all Internet Standards Process activities is maintained by the IETF LLC or its designees. Also, the Working Group chair is responsible for providing complete and accurate minutes of all Working Group meetings. Internet-Drafts that have been removed (for any reason) from the Internet-Drafts directories shall be archived for the sole purpose of preserving an historical record of Internet standards activity and thus are not retrievable except in special circumstances.

11. Varying the Process

This document, which sets out the rules and procedures by which Internet Standards and related documents are made is itself a product of the Internet Standards Process (as a BCP, as described in Section 7.) It replaces a previous version, and in time, is likely itself to be replaced.

While, when published, this document represents the community's view of the proper and correct process to follow, and requirements to be met, to allow for the best possible Internet Standards and BCPs, it cannot be assumed that this will always remain the case. From time to time there may be a desire to update it, by replacing it with a new version. Updating this document uses the same open procedures as are used for any other BCP.

In addition, there may be situations where following the procedures leads to a deadlock about a specific specification, or there may be situations where the procedures provide no guidance. In these cases it may be appropriate to invoke the variance procedure described below.

11.1. The Variance Procedure

Upon the recommendation of the responsible IETF Working Group (or, if no Working Group is constituted, upon the recommendation of an ad hoc committee), the IESG may enter a particular specification into, or advance it within, the standards track even though some of the requirements of this document have not or will not be met. The IESG may approve such a variance, however, only if it first determines that the likely benefits to the Internet community are likely to outweigh any costs to the Internet community that result from noncompliance with the requirements in this document. In exercising this discretion, the IESG shall at least consider (a) the technical merit of the specification, (b) the possibility of achieving the goals of the Internet Standards Process without granting a variance, (c) alternatives to the granting of a variance, (d) the collateral and precedential effects of granting a variance, and (e) the IESG's ability to craft a variance that is as narrow as possible. In determining whether to approve a variance, the IESG has discretion to limit the scope of the variance to particular parts of this document and to impose such additional restrictions or limitations as it determines appropriate to protect the interests of the Internet community.

The proposed variance must detail the problem perceived, explain the precise provision of this document which is causing the need for a variance, and the results of the IESG's considerations including consideration of points (a) through (d) in the previous paragraph. The proposed variance shall be issued as an Internet Draft. The IESG shall then issue an extended Last-Call, of no less than 4 weeks, to allow for community comment upon the proposal.

In a timely fashion after the expiration of the Last-Call period, the IESG shall make its final determination of whether or not to approve the proposed variance, and shall notify the IETF of its decision via electronic mail to the IETF Announce mailing list. If the variance is approved it shall be forwarded to the RFC Editor with a request that it be published as a BCP.

This variance procedure is for use when a one-time waiver of some provision of this document is felt to be required. Permanent changes to this document shall be accomplished through the normal BCP process.

The appeals process in Section 8.5 applies to this process.

11.2. Exclusions

No use of this procedure may lower any specified delays, nor exempt any proposal from the requirements of openness, fairness, or consensus, nor from the need to keep proper records of the meetings and mailing list discussions.

Specifically, the following sections of this document must not be subject of a variance: Section 7.1, Section 8.1, Section 8.1.1 (first paragraph), Section 8.1.2, Section 8.3 (first sentence), Section 8.5 and Section 11.

12. Security Considerations

Security issues are not discussed in this memo.

13. IANA Considerations

This document has no IANA actions.

14. Change Log

14.1. Working group draft

* Draft 0: Adopted by PROCON WG.

* Draft 1: Various GitHub fixes. Improve 7475 obsolescence text. Add wording about RFC style, output formats, default input; remove text about standards requiring ASCII. Unindent or remove text blocks. Discuss legacy "Draft Standard" documents. Tighten IPR requirements on Informational. Add WG changelog section.

* Draft 2: Fix link to repository, tweak wording about RFC style and formats. Clarify that not all discussions must be public.

* Draft 3: Refer to BCP78 for definition of "Contribution." Clearify procedures for Experimental and Informational. Clarify ADs can delegate handlling an appeal. Add AD sponsor as an example of non-WG initiation. IETF LLC maintains mailing lists anad public records. Renamed IETF Trust to IETF Intellectual Property Management Corporation. Various minor editorial/wording changes.

14.2. Individual draft

* Draft 0: Translated the nroff source of RFC 2026 into markdown. The notices in the document at section 12.4 were prefaced with "THIS TEXT ADDED TO PASS THE IDNITS CHECKS" so that the draft could be published. The copyright notice is changed to the current one. Because of this and other boilerplate, some section numbers differ from the original RFC.

* Draft 1: Add Scott Bradner as co-author. Add Note. Alphabetize terminology. Minor wording tweaks.

* Draft 2: Clarified Note about the RFC's. More word tweaks. Remove bulk of text from the Notices, and point to RFC 2026, to avoid confusion and pass the idnits checks.

* Draft 3: Incorporated RFC 5378.

* Draft 4: Updated terminology and removed some obvious or old terms. In some cases this meant minor editorial changes in the body text.

* Draft 5: Add text about RFC 5657 and errata to the intro Note. Incorporate RFC 5742.

* Draft 6: Incorporate RFC 6410. Moved some text around to make the new text flow a bit better.

* Draft 7: Incorporate RFC 7100, RFC 7475, and RFC 9282. Add mention of the "rfcindex.txt" file.

* Draft 8: Incorporate RFC 7127.

* Draft 9: Incorporate RFC 8789. Updates (not obsoletes) RFC 5378, RFC 5657, and RFC 7475.

* Draft 10: Incorporate RFC 8179.

* Draft 11: Remove IPR section (RFC 5378 and RFC 8179) and add a pointer to those RFCs instead.

* Draft 12: Addressed the editorial issues found by the following verified errata: 523, 524, 1622, 3014, 3095, and 7181. Errata 3095 was marked as editorial, although it seems to be a semantic change but one that properly reflects consensus. The following errata were closed by the conversion to markdown and associated tooling, as they do the right thing: 6658, 6659, 6661, 6671, and 6669.

* Draft 13: Address some pre-adoption issues raised on the WG mailing list.

15. References

15.1. Normative References

[BCP78] Best Current Practice 78, <https://www.rfc-editor.org/info/bcp78>. At the time of writing, this BCP comprises the following:

Bradner, S., Ed. and J. Contreras, Ed., "Rights Contributors Provide to the IETF Trust", BCP 78, RFC 5378, DOI 10.17487/RFC5378, November 2008, <https://www.rfc-editor.org/info/rfc5378>.

[BCP79] Best Current Practice 79, <https://www.rfc-editor.org/info/bcp79>. At the time of writing, this BCP comprises the following:

Bradner, S. and J. Contreras, "Intellectual Property Rights in IETF Technology", BCP 79, RFC 8179, DOI 10.17487/RFC8179, May 2017, <https://www.rfc-editor.org/info/rfc8179>.

[RFC1796] Huitema, C., Postel, J., and S. Crocker, "Not All RFCs are Standards", RFC 1796, DOI 10.17487/RFC1796, April 1995, <https://www.rfc-editor.org/rfc/rfc1796>.

[RFC7322] Flanagan, H. and S. Ginoza, "RFC Style Guide", RFC 7322, DOI 10.17487/RFC7322, September 2014, <https://www.rfc-editor.org/rfc/rfc7322>.

[RFC9281] Salz, R., "Entities Involved in the IETF Standards Process", BCP 11, RFC 9281, DOI 10.17487/RFC9281, June 2022, <https://www.rfc-editor.org/rfc/rfc9281>.

15.2. Informative References

[ADSPONSOR] "Guidance on Area Director Sponsoring of Documents", n.d., <https://datatracker.ietf.org/doc/statement-iesg-guidance-on-area-director-sponsoring-of-documents-20070320/>.

[RFC1311] Postel, J., "Introduction to the STD Notes", RFC 1311, DOI 10.17487/RFC1311, March 1992, <https://www.rfc-editor.org/rfc/rfc1311>.

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[RFC5657] Dusseault, L. and R. Sparks, "Guidance on Interoperation and Implementation Reports for Advancement to Draft Standard", BCP 9, RFC 5657, DOI 10.17487/RFC5657, September 2009, <https://www.rfc-editor.org/rfc/rfc5657>.

[RFC5742] Alvestrand, H. and R. Housley, "IESG Procedures for Handling of Independent and IRTF Stream Submissions", BCP 92, RFC 5742, DOI 10.17487/RFC5742, December 2009, <https://www.rfc-editor.org/rfc/rfc5742>.

[RFC8729] Housley, R., Ed. and L. Daigle, Ed., "The RFC Series and RFC Editor", RFC 8729, DOI 10.17487/RFC8729, February 2020, <https://www.rfc-editor.org/rfc/rfc8729>.

[RFC9280] Saint-Andre, P., Ed., "RFC Editor Model (Version 3)", RFC 9280, DOI 10.17487/RFC9280, June 2022, <https://www.rfc-editor.org/rfc/rfc9280>.

[RFCPAGE] "About RFCs", n.d., <https://www.ietf.org/process/rfcs/>.

[RFCXML] "RFCXML overview and background", n.d., <https://authors.ietf.org/rfcxml-overview>.

[US-ASCII] ANSI, "Coded Character Set -- 7-Bit American Standard Code for Information Interchange", March 1986. ANSI X3.4-1986

[_2418bis] Salz, R., Schinazi, D., and S. O. Bradner, "IETF Working Group Guidelines and Procedures", Work in Progress, Internet-Draft, draft-ietf-procon-2418bis-01, 15 October 2025, <https://datatracker.ietf.org/doc/html/draft-ietf-procon-2418bis-01>.

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