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Improving Awareness of Running Code: The Implementation Status Section

Abstract

This document describes a simple process that allows authors of Internet-Drafts to record the status of known implementations by including an Implementation Status section. This will allow reviewers and working groups to assign due consideration to documents that have the benefit of running code, which may serve as evidence of valuable experimentation and feedback that have made the implemented protocols more mature.

The process in this document is offered as an experiment. Authors of Internet-Drafts are encouraged to consider using the process for their documents, and working groups are invited to think about applying the process to all of their protocol specifications. The authors of this document intend to collate experiences with this experiment and to report them to the community.

Status of This Memo

This document is not an Internet Standards Track specification; it is published for examination, experimental implementation, and evaluation.

This document defines an Experimental Protocol for the Internet community. This document is a product of the Internet Engineering Task Force (IETF). It represents the consensus of the IETF community. It has received public review and has been approved for publication by the Internet Engineering Steering Group (IESG). Not all documents approved by the IESG are a candidate for any level of Internet Standard; see Section 2 of RFC 5741.

Information about the current status of this document, any errata, and how to provide feedback on it may be obtained at http://www.rfc-editor.org/info/rfc6982.

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1. Introduction

Most IETF participants are familiar with the saying "rough consensus and running code" [Tao] and can identify with its pragmatic approach. However, implementation is not a requirement for publication as an RFC. There are many examples of Internet-Drafts containing protocol specification that have gone through to publication as Proposed Standard RFCs without implementation. Some of them may never get implemented.

Over time, a variety of policies have been applied within the IETF to consider running code. In the Routing Area, it used to be a requirement that one or more implementations must exist before an Internet-Draft could be published as a Proposed Standard RFC [RFC1264]. That RFC was later obsoleted and the requirement for implementation was lifted, but each working group was given the authority to impose its own implementation requirements [RFC4794] and at least one working group, Inter-Domain Routing (IDR), continues to require two independent implementations.

The hypothesis behind the current document is that there are benefits to the IETF standardization process of producing implementations of protocol specifications before publication as RFCs. These benefits, which include determining that the specification is comprehensible and that there is sufficient interest to implement, are further discussed in Section 4.

This document describes a simple mechanism that allows authors of Internet-Drafts to record and publicize the status of known implementations by including an Implementation Status section. The document defines (quite informally) the contents of this section to ensure that the relevant information is included. This will allow reviewers and working groups to assign due consideration to documents that have the benefit of running code, which may serve as evidence of valuable experimentation and feedback that have made the implemented protocols more mature.

It is up to the individual working groups to use this information as they see fit, but one result might be the preferential treatment of documents, resulting in them being processed more rapidly. We recommend that the Implementation Status section should be removed from Internet-Drafts before they are published as RFCs. As a result, we do not envisage changes to this section after approval of the document for publication, e.g., the RFC errata process does not apply.

The process in this document is offered as an experiment (though not as an [RFC3933] experiment; see Section 5). Authors of Internet-Drafts are encouraged to consider using the process for their documents, and working groups are invited to think about applying the process to all of their protocol specifications.

The scope of the intended experiment is all Internet-Drafts (I-Ds) that contain implementable specifications, whether produced within IETF working groups or outside working groups but intended for IETF consensus. I-Ds published on the Independent Stream are explicitly out of scope. It is expected that the greatest benefit in the experiment will be seen with Standards Track documents developed within working groups.

The authors of this document intend to collate experiences with this experiment and to report them to the community.

2. The "Implementation Status" Section

Each Internet-Draft may contain a section entitled "Implementation Status". This section, if it appears, should be located just before the "Security Considerations" section and contain, for each existing implementation, some or all of the following:

- The organization responsible for the implementation, if any.
- The implementation’s name and/or a link to a web page describing the implementation.
- A brief general description.
- The implementation’s level of maturity: research, prototype, alpha, beta, production, widely used, etc.
- Coverage: which parts of the protocol specification are implemented and which versions of the Internet-Draft were implemented.
- Licensing: the terms under which the implementation can be used. For example: proprietary, royalty licensing, freely distributable with acknowledgement (BSD style), freely distributable with requirement to redistribute source (General Public License (GPL) style), and other (specify).
- Implementation experience: any useful information the implementers want to share with the community.

- o Contact information: ideally a person’s name and email address, but possibly just a URL or mailing list.

In addition, this section can contain information about the interoperability of any or all of the implementations, including references to test-case descriptions and interoperability reports, when such exist.

Working group chairs and area directors (ADs) are requested to ensure that this section is not used as a marketing venue for specific implementations.

Since this information is necessarily time dependent, it is inappropriate for inclusion in a published RFC. The authors should include a note to the RFC Editor requesting that the section be removed before publication.

2.1. Introductory Text

The following boilerplate text is proposed to head the Implementation Status section:

> This section records the status of known implementations of the protocol defined by this specification at the time of posting of this Internet-Draft, and is based on a proposal described in RFC 6982. The description of implementations in this section is intended to assist the IETF in its decision processes in progressing drafts to RFCs. Please note that the listing of any individual implementation here does not imply endorsement by the IETF. Furthermore, no effort has been spent to verify the information presented here that was supplied by IETF contributors. This is not intended as, and must not be construed to be, a catalog of available implementations or their features. Readers are advised to note that other implementations may exist.
>
> According to RFC 6982, "this will allow reviewers and working groups to assign due consideration to documents that have the benefit of running code, which may serve as evidence of valuable experimentation and feedback that have made the implemented protocols more mature. It is up to the individual working groups to use this information as they see fit".

Authors are requested to add a note to the RFC Editor at the top of this section, advising the Editor to remove the entire section before publication, as well as the reference to RFC 6982.

3. Alternative Formats

Sometimes it can be advantageous to publish the implementation status separately from the base Internet-Draft, e.g., on the IETF wiki:

- When the Implementation Status section becomes too large to be conveniently managed within the document.
- When a working group decides to have implementors, rather than authors, keep the status of their implementations current.
- When a working group already maintains an active wiki and prefers to use it for this purpose.
- If the working group decides that the information is still valuable (and needs to be kept current) after the I-D is published as an RFC, and the Implementation Status section had been removed from it.

It is highly desirable for all readers of the Internet-Draft to be made aware of this information. Initially, this can be done by replacing the Implementation Status section's contents with a URL pointing to the wiki. Later, the IETF Tools may support this functionality, e.g., by including such a link in the HTML file of the document, similar to the IPR link.

If the implementation status is published separately from the I-D, then this information needs to be openly available without requiring authentication, registration, or access controls if it is to have any useful effects.

4. Benefits

Publishing the information about implementations provides the working group with several benefits:

- Working group members, chairs, and ADs may use the information provided to help prioritize the progress of I-Ds, e.g., when there are several competing proposals to solve a particular problem.
- Similarly, the information is useful when deciding whether the document should be progressed on a different track (individual submission, Experimental, etc.).
- Making this information public and an explicit part of WG deliberations will motivate participants to implement protocol proposals, which in turn helps in discovering protocol flaws at an early stage.

- Other participants can use the software to evaluate the usefulness of protocol features, its correctness (to some degree), and other properties, such as resilience and scalability.

- WG members may choose to perform interoperability testing with known implementations, especially when they are publicly available.

- In the case of open source, people may want to study the code to better understand the protocol and its limitations, determine if the implementation matches the protocol specification, and whether the protocol specification has omissions or ambiguities.

- And lastly, some protocol features may be hard to understand, and for such features, the mere assurance that they can be implemented is beneficial. We note though that code should never be used in lieu of a clear specification.

We do not specify here whether and to what degree working groups are expected to prefer proposals that have "running code" associated with them, over others that do not.

5. Process Experiment

The current proposal is proposed as an experiment. The inclusion of Implementation Status sections in Internet-Drafts is not mandatory, but the authors of this document wish to encourage authors of other Internet-Drafts to try out this simple mechanism to discover whether it is useful. Working group chairs are invited to suggest this mechanism to document editors in their working groups, and to draw the attention of their working group participants to Implementation Status sections where they exist.

Following a community discussion, it was concluded that [RFC3933] is not an appropriate framework for this experiment, primarily because no change is required to any existing process.

5.1. Duration

Given the typical time to produce an RFC (see [Stats]), we propose a duration of 18 months for the experiment. Thus, 18 months after the date of publication of this document as an RFC, the authors will report on the experiment as described in the next section.

I-D authors are obviously free to include Implementation Status sections in their documents even after the experiment has concluded.

5.2. Summary Report

The authors will summarize the results of the experiment at the end of the period assigned to the experiment (see Section 5.1). If nothing happens (no I-Ds or only a handful include an Implementation Status section), an email to the IETF list will be sufficient. This would obviously constitute a failure to adopt the idea and the authors will abandon the experiment.

If this idea is adopted by document authors, a summary I-D will be written containing the statistics of such adoption, as well as (necessarily subjective) reports by working group members, chairs, and area directors who have used this mechanism.

The authors may then propose more wide-scale use of the process and might suggest more formal adoption of the process by the IETF.

5.3. Success Criteria

The goal of this experiment is to improve the quality of IETF specifications. This is impossible to quantify, of course. We suggest that generally positive answers to the following questions would indicate that the experiment was successful:

- Did the working group make decisions that were more informed when comparing multiple competing solutions for the same work item?
- Did authors significantly modify proposed protocols based on implementation experience?
- Did disclosure of implementations encourage more interoperability testing than previously?
- Did non-authors review documents based on interactions with running code and/or inspection of the code itself?

6. Security Considerations

This is a process document; therefore, it does not have a direct effect on the security of any particular IETF protocol. However, better-reviewed protocols are likely to also be more secure.

7. Acknowledgements

We would like to thank Stephen Farrell, who reawakened community interest in this topic. Several reviewers provided important input, including Loa Andersson, Dave Crocker, Ned Freed, Christer Holmberg, Denis Ovsienko, and Curtis Villamizar.

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8. Informative References

[RFC1264] Hinden, R., "Internet Engineering Task Force Internet Routing Protocol Standardization Criteria", RFC 1264, October 1991.

[RFC3933] Klensin, J. and S. Dawkins, "A Model for IETF Process Experiments", BCP 93, RFC 3933, November 2004.

[RFC4794] Fenner, B., "RFC 1264 Is Obsolete", RFC 4794, December 2006.

[Stats] Arkko, J., "Distribution of Processing Times", December 2012, <http://www.arkko.com/tools/lifecycle/wgdistr.html>.

[Tao] Hoffman, P., Ed., "The Tao of IETF: A Novice's Guide to the Internet Engineering Task Force", November 2012, <http://www.ietf.org/tao.html>.

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