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M. Cotton
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Early IANA Allocation of Standards Track Code Points

Abstract

This memo describes the process for early allocation of code points by IANA from registries for which "Specification Required", "RFC Required", "IETF Review", or "Standards Action" policies apply. This process can be used to alleviate the problem where code point allocation is needed to facilitate desired or required implementation and deployment experience prior to publication of an RFC, which would normally trigger code point allocation. The procedures in this document are intended to apply only to IETF Stream documents.

This document obsoletes RFC 4020.

Status of This Memo

This memo documents an Internet Best Current Practice.

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). Further information on BCPs is available in 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/rfc7120>.

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1. Introduction

In protocol specifications documented in RFCs, there is often a need to allocate code points for various objects, messages, or other protocol entities so that implementations can interoperate. Many of these code point spaces have registries handled by the Internet Assigned Number Authority (IANA). Several IETF policies for IANA allocation of protocol parameters are described in RFC 5226 [RFC5226]. Some of them, such as "First Come First Served" or "Expert Review", do not require a formal IETF action before the IANA performs allocation. However, in situations where code points are a scarce resource and/or the IETF community has consensus to retain tight control of the registry content, policies such as "IETF Review" (formerly "IETF Consensus"), or "Standards Action" have been used. Such allocation policies present a problem in situations where implementation and/or deployment experience are desired or required before the document becomes an RFC.

To break the deadlock, document authors often choose some "seemingly unused" code points, often by selecting the next available value from the registry; this is problematic because these may turn out to be different from those later assigned by IANA. To make this problem worse, "pre-RFC" implementations are often developed and deployed based on these code point selections. This creates several potential interoperability problems between early implementations and implementations of the final standard, as described below:

1. IANA allocates code points different from those that early implementations assumed would be allocated. Early implementations won't interoperate with standard ones.
2. IANA allocates code points for one extension while a "pre-RFC" implementation of a different extension chooses the same code point. The different extensions will collide on the same code point in the field.

This gets in the way of the main purpose of standards; namely, to facilitate interoperable implementations.

It is easy to say that pre-RFC implementations should be kept private and should not be deployed; however, both the length of the standards process and the immense value of early implementations and early deployments suggest that finding a better solution is worthwhile. As an example, in the case of documents produced by Working Groups in the Routing Area, a pre-RFC implementation is highly desirable and sometimes even required [RFC4794], and early deployments provide useful feedback on the technical and operational quality of the specification.

This memo addresses the early allocation of code points so that reservations are made in the IANA registries before the publication of an RFC. The early allocation mechanisms are applied only to spaces whose allocation policy is "Specification Required" (where an RFC is used as the stable reference), "RFC Required", "IETF Review", or "Standards Action". For an explanation of these allocation policies, see [RFC5226].

A policy for IANA early allocations was previously described in [RFC4020]. This document obsoletes RFC 4020 and includes other registration procedures regarding the types of registries that can qualify for early allocation. The procedures in this document are intended to apply only to IETF Stream documents.

2. Conditions for Early Allocation

The following conditions must hold before a request for early allocation of code points will be considered by IANA:

- a. The code points must be from a space designated as "RFC Required", "IETF Review", or "Standards Action". Additionally, requests for early assignment of code points from a "Specification Required" registry are allowed if the specification will be published as an RFC.
- b. The format, semantics, processing, and other rules related to handling the protocol entities defined by the code points (henceforth called "specifications") must be adequately described in an Internet-Draft.
- c. The specifications of these code points must be stable; i.e., if there is a change, implementations based on the earlier and later specifications must be seamlessly interoperable.
- d. The Working Group chairs and Area Directors (ADs) judge that there is sufficient interest in the community for early (pre-RFC) implementation and deployment, or that failure to make an early allocation might lead to contention for the code point in the field.

3. Process for Early Allocation

There are three processes associated with early allocation: making the request for code points; following up on the request; and revoking an early allocation. It cannot be emphasized enough that these processes must have a minimal impact on IANA itself, or they will not be feasible.

The processes described below assume that the document in question is the product of an IETF Working Group (WG). If this is not the case, replace "WG chairs" below with "Shepherding Area Director".

3.1. Request

The process for requesting and obtaining early allocation of code points is as follows:

1. The authors (editors) of the document submit a request for early allocation to the Working Group chairs, specifying which code points require early allocation and to which document they should be assigned.
2. The WG chairs determine whether the conditions for early allocations described in Section 2 are met, particularly conditions (c) and (d).
3. The WG chairs gauge whether there is consensus within the WG that early allocation is appropriate for the given document.
4. If steps 2) and 3) are satisfied, the WG chairs request approval from the Area Director(s). The Area Director(s) may apply judgement to the request, especially if there is a risk of registry depletion.
5. If the Area Directors approve step 4), the WG chairs request IANA to make an early allocation.
6. IANA makes an allocation from the appropriate registry, marking it as "Temporary", valid for a period of one year from the date of allocation. The date of first allocation and the date of expiry are also recorded in the registry and made visible to the public.

Note that Internet-Drafts should not include a specific value of a code point until IANA has completed the early allocation for this value.

3.2. Follow-Up

It is the responsibility of the document authors and the Working Group chairs to review changes in the document, and especially in the specifications of the code points for which early allocation was requested, to ensure that the changes are backward compatible.

If at some point changes that are not backward compatible are nonetheless required, a decision needs to be made as to whether previously allocated code points must be deprecated (see Section 3.3 for more information on code point deprecation). The considerations include aspects such as the possibility of existing deployments of the older implementations and, hence, the possibility for a collision between older and newer implementations in the field.

If the document progresses to the point at which IANA normally makes code point allocations, it is the responsibility of the authors and the WG chairs to remind IANA that there were early allocations and of the code point values allocated in the IANA Considerations section of the RFC-to-be. Allocation is then just a matter of removing the "Temporary" tag from the allocation description.

3.3. Expiry

As described in Section 3.1, each temporary assignment is recorded in the registry with the date of expiry of the assignment. If an early allocation expires before the document progresses to the point where IANA normally makes allocations, the authors and WG chairs may repeat the process described in Section 3.1 to request renewal of the code points. At most, one renewal request may be made; thus, authors should choose carefully when the original request is to be made.

As an exception to the above rule, under rare circumstances, more than one allocation renewal may be justified. All such further renewal requests must be reviewed by the IESG. The renewal request to the IESG must include the reasons why such further renewal is necessary and the WG's plans regarding the specification.

If a follow-up request is not made, or the document fails to progress to an RFC, the assignment will remain visible in the registry, but the temporary assignment will be shown to have expired as indicated by the expiry date. The WG chairs are responsible for informing IANA that the expired assignments are not required and that the code points are to be marked "deprecated".

A deprecated code point is not marked as allocated for use as described in any document (that is, it is not allocated) and is not available for allocation in a future document. The WG chairs may inform IANA that a deprecated code point can be completely de-allocated (i.e., made available for new allocations) at any time after it has been deprecated. Factors influencing this decision will include whether there may be implementations using the previous temporary allocation and the availability of other unallocated code points in the registry.

Implementers and deployers need to be aware that deprecation and de-allocation could take place at any time after expiry; therefore, an expired early allocation is best considered as deprecated.

It is not IANA's responsibility to track the status of allocations, their expirations, or when they may be re-allocated.

Note that if a document is submitted for review to the IESG, and at the time of submission some early allocations are valid (not expired), these allocations must not be considered to have expired while the document is under IESG consideration or is awaiting publication in the RFC Editor's queue after approval by the IESG.

4. IANA Considerations

This document defines procedures for early allocation of code points in the registries with the "Specification Required", "RFC Required", "IETF Review", and "Standards Action" policies and as such directly affects IANA. This document removes the need for registries to be marked as specifically allowing early allocation. IANA has updated impacted registries by removing any such markings.

5. Security Considerations

It is important to keep in mind that denial-of-service attacks on IANA are possible as a result of the processes defined in this memo. There are two that are immediately obvious: depletion of code space by early allocations and process overloading of IANA itself. The processes described here attempt to alleviate both of these potential attacks, but they are subject to scrutiny by IANA to ensure that they work. IANA may at any time request that the IESG suspend the procedures described in this document.

There is a significant concern that the procedures in this document could be used as an end-run on the IETF process to achieve code point allocation when an RFC will not be published. For example, a WG or a WG chair might be pressured to obtain an early allocation for a protocol extension for a particular company or for another Standards Development Organization even though it might be predicted that an IETF LC or IESG Evaluation would reject the approach that is documented. The requirement for AD consent of early review is an important safeguard, and ADs with any concern are strongly recommended to escalate the issue for IESG-wide discussion.

6. References

6.1. Normative References

- [RFC5226] Narten, T. and H. Alvestrand, "Guidelines for Writing an IANA Considerations Section in RFCs", BCP 26, RFC 5226, May 2008.

6.2. Informative References

- [RFC4020] Kompella, K. and A. Zinin, "Early IANA Allocation of Standards Track Code Points", BCP 100, RFC 4020, February 2005.
- [RFC4794] Fenner, B., "RFC 1264 Is Obsolete", RFC 4794, December 2006.

Appendix A. Acknowledgments

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Author's Address

Michelle Cotton
Internet Corporation for Assigned Names and Numbers
12025 Waterfront Drive, Suite 300
Los Angeles, CA 90094-2536
United States of America

Phone: +1-310-823-5800
EMail: michelle.cotton@icann.org
URI: <http://www.icann.org/>

