                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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