6man
Internet-Draft
Updates: 7249 (if approved)
Intended status: Best Current Practice
Expires: 13 November 2025

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12 May 2025

Clarification of IPv6 Address Allocation Policy
draft-ietf-6man-addr-assign-05

Abstract

This document specifies the approval process for changes to the IPv6 Address Space registry. It also updates RFC 7249.

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-6man-addr-assign/.

Discussion of this document takes place on the 6MAN Working Group mailing list (mailto:ipv6@ietf.org), which is archived at https://mailarchive.ietf.org/arch/browse/ipv6/. Subscribe at https://www.ietf.org/mailman/listinfo/ipv6/.

Status of This Memo

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

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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 13 November 2025.

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1. Introduction

Internet Protocol Version 6 (IPv6) and its address space are defined by [STD86] and [RFC4291]. The management of the IPv6 address space was delegated to IANA by [RFC1881], some years before the relationship between the IETF and IANA was formalized [RFC2860] and registry details were clarified [RFC7020], [RFC7249].

Occasionally, IPv6 address space allocations are performed outside the scope of routine allocations to Regional Internet Registries (RIRs). For example, a substantial allocation was requested by an

IETF document approved by the IESG [RFC9602], which moved the range 5f00::/16 from the Internet Protocol Version 6 Address Space registry [IANA1] to the IANA IPv6 Special-Purpose Address Registry [IANA3].

At the time of writing, the allocation policy in the Internet Protocol Version 6 Address Space registry [IANA1] was shown as "IESG approval", whereas for major allocations a more stringent policy is appropriate. The present document therefore strengthens the approval level needed for non-routine address allocations, which requires an update to RFC 7249.

This document also clarifies the status of RFC 1881. This clarification is necessary because RFC 1881, a joint publication of the IAB and IESG following an IETF Last Call, was incorrectly listed in the RFC index at the time of writing as "legacy", whereas it is part of the IETF stream [RFC8729].

2. Approval Level of IPv6 Address Allocations

Portions of the IPv6 address space are shown in the registry [IANA1] as "Reserved by IETF". This is the address space held in reserve for future use if ever the 125-bit unicast space (2000::/3) is found inadequate or inappropriate.

RFC 1881 did not specify an allocation policy for this space. At some point, IANA listed "IESG approval". As defined in [BCP26], this is a rather weak requirement ("Although there is no requirement that the request be documented in an RFC, the IESG has the discretion to request documents...") and is "a fall-back mechanism in the case where one of the other allowable approval mechanisms cannot be employed...".

For something as important as the majority of the spare IPv6 address space, this process is clearly insufficient. The present document replaces the "IESG approval" process by the "IETF Review" process as defined by BCP 26. It is not considered necessary to require the stricter "Standards Action" policy, because there might be cases where opening up a new range of address space did not in fact require a new protocol standard.

It may be noted that the allocation for [RFC9602], which was processed as a working group document, did indeed follow the more stringent "IETF Review" process proposed by this document. Indeed, the other two related registries [IANA2] [IANA3] do cite the "IETF Review" policy, consistently with RFC 7249.

This document therefore extends the first paragraph of section 2.3 of [RFC7249] as follows:

OLD:

| The vast bulk of the IPv6 address space (approximately 7/8ths of
| the whole address space) is reserved by the IETF [RFC4291], with
| the expectation that further assignment of globally unique unicast
| address space will be made from this reserved space in accordance
| with future needs.

NEW:

| The vast bulk of the IPv6 address space (approximately 7/8ths of
| the whole address space) is reserved by the IETF [RFC4291], with
| the expectation that further assignment of globally unique unicast
| address space will be made from this reserved space in accordance
| with future needs, through "IETF Review" as defined in [BCP26].

3. RFC Editor Considerations

The RFC Editor is requested to update the "Stream" information for [RFC1881] to "IETF" in place of "Legacy".

4. IANA Considerations

IANA is requested to update the "Registration Procedure(s)" section of the Internet Protocol Version 6 Address Space registry [IANA1] to show the policy as "IETF Review".

5. Security Considerations

The security considerations of [RFC7249] apply. While having no direct security impact, carefully reviewed address allocation mechanisms are necessary to ensure operational address accountability.

6. Acknowledgements

Useful comments were received from Dale Carder, Bob Hinden, Scott Kelly, Philipp Tiesel, and others.

7. References

7.1. Normative References

[BCP26] Best Current Practice 26,
<https://www.rfc-editor.org/info/bcp26>.
At the time of writing, this BCP comprises the following:

Cotton, M., Leiba, B., and T. Narten, "Guidelines for Writing an IANA Considerations Section in RFCs", BCP 26, RFC 8126, DOI 10.17487/RFC8126, June 2017, <https://www.rfc-editor.org/info/rfc8126>.

[RFC4291] Hinden, R. and S. Deering, "IP Version 6 Addressing Architecture", RFC 4291, DOI 10.17487/RFC4291, February 2006, <https://www.rfc-editor.org/rfc/rfc4291>.

[STD86] Internet Standard 86, <https://www.rfc-editor.org/info/std86>. At the time of writing, this STD comprises the following:

Deering, S. and R. Hinden, "Internet Protocol, Version 6 (IPv6) Specification", STD 86, RFC 8200, DOI 10.17487/RFC8200, July 2017, <https://www.rfc-editor.org/info/rfc8200>.

7.2. Informative References

[IANA1] "Internet Protocol Version 6 Address Space", n.d., <https://www.iana.org/assignments/ipv6-address-space>.

[IANA2] "IPv6 Global Unicast Address Assignments", n.d., <https://www.iana.org/assignments/ipv6-unicast-address-assignments>.

[IANA3] "IANA IPv6 Special-Purpose Address Registry", n.d., <https://www.iana.org/assignments/iana-ipv6-special-registry>.

[RFC1881] IAB and IESG, "IPv6 Address Allocation Management", RFC 1881, DOI 10.17487/RFC1881, December 1995, <https://www.rfc-editor.org/rfc/rfc1881>.

[RFC2860] Carpenter, B., Baker, F., and M. Roberts, "Memorandum of Understanding Concerning the Technical Work of the Internet Assigned Numbers Authority", RFC 2860, DOI 10.17487/RFC2860, June 2000, <https://www.rfc-editor.org/rfc/rfc2860>.

[RFC7020] Housley, R., Curran, J., Huston, G., and D. Conrad, "The Internet Numbers Registry System", RFC 7020, DOI 10.17487/RFC7020, August 2013, <https://www.rfc-editor.org/rfc/rfc7020>.

[RFC7249] Housley, R., "Internet Numbers Registries", RFC 7249, DOI 10.17487/RFC7249, May 2014, <https://www.rfc-editor.org/rfc/rfc7249>.

[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>.

[RFC9602] Krishnan, S., "Segment Routing over IPv6 (SRv6) Segment Identifiers in the IPv6 Addressing Architecture", RFC 9602, DOI 10.17487/RFC9602, October 2024, <https://www.rfc-editor.org/rfc/rfc9602>.

Appendix A. Change Log [RFC Editor: please remove]

A.1. draft-carpenter-6man-addr-assign-00

* Original version

A.2. Draft-01

* Added author
* Added citations
* Small update to RFC 7249
* Added appendix on registry names

A.3. Draft-02

* Clarified some details

A.4. draft-ietf-6man-addr-assign-00

* Adopted by WG

A.5. Draft-01

* Changed stream for RFC 1881 to IETF
* Editorial improvements

A.6. Draft-02

* Further editorial improvements

A.7. Draft-03

* At IESG's request, removed the appendix about registry names, which will be handled by IANA directly.
* Clarified discussion of RFC9602
* Improved security considerations
* Minor editorial changes

A.8. Draft-04

* Minor editorial changes

A.9. Draft-05

* Corrected title to "Allocation" instead of "Assignment"
* Minor editorial changes

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