
Stream: Internet Engineering Task Force (IETF)
RFC: [9637](#)
Updates: [3849](#)
Category: Informational
Published: August 2024
ISSN: 2070-1721
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RFC 9637

Expanding the IPv6 Documentation Space

Abstract

The document describes the reservation of an additional IPv6 address prefix for use in documentation. This update to RFC 3849 expands on the existing 2001:db8::/32 address block with the reservation of an additional, larger prefix. The addition of a /20 prefix allows documented examples to more closely reflect a broader range of realistic, current deployment scenarios and more closely aligns with contemporary allocation models for large networks.

Status of This Memo

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1. Introduction

[RFC3849] introduced the IPv6 address prefix 2001:db8::/32 as a reserved prefix for use in documentation. The rationale for this reservation was to reduce the likelihood of conflict and confusion when relating documented examples to deployed systems.

As the global deployment of IPv6 expands and evolves, individual IPv6 network deployment scenarios have also increased in size and diversity, and there is a requirement for documentation to reflect this increased diversity and scope. The original 2001:db8::/32 reservation is inadequate to describe many realistic, current deployment scenarios.

Without this additional address allocation, documentation prefixes are drawn from address blocks already allocated or assigned to existing organizations or well-known ISPs, or they are drawn from the currently unallocated address pool. Such use conflicts with existing or future allocations or assignments of IPv6 address space. The reservation of a /20 IPv6 address prefix from the Global Unicast Address pool [RFC4291] for documentation purposes allows such conflicts to be avoided.

2. Requirements Language

The key words "MUST", "MUST NOT", "REQUIRED", "SHALL", "SHALL NOT", "SHOULD", "SHOULD NOT", "RECOMMENDED", "NOT RECOMMENDED", "MAY", and "OPTIONAL" in this document are to be interpreted as described in BCP 14 [RFC2119] [RFC8174] when, and only when, they appear in all capitals, as shown here.

3. Current Assignment and Allocation Data

According to the allocation and assignment data published by the Regional Internet Registries (RIRs) (see [NROStatsReport]), in August 2023, 25.9% of the 62,770 recorded IPv6 unicast allocations and assignments were larger than a /32 in size. The most common allocation or assignment size was a /29, used in 24.8% of cases.

The four largest assignments made to end users have been /19s, but these allocations were made before the RIRs moved away from the use of a fixed /48 site address prefix in IPv6 address assignment policies, and in the foreseeable future, it is unlikely that individual networks will require more than a /20. It is believed that reservation of a /20 will cover the documentation needs as they relate to the broad range of realistic network deployments.

4. Filtering and Appropriate Use

Documentation prefixes are for the use of relaying configuration and documentation examples, and as such, they **MUST NOT** be used for actual traffic, **MUST NOT** be globally advertised, and **SHOULD NOT** be used internally for routed production traffic or other connectivity. Documentation prefixes should be considered bogon [BOGON] and filtered in routing advertisements as appropriate.

5. Security Considerations

This special-use prefix should be marked as and considered bogon [BOGON]. As is appropriate with bogon prefixes, packets whose source or destination belongs to this prefix should be dropped and disallowed over the public Internet.

6. IANA Considerations

IANA has registered the following in the "IANA IPv6 Special-Purpose Address Registry" [IANA-IPv6-SPAR].

Address Block: 3fff::/20
Name: Documentation
RFC: RFC 9637
Allocation Date 2024-07

Termination Date: N/A
Source: False
Destination: False
Forwardable: False
Globally Reachable : False
Reserved-by-Protocol: False

7. References

7.1. Normative References

- [IANA-IPv6-SPAR] IANA, "IANA IPv6 Special-Purpose Address Registry", <<https://www.iana.org/assignments/iana-ipv6-special-registry>>.
- [RFC2119] Bradner, S., "Key words for use in RFCs to Indicate Requirement Levels", BCP 14, RFC 2119, DOI 10.17487/RFC2119, March 1997, <<https://www.rfc-editor.org/info/rfc2119>>.
- [RFC8174] Leiba, B., "Ambiguity of Uppercase vs Lowercase in RFC 2119 Key Words", BCP 14, RFC 8174, DOI 10.17487/RFC8174, May 2017, <<https://www.rfc-editor.org/info/rfc8174>>.

7.2. Informative References

- [BOGON] Team Cymru, "Unravelling the Mystery of Bogons: A senior stakeholder and IT professional guide", July 2023, <<https://www.team-cymru.com/post/unravelling-the-mystery-of-bogons-a-senior-stakeholder-and-it-professional-guide>>.
- [NROStatsReport] "NRO Stats Reports", <<https://ftp.ripe.net/pub/stats/ripenncc/nro-stats>>.
- [RFC3849] Huston, G., Lord, A., and P. Smith, "IPv6 Address Prefix Reserved for Documentation", RFC 3849, DOI 10.17487/RFC3849, July 2004, <<https://www.rfc-editor.org/info/rfc3849>>.
- [RFC4291] Hinden, R. and S. Deering, "IP Version 6 Addressing Architecture", RFC 4291, DOI 10.17487/RFC4291, February 2006, <<https://www.rfc-editor.org/info/rfc4291>>.

Acknowledgments

The authors would like to acknowledge the valuable input from XiPeng Xiao, Chris Cummings, Russ White, Kevin Myers, Ed Horley, Tom Coffeen, and Scott Hogg.

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