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Multicast Addresses for Documentation
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Abstract

This document discusses which multicast addresses should be used for documentation purposes and reserves multicast addresses for such use. Some multicast addresses are derived from AS numbers or unicast addresses. This document also explains how these can be used for documentation purposes.

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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1. Introduction

It is often useful in documentation, IETF documents, etc., to provide examples containing IP multicast addresses. For documentation where examples of general purpose multicast addresses are needed, one should use multicast addresses that never will be assigned or in actual use. There is a risk that addresses used in examples may accidentally be used. It is then important that the same addresses are not used by other multicast applications or services. It may also be beneficial to filter out such addresses from multicast signalling and multicast data sent to such addresses.

For unicast there are both IPv4 and IPv6 addresses reserved for this purpose, see [RFC5737] and [RFC3849] respectively. This document reserves multicast addresses for this purpose.

There are also some multicast addresses that are derived from AS numbers or unicast addresses. For examples where such addresses are desired, one should derive them from the AS numbers and unicast addresses reserved for documentation purposes. This document also discusses the use of these.

2. IPv4 multicast documentation addresses

The type of multicast addresses most commonly used today, are addresses used for so-called ASM (Any-Source Multicast). For ASM, the IPv4 multicast addresses allocated for documentation purposes are 233.252.0.0 - 233.252.0.255 (233.252.0.0/24).

Another type of multicast is SSM (Source-Specific Multicast). For SSM it is less important which multicast addresses are used, since a host/application joins a channel identified by both source and group. Any source addresses used in SSM examples should be unicast addresses reserved for documentation purposes, see [RFC5737].

Sometimes one wants to give examples where a specific type of address is desired. E.g. for text about multicast scoping, one might want the examples to use addresses that are to be used for administrative scoping. See below for guidance on how to construct specific types of example addresses.

2.1. Administratively scoped IPv4 multicast addresses

Administratively scoped IPv4 multicast addresses [RFC2365] are reserved for scoped multicast. They can be used within a site or an organization. Apart from a small set of scope relative addresses, these addresses are not assigned. There are no specific scoped addresses available for documentation purposes. Except for examples detailing the use of scoped multicast, one should avoid using them.

2.2. GLOP multicast addresses

GLOP [RFC3180] is a method for deriving IPv4 multicast group addresses from 16 bit AS numbers. For examples where GLOP addresses are desired, the addresses should be derived from the AS numbers reserved for documentation use. See [RFC5398].

2.3. Unicast prefix based IPv4 multicast addresses

IPv4 multicast addresses can be derived from IPv4 unicast prefixes, see [RFC6034]. For examples where this type of addresses are desired, the addresses should be derived from the unicast addresses reserved for documentation purposes, see [RFC5737].

3. IPv6 multicast documentation addresses

The type of multicast addresses most commonly used today, are addresses used for so-called ASM (Any-Source Multicast). For ASM, the IPv6 multicast addresses allocated for documentation purposes are TBD.

Another type of multicast is SSM (Source-Specific Multicast). For SSM it is less important which multicast addresses are used, since a host/application joins a channel identified by both source and group. Any source addresses used in SSM examples should be unicast addresses reserved for documentation purposes, see [RFC3849].

Sometimes one wants to give examples where a specific type of address is desired. E.g. for text about multicast scoping, one might want the examples to use addresses that are to be used for administrative scoping. See below for guidance on how to construct specific types of example addresses.

3.1. Unicast prefix based IPv6 multicast addresses

IPv6 multicast addresses can be derived from IPv6 unicast prefixes,

see [RFC3306]. For examples where this type of addresses is desired, the addresses should be derived from the unicast addresses reserved for documentation purposes, see [RFC3849].

3.2. Embedded-RP IPv6 multicast addresses

There is a type of IPv6 multicast addresses called Embedded-RP addresses where the IPv6 address of a Rendezvous-Point is embedded inside the multicast address, see [RFC3956]. For examples where this type of addresses is desired, the addresses should be derived from the unicast addresses reserved for documentation purposes, see see [RFC3849].

4. Security Considerations

The use of specific multicast addresses for documentation purposes has no impact on security.

5. IANA Considerations

IANA is requested to assign "variable scope" IPv6 multicast addresses for documentation purposes. This should be a /96 prefix of the form FF0X:...

6. Acknowledgments

The authors thank Roberta Maglione for providing comments on this document.

7. Informative References

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[RFC3306] Haberman, B. and D. Thaler, "Unicast-Prefix-based IPv6 Multicast Addresses", RFC 3306, August 2002.

[RFC3307] Haberman, B., "Allocation Guidelines for IPv6 Multicast Addresses", RFC 3307, August 2002.

[RFC3849] Huston, G., Lord, A., and P. Smith, "IPv6 Address Prefix Reserved for Documentation", RFC 3849, July 2004.

[RFC3956] Savola, P. and B. Haberman, "Embedding the Rendezvous Point (RP) Address in an IPv6 Multicast Address", RFC 3956, November 2004.

[RFC5398] Huston, G., "Autonomous System (AS) Number Reservation for Documentation Use", RFC 5398, December 2008.

[RFC5737] Arkko, J., Cotton, M., and L. Vegoda, "IPv4 Address Blocks Reserved for Documentation", RFC 5737, January 2010.

[RFC6034] Thaler, D., "Unicast-Prefix-Based IPv4 Multicast Addresses", RFC 6034, October 2010.

Appendix A. Examples

Usually addresses for documentation can simply be selected from the addresses reserved for such. But as we discuss in this document, there are cases where one wants to use multicast addresses derived from AS numbers (GLOP) or from unicast addresses. In this appendix we will just provide some examples for how such addresses can be derived.

A.1. GLOP multicast addresses

GLOP [RFC3180] is a method for deriving IPv4 multicast group addresses from 16 bit AS numbers. The 16 bit AS numbers reserved for documentation use in [RFC5398] are 64496 - 64511. By use of [RFC3180], we then get 16 /24 multicast prefixes for documentation use. The first one 233.251.240.0/24, and the last 233.251.255.0/24.

A.2. Unicast prefix based IPv4 multicast addresses

IPv4 multicast addresses can be derived from IPv4 unicast prefixes, see [RFC6034]. There are three unicast address ranges provided for documentation use in [RFC5737]. The ranges are 192.0.2.0/24, 198.51.100.0/24 and 203.0.113.0/24. Using [RFC6034] this leaves us with the unicast prefix based IPv4 multicast addresses 234.192.0.2, 234.198.51.100 and 234.203.0.113.

A.3. Unicast prefix based IPv6 multicast addresses

IPv6 multicast addresses can be derived from IPv6 unicast prefixes, see [RFC3306]. The IPv6 unicast prefix reserved for documentation purposes is 2001:DB8::/32, see [RFC3849]. This allows a wide range of different IPv6 multicast addresses. Using just the base /32 prefix, one get the IPv6 multicast prefixes FF3X:20:2001:DB8::/64, one for each available scope X. But also, from 2001:DB8::/32 one can pick say a /64 prefix 2001:DB8:DEAD:BEEF::/64 which gives us the multicast prefixes FF3X:40:2001:DB8:DEAD:BEEF::/96, one for each available scope X.

A.4. Embedded-RP IPv6 multicast addresses

For Embedded-RP IPv6 multicast addresses, the the IPv6 address of a Rendezvous-Point is embedded inside the multicast address, see [RFC3956]. For documentation purposes, the RP address can be any address from the range 2001:DB8::/32, see [RFC3849], that follows the constraints specified in [RFC3956]. One example address could be 2001:DB8::1. The embedded-RP multicast prefixes might then be FF7X:120:2001:DB8::/96. Another example could be the RP address 2001:DB8:BEEF:FEED::7 which gives the prefixes FF7X:740:2001:DB8:BEEF:

FEED::/96. See also the examples in [RFC3956].

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