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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.

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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

For Any-Source Multicast (ASM), the IPv4 multicast addresses allocated for documentation purposes are 233.252.0.0 - 233.252.0.255 (233.252.0.0/24).

For Source-Specific Multicast (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. 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.

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. The high order /24 in every scope is reserved for relative assignments. A relative assignment is an integer offset from the highest address in the scope and represents an IPv4 address. For documentation purposes, the integer offset is

TBD1. This provides one multicast address per scope.

For example in the Local Scope 239.255.0.0/16, the multicast address for documentation purposes is 239.255.255.255-TBD1.

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.

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.

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](#)].

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.

[3.](#) IPv6 multicast documentation addresses

For Any-Source Multicast (ASM) the IPv6 multicast addresses allocated for documentation purposes are TBD2. This is a /96 prefix so that it can be used with group IDs according to the allocation guidelines in [[RFC3307](#)]). Also note that for these addresses the transient flag, the T-flag as defined in [[RFC3513](#)], is zero. This is because they are permanently assigned. There can be no permanently assigned addresses for documentation purposes with the transient flag set to one, since the flag set to one means that they are not permanently assigned.

For Source-Specific Multicast (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. The IPv6 unicast prefix reserved for documentation purposes is 2001:DB8::/32, 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.

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 gets the IPv6 multicast prefixes FF3X:20:2001:DB8::/64, one for each available scope X. One can also produce longer prefixes from this. Just as an example, one can pick say a /64 prefix 2001:DB8:DEAD:BEEF::/64 which gives the multicast prefixes FF3X:40:2001:DB8:DEAD:BEEF::/96, one for each available scope X.

[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

[[RFC3849](#)].

For documentation purposes, the RP address can be any address from the range 2001:DB8::/32 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](#)].

[4.](#) Security Considerations

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

5. IANA Considerations

IANA is requested to add a reference to this document for the IPv4 MCAST-TEST-NET allocation, so that all the different documentation multicast assignments reference this document.

IANA is requested to assign a scope relative IPv4 address for documentation purposes.

This paragraph contains some further instructions for IANA in order to clarify. It should be deleted before publishing. The string TBD1 in this document should be replaced by the assigned offset. Also the string 255-TBD1 should be replaced by the value of 255 minus the assigned offset. The next available offset seems currently to be 10. Look in the registry for where it says "10-252 Reserved - To be assigned by the IANA". If the value 10 is chosen, then we would like to add "10 MCAST-TEST-NET-2 [RFCxxxx]" to the table. TBD1 would then be 10. TBD1 is used in two places apart from the IANA considerations. In one place it says just TBD1, that should be replaced by "10". The other place it says "239.255.255.255-TBD1". That should then be replaced by "239.255.255.245". In the unlikely event that 10 is not available, please use the first available value accordingly. MCAST-TEST-NET-2 is suggested here, since the existing allocation is named MCAST-TEST-NET.

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

This paragraph contains some further instructions for IANA in order to clarify. It should be deleted before publishing. The word TBD2 in this text should be replaced with the assigned prefix. The prefix should be of the form FF0X:.../96. In order to make this documentation prefix easily recognizable, the authors would like to request the prefix FF0X::DB8:0:0/96 if possible. This makes it somewhat similar to the IPv6 unicast prefix 2001:DB8::/32. We suggest they are denoted as "Documentation Addresses" with a reference to this document.

[6.](#) Acknowledgments

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