                     Multicast Addresses for Documentation

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 will never 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
   not be used by other multicast applications or services. It may also
   be beneficial to filter out such addresses from multicast signalling
   and to filter out 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 same 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. For example, 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
10. 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 239.255.255.245.

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 is 233.251.240.0/24,
   and the last one is 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 address is 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 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 FF0X::DB8:0:0/96. 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, or "T-flag" as defined in [RFC4291],
   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. For example, 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 address 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 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 address called an "Embedded-RP"
   address, where the IPv6 address of a Rendezvous-Point (RP) is
   embedded inside the multicast address, see [RFC3956]. For examples
   where this type of address 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 has added a reference to this document for the IPv4 MCAST-TEST-
   NET allocation so that all the different documentation multicast
   assignments reference this document.

   IANA has assigned a scope-relative IPv4 address for documentation
   purposes.

   IANA has assigned "variable-scope" IPv6 multicast addresses for
   documentation purposes. This is a /96 prefix.

6. Acknowledgments

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   for providing comments on this document.

7. Informative References

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