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Internet-Draft   Cisco
Updates: RFC 4291 (if approved)   November 04, 2013
Intended status: Standards Track
Expires: May 08, 2014

                     IPv6 Multicast Address Scopes
                  draft-ietf-6man-multicast-scopes-01.txt

Abstract

   This document updates the definitions of IPv6 multicast scopes.

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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   This Internet-Draft will expire on May 08, 2014.

1. Definition of IPv6 Multicast Address Scopes (Updates RFC 4291)

RFC 4291 [RFC4291] defines "scop is a 4-bit multicast scope value used to limit the scope of the multicast group." scop 3 is defined as "reserved" in RFC 4291. The multicast protocol specification in draft-ietf-roll-trickle-mcast [I-D.ietf-roll-trickle-mcast] desires to use multicast scop 3 for transport of multicast traffic scoped to a network of nodes connected in a mesh. The use of this scop value is to accommodate a multicast scope that is greater than Link-Local but is also automatically determined by the network architecture; for example, all of the hosts and routers in a multi-link subnet RPL realm.

The following table updates the definitions in RFC 4291:

0   reserved

1   Interface-Local scope

2   Link-Local scope

3   Realm-Local scope

4   Admin-Local scope

5   Site-Local scope

6   (unassigned)

7   (unassigned)

8   Organization-Local scope

9   (unassigned)

A   (unassigned)

B   (unassigned)

C   (unassigned)

D   (unassigned)

E   Global scope

F   reserved

    The following change is applied to section 2.7 of RFC 4291:

        OLD:

            Admin-Local scope is the smallest scope that must be
            administratively configured, i.e., not automatically derived
            from physical connectivity or other, non-multicast-related
            configuration.

        NEW:

            Interface-Local, Link-Local, and Realm-Local scope
            boundaries are automatically derived from physical
            connectivity or other, non-multicast related configuration.
            Global scope has no boundary. The boundaries of all other
            non-reserved scopes of Admin-Local or larger are
            administratively configured. For reserved scopes, the way
            of configuring their boundaries will be defined when the
            semantics of the scope is defined.

            According to RFC 4007 [RFC4007], the zone of a Realm-Local
            scope must fall within zones of larger scope. Because the
            zone of a Realm-Local scope is configured automatically,
            while the zones of larger scopes are configured manually,
            care must be taken in the definition of those larger scopes
            to ensure that inclusion contraint is met.

2. Definition of Realm-Local scopes

    The definition of any Realm-Local scope for a particular network
    technology should be published in an RFC. For example, such a scope
    definition would be appropriate for publication in an "IPv6-over-foo"
    RFC.

    Any RFCs that include the definition of a Realm-Local scope will be

listed in the IANA "IPv6 Multicast Address Scopes" registry.

3. Definition of automatic and administratively configures scopes
   (updates RFC 4007)

   Section 5 of RFC 4007 [RFC4007] and section 2.7 of RFC 4291 disagree
   about the way in which multicast scope 3 is configured. To resolve
   that disagreement, change the last bullet in the list in section 5 of
   RFC 4007 as follows:

   OLD:

   o The boundaries of zones of a scope other than interface-local,
      link-local, and global must be defined and configured by network
      administrators.

   NEW:

   o The boundaries of zones of a scope are defined by the IPv6
      addressing architecture [RFC4291].

4. IANA Considerations

   IANA is asked to establish a sub-registry titled "IPv6 Multicast
   Address Scopes" in the existing "Internet Protocol version 6 (IPv6)
   Multicast Address Allocations" registry. The "IPv6 Multicast Address
   Scopes" is to be populated with the scope values given in section 1,
   with a note associated with scope 3 listing all RFCs that define
   Realm-Local scoping rules that use scope 3.

5. Acknowledgments

   Robert Cragie, Kerry Lynn, Jinmei Tatuya, Dave Thaler and Stig Venaas
   all contributed to enuring that the updates to RFC 4007 and RFC 4291
   are correct

6. Security Considerations

This document has no security considerations beyond those in RFC 4291
[RFC4291].

7. References

7.1. Normative References

   [RFC4007]   Deering, S., Haberman, B., Jinmei, T., Nordmark, E., and
               B. Zill, "IPv6 Scoped Address Architecture", RFC 4007,
               March 2005.

   [RFC4291]   Hinden, R. and S. Deering, "IP Version 6 Addressing
               Architecture", RFC 4291, February 2006.

7.2. Informative References

   [I-D.ietf-roll-trickle-mcast]

               Hui, J. and R. Kelsey, "Multicast Protocol for Low power
               and Lossy Networks (MPL)", draft-ietf-roll-trickle-
               mcast-05 (work in progress), August 2013.

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