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IPv6 Multicast Address Scopes
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Abstract

This document updates the definitions of IPv6 multicast scopes.

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1. Definition of IPv6 Multicast Address Scopes

[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 RPL realm (or "domain") [[RFC6550](#)]. 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 paragraph is added as the third paragraph following the list of scop values in [RFC 4291](#):

Realm-Local scope is the largest scope that is automatically configured, i.e., automatically derived from physical connectivity or other, non-multicast-related configuration. According to [RFC 4007](#), 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 constraint 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. 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.

4. Security Considerations

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

5. References

5.1. 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.

5.2. 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-04](#) (work in progress), February 2013.

[RFC6550] Winter, T., Thubert, P., Brandt, A., Hui, J., Kelsey, R., Levis, P., Pister, K., Struik, R., Vasseur, JP., and R. Alexander, "RPL: IPv6 Routing Protocol for Low-Power and Lossy Networks", [RFC 6550](#), March 2012.

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