

Multicast Scoped Address Assignment Guidance
draft-pashby-mboned-mc-scoped-addr-01.txt

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Purpose

- Define IPv6 multicast identifier ranges for Dynamically Assigned Link-local Scoped addresses and Local Network Control Block
 - Ranges should guarantee that no other multicast will overlap the range

Justification

- Uniqueness is very important for these ranges based on the link-layer mapping
- Guidance is needed for assigning addresses in these scopes (e.g. draft-ietf-ipngwg-icmp-name-lookups)

RFC3307 Current Ranges

- Permanent IPv6 Multicast Addresses
 - 0x00000001 – 0x3FFFFFFF
- Permanent IPv6 Multicast Group Identifiers
 - 0x40000000 – 0x7FFFFFFF
- Dynamic IPv6 Multicast Addresses
 - 0x80000000 – 0xFFFFFFFF
 - Solicited Node Address fall in here

Problem

- One or more hosts join a high traffic group
- Unsuspecting host that is running a real-time application joins its Solicited Node's group
- The groups collide at the layer 2
- The unsuspecting host gets inundated by the high traffic and it fails to perform its real-time task

Solution

- Define ranges that guarantee no collision with “real” multicast traffic to the node’s required multicast groups.

New Ranges Defined

- Local Network Control Block (Scope = 2)
 - 0x00000001 – 0x000000FF
- Dynamically Assigned Global (Scope = 9 – E)
 - 0x80000000 – 0xBFFFFFFF
- Dynamically Assigned Non-Global (Scope = 1 – 8)
 - 0xC0000000 – 0xFFFFFFFF
 - **Reserved Dynamically Assigned Non-Global (Scope = 3 – 8)**
 - Future use may be for Site-Local Scoped and Organization Scoped
 - 0xC0000000 – 0xEFFFFFFF
 - **Dynamically Assigned Link-Local Scoped (Scope = 2)**
 - 0xF0000000 – 0xFFFFFFFF
 - Includes 0xFFxxxxxx Solicited Node Addresses

Probabilities of Collisions

Number of Groups	Probability of Collisions	
	<u>2B Range</u>	<u>1B Range</u>
100	<0.001%	<0.001%
1000	0.023%	0.047%
10000	2.3%	4.5%

Number of Groups with Probability of Collisions

<u>Probability</u>	<u>2B Range</u>	<u>1B Range</u>
0.01%	650	456
0.1%	2077	1465
1%	6572	4647

Related Drafts

draft-pashby-magma-simplify-mld-snooping

- “Simplifying IPv6 MLD Snooping Switches”
- Recommends that Network Control Block and Dynamically Assigned Link-Local Scoped be sent to all ports without the need for MLD Joins and MLD state for these groups

Recommendation

- Accept this draft as a WG draft and proceed to incorporate modifications into RFC3307 and RFC3306

Questions?