Network Working Group
INTERNET DRAFT

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Category

Best Current Practices
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Source-Specific Protocol Independent Multicast in 232/8

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3. Abstract

IP Multicast group addresses in the 232/8 (232.0.0.0 to 232.255.255.255) range are designated as source-specific multicast [SSM] destination addresses and are reserved for use by source-specific applications and protocols [IANA]. This document defines operational recommendations to ensure source-specific behavior within the 232/8 range.

The keywords MUST, MUST NOT, MAY, OPTIONAL, REQUIRED, RECOMMENDED, SHALL, SHALL NOT, SHOULD, SHOULD NOT are to be interpreted as defined in RFC 2119 [RFC2119].

4. Introduction

Current PIM Sparse Mode [RFC2362] relies on the shared Rendezvous Point (RP) tree to learn about active sources for a group and to support group-generic (not source specific) data distribution. The IP Multicast group address range 232/8 has been designated for source-specific [SSM] applications and protocols [IANA] and SHOULD support source-only trees only, precluding the requirement of an RP and a shared tree; active sources in the 232/8 range will be discovered out of band. PIM Sparse Mode Designated Routers (DR), with local membership, are capable of joining the shortest path tree for the source directly using Source-Specific PIM [SSM].

Operational best common practices in the 232/8 group address range are necessary to ensure shortest path source-only trees across multiple domains in the Internet [SSM], and to prevent data from sources sending to groups in the 232/8 range from arriving via shared trees. This avoids unwanted data arrival, and allows several sources to use the same group address without conflict at the receivers.

The operational practices SHOULD

- Prevent local sources from sending to shared tree
- Prevent remote sources from being learned/joined via MSDP [MSDP]
- Prevent receivers from joining the shared tree

o Prevent RP's as candidates for 232/8

5. Operational practices in 232/8

5.1. Preventing local sources from sending to shared tree

Eliminating the use of shared trees for groups in 232/8, while maintaining coexistence with PIM-SM, behavior of the RP and/or the DR needs to be modified. This can be accomplished by

- preventing data for 232/8 groups from being sent encapsulated to the RP by the DR

- preventing the RP from accepting registers for 232/8 groups from the DR

- preventing the RP from forwarding accepted data down (*,G) tree

5.2. Preventing remote sources from being learned/joined via MSDP

PIM-SS does not require active source announcements via MSDP. All source announcements are received out of band, the the last hop router is responsible for sending (S,G) joins directly to the source. To prevent propagation of SAs in the 232/8 range, an RP SHOULD

- never originate an SA for any 232/8 groups

- never accept or forward an SA for any 232/8 groups.

5.3. Preventing receivers from joining the shared tree

Local PIM domain practices need to be enforced to prevent local receivers from joining the shared tree for 232/8 groups. This can be accomplished by

- preventing DR from sending (*,G) joins

- preventing RP from accepting (*,G) join

Within a local PIM domain, any last-hop router NOT preventing (*,G) joins MAY trigger (*,G) state toward the RP which intersects an existing (S,G) tree, allowing the receiver on the shared tree to

receive the data. So if the last-hop routers are not preventing (*,G) joins, then all routers in the domain must also prevent (*,G) joins.

5.4. Preventing RP's as candidates for 232/8

Because PIM-SS does not require an RP, all RPs SHOULD NOT offer themselves as candidates in the 232/8 range. This can be accomplished by

- preventing RP/BSR from announcing in the 232/8 range
- preventing DRs from accepting delegations in this range
- precluding RP functionality on RP for the 232/8 range

6. References

[IANA] http://www.iana.org

[SSM] Holbrook, H., Cain, B., "Source-Specific Multicast", draft-ietf-ssm-arch-01.txt, November, 2002.

[RFC2119] S. Bradner, "Key words for use in RFCs to Indicate Requirement Levels", RFC 2119, March, 1997.

[RFC2362] D. Estrin, et. al., "Protocol Independent Multicast-Sparse Mode (PIM-SM): Protocol Specification", RFC 2362, June, 1998.

[MSDP] D. Meyer and Bill Fenner (Editors), "The Multicast Source Discovery Protocol (MSDP)", draft-ietf-msdp-spec-14.txt, November 2002.

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