Prefix Unreachable Announcement

draft-wang-lsr-prefix-unreachable-announcement-10

A. Wang (China Telecom)
   G. Mishra (Verizon)
   Z. Hu (Huawei Technologies)
   Y. Xiao (Huawei Technologies)

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History of Proposed Solution

- Proposed first on Oct, 2019.
- Initial Presentation on IETF 106 (Nov. 2019), Singapore.
- Also in IETF 108, IETF110, IETF111
- Several rounds intense discussion on LSR list:
  - Control Plane / Data Plane
  - Covered Use cases / BGP / Tunnel / SRv6 etc.
  - Alternate Solutions: BGP / PULSE / NLP (Node Live Protocol) / DROID / UPA
- Solution Converging:
  - PUA(M) / UPA
Updated Contents

• Describe briefly the applied scenarios (well-known):
  – BGP Services/LDP inter-area extension (PE interested)
  – Tunnel Services (P/PE interested)
  – SRv6 services (P/PE interested)

• Root Cause of the Proposed Solution:
  – Summary Address advertisement hide the unreachability of its covered prefixes.
  – Services need to know the unreachability of these prefixes to switchover promptly to other alternative endpoints

• Need to confine the negative advertisements to avoid IGP flooding churns.
Updated Solutions(1/2)

✓ PUA(M) message declare *explicitly* the associated prefixes is unreachable
  
  • Set its “Prefix Originator” to NULL(0.0.0.0)
  
  • Also set the associated metric to LSInfinity, prevent the unsupported nodes from misbehavior(bypass the LSA according to RFC2328 etc.)
  
  • If all nodes support the PUA(M) Capabilities, LSInfinity is unnecessary.

OSPF Prefix Unreachable Scenario (Node Failure)
If only some of the ABR can't reach the mentioned prefixes:
  • The ABR that can reach the prefixes should advertise one specific route to the mentioned prefixes.

Service switchover takes place only when all the ABRs advertise the same PUA(M) message.
Implementation Consideration

- Considering the balance of reachable information and unreachable information announcement capabilities, the implementation of this mechanism should set one MAX_Address_Announcement (MAA) threshold to control the advertisement of PUA and summary address.
  - If the number of unreachable prefixes is less than MAA, the ABR should advertise the summary address and the PUA.
  - If the number of reachable addresses is less than MAA, the ABR should advertise the detail reachable address only.
  - If the number of reachable prefixes and unreachable prefixes exceed MAA, then advertise the MAA unreachable prefixes, and also the summary address with MAX(LSInfinity-1) metric. At the same time, the ABR should notify the operators there are severe incident occurs within the network.
Further Action

• Comments?
• Adopt as WG document?
• Co-Authors are welcome!

wangaj3@chinatelecom.cn
gyan.s.mishra@verizon.com
huzhibo@huawei.com
xiaoyaqun@Huawei.com

IETF114@Online(Virtual)