Prefix Unreachable Announcement

draft-wang-lsr-prefix-unreachable-annoucement-10

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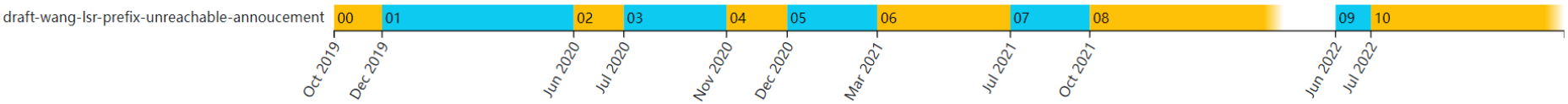
History of Proposed Solution



- 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

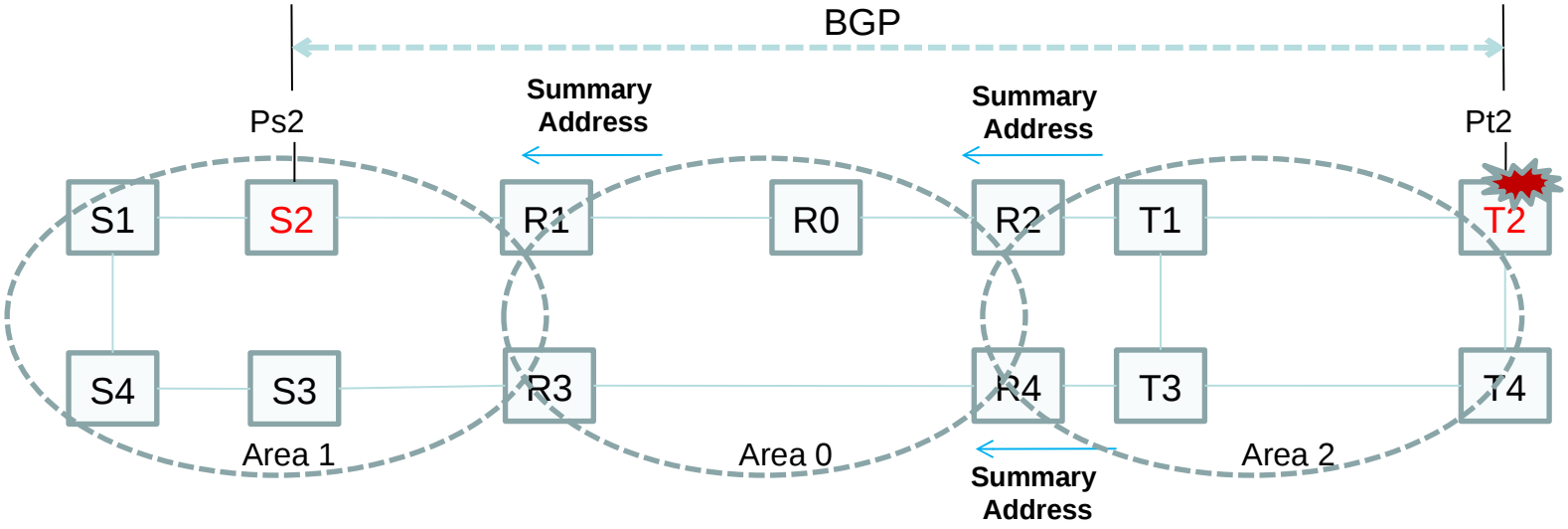
Updated Contents

- 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)

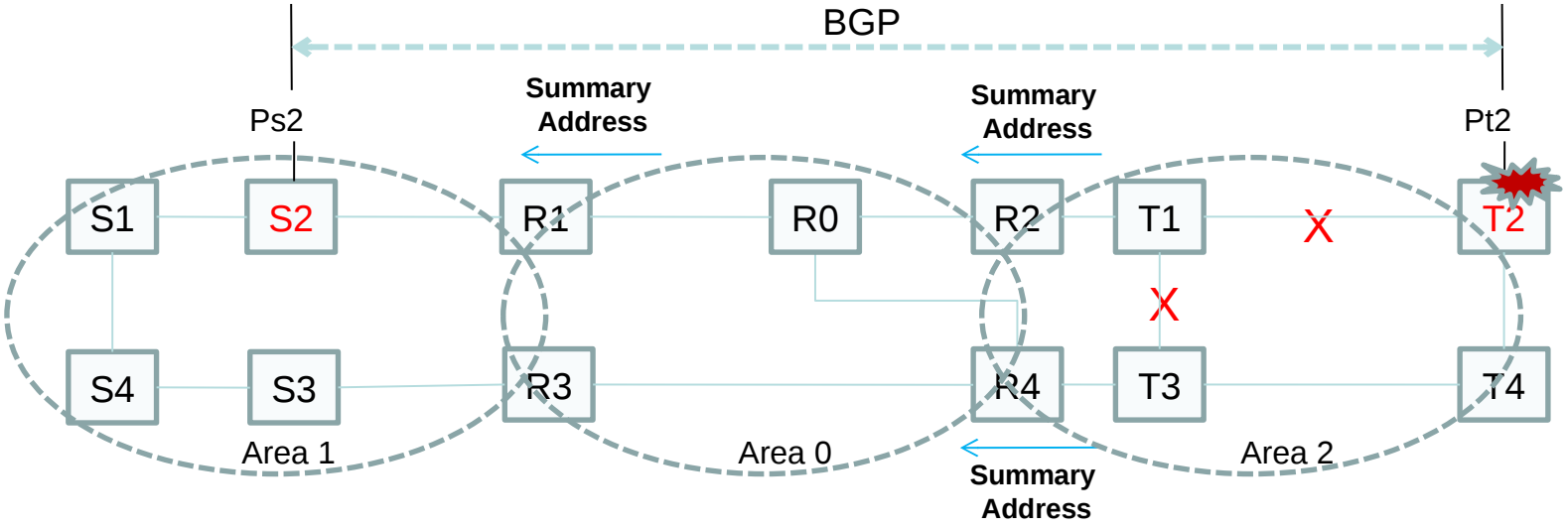
- ✓ PUA(M) message declare explicitly the associated prefixes is unreachable
  - Set its “Prefix Originator” to NULL(0.0.0.0)
  - Also set the associated metric to LSInfinity, prevent the unsupported nodes from misbehavior(bypass the LSA according to RFC2328 etc.)
  - If all nodes support the PUA(M)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



OSPF Prefix Unreachable Scenario (Node Failure)

Updated Solutions(2/2)

- ✓ 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 address 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(LSInfiity-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!

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