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draft-wijnands-rtgwg-mcast-frr-tn-01

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What is the goal of TN

- A generic mechanism for a MoFRR router to detect a Tree failure.
- Independent of traffic rate.
- Implementable on any router platforms.
- Must be much faster then IGP convergence.
- Optional feature to optimize bandwidth usage on the MoFRR backup path.

What is Tree Notification (previous -00)

- An Tree Notification Packet is sent down the tree to indicate the upstream path is broken.
- A Tree notification Packet is sent up the tree to enable forwarding.
  - This is optional to avoid bandwidth use on the MoFRR backup path.
- A combination of both can be used.
- TN packets are forwarded using the multicast tree itself as real data.

This has been changed

What is the challenge with Tree Notification

- It appeared to be painful to intercept the TN packet on the tree when sent inline with the data packets.
- For MPLS needed a Router Alert label to be added to the packet in order to intercept. Each router along the path needs to intercept and forward. This would be slow.
- Similar scalability concerns with IP forwarding.
- Its only the Repair Node router that needs to consume the packet and potentially forward if it can’t repair.

New Tree Notification mechanism

- A Repair Node knows it's the Repair node when it joins the tree via two different upstream neighbors.
- A candidate Repair Node advertises it self to its upstream neighbors on the tree.
  - mLDP via a new Status TLV in the Label Mappings.
  - PIM via a new Attribute in the PIM Joins.
- Each node on the tree learns its downstream repair node.
- When a node on the tree detects a failure, it sends the TN via unicast to the Repair Node directly!
- The TN packet has the identifier of the upstream path that failed.
- For the rest, the same procedures apply.

Unicast Tree Notification - advantages

- Easier to intercept the TN because its targeted to the Repair node.
- We'll use a special UDP port number to identify the TN for both PIM and mLDP.
- Intermediate nodes (none Repair node) don't need to process and forward the TN packet.
- Easier to apply security to the TN packet.
- Possible to aggregate multiple TN's in a single packet. (trees that share the same Repair Node).

Unicast Tree Notification - disadvantages

- A node that detects a failure potentially needs to sent out multiple TN packets to each downstream Repair Node.
- In the -00 version the TN packet would get replicate as data while doing down the tree.
- How many TN packets need to be originated depends on where the failure happens on the tree.

Going forward

- We like to get feedback from the working group
- We’re open to co-authoring

Questions?