

PIM Router Graceful Insertion and Removal

draft-raunak-pim-gir-support-00

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Problem Overview

- Graceful Insertion and Removal (GIR) of routers is often adopted by network administrators as an alternative to ISSU/ISSD
- Today, when a multicast router goes through maintenance procedure, it leads to traffic disruption
- The goal of the draft (<https://tools.ietf.org/html/draft-raunak-pim-gir-support-00>) is to make GIR graceful so that multicast router can be isolated from the network with minimal traffic disruption
- The draft discusses various scenarios, requirements and possible solution for the same

Proposal in the draft

- As part of current GIR procedures, infinite metrics are advertised from the router undergoing GIR.
- Infinite metrics will lead to RPF change on all the PIM routers
- Multicast flows need to change the RPF in a graceful manner to have minimal or no disruption in traffic flow
- To achieve this, PIM should not change RPF immediately following unicast routing change.
- PIM should join the new path and wait for the traffic to arrive on the new path before pruning the old path.

Proposal in the draft (cont.)

- Until the packets arrive on the new path, the packets are accepted and forwarded on the old path
- The RPF failures on the new path will indicate that the flow is available on the new path, upon which the RPF for the flows will be changed from old to new. This leads to non-stop forwarding on multicast traffic.
- The above method of doing graceful RPF change is not advisable in a normal RPF change scenario because old path could be down due to link failures and the RPF change may take more time which could increase convergence time
- Hence, graceful RPF change should only be done during the GIR window

Proposal in the draft (cont.)

- All the routers in PIM domain must know that some multicast router in PIM domain is undergoing GIR and the start and end of GIR period
- To achieve this, a PIM Flooding Mechanism message (PFM) [[RFC8364](#)] TLV is originated from the router undergoing GIR
- This message is flooded periodically in the PIM domain and carries the start and end time of GIR period.
- The unicast infinite metric change from the router undergoing GIR has to be sequenced between the advertised start and end of GIR.
- Once that happens, RPF will change in a graceful manner and will have minimal or no disruption in traffic flow
- The same method as described above will be used to gracefully insert a router with no traffic disruption after system maintenance mode.