Multi-Instances ISIS Extension

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MI-ISIS
Introduction

- Allows separate ISIS instances to share nodes and links
- Allows routing and non-routing info to be conveyed and stored in separate/isolated LSDB flooding schemes
- Full Topology isolation
    - Ships in the night approach
- Mechanism used to mark packets with instance membership
    - IID TLV
    - Mark all packets: IIH, [C|P]SNP, LSP

Interoperability on LANs

- Use of dedicated per level multicast address for non-zero IID
  Prevent interoperability issues

- Hide MI-ISIS packets to non-MI capable routers

- MI routers MUST discard packets if:
  - The destination multicast address is AllL1IS or AllL2IS and the PDU contains an IID TLV with non-zero value
  - The destination multicast address is one of the two new addresses and the PDU contains an IID TLV with a zero value or has no IID TLV

Instance Identifier

- Assign to each ISIS packet an instance Identifier
  - IIHs, LSPs, SNPs
- Instance is identified through new TLV
  - IID TLV (TBA)
  - IID ==> ISIS Instance
  - IID TLV is 16-bits number
- Single IID TLV on each ISIS packet

Instance Identifier

- IID TLV allows a router to distinguish among ISIS packets when running multiple ISIS instances
  - Upon reception, packets are forwarded to the corresponding instance
  - Routers establish adjacencies if sharing same IID
- How to distinguish/discriminate among data packets once routing schemes/trees have been computed is out of the scope of this document.

MI-ISIS

- Slightly different approach than the one taken by Multi-topologies ISIS
  - No share fate other than the link
  - Separate flooding, LSDBs, Adjacency table, …

- IID TLV _must_ to be unique per ISIS packet
  - Requires packet analysis in order to enforce the rule
  - Probably more work to do prior to accept reject each packet

IID and ITID

- Before version 5:
  - If more than one IID is configured on a given link, multiple adjacencies will be established, one per instance
  - Means: more than one adjacency even on p2p links

- Version 5 introduces the capability of having multiple topologies within the same instance
  - Two levels: instance and topology
  - Separate LSDB per topology
  - Separate Update process per topology
  - ITID: Instance Topology Identifier

- Advantages: two levels of hierarchy:
  - Instance and Topology
  - Still independent flooding and LSDBs

MI-ISIS

- Version 6:
  - Re-defines ITID to 12 bits
    - Requirement: ability to map ITID to VLAN-ID

MI-ISIS

Thank You

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