Multi-Instances ISIS Extension

draft-ietf-isis-mi-06.txt

Stefano Previdi (sprevidi@cisco.com)
Les Ginsberg (ginsberg@cisco.com)
Dave Ward (wardd@cisco.com)
Mike Shand (imc.shand@googlemail.com)
Abhay Roy (akr@cisco.com)
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