ISIS Auto-Configuration

Bing Liu

@ISIS-WG, ietf88, Nov 2013
Motivation

- There might be multiple routers in one home-networks. [ietf-homenet-arch]
- Plug-N-Play is needed in homenet
- Routing protocols also need to be P-N-P
- There is already an OSPFv3-AutoConfig mechanism [ietf-ospf-ospfv3-autoconfig]
- An ISIS version also makes sense
Scope

• The scenarios are supposed to be IPv6.
• Automatic addressing is NOT in the scope of this document.
  – homenet-wg is dealing with it:
    • draft-arkko-homenet-prefix-assignment-04
    • draft-baker-homenet-prefix-assignment-01
• ISIS-AC in this document only supports routers operating:
  – in a single ISIS area
  – in a single process (instance)
  – only in level-1 operation mode
  – NOT consider multiple routing protocols interaction
• Regarding Trill-ISIS-Autoconf
  – It is a Trill-Dedicated ISIS instance
  – Could be distinguished in layer-2
  – No conflict/overlap with this draft
ISIS-AC Approaches

• Default configurations in a router
  – ISIS SHOULD be enabled on all interfaces in a router as default.
  – IS-IS interfaces MUST be auto-configured to an interface type corresponding to their layer-2 capability.
    • E.g. Ethernet
    • PPP
    • ...

ISIS-AC Approaches

• ISIS NET Generation

<table>
<thead>
<tr>
<th>Area Address</th>
<th>System ID</th>
<th>NSEL</th>
</tr>
</thead>
<tbody>
<tr>
<td>Variable length from 1-13 octets</td>
<td>6 octets</td>
<td>1 octet</td>
</tr>
</tbody>
</table>

In ISIS-AC:
– Area Address field MUST be **Zero** in 13 octets length.
– System ID field SHOULD be the **MAC address** of the ISIS enabled interface.
– NSEL MUST be **Zero**.
ISIS-AC Approaches

• ISIS NET duplication resolution
  – Since MAC addresses might duplicated, we need a NET duplication resolution mechanism.
  – Re-use the Router-Hardware-Fingerprint TLV defined in [OSPFv3-Autoconfig]

  - The contents of the hardware fingerprint should be some combination of CPU ID, or serial number(s) that provides an extremely high probability of uniqueness.
  - It MUST be based on hardware attributes that will not change across hard and soft restarts.
  - The TLV content MUST NOT use MAC address only.
  - Implementations SHOULD use other information exclude MAC address.
ISIS-AC Approaches

• Basic NET duplication resolution procedures
  – The Router-Hardware-Fingerprint TLV MUST be included in the first originated level-1 LSP by every auto-configuring routers.
  – An IS-IS auto-configuring router MUST compare a received self-originated LSP's Router-Hardware-Fingerprint TLV against its own one.
  – If the they are not equal, there is a NET duplication…
  – and the Router with the numerically smaller router hardware fingerprint MUST generate a new NET.
  – After selecting a new NET, the LSP with the prior duplicate NET MUST be purged.
  – And any IS-IS neighbor adjacencies MUST be reestablished.
Next Steps

• Complete the technical designs
  – Adjacency formation considerations
  – Detailed procedures of NET duplicated resolution
  – Other aspects from comments/ML-discussion
    (Thanks for your feedbacks in advance!)

• Solicit more review/comments

• To see if ISIS in favor of adopting such a work?
Thank you!
Your comments would be appreciated much.

leo.liubing@huawei.com
IETF88, Vancouver