VLAN registration in Shortest Path Bridging

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SPT calculating Protocols

Up to now, there are three to four protocol choices to calculate SPT, among them two protocols are MSTP alike protocol and IS-IS protocol.

- For MSTP alike protocol, it must keep the spanning trees symmetric when rooted separately on a pair of bridges. If there are N bridges in networks, every bridge must keep N states based on the different rooted spanning trees. And for MSTP, 64 STIs are trivially supported, a limitation in the scalability. Even it can be CPU and memory intensive to support more than 64 STIs, more complex.

SPT calculating protocols – Cont.

- For IS-IS protocol, by collecting the bridge network link states, computes the optimization path between the bridge nodes. There is no need to keep complicated states on the bridge, but to facilitate the MAC learning, IS-IS protocol must also be extended to keep the route symmetric during the router computing.

VLAN registration in SPB
– when using MSTP alike protocol

- VLAN registration is run on the active topology of the spanning trees as is and there are no special issues.

VLAN registration in SPB – when using IS-IS

Using IS-IS in SPB:

- RFC4205 extends IS-IS to support the link related attributes sub-TLVs, including link local/remote identifier, protection type, interface switching capabilities and shared risk group.
- The link layer neighbor discovery can be conducted through these extension sub-TLVs.
- Link State Packet (LSP) lists the node itself and the costs to neighbors.
- Broadcast LSPs to all bridges
- Store latest LSP from each bridge
- Compute Routes, use well known shortest path algorithms.

VLAN registration in SPB – when using IS-IS – Cont.

- When use IS-IS to calculate SPT, is there need to run STP?
- If no STP is needed, while there is no such “active topology” under this condition, VLAN registration can be run on every port of bridges in the network.
- To avoid the registration information indefinitely loop, TTL may be introduced such as in the Rbridge (refer to: draft-bryant-perlman-trill-pwe-encap-xx.txt)

VLAN registration in SPB – when using IS-IS - Cont

- There are two issues here:

Ø TTL initialization value set

  - u A possible solution: according to the network dimension, set a TTL initialization value. Default TTL value may be 255.

Ø TTL process in the middle bridge

  - u A possible process method: When receive the VLAN declaration message, decrease TTL value, and copy it to the correlated VLAN declaration message. When TTL <=0, then VLAN declaration will stop. In this way, VLAN registration distribution can be limited.

Thank You!