

Loops Prevention in 802.1ah Provider Backbone Bridged Network



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Background



- Loops fatally affect on Bridged Network
- Why looping in Bridged Network?
 - Theoretically, no loops in the standard-based Bridged Network
 - Usually, bug of proprietary protection protocol or miss-implementation of xSTP is cause of looping
 - Fix it!
- However, in terms of service providers, there are no perfect implementations
- To deal with unpredicted looping trouble and then achieve robust network operation, development of loops prevention mechanism is highly desired

Loops prevention with B-SA

- Looping is multiple active paths between two end stations
- In terms of 802.1ah Provider Backbone Bridges protocol architecture, an "end station" means B-MAC shim
 - It provides an MSAP which is identified by a B-MAC address
 - Thus, B-SA in B-tagged frame holds a B-MAC address that identify a B-MAC shim
- Provider Backbone Bridge which received B-tagged frame should verify B-SA
 - If it matches one of B-MAC shim addresses of that Bridge, looping is detected
 - In this case, the frame must be discarded to prevent looping
- This prevents looping when it is just formed
 - Source and end points of looping could be detected

Discussions



- Limitation:
 - This scheme perfectly detects loops through 802.1ah Provider Backbone Bridges
 - But, it can't detect loops in 802.1ad island or through only 802.1ad core Bridges
 - However, it is much better than we don't have nothing
- Implementation consideration:
 - In terms of implementation, a Provider Backbone Bridge may have multiple B-MAC shims
 - In this case, to simplify compare process, B-MAC shim addresses should be assigned from a contiguous block address
- Proposal:
 - Provider Backbone Bridges should verify B-SA value from incoming B-tagged frame for loops prevention