Edge Virtual Bridging: Some Thoughts on Discovery

Joe Pelissier
bg-pelissier-evb-discoverythoughts-0110
Introduction

- We have an active debate on whether EVB discovery should be done with LLDP only or if LLDP should be augmented with a new lightweight protocol.
- Many of these presentations on either side of the debate over-simplify what needs to happen during discovery.
  - Discovery is still quite simple, just not quite as simple as some have indicated.
- This presentation hopes to illustrate a few of the required steps.
  - What is presented is not the only possible solution, but it at least gets us to the ballpark.
MultiChannel Discovery

Is there anybody out there?

- LLDP/DCBX runs between Bridge and S_VLAN Mapping Component (SMC)
  - Bridge discovers the SMC
  - SMC discovers bridge
  - Link parameters (ETS, PFC, etc.) established

![Diagram of Physical End Station and Bridge connections]
MultiChannel Discovery
Creating Channels

- We need six channels between the bridge and the SMC
  - Maybe a 7th channel to operate as a control channel between the SMC and Bridge?
- Each channel needs to be associated with a port (A-F) on the SMC
  - This setup is done on the control channel?
MultiChannel Discovery
Discovering the Ports, VEBs and VEPAs

- Discovery of ports, VEBs, and VEPAs done on a per-channel basis
  - Separate LLDP instance per channel
- In the case of ports and VEB, as single “VPort” is created in the Bridge for each channel
- In the case of VEPA, multiple VPorts are created per channel
- Same basic principle for Port Extension, just repeat as necessary
MultiChannel Discovery
Discovering the Ports, VEBs and VEPAs

- By default, a port starts with and can have a maximum of five credits
  - This may be set as high as ten through management

- Every time an LLDP PDU is sent, a credit is consumed
  - An LLDP PDU cannot be sent without a credit
  - Not even if some local has changed

- A new credit is bestowed once per second
  - Not to exceed the maximum mentioned above
Illustrated is a nearly best-case bring up
- In this well-behaved scenario, the SMC generates four LLDP PDUs nearly immediately
- If VMs, VEPAs, and VEBs come up unsynchronized, additional PDUs are generated
- If some of these things happen to reset during the bring up process, even more PDUs are generated

We also need to consider forwarding tables and other things yet to be invented that need to be communicated
- Some of these are likely to need to occur serially

We also need to consider other things that need to be communicated
- VPort setup with VEPA
- Forwarding tables in PEs
- ACLs, security, and proprietary features

We also need to consider that we are at the genesis of this new technology
- Do we really want to be this close to a scalability limit this soon?

In effect, we only get one PDU per second
- IMHO, this is really scary
Thank you!