AVB VLAN Tagging

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Priority & VLAN tagging

Three variations on tagging:

• Untagged frame

• Priority Tagged frame (802.1p)
  – VID = 0

• Tagged frame
  – VID = 1-4094 (4095 reserved)
Real-life Bridge Experiences

• Bridges either egress ALL frames Tagged or ALL frames Untagged, nothing is egressed Priority Tagged

• In Untagged mode:
  – Strip priority tagging (goodbye to Class A/B)
  – Strip VLAN tagging

• In Tagged mode:
  – Assign Default VLAN to Priority Tagged frames
  – Add Default VLAN tag to untagged frames
AVB and Tagging

• AVB ports need to run in tagging mode
  – Must pass priority (PCP) to next station
  – 1722/1733 packets assigned to Default VID by bridge

• What defines an AVB port?
  – Use MSRP to decide?
  – Use PTP to decide?
  – Resurrect LLDP to decide?

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Quick MSRP Abstract

• Declared vs. Registered
  – Declare TO another stations
  – Register FROM another station

• MSRPDU Declared on ALL ports

• Declarations (and related Registrations) come-and-go with Talkers and Listeners changing participation
AVB Port determined via MSRP

• Concerns:
  – AVB Port boundary would be fluid
  – Legacy end-point could see packets coming in Tagged and then later Untagged if AVB boundary shrinks*
Effects Of Spanning Tree Changes

• Have the possibility of causing “fluid” AVB Port boundaries
  – STP event occurs which reroutes Tagged traffic as shown below
Conflicting Default VLANs

- Manufacturer A uses Default VID of 1 (802.1Q Table 9-2)
- Manufacturer B uses Default VID of 8

Problem:
- Priority Tagged frame enters Mfg-A bridge and comes out Tagged with VID=1
- Tagged (VID=1) frame then enters Mfg-B bridge and is dropped since it is not in VLAN 8
- Same problem in opposite direction

Unacceptable solution
- Configure bridges to recognize VLAN 1 and VLAN 8
- AVB networks no longer “just work”

- 802.1BA must say AVB Bridges shall use Default VID=1
AVB Default Tagging Rules

- **Bridge Egress**: Tag all egress traffic (VID=1) if any MSRP attributes are registered on that port and the port is asCapable, otherwise Untag all egress traffic.
  - This means the boundary is “fluid”.
  - Add asCapable (802.1AS) so we never force Tagged traffic onto a network via a buffered repeater.
- **Station Egress**: Stream traffic will be Priority Tagged. Best Effort traffic is untagged.
- **Station Ingress**: Tags stripped from incoming Best Effort traffic.