802.1Qbp – ECMP
Editor’s Notes and Issues
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Comment Resolution for D0.1 TG Ballot

- Specification Architecture
- How to Incorporate OAM
- Untagged operation (SPBM ECMP without VLANs)
- CFM model for ECMP
- Assigning BSI to ECT-Algorithm
- Consideration for Potential Future Features
- Terminology and Clarity
- Details
- Mostly Editorial or Otherwise
Specification Architecture

- ISS, parameters, and enhanced SAPs (EISS, FISS?) [47]
  - Remove flow filtering information from ISS
- How many “support for flow filtering” shims (one or two)? [19, 21]
  - One shim with clear CBP and PNP required functions
- Independent PCP/DEI processing for F-TAG and VLAN tag? [34, 60, 61]
  - Make flow filtering shim PCP/DEI processing independent
  - Assume no intervening F-TAG unaware bridge changes PCP/DEI
- Use Dynamic Filtering Entries (i.e., no new FDB entry type)? [23, 48]
  - No new filtering entry type
  - New rule for Dynamic Filtering Entry with multiple forwarding ports
How to Incorporate OAM [25, 70, 71]

Need further discussion on CFM:

- MEP location in baggy pant leg
- How to use CCM for path testing
  - Vary Flow ID with same MEP ID?
  - Vary MEP ID at single endpoint?
- CFM primitives (e.g., providing Flow ID and TTL)
- Loopback symmetry
  - Is this important enough to specify new OAM mechanism?
- Applicability of DDCFM?
  - What diagnostic tests are required?
- New CFM functions needed?
Untagged Operation [Editor’s Note]

• At the Nanjing meeting it was suggested that the untagged mode for ECMP was intended for a case in which there are no VLANs in the network (i.e., only one bridged LAN running SPBM with ECMP).
• This avoids some issues related to other bridge control protocols (e.g. MRP protocols) since the only protocols operating in the network are ISIS-SPB and LLDP.
• However, this could take us back to extending the non VLAN aware bridge form (.1D) – Is this what we want to do?
  – What is the situation with respect to incorporating 802.1D into 802.1Q?
  – Specify with or without VLAN support (e.g., MST Configuration Table)?
  – Do not specify untagged option (though the functions support it)?

Discussion suggested that what is needed is one untagged VLAN. Need text describing considerations and constraints for this case.
Assigning BSI to ECT-Algorithm [29, 30]

- All ECMP algorithms have the same unicast behavior
- Reason for choosing an ECT-Algorithm is to select multicast routing behavior
- Current approach in 28.13.10 provides selection per TLV
  - Selection covers multiple I-SIDs
  - Creates problem for identifying B-VID
  - Forces new TLV for each ECT-Algorithm choice
  - Two TLVs change if selection is changed
- Controlling amount of multicast state is a concern
  - Addressed by shared trees (allowing one group DA for all BSI endpoints)
  - Can also allow head-end replication behavior as an option (no multicast state)
- Alternate encoding for BSI to multicast behavior assignment
  - Selecting ECT-Algorithm sets the default multicast behavior
  - Extra bits in TLV can be used to override for selected BSIs when necessary
  - Two bits for mode, 4 bits for ECT tie-breaker selection
Consideration for Potential Future Features

• SPBM with ECMP could be used without PBB [13, 17, 45]*
  – Interaction/synergy between CN-TAG and F-TAG
  – Will pick a new term replacing “flow identifier” for F-TAG
• Multiple VLANs may use the same ECT Algorithm [29, 65]
  – Continue to allow multiple B-VLANs to use one ECT Algorithm
• Future filtering enhancements, e.g., source routing [24]
  – Where possible will avoid text that may require revision for future enhancements
Terminology and Clarity

- Filtering Information [8]
  - Change term, “Filtering Parameters” (other suggestions?)
- Flow Identifier [13, 17, 45]*
  - Change term: suggestions?
- F-TAG [18]
  - Keep name
- TTL [66]
  - Keep name
- Loop Mitigation [63]
  - Keep term
- Definitions or text clarity [36, 37, 38, 39, 42, 44, 56]
Details

- TTL default value [22]
- TTL expiry behavior [31, 40]
- Order of feeding data to FNV hash function [43]
- Fill out details on ECT-Algorithm multicast routing behavior [1, 26, 27, 28, 41, 72]
- Alternative for I-SID assignment to multicast treatment
- Impact on queuing [46, 62]
Mostly Editorial or Otherwise

- Editorial [2, 3, 4, 5, 6, 7, 9, 10, 11, 12, 14, 15, 20, 32, 33, 35, 49, 52, 53, 64]
- 802.1AC [16]
- 802.1aq base text [54, 55, 57, 58*]
- Dependent on other comment resolutions [50, 51, 59]
Open Questions

• Do we need an ECMP example in clause 27.18?
• TBD (depending on issue resolution and further study)
  – CFM clauses (18-22)
  – CN clauses (30-33)
  – SRP (35)