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.

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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)