802.1Qbp – ECMP Editor's Notes and Issues

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What Seems Clear

- Unicast traffic ECMP load spreading
  - Flow ID calculated at edge and placed in frame (new tag format)
  - No need for standard edge hash function
  - Forwarding based on standard hash f(Flow ID, System ID) used to select from ECMP port map
- TTL to mitigate loops due to transient state or bugs
  - All frames (unicast and multicast) carry ECMP tag w/TTL
- OAM to test ECMP forwarding

Issues to Resolve

- Frame format (new tag)
  - See bp-mackcrane-tag-format-0511.ppt
  - Untagged option (i.e., no VID in tag)
- Standard forwarding hash function
  - See [Puneet's presentation]
- Method for selection from ECMP port list (how forwarding hash is used in next hop selection)
- Multicast load spreading
  - See bp-mackcrane-multicast-spreading-0511.ppt
- OAM requirements
  - MEP per Flow ID or MEP cycling through Flow IDs?
  - Proactive or On Demand or both?
- Is there any change required to support CN?
- Is there any change required to support AVB?

Clauses that need work for 802.1Qbp

- 1, 3, 4: Overview, Definitions, Abbreviations,
- 5. Conformance
  - No change (ECMP is a new algorithm within SPBM); or do we want to explicitly address algorithm options?
- 6. Support of the MAC Service
  - Add primitive parameter(s)
  - Add shim functionality related to new parameters (new tag format); or expand 6.9 to add processing for new VLAN tag carrying ECMP info
  - Add TTL processing description

Clauses that need work for 802.1Qbp

- 8. Principles of bridge operation
  - New FDB entry type for ECMP
  - Filtering process for new FDB entry (hash-based hop selection)
- 9. Tagged frame format
  - Add description of new tag format
- 12. Management
  - Add ECMP algorithm choice(s)
  - Add/extend managed objects if new knobs are defined (not sure yet what is needed)
- 17. MIB
  - Add ECMP algorithm choice(s)

Clauses that need work for 802.1Qbp

- 27. Shortest Path Bridging (SPB)
  - Add subclause (or extend 27.17) to describe ECMP operation
  - Adjust other subclauses if necessary (not sure any others are affected)
- 28. ISIS-SPB Link State Protocol
  - Add ECMP algorithm choice (28.8)
  - Possibly define ECT Information for ECMP in SPB Instance Opaque ECT-ALGORITHM sub-TLV (not sure this is needed)
- Annex A. PICS
  - Not sure anything is needed unless we decide to explicitly address algorithm options.
- TBD (depending on issue resolution and further study)
  - CFM clauses (18-22)
  - CN clauses (30-33)
  - SRP (35)