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 $f(\text{Flow ID, System ID})$ 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)