

Link Aggregation and DCB Protocols

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Terminology

- From P802.1AX-REV
 - **Aggregation Port**: A Service Access Point (SAP) in an Aggregation System that is supported by a *single MAC entity*.
 - **Aggregator Port**: A Service Access Point (SAP) in an Aggregation System that is supported by an *Aggregator*.

Motivation

- Operation of LLDP on link aggregation was ambiguous
 - [maint-lynch-LLDP-over-LAG-0911-v1.pdf](#)
- Some issues are addressed in P802.1AX-REV
 - It is now possible to send LLDP messages to a specific aggregation port, or to the aggregator port
- Some issues remain, especially regarding protocols defined by the DCB TG

Link Aggregation and DCB Protocols

- There are a number of DCB protocols that are defined to operate on a “port”
 - LLDP: CN TLV, DCBX TLVs, CDCP TLV, EVB TLV, PE TLV
 - Non-LLDP: VDP which runs on ECP, an LLDP-like protocol
- No discussion about whether the port is an aggregation port or an aggregator port

What Remains to be Defined?

- How does the protocol operate in an environment with link aggregation?
 - e.g. operation of LLDP, ECP, etc.
 - Done. See P802.1AX-REV/D2.1, Clauses 6.1.3 and 6.2.7 😊
- For a given protocol's TLVs, what is the required or recommended behavior?
 - Operate on aggregation port only?
 - Operate on aggregator port only?
 - Operate on either?
- For operation on aggregation ports
 - TLV values should be consistent ?
 - TLV values may be different?

DCB Protocols Operation With Link Aggregation

Protocol / TLV	Standard	Aggregation (AN) / Aggregator (AR)	Discussion
LLDP / CN	802.1Qau	AN, same	
LLDP-DCBX / ETS	802.1Qaz	AN, same	Existing implementations
LLDP-DCBX / PFC	802.1Qaz	AN, same	Existing implementations
LLDP-DCBX / App Pri	802.1Qaz	AN, same	Existing implementations
LLDP / CDCP	802.1Qbg	AN, same	Does not preclude LAG of individual channels
LLDP / EVB	802.1Qbg	AN, same	All links in a LAG should have same behavior for RR
ECP / VDP	802.1Qbg	AR	VM registrations should happen only once on the aggregate
LLDP / PE	802.1BR	AR	802.1BR , Clause 8.4
ECP / PE-CSP	802.1BR	AR	802.1BR, Clause 8.4

Which Document?

- 802.1AX should specify the operation of LLDP and ECP over link aggregation
 - LLDP done, ECP covered by general protocol mux
- 802.1Q should specify which of the TLVs should be transmitted on aggregation or aggregator ports and, for those sent on aggregation ports, whether they should be identical, or may be different
 - Q-REV?

THANK YOU