

Ethernet Link Status

Pat Thaler
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Purpose

- This presentation is to fulfill my action item on link status monitoring in IEEE 802.3
- So that FCoE will have the correct references to Ethernet link state.

Structure of IEEE 802.3 PHYs

- **The structure of IEEE 802.3 PHYs varies**
 - Because of the variations over 4 decades of speed
 - Have a variety of encodings
 - Some have an auto-negotiation
 - 10 Gig may have multiple sublayers with encoding and decoding
- **Most PHYs provide a way for a PHY that detects a link failure to notify its link partner.**
 - So that both ends of the link know if the link is down.
 - All PHYs likely to be used for FCoE provide this
 - All 1 Gb/s and 10 Gb/s PHYs
 - All twisted-pair PHYs with autonegotiation
- **Because of the variations in PHYs, the indication to management that the link is up varies.**
- **The aMediaAvailable object provides a unified indication of link availability.**

aMediaAvailable

- IEEE 802.3 subclause 30.5.1.1.4
- Syntax is an enumerated variable list.
- The enumeration “available” indicates that the link is up.
- For the PHYs of interest for FCoE (1 Gig and 10 Gig PHYs), other enumerations are
 - “remote fault” indicates that there is a fault in the transmit path to the link partner
 - “not available” indicates that there is a fault in the receive path
 - “PXS link fault”, “PMD link fault”, “WIS frame loss”, “WIS signal loss”, “PCS link fault”, “excessive BER”, “DXS link fault” indicate a local fault where the reason for the local fault is known.

PHY type

- aMediaAvailable indicates that a PHY of some time is operational on the link.
- Because Ethernet ports may support multiple PHYs and not all operating speeds are desirable for FCoE operation, it may be desirable to the type of the PHY.
- aMAUType (IEEE 802.3 30.5.1.1.2) - an enumeration that indicates the current PHY type.
 - “MAU” is a historic term. In the original 802.3, the PHY was called a MAU (Media Attach Unit). The object was created when 802.3 was using “MAU”
 - Do we need to discuss which PHY types are acceptable for FCoE operation?
 - 1 Gb/s (1000BASE) and 10Gb/s (10GBASE)?
 - Some of these are EPON or WIS (Sonet) – likely to be longer round trip delay than suitable for default FC timer values.

Summary

- `aMediaAvailable` provides a consistent indication of link state
- `aMAUType` could be used to check that the PHY type is suitable.