

# FIP Interoperability

Erik Smith – EMC (E-Lab)

# Agenda



- Implementation issues
  - FIP auto-negotiation
  - Support for new FIP features
  - Clear Virtual Link
- FC-BB-5 issues
  - Virtual link re-initialization
  - MAX\_FCOE\_SIZE
  - FIP order
- New Feature request
  - ENode to ENode direct connect

## FIP auto-negotiation



- A CNA implementation has decided to send x FIP solicitations over a period of time and if there are no Advertisements from the FCF within that time they revert to pre-FIP. Unfortunately, the FCF remembers that the CNA was transmitting FIP frames and consequently drops the subsequent pre-FIP FLOGI. If the FCF transmits an Advertisement before the last solicitation, the login will succeed.
- Proposed resolution – None required. All references to pre-FIP are going to be removed in FC-BB-6.

## Support for new FIP features



- In FC-BB-5 rev 2.00, there is an optional Name\_Identifier field that falls in the critical range. FCFs that do not support rev 2.00 will not recognize the Name\_Identifier (if present) and as a result the link will not come up.
- During the last FC-BB-5 meeting the "D" bit was introduced into the "FIP FKA\_ADV\_Period descriptor" (see table 41 of FC-BB-5 rev 2.00). If this is not recognized, there is a concern that we may see some unexpected results.
- Proposed resolution – ENode and FCF developers must agree to support rev 2.00 ASAP....PLEASE!?

## Clear Virtual Link



- CNA reaction to CVL upon FCF functionality being disabled in the FCoE switch. When the CNA receives the CVL it either:
  - doesn't handle it properly (i.e. de-instantiate the Virtual Link)
  - or makes an assumption about the login state of the target (i.e. doesn't query the NS)
- Proposed resolution – All ENodes and FCFs should properly de-instantiate Virtual Links and be compliant with 09-023v2 / 09-206v4... 😊

## Virtual link re-initialization



- Several problems have been observed due to the way an ENode reacts differently to CVL and physical Link down.
- Proposed solution – In FC-BB-6, recommend the same Virtual Link instantiation process in all circumstances (i.e. power on, CVL, Link Down).

# MAX\_FCOE\_SIZE



- One of the CNA vendors was transmitting a solicitation with an incorrect MAX\_FCoE\_SIZE of 2180 bytes and one of the FCF developers stated they will discard solicitations with a MAX\_FCoE\_SIZE > 2166 bytes.
- Proposed resolution –
  - 1) Add informative text that provides an example of calculating MAX\_FCoE\_SIZE.
    - $\text{MAX\_FCoE\_SIZE} = \text{Maximum encapsulated FC Frame (2140 bytes / 2148 bytes with VFT)} + \text{FCoE PDU overhead (18 bytes)}$
    - 2158 / 2166 (with VFT)
  - 2) Add informative text that provides an example of calculating the FIP\_Pad size.
    - $\text{FIP\_Pad} = \text{MAX\_FCoE\_SIZE} - [\text{FIP descriptor length (48 bytes)} + \text{FIP PDU overhead (10 bytes)}]$
    - 2100 / 2108 (with VFT)

- An ENode implementation used the FIP Operations in an interesting order:
  - Wait for an Advertisement
  - Then transmit FIP VLAN Request using the VLAN ID specified in the Advertisement
  - Then transmit unicast Discovery Solicitation and so on...
- The problem –
  - lengthened the amount of time it took the ENode to complete Virtual Link Instantiation
  - a unique discovery process begs for an interoperability problem in later releases.
- Proposed resolution – FC-BB-6 should explicitly state a preference for the order in which the FIP operations are to be used.

**(NOTE: Changes were made in FC-BB-5 to help address this problem. Additional text to help clarify the process would be useful.)**

# ENode to ENode direct connect



- Today it is not possible to directly connect two ENodes in a back to back (no intermediate switch) configuration.
  - This is possible with FC, iSCSI, Ethernet
  - Useful for evaluation purposes
- Proposed resolution – Update FIP in FC-BB-6
  - If no Advertisements after  $2.5 * FKA\_ADV\_PERIOD$ , ENodes should be allowed to transmit a multicast Discovery Advertisement to ALL-ENODE-MACs.
  - Response could be a unicast Discovery Solicitation
  - Response to the unicast Discovery Solicitation could be a solicited unicast Discovery Advertisement
  - etc...

**EMC<sup>2</sup>**<sup>®</sup>

**where information lives<sup>®</sup>**