

SB-3 Concerns with FCoE

- **Class 2 Requirements**

- In FCoE fabrics, class 2 is not supported because ethernet switches are unaware of class 2 ACK/RJT/BSY requirements.
- SB-3 channels and control units require indication of class 2 support in the FLOGI service parameters; otherwise, channel initialization fails).
- Class 2 support is important for timely recovery of a failing link, e.g. to prevent long timeout delays when a link/port fails.
- The FIP-Keep-Alive protocol is intended to provide support in this area but it not clear that it will provide sufficient capability (as currently defined).

- **Link Incident Detection and Reporting (e.g., LIRR/RLIR)**

- Required in SB-3 environments to report link events such as loss of sync/light, NOS received, sequence timeout, and bit errors rate thresholds in paths between two SB-3 N_Ports.
- Need to be able identify failing components - critical for high Reliability and Availability, especially in large installations where automated link management/error detection is utilized.
- Do (can) ethernet switches provide any similar link event reporting capabilities?

SB-3 Concerns with FCoE (cont.)

- **Point to Point Connections**

- Support for direct point-to-point connections between two FCoE N_Ports (i.e., no intervening FC, FCF, or ethernet switches) is required.
- FC-LS defines handling of FLOGI ELS requests sent/received by direct-connected N_Ports.
- Need to define handling of FIP operations between two direct-connected FCoE N_Ports.

SB-3 Concerns with FCoE - Security attributes

The Query Security Attributes (QSA) ELS request indicates whether fabric binding and insistent domain IDs are supported throughout the fabric. SB-3 channels complete initialization only when both are supported, as defined by FC-SP:

- **Insistent Domain_ID Supported:** at a switch, the Domain_ID field shall be set to the administratively assigned Domain_ID. This feature indicates the Fabric is enforcing a policy that requires all Switches exploit the Insistent Domain_ID behavior. This may be done by the Fabric enforcing a non-NULL Switch Membership List not containing a wildcard entry, and with all Switches listed in the Switch Membership List having the Insistent Domain_ID flag set to one and the Domain_ID attribute not set to zero. A Switch using the Insistent Domain_ID behavior shall join a Fabric if its administratively assigned Domain_ID is granted during the Fabric Initialization procedure. During the Address Distribution phase the Switch shall request to the Principal Switch its administratively assigned Domain_ID in the RDI SW_ILS, and shall isolate the involved Switch Port if the Principal Switch does not grant the requested.
- **Fabric Binding:** a software enforced security feature (i.e., policy) that permits an administrator to control the fabric composition of switches by explicitly defining which switches are capable of forming a fabric. This results in an operator being able to prevent non-authorized switches access into a fabric. A non-authorized switch attempting to gain entry into a fabric becomes isolated by embedded software and is denied access of fabric resources. Fabric Binding validates that the formation of any inter-switch link between previously unconnected switches is not restricted. If the establishment of the ISL is not authorized the link is isolated and the state of the associated E_Ports is updated to reflect the Invalid Attachment (see FC-SW-4). In addition to ISL verification, Fabric Binding provides in-band propagation of fabric membership data updates to all switches within a fabric thus ensuring a consistent, unified behavior across all potential fabric access points.
- **Joining Switches:** when an inter-switch link becomes available, depending on the administration policy of the switches, the switch on either end of the fiber may verify that Fabric Binding and Insistent Domain_ID is supported and enabled on the adjacent switch using mechanisms not defined in this standard. Each switch verifies that the newly connected neighbor switch and all switches in the adjacent fabric, of which the neighbor switch is a member, are authorized to form a fabric or expand the current fabric.

SB-3 Concerns with FCoE (cont.)

- **IEEE Pause Mechanism**

- Will this actually provide the current functionality and reliability of the FC BB credit protocol?
- The concern is that there be more occurrences of dropped frames and the resulting IFCCs.
- Currently not enough information to make a judgement on this.