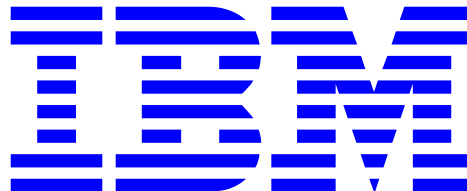To: INCITS Technical Committee T10

From: Kevin Butt

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Subject: ADC-2: NL-Port vs LN-Port

1. Revisions

1. ADI Working group suggested to use a single bit and combine the new bit with the P2P and TOPLOCK bits into a table.

2. Introduction

IBM drives have offered the ability to configure their Fibre Channel ports to autoconfigure in two different manners. The first is to use the standard LN-Port where the port attempts L-Port operation first and then if unsuccessful uses N-Port operation. The second method is to force the port to attempt to connect in N-Port first and if unsuccessful then switch to L-Port operation. IBMs legacy Library Drive Interface allowed this selection. We desire a manner in ADC to allow us to do the same.

3. Proposal

Add a topology negotiation method field to ADC-2

6.2.2.3.3 Fibre Channel descriptor parameter format

Table 39 describes the format of the descriptor parameter for Fibre Channel port types.

TABLE 38. DT device primary port descriptor format

Byte	Bit							
	7	6	5	4	3	2	1	0
0	P2P	TOPLOCK	RHA	LIV	MPN		Rsvd	PE
1	Reserved			TOPORD	SPDLOCK	SPEED		
2	Reserved							
3	Rsvd	FC-AL LOOP ID						
4	PORT NAME							
11								

A DT device receiving a MODE SELECT command (see SPC-3) for an enabled DT device primary port, where the command attempts to change the value of the MPN field, LIV bit, RHA bit, TOPLOCK bit, P2P bit, TOPORD bit, SPEED field, SPDLOCK bit, FC-AL LOOP ID field, or PORT NAME field, shall return CHECK CONDITION status with the sense key set to ILLEGAL REQUEST and the additional sense code set to INVALID FIELD IN PARAMETER LIST. If the DT device primary port is disabled, then the DT device may change the MPN field, LIV bit, RHA bit, TOPLOCK bit, P2P bit, SPEED field, SPDLOCK bit, FC-AL LOOP ID field, or PORT NAME field and enable the DT device primary port with the same MODE SELECT command.

A port enable (PE) bit set to one enables the DT device primary port (see 4.2.8). When the PE bit is set to zero, the DT device shall not enable the DT device primary port's drivers and the DT device primary port shall not respond to primitives (see FC-AL-2).

A topology lock (TOPLOCK) bit set to one forces the DT device primary port to operate only in the mode selected by the P2P bit. A TOPLOCK bit set to zero indicates the DT device primary port may negotiate the topology (see FC-FS). If the TOPLOCK bit is set to zero in a MODE SELECT command (see SPC-3), the P2P bit shall be ignored.

A point-to-point (P2P) bit set to one indicates the DT device primary port is configured to operate in point-to-point mode. If the P2P bit is set to one and the TOPLOCK bit is set to one, the RHA bit, LIV bit, and FC-AL LOOP ID field shall be ignored in a MODE SELECT command. A P2P bit set to zero indicates the DT device primary port is configured to operate in arbitrated loop mode.

The topology lock (TOPLOCK) bit, point-to-point (P2P) bit, and topology order (TOPORD) bit define the method by which the DT device primary port connects to the service delivery subsytem. Table a. defines how the TOPLOCK, P2P, and TOPORDER bits interact.

TABLE New-a. TOPLOCK, P2P, and TOPORDER bit meanings

TOPLOCK	P2P	TOPORD	Description
0	0	0	Vendor-specific behavior for negotiating topology
0	0	1	Port attempts to negotiate operation in FC-AL topology first. If unsuccessful then negotiates operation in point-to-point mode.
0	1	0	Port attempts to negotiate operation in point-to-point mode first. If unsuccessful then negotiates to FC-AL topology.
0	1	1	Reserved
1	0	x	The DT device primary port is configured to operate in arbitrated loop mode.
1	1	x	The DT device primary port is configured to operate in point-to-point mode and the RHA bit, LIV bit, and FC-AL LOOP ID field shall be ignored in a MODE SELECT command.

The SPEED field indicates the bit rate (see table 42) in which the DT device primary port is configured to operate.