

FIP Clear Virtual Link Reason Codes

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Problem



- When a FIP Clear Virtual Link (CVL) is received by an ENode, there is no mechanism to directly determine why the CVL was transmitted.
- This causes a problem during trace analysis

CVL (Timeout)



- Case 1 - A timeout due to missing VN_Port FIP Keep Alive frames
 - $2.5 * FKA_VN_PERIOD = 225$ seconds by default
- Case 2 - A timeout due to missing ENode FIP Keep Alive frames
 - $2.5 * FKA_ADV_PERIOD = 20$ seconds by default
- In the case of the missing VN_Port FIP Keep Alive frames
 - it is usually impossible to go backward in the trace 225 seconds when any kind of I/O is running since the buffer will wrap
 - As a result it is usually impossible to determine if this is the reason for the CVL
 - One could infer the reason for the CVL based on its contents, but this could potentially require additional knowledge about the environment that would also not be present in the trace

CVL (VF_Port offline)



- Case 1 - A configuration change is made by the Administrator
 - The user disables the VF_Port
- Case 2 - The fabric is no longer operational
 - The FCF is in AG/NPV mode and all links to the core switch are removed.

Proposed solution



- Create a new non-Critical FIP Descriptor that may be included in a FIP CVL

Proposed solution (new CVL)

Word	Bit 3	Bit 2	Bit 1	Bit 0	Bit 3	Bit 2	Bit 1	Bit 0	Bit 3	Bit 2	Bit 1	Bit 0	Bit 3	Bit 2	Bit 1	Bit 0	Bit 3	Bit 2	Bit 1	Bit 0	Bit 3	Bit 2	Bit 1	Bit 0	Bit 3	Bit 2	Bit 1	Bit 0
6	FIP Operation code = 0003h												R				FIP subcode = 02h											
7	FIP descriptor List Length = 0Ch												F	S	Reserved								R	A	S	F		
8	Type = 02h				Length = 02h				(MSB)																			
9	MAC Address												(LSB)															
10	Type = 04h				Length = 03h				Reserved																			
11	(MSB)												Name_Identifier															
12	(MSB)												(LSB)															
13	Type = 0Bh				Length = 05h				(MSB)																			
14	MAC Address												(LSB)															
15	Reserved				(MSB)				Address Identifier				(LSB)															
16	(MSB)												Port_Name															
17	(MSB)												(LSB)															
18	Type = 80h				Length = 02h				Reserved																			
19	Reserved				Reason Code				Reason Code Explanation				Vendor Specific															
20	FCS																											

• New non-critical FIP Descriptor

- Clear Virtual Link Reason code (CVLRC) = 128/80h
- Shall be the final FIP Descriptor in the CVL
- A CVL shall only contain a single CVLRC Descriptor

New FIP Descriptor Reason Codes



Table 49 (new) – Reason Codes

Encoded Value (bits 23-16)	Description
00h	Timeout
01h	Vx Port State Change

New FIP Descriptor Reason Code Explanations



Table 50 (new) – Reason Code Explanations

Encoded Value (bits 15-8)	Description
00h	No additional explanation
01h	ENode FIP Keep Alive Timeout
02h	VN Port FIP Keep Alive Timeout
03h	Configuration Change
04h	Fabric Offline

New FIP Descriptor Reason Code Explanations

Table 51 (new) – Examples

Encoded Value (bits 23-16)	Encoded Value (bits 15-8)	Explanation
00h	01h	2.5 * FKA_ADV_PERIOD has passed since the last ENode FIP Keep Alive Frame was received by the FCF.
00h	02h	2.5 * FKA_VN_PERIOD has passed since the last VN_Port FIP Keep Alive Frame was received by the FCF.
01h	03h	A configuration change has been performed on the FCF that requires the Virtual Link to be deinstantiated.
01h	04h	The Fibre Channel Functionality within the FCF has been disabled or is not longer accessible.

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