



Brocade® Fabric OS® portlogdump Reference Manual, 9.1.x

**Technical Reference Manual
15 December 2021**

Table of Contents

Introduction.....	6
Supported Hardware.....	6
CLI Usage Conventions.....	6
Contacting Technical Support for Your Brocade® Product.....	7
Document Feedback.....	7
Understanding the portLogDump Command.....	8
The portLogDump Command.....	8
Reading portLogDump Output.....	8
time.....	8
task.....	9
event.....	9
port.....	9
cmd.....	9
args.....	9
Using and Customizing the portLogDump Output.....	10
Related Commands.....	10
Displaying and Customizing the portLogDump Output.....	11
Locating Information by Task.....	12
Example portLogDump Output.....	15
Port Going Offline.....	15
E_Port Going Online.....	15
F_Port Going Online.....	16
Troubleshooting Using the Port Logs.....	19
portLogDump Fields.....	19
task.....	19
event.....	20
port.....	22
cmd.....	22
args.....	23
FC-PH Frames.....	23
FC-PH Frame Definitions.....	24
Routing Control (R_CTL).....	24
Destination ID (D_ID).....	26
Class-Specific Field Control (CS_CTL).....	26
Source ID (S_ID).....	27
Frame Control (F_CTL).....	27

Sequence ID (SEQ_ID).....	28
Data Field Control (DF_CTL).....	28
Sequence Count (SEQ_CNT).....	29
Originator ID (OX_ID).....	29
Responder ID (RX_ID).....	29
Data Field/Payload.....	29
Type Code.....	29
State Change Notifications.....	31
Reading an SCN Event.....	31
SCN Codes.....	31
Internal SCN Subtype.....	33
Internal SCN RSCN Subtypes.....	36
Internal SCN GBIC States.....	36
Internal SCN Update States.....	36
Internal SCN Fabric States.....	37
Internal SCN Diag States.....	37
Internal SCN SEC States.....	37
Internal SCN CER States.....	38
Internal SCN MMI States.....	38
Internal SCN Slot States.....	38
Internal SCN ENV States.....	39
Internal SCN Switch States.....	39
Internal SCN HA States.....	40
Internal SCN Zone States.....	41
Internal SCN FCP States.....	41
Internal SCN Port States.....	41
Internal SCN LE Port States.....	43
Internal SCN GE Port States.....	43
Internal SCN Blade States.....	43
Loop State Change Notification Reason Codes for LIP.....	44
Speed Negotiation.....	45
I/O Control (IOCTL).....	45
Extended Link Service (ELS).....	55
ELS Command Codes.....	55
ELS Example 1.....	58
ELS Example 2.....	58
Switch Fabric Internal Link Services (SW_ILS).....	58
Brocade-Specific SW_ILS Command Codes.....	58
SW_ILS Reject Reason Codes (SW_RJT).....	60
SW_ILS Examples.....	62

Hello Frame Example.....	62
Trunking Frame Example.....	63
NSD Example.....	64
Zoning Codes (NZ).....	64
Zone Example.....	69
Fabric OS State Synchronization (FSS).....	71
FSS Messages.....	71
FSSk Service Identification.....	73
FSSk Component Identification.....	73
Reading FSSk Output in the portlogdump Output.....	74
ISL Values and Parameters.....	75
ISL Flow Control Mode Values.....	75
ISL Flow Control Parameters.....	75
Switch_Priority Field Values.....	75
Fibre Channel Common Transport Protocol (FC-CT).....	75
Name Server (SNS).....	76
Name Server Commands and Code Descriptions.....	76
FC-CT Response Commands.....	78
FC-CT Reject Reason Codes (RJT).....	78
FC-CT Reason Code Explanations (NS_RJT).....	79
Fabric Internal FC-CT Commands.....	79
Name Server Request Types.....	80
Name Server Objects.....	80
Name Server Port Types.....	81
FC-4 Type Codes.....	81
Server-to-Server Protocol Data Unit Command/Response Codes.....	82
NSS_CT Command/Response Codes.....	82
Management Server.....	82
Fabric Configuration Server.....	83
Fabric Configuration Server Codes.....	83
Management Server Response Codes.....	83
Management Server Command Codes.....	83
Management Server Reason Codes and Explanations.....	91
Fabric Zone Server (ZS).....	93
Fabric Zone Server (ZS) Codes.....	94
Target Driven Peer Zone Request Codes.....	98
Host Bus Adapter Management Server.....	103
Host Bus Adapter Management Server Codes.....	104
Decoding Host Bus Adapter Management Server Requests and Responses.....	105
Application Server.....	109

Application Server Codes.....	109
Decoding Application Server Requests and Responses.....	110
Alias Service Request Codes (FC-GS-1).....	116
Decoding a ctin Event.....	116
Decoding a ctout Event.....	117
Fibre Channel Protocol Information.....	119
Well-Known Ordered Sets.....	119
Point-to-Point Link: Primitive Signals.....	119
Point-to-Point Link: Primitive Sequences.....	119
Port State Machine Values (pstate).....	120
Well-Known Addresses.....	120
Revision History.....	122
Copyright Statement.....	123

Introduction

This *Brocade® Fabric OS® portlogdump Reference Manual* details the options displayed in the `portlogdump` command output and how it helps to troubleshoot fabric issues.

Supported Hardware

The following hardware platforms are supported by Brocade® Fabric OS® 9.1.x.

Brocade Gen 7 (64G) Fixed-Port Switches

- Brocade G720 Switch
- Brocade G730 Switch

Brocade Gen 7 (64G) Directors

For ease of reference, Brocade chassis-based storage systems are standardizing on the term *director*. The legacy term *backbone* can be used interchangeably with the term *director*.

- Brocade X7-4 Director
- Brocade X7-8 Director

Brocade Gen 6 (32G) Fixed-Port Switches

- Brocade G610 Switch
- Brocade G620 Switch
- Brocade G630 Switch
- Brocade 7810 Extension Switch
- Brocade G648 Blade Server SAN I/O Module
- Brocade MXG610 Blade Server SAN I/O Module

Brocade Gen 6 (32G) Directors

- Brocade X6-4 Director
- Brocade X6-8 Director

CLI Usage Conventions

- Some Fabric OS `show` commands display certain switch or fabric components in three-digit decimal numbers, for example, 003. When you use these numeric identifiers as input to other commands, you must remove the leading zeros; otherwise the commands will fail or generate incorrect results. Adding zeros to any decimal number in command input will cause that number to be treated as an octal number.
- The entire command line (both commands and options) is case-sensitive. Selected command names and options may also support Java-style capitalization. Java-style capitalization means that although `bannershow` and `bannerShow` will both work, `BANNERSHOW` and `BannerShow` will not work. Command options, on the other hand, are strictly case-sensitive, and therefore only lower-case or Java-style capitalization can be entered depending on each option. This

means that while the `-USB` option of the `configDownload` command works, the `-usb` option will not work. Refer to the command syntax for explicit instructions on the supported capitalization for each command and its options.

- When command examples in this guide show user input enclosed in quotation marks, the quotation marks are required. Example: `zonecreate "zonename"` requires that the value for `zonename` be in quotation marks.
- Automatic page breaks in CLI command output are being phased out. Use the `more` option to display command output with page breaks: `command | more`. Do not use the `more` option in conjunction with help pages. Issuing `help command | more` displays a "no manual entry for command" message.

Contacting Technical Support for Your Brocade® Product

If you purchased Brocade® product support from a Broadcom® OEM or solution provider, contact your OEM or solution provider for all your product support needs.

- OEM and solution providers are trained and certified by Broadcom to support Brocade products.
- Broadcom provides backline support for issues that cannot be resolved by the OEM or solution provider.
- Brocade Supplemental Support augments your existing OEM support contract, providing direct access to Brocade expertise. For more information on this option, contact Broadcom or your OEM.
- For questions regarding service levels and response times, contact your OEM or solution provider.

If you purchased Brocade product support directly from Broadcom, use one of the following methods to contact the Technical Assistance Center 24x7. For product support information and the latest information on contacting the Technical Assistance Center, go to www.broadcom.com/support/fibre-channel-networking/contact-brocade-support.

Online	Telephone
For nonurgent issues, the preferred method is to log on to the Support portal at support.broadcom.com. (You must initially register to gain access to the Support portal.) Once registered, log on and then select Brocade Products. You can now navigate to the following sites: • Case Management • Software Downloads • Licensing • SAN Reports • Brocade Support Link • Training & Education	For Severity 1 (critical) issues, call Brocade Fibre Channel Networking Global Support at one of the phone numbers listed at www.broadcom.com/support/fibre-channel-networking/contact-brocade-support.

Document Feedback

Quality is our first concern. We have made every effort to ensure the accuracy and completeness of this document. However, if you find an error or an omission or if you think that a topic needs further development, we want to hear from you. Send your feedback to documentation.pdl@broadcom.com. Provide the publication title; topic heading; publication number and page number (for PDF documents); URL (for HTML documents); and as much detail as possible.

Understanding the portLogDump Command

The portLogDump Command

The `portlogdump` command output is a powerful tool that can be used to troubleshoot fabric issues. This chapter lists most of the Fibre Channel codes to decode your Fibre Channel `portlogdump` traces and Fibre Channel analyzer traces. The command also explains how to decode the Fabric OS `portlogdump` traces.

Use the `portlogdump` output to read the actions and communications within a fabric. By understanding the processes that occur in the fabric, you can locate areas that may be problematic.

This chapter assumes that you are familiar with the Fibre Channel Physical (FC-PH) frame and the `portlogdump` format and that you also understand the types of frames.

ATTENTION

Information that is contained in this chapter is subject to change without notice. In addition, undocumented messages may appear in the `portlogdump` output.

Reading portLogDump Output

The `portlogdump` command displays the port log, showing a portion of the FC-PH header (see [FC-PH Frames](#)) and the payload.

NOTE

Some Brocade hardware can divide the physical switch into virtual switches. The `portlogdump` command reports the information for only the particular virtual switch in which it is used.

Because the `portlogdump` output is long, a truncated example is presented.

```
sw0:admin> portlogdump
time          task          event    port cmd  args
-----
Wed Sep 22 10:02:31 2021
00:58:46.432 PORT          scn       8      6  00000000,00000000,00000001
00:58:46.513 PORT          debug     64      0  00000000,abcdcdcb,00000002,00000401
00:58:45.933 PORT          scn       0     22  00010002,43020001,00000001
00:58:56.132 PORT          scn      64      0  c70e74e0,c7059410,00000800
00:31:50.510 SPEE          sn        3     WS  00000000,00000000,00000000      * 2
<output truncated>
```

This primary example is broken down by line and is defined by information unit in the following examples.

time

The `time` field displays the event day, date, and time in 24-hour clock format (to the millisecond level).

```
sw0:admin> portlogdump
time          task          event    port cmd  args
-----
Wed Sep 22 10:02:31 2021
00:58:46.513 PORT          debug     64      0  00000000,abcdcdcb,00000002,00000401
```

task

The `task` field displays the task that was in progress when the event occurred. See [task](#) for more information.

```
sw0:admin> portlogdump
time          task          event    port cmd  args
-----
Wed Sep 22 10:02:31 2021
00:58:46.513 PORT          debug    64      00000000,abcddcba,00000002,00000401
```

event

The `event` field displays the specific action that is described in the output. See [event](#) for more information.

NOTE

The `debug` event is suppressed from the port log by default. You must enable it using the `configure` command.

```
sw0:admin> portlogdump
time          task          event    port cmd  args
-----
Wed Sep 22 10:02:31 2021
00:58:46.513 PORT          debug    64      00000000,abcddcba,00000002,00000401
```

port

The `port` field indicates a physical port number or logical port number.

```
sw0:admin> portlogdump
time          task          event    port cmd  args
-----
Wed Sep 22 10:02:31 2021
00:58:46.513 PORT          debug    64      00000000,abcddcba,00000002,00000401
```

cmd

The `cmd` field displays the commands that are associated with each event category. See [cmd](#) for more information.

```
sw0:admin> portlogdump
time          task          event    port cmd  args
-----
Wed Sep 22 10:02:31 2021
00:48:11.474 PORT          scn      19    11 00000000,00000000,00010000
```

args

The `args` field indicates arguments that are associated with a task or event. See [args](#) for more information.

```

sw0:admin> portlogdump
time          task          event    port cmd  args
-----
Wed Sep 22 10:02:31 2021
00:58:46.513 PORT          debug    64      00000000,abcdcdca,00000002,00000401

```

Using and Customizing the portLogDump Output

There are several commands that can be used to view certain aspects of the `portlogdump` output (such as a list of possible events) and to customize the output of the `portlogdump` command.

Refer to the *Brocade Fabric OS Command Reference Manual* for more detailed command information.

Related Commands

The following table displays commands that are related to `portlogdump`.

Table 1: portlogdump-Related Commands

Command	Action
<code>portlogclear</code>	Clears the port log of all entries. You may want to clear the port log before triggering an activity so that the log displays only the entries that are related to that activity.
<code>portlogconfigshow</code>	Displays the current port log configuration.
<code>portlogdump [count, [saved]]</code>	Displays the port log, listing all entries in the log without page breaks. This command displays the same information as <code>portlogshow</code> , but <code>portlogshow</code> prompts you to type a return between each page of output. The <code>count</code> option controls the number of entries that display. The <code>saved</code> option (when set to 1) causes the command to display the port log saved in flash memory (due to a previous switch fault).
<code>portlogdumpport <port_index></code>	Displays the port log of the specified port by its port index number. The command displays all entries in the log without page breaks. It is identical to <code>portlogshow portid</code> , except that <code>portlogshow portid</code> prompts the user to type a return between each page of output.
<code>portlogeventshow</code>	Displays the ID associated with the event. You can use this ID to enable or disable an event and prevent it from appearing in the <code>portlogdump</code> output. Also, this command shows the current enabled state for each event.
<code>portlogresize <num_entries></code>	Resizes the number of port log entries.
<code>portlogshow [count, [saved]]</code>	Displays the port log. This command displays one page of output at a time. The <code>portlogshow</code> command displays the same information as <code>portlogdump</code> , but it prompts you to type a return between each page of output. The <code>count</code> option controls the number of entries that display. The <code>saved</code> option (when set to 1) causes the command to display the port log saved in flash memory (due to a previous switch fault).

Command	Action
<code>portlogshowport <port_index></code>	Displays the port log of a specified port, showing one page of output at a time. It is identical to <code>portlogdump portid</code> , except that <code>portlogdump portid</code> does not prompt you to type a return between each page of output.
<code>portlogtypedisable <log_type_id></code>	Disables the port log for a specified port log type. Disabling a port log type prevents it from appearing in the <code>portlogdump</code> output, saving space for significant events.
<code>portlogtypeenable <log_type_id></code>	Enables the port log for a specified port log type. Enabling a port log type allows it to appear in the <code>portlogdump</code> output.

Displaying and Customizing the portLogDump Output

A port log event is the specific action that is being described by the output. For a complete list of possible events for your switch, see [event](#).

Use the following procedure to list port log events and find their associated ID numbers.

1. Connect to the switch as the administrator.
2. Enter the `portlogeventshow` command.

The left column displays the ID associated with the event. The number can be used to enable or disable a particular event; disabling an event prevents it from appearing in the `portlogdump` output.

The middle column displays the event names.

The right column displays the enabled or disabled status of the event (0 = Enabled, 1 = Disabled). A disabled event does not appear in the `portlogdump` output.

NOTE

Broadcom does not recommend that you customize the `portlogdump` output unless directed to do so by technical support.

3. Enter one of the following commands:
 - `portlogtypeenable <ID>`: To enable a particular event in the `portlogdump` output. <ID> is the ID number that is gathered in the previous step.
 - `portlogtypedisable <ID>`: To disable a particular event in the `portlogdump` output. <ID> is the ID number that is gathered in the previous step.

In the following example, the "start" event is disabled. It will not appear in the `portlogdump` output.

```
switch:admin> portlogeventshow
ID      Event-Name      Disabled
-----
1       start          1
2       disable        0
3       enable         0
4       ioctl          0
5       Tx             0
6       Tx1            0
7       Tx2            0
8       Tx3            0
9       Rx             0
10      Rx1            0
```

11	Rx2	0
12	Rx3	0
13	stats	0
14	scn	0
15	pstate	0
16	reject	0
17	busy	0
18	ctin	0
19	ctout	0
20	errlog	0
21	loopscn	0
22	create	0
23	debug	1
24	nbrfsm	0
25	timer	0
26	sn	0
27	fcin	0
28	fcout	0
29	read	0
30	write	0
31	err	0
32	frame	0
33	msRemQ	0
34	msRemR	0
35	nsRemQ	0
36	nsRemR	0
37	rscn	0
38	state	0
39	xalloc	0
40	xfree	0
41	xerr	0
42	xstate	0
43	seq	0
44	seqst	0
45	iu	0
46	payload	0
47	zone	0
48	cmd	0
49	event	0
50	msg	0
51	switch	0
52	ficonq	0
53	routing	0
54	fdRemQ	0
55	fdRemR	0

switch:admin> portlogtypedisable 1

Locating Information by Task

The following table is an information map and displays where to locate specific portlogdump information.

Table 2: portlogdump Information Mapping

Task	Event	Port	Command	Argument	Reference
PORT	ioctl	port#	IOCTL Code	—	See Speed Negotiation . See I/O Control (IOCTL) for a complete listing of the SCN codes.
	scn	port#	SCN Code	—	See SCN Codes .
	Tx ()	port#	Size of the payload in bytes	—	—
	Rx ()	port#	Size of the payload in bytes	The arguments for these frames are word 0, word 1, and word 4 of the frame header and word 0 of the frame payload.	If the ELS is R_CTL=0x22 or 0x23, see I/O Control (IOCTL) . If the FC-CT is R_CTL=0x02 or 0x03, see FC-CT reason code explanation (NS_RJT) . If the SW_ILS is R_CTL=0x02 or 0x03, see Switch Fabric Internal Link Services (SW_ILS) .
INTR	PS (primitive sequence) pstate	port#	State Machine Value	—	Standard protocol format. Visit http://www.t11.org .
SPEED	sn	port#	WS	Speed negotiation event, 00000000, 00000000	See Speed negotiation . See Loop State Change Notification reason codes for LIP for a complete listing of the SCN codes.
LOOP	loopscn	port#	Loopscan code - Brocade ASIC LOOP Code cmd column	Brocade ASIC LOOP Code	Loop State Change Notification reason codes for LIP
nsd	ctin	port#	Last byte of the Well-Known Address (WKA)	FC-CT's payload	Fibre Channel Common Transport protocol (FC-CT)
	ctout	port#	Last byte of WKA	FC-CT's payload	

Task	Event	Port	Command	Argument	Reference
	rscn	0	Bytes 0-2 of Word 0 of the header (the DID of the frame), which is the domain controller.	The arguments are: - Word 1 of the frame header (the SID is a domain controller). - The SW_ILS Code (0x1b000000 or 0x1f). - The high-order nibble of the highest-order byte is the RSCN information; the low-order nibble of that byte is the address format; the lower three bytes are the 24-bit address. - The detection method.	I/O Control (IOCTL) . See Loop State Change Notification reason codes for LIP for a complete listing of the SCN codes.
	Rscn	0	Word 0 = 24-bit address is the DID that the RSCN is accessing.	The arguments are: - Word 1 of the frame header (the SID is the fabric controller, fffffd). - Word 0 of the frame payload with the high-order byte being 0x61 (ELS RSCN). The next byte is the page length and is 0x04. The two low-order bytes are the payload length (min 8, max 1024). - The lowest three bytes are the 24-bit address of the changed device.	—
	nsRemQ	0: First nibble NS cmd code	Last three nibbles: Name Server cmd code. For Fabric internal FC-CT, see the cmd codes in Fabric internal FC-CT commands .	D_ID, S_ID. For the Name Server port type, see Name Server port type .	Fibre Channel Common Transport protocol (FC-CT)
	nsRemR	port#	See the Name Server cmd Code in Name Server commands and code descriptions .	D_ID, S_ID. Additional information command code.	—
msd	ctin	port#	Last byte of the WKA	FC-CT payload	Fibre Channel Common Transport protocol (FC-CT)
	ctout	port#	Last byte of the WKA	FC-CT payload	Fibre Channel Common Transport protocol (FC-CT)
apps	ctin	port#	Last byte of the WKA	FC-CT payload	Fibre Channel Common Transport protocol (FC-CT)
	ctout	port#	Last byte of the WKA	FC-CT payload	Fibre Channel Common Transport protocol (FC-CT)
fdmi	ctin	port#	Last byte of the WKA	FC-CT payload	Fibre Channel Common Transport protocol (FC-CT)

Task	Event	Port	Command	Argument	Reference
	ctout	port#	Last byte of the WKA	FC-CT payload	Fibre Channel Common Transport protocol (FC-CT)
ficu	ctin	port#	Word 0 = byte 3 is the DIB type. byte 4 is the last function (CCW, status type).	See Decoding a ctin Event and .	—
	ctout	port#			
asd	ctout	port#	Last byte of the WKA	FC-CT payload	Fibre Channel Common Transport protocol (FC-CT)
FSS	msg	N/A	—	Service ID, component ID, send and receive data, optional flags, additional text description.	FSS messages
	cmd	N/A	—	—	
	event	N/A	—	—	

Example portLogDump Output

The following examples show output for the `portlogdump` command in different scenarios. See the previous table ([portlogdump Information Mapping](#)) to interpret the command output.

Port Going Offline

```

22:18:08.423 INTR      pstate 177  OL1
22:18:08.425 PORT      scn    177  22  00010004,43620800,00000001
22:18:08.425 PORT      scn    177  2   861b7670,000000b1,00000002
22:18:08.425 PORT      scn    177  2   861b7670,000000b1,00000080
22:18:08.425 PORT      scn    177  5   00000000,00000000,00000002
22:18:08.425 PORT      scn    177  1   00010004,43620800,00000002
22:18:08.425 PORT      scn    177  22  00010004,43620800,00000001
22:18:08.426 PORT      ioctl1 1778010004 6b,0      * 4

```

E_Port Going Online

```

10:02:31.739 SPEE      sn      0    EE      00000018,fbad0011,00000000
10:02:31.739 PORT      scn      0    22      00010000,4302201e,00000001
10:02:31.739 PORT      scn      0    5       00000000,00000000,00000002
10:02:31.740 PORT      scn      0    1       00010000,4302201e,00000002
10:02:31.740 PORT      scn      0    22      00010000,4302201e,00000001
10:02:40.171 PORT      scn      0    1       00000000,00000000,80000000
10:02:40.442 SPEE      sn      0    EE      00000018,fbad0033,00000000
10:02:40.957 SPEE      sn      0    EE      00000017,fbad1111,00000000
10:02:40.957 SPEE      sn      0    EE      00000019,00000000,00000000
10:02:42.144 SPEE      sn      0    WS      00000000,04a30001,00000000
10:02:42.506 SPEE      sn      0    NM      00000000,00000001,00000000
10:02:42.506 SPEE      sn      0    NF      64000040,000000d0,00000000
10:02:44.932 SPEE      sn      0    EE      0000000d,0000000e,00000000
10:02:47.280 SPEE      sn      0    EE      003a0011,00009dbf,0001815e

```

10:02:47.280	SPEE	sn	0	NC	64000040,00000001,00000000
10:02:47.280	INTR	pstate	0	OL1	
10:02:47.288	INTR	pstate	0	AC	
10:02:47.293	PORT	scn	0	11	00000000,00000000,00000002
10:02:47.439	PORT	Rx	0	2048	02ffffffd,00ffffffd,61ccffff,10000000
10:02:47.439	PORT	Tx	0	0	c0ffffffd,00ffffffd,61cc4210,00000001
10:02:47.439	PORT	Rx	0	1756	02ffffffd,00ffffffd,61ccffff,00000000
10:02:47.439	PORT	Tx	0	0	c0ffffffd,00ffffffd,61cc4210,00000001
10:02:47.439	FCPH	read	0	2048	02ffffffd,00ffffffd,92000000,00000000,61cc4210
10:02:47.439	FCPH	seq	0	800	22210000,61cc4210,00000a4c,0000000c,00000000
10:02:47.571	PORT	scn	0	1	00000000,00000000,00000001

F_Port Going Online

00:42:17.599	SPEE	sn	34	WS	00000000,00000000,00000000	
00:42:17.851	SPEE	sn	34	NM	00000000,00000000,00000000	
00:42:17.851	SPEE	sn	34	NF	16000010,00000000,00000000	
00:42:17.851	SPEE	sn	34	NC	16000010,00000000,00000000	* 2
00:42:17.888	INTR	pstate	34	OL1		
00:42:17.895	INTR	pstate	34	AC		
00:42:17.901	PORT	scn	34	11	00000000,00000000,00000002	
00:42:18.049	PORT	scn	34	1	00000000,00000000,00000001	
00:42:18.049	PORT	scn	34	22	00000000,00000000,00000010	
00:42:18.052	PORT	Rx3	34	116	22ffffffe,00000000,29b3ffff,04000000	
00:42:18.052	PORT	scn	34	1	00000002,00000000,00800000	
00:42:18.052	PORT	Tx3	34	116	23000000,00ffffffe,29b373e9,02000000	
00:42:18.068	FCPH	write	34	372	00ffffffd,00ffffffd,00000000,00000000,00000000	
00:42:18.068	FCPH	seq	34	174	00210000,00000000,00000a6c,00010182,00000000	
00:42:18.068	PORT	Tx	34	372	02ffffffd,00ffffffd,73eaffff,10000000	
00:42:18.069	PORT	Rx	34	0	c0ffffffd,00ffffffd,73ea29b4,00000001	
00:42:18.069	FCPH	write	34	372	00ffffffd,00ffffffd,00000000,00000000,00000000	
00:42:18.069	FCPH	seq	34	174	00210000,00000000,00000a6c,00010182,00000000	
00:42:18.069	PORT	Tx	34	372	02ffffffd,00ffffffd,73ebffff,10000000	
00:42:18.070	PORT	Rx	34	0	c0ffffffd,00ffffffd,73eb29a4,00000001	
00:42:18.079	PORT	Rx	34	372	03ffffffd,00ffffffd,73eb29a4,02000000	
00:42:18.079	PORT	Tx	34	0	c0ffffffd,00ffffffd,73eb29a4,00000001	
00:42:18.079	FCPH	read	34	372	03ffffffd,00ffffffd,3f000000,00000000,73eb29a4	
00:42:18.079	FCPH	seq	34	174	22980000,73eb29a4,00000959,0000001c,00000000	
00:42:18.181	INTR	pstate	34	LR1		
00:42:18.181	INTR	pstate	34	AC		
00:42:18.188	PORT	scn	34	11	00000004,00000000,00000001	
00:42:18.193	PORT	Rx3	34	116	22ffffffe,00000000,29a5ffff,04000000	
00:42:18.196	PORT	scn	34	1	00000000,00000000,00000020	
00:42:18.196	PORT	scn	34	22	00000000,00000000,00000008	
00:42:18.199	PORT	Tx3	34	116	23012200,00ffffffe,29a573ec,02000000	
00:42:18.303	PORT	Rx3	34	116	22ffffffc,00012200,29b5ffff,03000000	
00:42:18.304	PORT	Tx3	34	116	23012200,00ffffffc,29b573ed,02000000	
00:42:18.305	PORT	Rx3	34	116	22fffc01,00012200,29b6ffff,03000000	
00:42:18.305	PORT	Tx3	34	116	23012200,00fffc01,29b673ee,02000000	
00:42:18.307	PORT	Rx3	34	8	22ffffffd,00012200,29b7ffff,62000000	

```

00:42:18.307 PORT      scn      34      2  00012200,0000000f,00000004
00:42:18.307 PORT      scn      34      2  00012200,0000000f,00000100
00:42:18.307 PORT      Tx3      34      4  23012200,00fffffd,29b773ef,02000000
00:42:18.309 PORT      Rx3      34     116  22ffffffa,00012200,29b8ffff,03000000
00:42:18.309 PORT      Tx3      34     116  23012200,00ffffffa,29b873f0,02000000
00:42:18.311 PORT      Rx3      34      52  02ffffffc,00012200,29b9ffff,01000000
00:42:18.311 FCPH      read     34      52  02ffffffc,00012200,45000000,00000000,29b973f1
00:42:18.311 FCPH      seq      34      34  20290000,29b973f1,0000096b,0000001c,00000000
00:42:18.311 nsd       ctin     34      fc  00030217,00012200,00000100
00:42:18.312 nsd       ctout    34      fc  00008002
00:42:18.312 FCPH      write    34      16  03012200,00ffffffc,45000000,00000000,29b973f1
00:42:18.312 FCPH      seq      34      10  20980000,29b973f1,00000a9e,0004001c,00000000
00:42:18.312 PORT      Tx3      34      16  03012200,00ffffffc,29b973f1,01000000
00:42:18.314 PORT      Rx3      34      24  02ffffffc,00012200,29baffff,01000000
00:42:18.314 FCPH      read     34      24  02ffffffc,00012200,46000000,00000000,29ba73f2
00:42:18.314 FCPH      seq      34      18  20290000,29ba73f2,0000096b,0000001c,00000000
00:42:18.314 nsd       ctin     34      fc  0003021f,00012200,00000208
00:42:18.314 nsd       ctout    34      fc  00008002
00:42:18.314 FCPH      write    34      16  03012200,00ffffffc,46000000,00000000,29ba73f2
00:42:18.314 FCPH      seq      34      10  20980000,29ba73f2,00000a9e,0004001c,00000000
00:42:18.314 PORT      Tx3      34      16  03012200,00ffffffc,29ba73f2,01000000
00:42:18.316 PORT      Rx3      34      28  02ffffffc,00012200,29bbffff,01000000
00:42:18.316 FCPH      read     34      28  02ffffffc,00012200,47000000,00000000,29bb73f3
00:42:18.316 FCPH      seq      34      1c  20290000,29bb73f3,0000096b,0000001c,00000000
00:42:18.316 nsd       ctin     34      fc  00030213,00012200,10000027
00:42:18.316 nsd       ctout    34      fc  00008002
00:42:18.316 FCPH      write    34      16  03012200,00ffffffc,47000000,00000000,29bb73f3
00:42:18.316 FCPH      seq      34      10  20980000,29bb73f3,00000a9e,0004001c,00000000
00:42:18.316 PORT      Tx3      34      16  03012200,00ffffffc,29bb73f3,01000000
00:42:18.320 PORT      Rx3      34     280  02ffffffc,00012200,29bcffff,01000000
00:42:18.320 FCPH      read     34     280  02ffffffc,00012200,48000000,00000000,29bc73f4
00:42:18.320 FCPH      seq      34     118  20290000,29bc73f4,0000096b,0000001c,00000000
00:42:18.320 nsd       ctin     34      fc  00030239,10000027,f8f02628
00:42:18.321 nsd       ctout    34      fc  00008002
00:42:18.321 FCPH      write    34      16  03012200,00ffffffc,48000000,00000000,29bc73f4
00:42:18.321 FCPH      seq      34      10  20980000,29bc73f4,00000a9e,0004001c,00000000
00:42:18.321 PORT      Tx3      34      16  03012200,00ffffffc,29bc73f4,01000000
00:42:18.322 PORT      Rx3      34     472  02ffffffa,00012200,29aaffff,01000000
00:42:18.323 FCPH      read     34     472  02ffffffa,00012200,49000000,00000000,29aa73f5
00:42:18.323 FCPH      seq      34     1d8  20290003,29aa73f5,0000095b,0000001c,00000000
00:42:18.323 fdmi      ctin     34      fa  00030200,30220027,f8f02628
00:42:18.323 PORT      scn      34      33  00000200,00000000,00000008
00:42:18.324 fdmi      ctout    34      fa  00008002
00:42:18.324 FCPH      write    34      16  03012200,00ffffffa,49000000,00000000,29aa73f5
00:42:18.324 FCPH      seq      34      10  20980003,29aa73f5,00000a92,0004001c,00000000
00:42:18.324 PORT      Tx3      34      16  03012200,00ffffffa,29aa73f5,01000000
00:42:18.325 PORT      Rx3      34     264  02ffffffa,00012200,29a9ffff,01000000
00:42:18.325 FCPH      read     34     264  02ffffffa,00012200,4a000000,00000000,29a973f6
00:42:18.325 FCPH      seq      34     108  20290003,29a973f6,0000095b,0000001c,00000000
00:42:18.326 fdmi      ctin     34      fa  00030211,30220027,f8f02628
00:42:18.326 PORT      scn      34      33  00000211,00000000,00000010
00:42:18.326 fdmi      ctout    34      fa  00008002
00:42:18.326 FCPH      write    34      16  03012200,00ffffffa,4a000000,00000000,29a973f6

```

```

00:42:18.326 FCPH      seq      34    10  20980003,29a973f6,00000a92,0004001c,00000000
00:42:18.326 PORT      Tx3      34    16  03012200,00fffffa,29a973f6,01000000
00:42:19.236 PORT      scn      34     5  00000000,00000000,00000001
00:42:19.236 FCPH      write    34   116  00012200,00fffc01,00000000,00000000,00000000
00:42:19.236 FCPH      seq      34    74  00210000,00000000,00000a7a,000101c2,00000000
00:42:19.237 PORT      Tx3      34   116  22012200,00fffc01,73f7ffff,03000000
00:42:19.238 PORT      Rx3      34   116  23fffc01,00012200,73f729bd,02000000
00:42:19.238 FCPH      read     34   116  23fffc01,00012200,4b000000,00000000,73f729bd
00:42:19.238 FCPH      seq      34    74  01980000,73f729bd,0000095a,0000001c,00000000
00:42:19.239 FCPH      write    34    20  00012200,00fffc01,00000000,00000000,00000000
00:42:19.239 FCPH      seq      34    14  00210000,00000000,00000a7a,00010182,00000000
00:42:19.239 PORT      Tx3      34    20  22012200,00fffc01,73f8ffff,20100014
00:42:19.241 PORT      Rx3      34    20  23fffc01,00012200,73f829be,02000014
00:42:19.241 FCPH      read     34    20  23fffc01,00012200,4c000000,00000000,73f829be
00:42:19.241 FCPH      seq      34    14  01980000,73f829be,0000095a,0000001c,00000000
00:42:19.241 PORT      scn      34     2  8543b6b0,ffffffff,00000001
00:42:19.241 PORT      scn      34     2  8543b6b0,ffffffff,00000040
00:42:19.241 FCPH      write    34    16  00012200,00fffc01,00000000,00000000,00000000
00:42:19.241 FCPH      seq      34    10  00210000,00000000,00000a7a,00010182,00000000
00:42:19.241 PORT      Tx3      34    16  22012200,00fffc01,73f9ffff,05000000
00:42:19.243 PORT      Rx3      34     4  23fffc01,00012200,73f929bf,02000000
00:42:19.243 FCPH      read     34     4  23fffc01,00012200,4d000000,00000000,73f929bf
00:42:19.243 FCPH      seq      34     4  01980000,73f929bf,0000095a,0000001c,00000000

```

Troubleshooting Using the Port Logs

portLogDump Fields

Each field in the `portlogdump` output displays information about a single event. The `portlogdump` command output consists of six fields:

- time
- task
- event
- port
- cmd
- args

task

The following table lists the tasks, their descriptions, and functionality.

Table 3: Task Descriptions

Task	Description	Functionality
INTR	Internal	Events associated with this task: Port State (PS) and debug.
PORT	Port kernel driver	Events associated with this task: debug, I/O control, State Change Notification, Transmit, and Receive.
SPEED	Speed	ASIC speed negotiation function; speed selection of 1, 2, 4, 8, or 16G.
FLTR	Filtering	ASIC frame filtering function; used in WWN zoning (WWN).
LOOP	Loop	ASIC loop function; it has to do with loop port initialization.
nsd	Name Server Daemon	NS daemon.
msd	Management Server Daemon	MS daemon.
asd	Alias Server Daemon	AS daemon. Events associated with this task: ctin and ctout.
fspfd	Fibre Channel Shortest Path First	Event associated with this task: neighbor state transition.
zone	Zoning	Event associated with this task: debug.
fcpd	N/A	No event is associated with this task.

Task	Description	Functionality
FSSk	Fabric OS State Synchronization	The primary function of FSS is to deliver State Update messages from ACTIVE components to their peer STANDBY components. FSS determines if fabric elements are synchronized (and thus "FSS-compliant"). Associated events are: UPCONN, DOWNCONN, COMP, INCOMP, DUMPRDY, SYNCsucc, FAILSYNC, START, STOP, RECOVFAIL, TAKE, YIELD, MISCATCH, UPDATE, ACTIVE, STANDBY, TXQHIG, RXQHIG, MISSVC, AVAILSVC, TRACE.
apps	Application Server	To manage application-specific services such as application identifiers. Events associated with this task: ctin and ctout.
fdmi	Fabric Device Management Interface	To help in the debugging of FDMI protocol issues. Events associated with this task: ctin and ctout.
ficu	FICON CUP	To help in the internal debugging of FICON protocol issues. Events associated with this task: ctin and ctout.
FCPH	Fibre Channel Protocol Handler	Highlights the fields in the frame header for read, write, and sequence events.
cald	Common Access Layer Daemon	Provides a common API for access to a FOS functionality.
essd	Exchange Service Support Daemon	Records capabilities of the switches in the fabric.

event

An event is a specific action that is described by the output. For a complete list of possible events for your switch, see the following table.

Table 4: Event Descriptions

Event	Description
start	Describes a switch start or restart event.
disable	Indicates that a port is disabled.
enable	Indicates that a port is enabled.
ioctl	Indicates that a port I/O control is executed.
Tx	Indicates that a frame is transmitted.
Tx()	Indicates that a class 1 or 2 frame is transmitted.
Tx(3)	Indicates that a class 3 frame is transmitted.
Rx	Indicates that a frame is received.

Event	Description
Rx()	Indicates that a class 1 or 2 frame is received.
Rx(3)	Indicates that a class 3 frame is received.
stats	Indicates a port status or statistic.
scn	Indicates a State Change Notification (SCN).
pstate	Indicates that a port changes physical state.
reject	Indicates that a frame is rejected.
busy	Indicates that a received frame is busy.
ctin	Indicates that a Common Transport (CT)-based request is received.
ctout	Indicates that a Common Transport (CT)-based response is transmitted.
errlog	Indicates that a message is added to the error log.
loopscn	Indicates a loop state change notification.
create	Indicates that a task is created.
debug	Indicates generic debugging information.
nbrfsm	Indicates a neighbor state transition.
timer	Indicates a timer.
sn	Indicates a speed negotiation.
fcin	Indicates FC input.
fcout	Indicates FC output.
read	Indicates an FC read event.
write	Indicates an FC write event.
err	Indicates an FC error.
frame	Indicates an FC frame payload.
nsRemQ	Indicates an interswitch NS query.
nsRemR	Indicates an interswitch NS response.
rscn	Indicates a Registered State Change Notification (RSCN).
state	Indicates an FC state.
xalloc	Indicates an alloc exchange event.
xfree	Indicates a free exchange event.
xerr	Indicates an exchange error.
xstate	Indicates an exchange state event.
seq	Indicates a sequence event.
seqst	Indicates a sequence state event.
iu	Indicates an IU event.
payload	Indicates a frame payload event.
zone	Indicates a zone request/response event.
cmd	Indicates an FSS command log event.
event	Indicates an FSS event log event.
msg	Indicates an FSS message log event.
switch	Indicates a switch driver log event.

Event	Description
ficonq	Indicates a FICON queue and ELS measurement event.
routing	Indicates a switch/blade driver's routing log event.
reconf	Indicates a fabric reconfiguration.
ps	Indicates a primitive sequence in a Fibre Channel protocol exchange.

The following example indicates an internal task (INTR); the associated event is the Port State Machine (pstate); and the `cmd` field describes the event, which is a link failure (LF2).

```
sw0:admin> portlogdump
time          task      event    port cmd  args
-----
Wed Sep 22 10:02:31 2021
00:48:11.473  INTR      pstate  19   LF2
```

port

The `port` field in the `portlogdump` output indicates a physical port number or logical port number.

```
sw0:admin> portlogdump
time          task      event    port cmd  args
-----
Wed Sep 22 10:02:31 2021
00:58:32.750  PORT      debug    64      00000000,abcdcdcb,00000002,00000401
00:58:56.132  PORT      scn      64      0 c70e74e0,c7059410,00000800
00:31:50.510  SPEE      sn       3       WS 00000000,00000000,00000000
```

cmd

The `cmd` field represents different values depending on the task and event.

A command (`cmd`) is associated with each event category. For example, in the following output, the `cmd` column represents the `scn` event. If the task is `PORT`, the `cmd` is usually the size of the payload.

```
sw0:admin> portlogdump
time          task      event    port cmd  args
-----
Wed Sep 22 10:02:31 2021
00:48:11.474  PORT      scn      19     11 00000000,00000000,00010000
```

Commands that are associated with an event category are also referred to as state events. The following table lists some of the possible commands.

Table 5: List of Possible Commands (cmd)

Command	Definition
AC	Active State
FC	Name Server (in MS)
LF1	Link Failure: NOS Transmit State
LF2	Link Failure: NOS Receive State
LIP	Loop Initialization Primitive received
LIM	FL_Port became the Loop Initialization Master
LR1	Link Reset: LR Transmit State
LR2	Link Reset: LR Receive State
LR3	Link Reset: LRR Receive State
OL1	Offline: OLS Transmit State
OL2	Offline: OLS Receive State
OL3	Offline: Wait for OLS State
OLP	Offline or Non-Participating

args

The `args` field represents different values depending on the task and event.

If there is an asterisk with a number after the `args` field, this means that there are multiple identical entries collapsed into one line. In the following example, the last line represents three identical events.

```
sw0:admin> portlogdump
time          task      event  port cmd  args
-----
Wed Sep 22 10:02:31 2021
23:55:11.439 PORT      Tx3     1   12  22000000,00000000,ffffffff,11010000
23:55:11.439 PORT      Rx3     1   12  22000000,00000000,ffffffff,11010000
23:55:11.439 PORT      Tx3     1   20  22000000,00000000,ffffffff,11020000
23:55:11.439 PORT      Rx3     1   20  22000000,00000000,ffffffff,11020000
23:55:11.439 PORT      Tx3     1   20  22000000,00000000,ffffffff,11030000
23:55:11.439 PORT      Rx3     1   20  22000000,00000000,ffffffff,11030000
23:55:11.439 PORT      Tx3     1   20  22000000,00000000,ffffffff,11040000
23:55:11.439 PORT      Rx3     1   20  22000000,00000000,ffffffff,11040000
```

FC-PH Frames

FC-PH stands for Fibre Channel payload and header frames. The header contains control and addressing information that is associated with the frame. The payload contains the information being transported by the frame and is determined by the higher-level service or FC-4 upper-level protocol. There are many different payload formats based on the protocol.

- The routing control INFO bit (bits 27–24) determines how to interpret the payload.
- The TYPE field (word 2, bits 31–24) tells which information unit (IU) format to use.

The following table describes the entire FC-PH frame.

Table 6: FC-PH Frame Diagram

4	8	Up to 2112 Bytes	4	4
S O F	HEADER	PAYLOAD	C R C	E O F

The following table cross-references the sections in this guide that discuss specific sections of the FC-PH frame.

Table 7: FC-PH Frame Cross-References

	Word	Bits 31-24	Bits 23-16	Bits 15-8	Bits 7-0	
HEADER	0	Routing Control (R_CTL)	Destination ID (D_ID)			
	1	Class-Specific Control Field (CS_CTL)	Source ID (S_ID)			
	2	Type of protocol service (such as FC-CT, FCP, FCIP, for the FC-PH frame)	Frame Control (F_CTL)			
	3	Sequence ID (SEQ_ID)	Data Field Control (DF_CTL)	Sequence Count (SEQ_CNT)		
	4	Originator ID (OX_ID)			Responder ID (RX_ID)	
	5	Parameter				
		Data Payload: 6 to 528 words				

FC-PH Frame Definitions

The following sections describe the FC-PH frame header fields.

Routing Control (R_CTL)

The Routing Control (R_CTL) is the high-order byte in word 0 of the frame header. It defines the type of the frame and its contents. The first four high-order bits (word bits 31-28) identify the frame type. The next four bits (word bits 27-24) define the contents of the frame or identify the function of the frame.

```
sw0:admin> portlogdump
time          task          event    port cmd  args
-----
Wed Sep 22 10:02:31 2021
00:46:44.044 PORT          Tx        8    40  02ffffffd,00ffffffd,027fffff,14000000
```

The following table diagrams the structure of the Routing Control bits.

Table 8: Routing Control Bits: R_CTL Diagram

R_CTL Bits	Information	Description
FC-4 Device Data x'0'	0	Uncategorized Device Data
	1	Solicited Device Data
	2	Unsolicited Control Info (Request)

R_CTL Bits	Information	Description
	3	Solicited Control Info (Reply)
	4	Unsolicited Device Data
	5	Data Descriptor
	6	Unsolicited Command
	7	Command Status Information
	Others	Reserved
Extended Link Service x'2'	1	Solicited Data
	2	Request
	3	Reply
	Others	Reserved
FC-4 Link Data x'3' Note: Same as FC-4 Device Data frames.	0	Uncategorized Device Data Uncategorized Data
	1	Solicited Device Data Solicited Data
	2	Unsolicited Control Info (Request)
	3	Solicited Control Info (Reply)
	4	Unsolicited Data
	5	Data Descriptor
	6	Unsolicited Command
	7	Command Status Information
	Others	Reserved
Video_Data x'4'	4	Unsolicited Data
	Others	Reserved
Extended_Headers x'5'	50	VFT_Header
	51	IFR_Header
	52	Enc_Header
	53-5F	Reserved
Basic Link Service x'8'	0	No Operation (NOP)
	1	Abort Sequence (ABTS)
	2	Obsolete
	4	Basic_Accept (BA_ACC)
	5	Basic_Reject (BA_RJT)
	6	Obsolete
	Others	Reserved
Link Control x'C'	0	Acknowledge_1
	1	Acknowledge_0
	2	Nx_Port Reject (P_RJT)
	3	Fabric Reject (F_RJT)
	4	Nx_Port Busy (P_BSY)
	5	Fabric Busy to Data Frame (F_BSY)

R_CTL Bits	Information	Description
	6	Fabric Busy to Link Control Frame (F_BSY)
	7	Link Credit Reset (LCR)
	8	Notify - Obsolete
	9	End - Obsolete
	Others	Reserved
Extended Routing x'F'	0	Vendor Unique
	Others	Reserved

Destination ID (D_ID)

The Destination ID (D_ID) refers to the native port address (24-bit address).

Example Args

```
sw0:admin> portlogdump
time          task          event    port cmd  args
-----
Wed Sep 22 10:02:31 2021
23:55:27.598 PORT          Tx        1    40  02ffffffd,00ffffffd,8b4fffff,14000000
```

In the example arguments, the D_ID is the well-known address of a fabric controller. The underlined ffffffd is the D_ID.

Class-Specific Field Control (CS_CTL)

Different controls are necessary for different classes of service. The Class-Specific Field Control (CS_CTL) field should always be zero, per the FC-PH standards. If it is something other than zero, it is a Brocade internal code that is called an IU_Status Value. The following table shows the CS_CTL. These are Brocade internal constants, not standard FC descriptions.

Table 9: Class-Specific Control Field (CS_CTL) IU_Status Values

Internal Code	CS_CTL	IU_Status Value
0x02	IU_P_RJT	Received P_RJT
0x03	IU_F_RJT	Received F_RJT
0x04	IU_P_BSY	Received P_BSY
0x05	IU_F_BSY	Received F_BSY
0x06	IU_F_BSY_LC	Received F_BSY_LC
0x10	IU_NO_EXCH	Cannot allocate exchange
0x11	IU_OFFLINE	Port is offline
0x12	IU_BAD_EXCH	Exchange ID is not valid
0x13	IU_NO_ACK	ED_TOV is expired
0x14	IU_CORRUPT	Corruption such as CRC error or encoding error
0x15	IU_BAD_CLASS	Class 1 frame
0x16	IU_BAD_S_ID	Invalid S_ID

Internal Code	CS_CTL	IU_Status Value
0x17	IU_BAD_D_ID	Invalid D_ID, VC, or multicast address
0x18	IU_TIMED_OUT	Frame timed out, generate F_BSY
0x19	IU_TX_UNAVAIL	Tx unavailable, generate F_BSY
0x1a	IU_LOGIN_RQRD	Login required
0x1b	IU_PROTOCOL	Protocol error
0x1c	IU_RX_FLUSHED	Frame flushed by Rx port
0x20	IU_ALPA_TMPNA	AL_PA temporarily not available
0x21	IU_ALPA_PMTNA	AL_PA permanently not available
0x22	IU_LOGO_OFFLINE	Logout received or port goes offline
0x23	IU_ZONE_CONFLT	Zone conflict
0x80	IU_ASYNC_RESP	Async IU response payload received
0x81	IU_ASYNC_TO	Async IU response timeout
0x82	IU_ASYNC_ABTS	Async IU aborts
0x83	IU_ASYNC_LOGO	Async IU killed due to a port logout or offline

Source ID (S_ID)

The Source ID (S_ID) refers to the native port address (24-bit address).

Example Args

```
sw0:admin> portlogdump
time          task          event    port cmd  args
-----
Wed Sep 22 10:02:31 2021
23:55:27.598 PORT      Tx          1    40  02fffffd,00fffffd,8b4fffff,14000000
```

In the example arguments, the S_ID is the well-known address of a fabric controller. The underlined fffffd is the S_ID.

Frame Control (F_CTL)

The Frame Control (F_CTL) field contains miscellaneous control information regarding the frame.

Table 10: Frame Control (F_CTL)

Hex	Abbreviation	Description
0xC00000	FCTL_XCHSEQ	Exchange & Sequence Context Bit Mask
0x800000	FCTL_RESPXCH	Responder of Exchange
0x400000	FCTL_RECSEQ	Sequence Recipient
0x200000	FCTL_1STSEQ	First Sequence of Exchange
0x100000	FCTL_LASTSEQ	Last Sequence of Exchange
0x080000	FCTL_ENDSEQ	Last Data Frame of Sequence
0x040000	FCTL_ENDCONN	End of Connection Pending

Hex	Abbreviation	Description
0x020000	FCTL_CHAINEDSEQ	Chained Sequence Active
0x010000	FCTL_SEQINIT	Transfer Sequence Initiative
0x800000	FCTL_NEWXID	X_ID Reassigned
0x004000	FCTL_INVXID	Invalid X_ID
0x003000	FCTL_ACKFORM	ACK Form Capability
0x000800	FCTL_COMPRESS	Data Compression
0x000400	FCTL_ENCRYPT	Data Encryption
0x000200	FCTL_RETXSEQ	Sequence Retransmission
0x000100	FCTL_UNIDIRECTX	Unidirectional Transmission
0x0000C0	FCTL_CSCMASK	Mask to Get Control Sequence Condition
0x0000C0	FCTL_SEQDLY	Sequence to Follow - Delayed
0x000080	FCTL_SEQSOON	Sequence to Follow - Soon
0x000040	FCTL_SEQIMM	Sequence to Follow - Immediately
0x000000	FCTL_SEQNONE	No information
0x000030	FCTL_ASCMASK	Mask to Get Abort Sequence Condition
0x000030	FCTL_SEQABTR	Abort Sequence - Do ABTR
0x000020	FCTL_SEQSTOP	Stop Sequence
0x000010	FCTL_SEQABTS	Abort Sequence - Do ABTS
0x000000	FCTL_SEQCONT	Continue Sequence
0x000030	FCTL_POLICYMASK	Mask to Get Sequence Policy
0x000030	FCTL_DISCRETX	Discard Multi Sequence Immed ReTx
0x000020	FCTL_PROCESS	Process Policy with Infinite Buffer
0x000010	FCTL_DISC1ABT	Discard Single Sequence, Abort
0x000000	FCTL_DISCMABT	Discard Multi Sequence, Abort
0x000008	FCTL_RELOFF	Relative Offset Present
0x000004	FCTL_XCHREASS	Exchange Reassembly - Reserved
0x000003	FCTL_FILLMASK	Mask to Get the Fill Bits
0x060f00	FCTL_INVALID	Class 1, Compression, Encryption
0xffff	NULL_XID	Unassigned ox_id or rx_id

Sequence ID (SEQ_ID)

The Sequence ID (SEQ_ID) is used to identify and track all frames within a sequence between a source and destination port pair.

Data Field Control (DF_CTL)

The Data Field Control (DF_CTL) field indicates the presence of one or more optional headers at the beginning of the data field of the frame. Optional headers are used for information that may be required by some applications or protocol mappings.

Table 11: Data Field Control (DF_CTL) Optional Headers

DF_CTL Code	Description
0x40	SECURITY_HEADER
0x20	NETWORK_HEADER
0x10	ASSOCIATION_HEADER
0x03	DEVICE_HEADER
0x8c	DF_RESERVED
0x01	APPLICATION_HEADER

Sequence Count (SEQ_CNT)

The Sequence Count (SEQ_CNT) is used to indicate the sequential order of frame transmission within a sequence or multiple consecutive sequences within the same exchange.

Originator ID (OX_ID)

The Originator ID (OX_ID) refers to the exchange ID assigned by the originator port.

Example Args

```
sw0:admin> portlogdump
time          task          event    port cmd  args
-----
Wed Sep 22 10:02:31 2021
23:55:27.598 PORT          Tx        1    40  02fffffd,00fffffd,8b4fffff,14000000
```

In the example, 8b4f is the Originator ID. See [FC-PH Frames](#).

Responder ID (RX_ID)

The Responder ID is assigned by the responder to the exchange.

Example Args

```
sw0:admin> portlogdump
time          task          event    port cmd  args
-----
Wed Sep 22 10:02:31 2021
23:55:27.598 PORT          Tx        1    40  02fffffd,00fffffd,8b4fffff,14000000
```

In the example, ffff is the Responder ID. See [FC-PH Frames](#).

Data Field/Payload

The FC-PH standard limits the maximum size to 2112 bytes. Refer to [FC-PH Frames](#) for more details.

Type Code

The Type code provides the type of protocol service (such as FC-CT, FCP, FCIP) for the FC-PH frame.

Table 12: FC-4 Type Codes

Code	Type of Service
1x	F_BSY (Fabric Busy, "x" = R_CTL bits 27-24)
3x	F_BSY (N_Port Busy, "x" = R_CTL bits 27-24)
00	Basic Link Service
01	Extended Link Service
04	ISO/IEC 8802-2 LLC (in order)
05	ISO/IEC 8802-2 LLC/SNAP
06-07	Reserved
08	SCSI-FCP
09	SCSI-GPP
0A-0F	SCSI-Reserved
10	Reserved: IPI-3
11	IPI-3 Master
12	IPI-3 Slave
13	IPI-3 Peer
14	Reserved: IPI-3
15	CP IPI-3 Principal
16	CP IPI-3 Agent
17	CP IPI-3 Peer
18	Reserved: SBCCS
19	SBCCS - Channel (obsolete)
1A	SBCCS - Control Unit (obsolete)
1B	SBCCS-2 - Channel (proposed)
1C	SBCCS-2 - Control Unit (proposed)
1D-1F	Reserved: SBCCS
20	Fibre Channel Services (FC-CT)
21	FC-FG (not used)
22	Internal Link Service (SW_ILS)
23	FC-AL (not used)
24	FC-SNMP
25-27	Reserved: Fabric Services
28-2F	Reclaimed: was futurebus
30-33	Scalable Coherent Interface (SCI)
34-37	MessageWay (FC-PH2)
38-3F	Reserved
40	HIPPI - FP
41-47	Reserved: HIPPI
48-57	Reserved
58	Virtual Interface (FC-VI)

Code	Type of Service
59-DF	Reserved
60	Application Services
E0-FF	Vendor Unique

State Change Notifications

There are three different State Change Notifications (SCNs):

- **Stage Change Registration (SCR)**

The State Change Registration (SCR) Extended Link Service requests the fabric controller to add the N_Port or NL_Port to the list of N_Ports and NL_Ports registered to receive the Registered State Change Notification (RSCN) Extended Link Service.

- **Registered State Change Notification (RSCN)**

The fabric controller issues RSCN requests only to N_Ports and NL_Ports that have registered to be notified of state changes in other N_Ports and NL_Ports. This registration is performed by way of the SCR Extended Link Service. An N_Port or NL_Port can issue an RSCN to the fabric controller without having completed an SCR with the fabric controller.

- **Internal State Change Notification (SCN)**

The Internal State Change Notification is used for internal state change notifications, not external changes. If the switch logging that the port is online or is an Fx_Port. This is not what is sent from the switch to the Nx_Ports.

Reading an SCN Event

```

time          task  event  port cmd    args
-----
12:05:28.116  PORT  scn    7    137    00000000, 00000000, 00000008

```

- The cmd field represents the SCN type. See [SCN Codes](#) to view the cmd description.
- In the args column:
 - Arg 1 is dependent on the SCN type:
 - First 16 bits (most significant) = The mode that the port is in.
 - Second 16 bits (least significant) = The error that causes the port to be marked OFFLINE.
 - Arg 2 is dependent on the SCN type; it is currently not used (00000000).
 - Arg 3 is the SCN subtype.
- Combine the SCN subtype (the third arg) and the SCN type (the cmd column) to uniquely identify a particular SCN. The SCN type alone is not sufficient and is not guaranteed to be unique across all SCN types.

SCN Codes

The tables from Internal SCN Subtype through Internal Blade States relate to the possible State Change Notification (SCN) results returned by the `portlogdump` command.

Table 13: Internal State Change Notification Type and State Value

SCN Value	SCN Type	Description
0	SWITCH_SCN	Switch state change
1	PORT_SCN	Port state change
2	UPD_SCN	Update state change
3	REMOTE_SCN	Remote state change
4	ZONE_SCN	Zone check
5	FCP_SCN	FCP port FCP trigger
6	GBIC_SCN	GBIC module in/out SCN
7	ENV_SCN	Environmental events
8	SLOT_SCN	Slot change events
9	HA_SCN	HA change events
10	DIAG_SCN	DIAG change events
11	FAB_SCN	Fabric application events
12	LI_SCN	Link incident SCN
13	SEC_SCN	FLOGI device security violation
14	CER_SCN	Core-Edge Routing state change
15	BLADE_SCN	Blade state change
16	PIC_SCN	Plug-In Card state change
17	MEDIA_SCN	Port media state change
18	MMI_SCN	Management module state change
19	GE_PORT_SCN	GigE port state change
20	EX_PORT_SCN	EX_Port state change
21	LE_PORT_SCN	Logical E_Port state change
22	TA_SCN	Trunk area state change
23	FCOE_SCN	FCoE state change
24	FCOE_PORT_STATE	FCoE port state change
25	FCOE_FLOGI_SCN	FCoE FLOGI state change
26	FCOE_MAC_RANGE	FCoE MAC range state change
27	AG_SCN	AG mode state change
28	VE_PORT_SCN	VE port state change
29	SOFT_ZONE_SCN	NS zone turned soft
30	CONFIG_SCN	Config state change
31	VPWWN_SCN	VPWWN events
32	NP_SCN	Flow Vision state change
33	PORT_SCN_EXTN	PORT_SCN Extension since PORT_SCN is exhausted
34	ESM_SCN	Triggered for ESM (Extension Services Module) events
35	CHIP_SCN	Chip-specific SCN
36	ETH_PORT_SCN	Ethernet-specific SCN

SCN Value	SCN Type	Description
37	FCOE_SLOT_STATE	Slot state SCN

Internal SCN Subtype

The following table lists the SCN subtypes for the Brocade proprietary SCN types.

Table 14: Brocade Proprietary SCN Subtypes

SCN Value	SCN Type	SCN Subtype	Subtype Value	Description
23	FCOE_SCN	None	—	FCoE state change information.
24	FCOE_PORT_STATE	—	—	FCoE port state change information.
		FCOE_PORT_PRESENT	1	Indicates that the FCoE port is present.
		FCOE_PORT_REMOVED	2	Indicates that the FCoE port is removed.
		FCOE_PORT_LINK_UP	4	Indicates that the FCoE port link is up.
		FCOE_PORT_LINK_DOWN	8	Indicates that the FCoE port link is down.
25	FCOE_FLOGI_SCN	None	—	FCoE FLOGI state change information.
26	FCOE_MAC_RANGE	None	—	FCoE MAC range state change information.
27	AG_SCN	—	—	AG mode state change information. This SCN is specific to AG mode and will not be observed when there is a change in the switch state (from Native to AG mode).
		AG_PLOGI_TRAP	1	Indicates that a PLOGI has been trapped.
		AG_NPORT_SCN	2	Indicates that the N_Port has come online.
		AG_FPORT_SCN	4	Indicates that the F_Port has come online.
28	VE_PORT_SCN	—	—	VE port state change information.
		VE_PORT_READY	1	Indicates that the VE port is registered with the switch driver.
		VE_TUNNEL_UPDATE	2	Indicates that the bandwidth change has occurred on the extension tunnel for the VE port.

SCN Value	SCN Type	SCN Subtype	Subtype Value	Description
		VE_CIRCUIT_UP	4	Indicates that the extension circuit is up.
		VE_CIRCUIT_DOWN	8	Indicates that the extension circuit is down.
		VE_CFG_MISMATCH	16	Indicates that the extension tunnel for the VE port has a configuration mismatch with the peer.
29	SOFT_ZONE_SCN	None	—	NS zone turned soft information. This SCN is obsolete
30	CONFIG_SCN	—	—	Config state change information.
		CONFIG_DEFAULT_COMPLETE	1	Indicates that the config-default command is executed.
		CONFIG_PORT_NAME	2	Indicates that the dynamic port name feature is enabled or disabled.
31	VPWWN_SCN	—	—	VPWWN event information.
		FPORT_VPWWN_LOGGED_IN	1	Indicates that the VPWWN device has logged in.
		PORT_VPWWN_LOGGED_OUT	2	Indicates that the VPWWN device has logged out.
		VPWWN_SWPT_MAPPING_CREATED	4	Indicates that switch port to VPWWN mapping is created.
		VPWWN_SWPT_ENABLED_AND_MAPPING_CREATED	8	Indicates that the VPWWN assigned to the switch port is enabled.
		VPWWN_SWPT_MAPPING_DELETED	16	Indicates that switch port to VPWWN mapping is deleted.
		VPWWN_SWPT_DISABLED_AND_MAPPING_DELETED	32	Indicates that the VPWWN assigned to the switch port is deleted.
		VPWWN_AGPT_MAPPING_CREATED	64	Indicates that AG port to VPWWN mapping is created.
		VPWWN_AGPT_ENABLED_AND_MAPPING_CREATED	128	Indicates that the VPWWN assigned to the AG port is enabled.
		VPWWN_AGPT_MAPPING_DELETED	256	Indicates that AG port to VPWWN mapping is deleted.

SCN Value	SCN Type	SCN Subtype	Subtype Value	Description
		VPWWN_AGPT_DISABLED_AND_MAPPING_DELETED	512	Indicates that the VPWWN assigned to the AG port is deleted.
		VPWWN_AG_VPWWN_LOGGED_IN	1024	Indicates that the VPWWN device has logged in through the AG port.
		VPWWN_AG_VPWWN_LOGGED_OUT	2048	Indicates that the VPWWN device visible through AG has logged out.
		VPWWN_CHANGE_SCN	4096	Indicates that the VPWWN database has changed.
		VPWWN_AG_MASTER_CHANGED	8192	Indicates that the master port of the AG switch has changed.
32	NP_SCN	—	—	Flow Vision state change information.
		NP_FLOW_CREATE	1	Indicates that the flow is created. Note: This SCN subtype is obsolete.
		NP_FLOW_DELETE	2	Indicates that the flow is deleted. Note: This SCN subtype is obsolete.
		NP_FLOW_ACTIVATE	4	Indicates that the flow is activated. Note: This SCN subtype is obsolete.
		NP_FLOW_DEACTIVATE	8	Indicates that the flow is deactivated. Note: This SCN subtype is obsolete.
		NP_FLOW_UPDATE	16	Indicates that the flow definition is updated. Note: This SCN subtype is obsolete.
		NP_FLOW_RESET	32	Indicates that the flow statistics are reset. Note: This SCN subtype is obsolete.
		NP_SERVICE_READY	64	Indicates that Flow Vision is registered and ready.

SCN Value	SCN Type	SCN Subtype	Subtype Value	Description
		NP_FLOW_CLEANUP	128	Indicates that all flows are cleaned in the Flow Vision database.
		NP_FLOW_CTRLCFG	256	Indicates that the flow control configuration has changed. Note: This SCN subtype is obsolete.

Internal SCN RSCN Subtypes

Table 15: Internal SCN RSCN Subtypes

SCN Value	Subtype	Description
00000001	DOM_RSCN	Domain RSCN
00000002	LOC_DEV_EXT_RSCN	Local Device External RSCN
00000004	REM_DEV_EXT_RSCN	Remote Device External RSCN
00000008	PORT_DET_RSCN	N_Port Detected RSCN

Internal SCN GBIC States

Table 16: Internal SCN GBIC States

SCN Value	State	Description
00000001	GBIC_ONLINE	GBIC is online.
00000002	GBIC_OFFLINE	GBIC is offline.
00000004	GBIC_INCOMPATIBLE	GBIC is incompatible.

Internal SCN Update States

Table 17: Internal SCN Update States

SCN Value	State	Description
00000001	UPDSCN_UPD_AREA	Update an area.
00000002	UPDSCN_DEL_AREA	Delete an area.
00000004	UPDSCN_UPD_SCR	Update state change registration.
00000008	UPDSCN_UPD_VAREA	Update SCN for virtual device.
00000010	UPDSCN_DEL_VAREA	Delete area SCN for virtual device.
00000020	UPDSCN_UPD_VSCR	Update state change registration for virtual device.
00000040	UPDSCN_UPD_TA_AREA	Update logical trunk area.
00000080	UPDSCN_DEL_TA_AREA	Delete logical trunk area.

SCN Value	State	Description
00000100	UPDSCN_UPD_TA_SCR	Update state change registration for trunk area.
00000200	UPDSCN_UPD_PROBE	Update SCN for NPIV device.
00000400	UPDSCN_UPD_16B_AREA	Update SCN for 16B area.
00000800	UPDSCN_DEL_16B_AREA	Delete SCN for 16B area.

Internal SCN Fabric States

Table 18: Internal SCN Fabric States

SCN Value	State	Description
00000001	AC_PORT	Link reset completed for E_Port.
00000002	LR_PORT	Link reset completed for non-E_Port.
00000004	SW_PERSISTENT_DISABLE	Switch disabled persistently.
00000008	F_SLAVE_LR_PORT	Link reset completed for slave F_Port.
00000010	PT_PERSISTENT_DISABLE	Port disabled persistently.
00000020	PT_TA_DISABLE	Trunk area disabled.
00000040	AC2_PORT	Link reset completed for an encryption-enabled port.
00000080	FEC_ENABLE	FEC enabled on port.

Internal SCN Diag States

Table 19: Internal SCN Diag States

SCN Value	State	Description
00000000	DIAG_UNKNOWN	Unknown/Initial diagnostics status.
00000001	DIAG_IDLE	Diagnostics are not running.
00000002	DIAG_ABORT	Abort diagnostics test.

Internal SCN SEC States

Table 20: Internal SCN SEC States

SCN Value	State	Description
00000001	REM_DOMAIN_SET	Domain is reachable and confirmed.
00000002	REM_DOMAIN_CLEAR	Domain is not reachable or not confirmed.
00000004	FLOGI_DCC	Device is a FLOGI device.

Internal SCN CER States

Table 21: Internal SCN CER States

SCN Value	State	Description
00000001	DOM_ADDS_REQD	FSPF must re-add routes to new ports.
00000002	REBALANCE_ALL	Shuffle domain routes.
00000004	IS_DOMS_ADDS_DONE	Check whether mass reroute is complete.
00000008	TRAFFIC_DISRUPTION_EVENT	Notify FICON of mass reroute event.

Internal SCN MMI States

Table 22: Internal SCN MMI States

SCN Value	State
00000001	MMI_CONTROL
00000002	MMI_AB_SWITCH
00000004	MMI_ISMIC_CMD
00000008	MMI_SFP
00000010	MMI_EHCM_ON
00000020	MMI_EHCM_OFF
00000040	MMI_SECURITY_RESET
00000080	MMI_ISMIC_EXT_CMD
00000100	MMI_PLAT_EVENT
00000200	MMI_CANMIC_DOORBELL

Internal SCN Slot States

Table 23: Internal SCN Slot States

SCN Value	State	Description
00000000	UNKNOWN	—
00000001	SLOT_OUT	Blade has been removed.
00000002	SLOT_IN	Blade has been inserted but not powered on.
00000004	SLOT_READY	Blade is in and has been powered on.
00000008	SLOT_UP	Blade is ready and has passed POST1.
00000010	SLOT_ON	Blade is up and has passed POST2.
00000020	SLOT_OFF	Blade is on and has been disabled.
00000040	SLOT_FAULT	Blade has been marked as faulty.

Internal SCN ENV States

Table 24: Internal SCN ENV States

SCN Value	State	Description
00000000	UNKNOWN	—
00000001	ENV_OUT	Removed.
00000002	ENV_IN	Environmental hardware unit (PS/blower) inserted.
00000004	ENV_READY	Ready for hardware validation.
00000008	ENV_UP	Ready for operations.
00000010	ENV_ON	Up and passed POST2 (unless N/A).
00000020	ENV_OFF	ON and disabled.
00000040	ENV_FAULT	—

Internal SCN Switch States

Table 25: Internal SCN Switch States

SCN Value	State	Description
00000001	DOMAIN_VALID	Switch gets a domain.
00000002	DOMAIN_INVALID	Switch loses its domain.
00000004	DOMAIN_REACHABLE	Domain is reachable.
00000008	DOMAIN_UNREACHABLE	Domain is not reachable.
00000010	SW_ONLINE	Switch is online.
00000020	SW_OFFLINE	Switch is offline.
00000040	CFG_CHANGED	Effective zone set has changed.
00000080	PASSWD_CHANGED	Password has changed.
00000100	FWN_NOTIFY	Firmware has changed.
00000200	PID_CHANGED	PID format has changed.
00000400	ZONE_CHANGED	Zoning database has changed.
00000800	ROUTE_CHANGE	Route has changed.
00001000	DOMAIN_CAP_AVAILABLE	Domain capabilities are available.
00002000	SERVICESTAT_START	Service statistics start.
00004000	SERVICESTAT_STOP	Service statistics stop.
00008000	FAB_SIZE_LIMIT_VIOLATION	Fabric size threshold crossed.
Traffic isolation zone's domain reachable/unreachable SCN.		
00010000	TI_DOMAIN_REACHABLE	—
00020000	TI_DOMAIN_UNREACHABLE	—
00040000	DOMAIN_COST_CHANGE	—
SCN when base domain routes have been replaced.		
00080000	BASE_DOMAIN_ROUTES_REPLACED	—

SCN Value	State	Description
00100000	WWN_AREA_UPDATE	—
00200000	SWITCH_ATTR_CHANGE	—
SCN when the inherited FID changes.		
00400000	INHERITED_FID_UPDATE	—
SCN when the fabric name configured/reconfigured.		
00800000	FABRIC_NAME_CHANGE	—
Service statistics		
04000000	SERVICESTAT_START	—
08000000	SERVICESTAT_STOP	—
NS device type change SCN (triggered when there is a device type change).		
10000000	NS_DEV_TYPE_CHANGE	—
20000000	ZONE_UPDATE_IN_PROGRESS	—
SNMPd listen for this aptpolicy change.		
40000000	ROUTE_POLICY_CHANGE	—

Internal SCN HA States

Table 26: Internal SCN HA States

SCN Value	State	Description
00000001	GO_ACTIVE_SCN	Make this CP active.
00000002	GO_STANDBY_SCN	Make this CP standby.
00000004	DEBUG_SCN	—
00000008	SWITCH_0_SCN	—
00000010	SWITCH_1_SCN	—
00000020	SWITCH_BOTH_SCN	—
00000040	CP_0_SCN	—
00000080	CP_1_SCN	—
00000100	FC0_IP_SCN	—
00000200	FC1_IP_SCN	—
00000400	HTBT_UP_SCN	CP heartbeat detected.
00000800	HTBT_DOWN_SCN	CP heartbeat not detected.
00001000	EVENT_SCN	—
00002000	SWD_APP_NOT_RESPONDING	Application has not updated the software watchdog.
00004000	SWD_SWDD_DATA_COLLECT	Software watchdog daemon data collection.
00008000	GO_REBOOT_SCN	—
00010000	SWD_SWDD_APP_RESTART	—
00020000	SWD_SWDD_APP_LAUNCHED	—
00040000	SWD_SWDD_TIMEOUT	—

SCN Value	State	Description
00080000	HTBT_MISS_SCN	—
00100000	POD_COMMIT_SCN	—

Internal SCN Zone States

Table 27: Internal SCN Zone States

SCN Value	State	Description
00000001	ZONE_CHECK_WWN	—
00000002	ZONE_CHECK_PORT	—
00000004	ZONE_TYPE_CLEAR	—
00000008	ZONE_SOFT	—
00000010	ZONE_REQUEST_RJT	—
00000020	ZONE_MERGE_FAIL	—
00000040	ZONE_MERGE_SUCCESS	—
00000080	ZONE_DEFAULT_ZONE	—
00000100	ZONE_ACT_RESULT	—
00000200	ZONE_SAVE_RESULT	—
00000400	ZONE_SAVE_RJT	—
00000800	ZONE_OPEN_TRANS	—
00001000	ZONE_ABRT_OPEN_TRAN	—

Internal SCN FCP States

Table 28: Internal SCN FCP States

SCN Value	State	Description
00000001	FCPMSG_PROBE	Start probing.
00000002	FCPMSG_FLUSH	Stop probing.

Internal SCN Port States

Table 29: Internal SCN Port States

SCN Value	State	Description
00000000	UNKNOWN	Port state unknown.
00000001	ONLINE	Port is online.
00000002	OFFLINE	Port is offline.
00000004	TESTING	Port is running diagnostics.
00000008	FAULTY	Port marked faulty.

SCN Value	State	Description
00000010	E_PORT	Port is an E_Port.
00000020	F_PORT	Port is an F_Port.
00000040	SEGMENTED	Port is segmented.
00000080	T_PORT	Port is a trunk port, not a trunk master.
00000100	LIP_ONLINE	LIP has occurred.
00000200	FORCE_OFFLINE	Force offline a port that is already offline.
00000400	BUF_ONLINE	Port is online by acquiring free buffers.
00000800	BUF_OFFLINE	Port is offline due to lack of buffers.
00001000	OFFLINE_NEW_REASON	Port is debounced and still offline with a new reason.
00002000	BUF_DEGRADED	Port is degraded due to lack of buffers.
00004000	BUF_UPDATE	Degraded bitmap needs to be cleared and updated.
00008000	EPORT_CHANGE	Promote TRUNK_SLAVE to TRUNK_MASTER.
00010000	PLOGI_RCVD	Switch has received a PLOGI.
00020000	LOGO_RCVD	Switch has received a LOGO.
00040000	XCHANGE_ABORT_NOTIFY	Send an SCN because the exchange has been aborted.
00080000	F_Port ELP start	Start F_Port trunking.
01000000	Trunked F_Port	The port is a trunked F_Port.
02000000	Dynamic Area Update	A dynamic area has been assigned or cleared.
04000000	D_Port Test Status	Change in D_Port test status.
08000000	D_Port	The port is a D_Port.
10000000	Auto D_Port	Dynamic or on-demand D_Port.
20000000	DPORT_MODE_OFF	D_Port Mode OFF SCN.
40000000	SPEED_UPDATE	During upgrade to copy pcfg_bm.old_speed (3 bits) to * pcfg_bm.speed (5 bits to accommodate auto max speed config).
80000000	PERSISTENT_PORT_ENABLE_REQUEST	Received a persistent port enable request from the user. * Currently used for the on-demand D-Port setting.
PORT_SCN_EXTN subtypes used for port state.		
00000000	UNKNOWN	Port status is unknown. Never sent or registered as a subtype, hence can be 0.
00000001	AUTO_DPORT_AG	Auto D_Port SCN On AG mode - triggered for the Dynamic/On-demand D_Port modes.
00000002	REFLOGI_RCVD	Re-FLOGI on an F_Port.
00000004	PORT_NAME_CHANGED	—
00000008	FDMI_ATTRIB_CHANGED	—
00000010	FDMI_HOSTNAME_CHANGED	—

SCN Value	State	Description
00000020	TRUNK_EVENTS_NOTIFY	NS will listen to the event to update device's link speed in its DB.
00000040	MULTI_AREA_UPDATE_SCN	Multi-Area SCN to PDM to persist in memory table.

Internal SCN LE Port States

Table 30: Internal SCN LE Port States

SCN Value	State	Description
00000001	LE_ONLINE	Logical E_Port online.
00000002	LE_OFFLINE	Logical E_Port offline.
00000004	LE_PORT	Port is a logical E_Port.
00000008	LEPORT_CHANGE	Change logical slave trunk port to new master.

Internal SCN GE Port States

NOTE

The following table is also applicable for 10GbE ports.

Table 31: Internal SCN GE Port States

SCN Value	State	Description
00000001	GE_TCP_CONN_UP	Gigabit Ethernet TCP connection is up.
00000002	GE_TCP_CONN_DOWN	Gigabit Ethernet TCP connection is down.
00000004	GE_NTP_SYNC_UP	Gigabit Ethernet NTP sync is up.
00000008	GE_NTP_SYNC_DOWN	Gigabit Ethernet NTP sync is down.
00000010	GE_AUTH_FAILURE	Gigabit Ethernet authorization failed.
00000020	GE_PORT_READY	Gigabit Ethernet port is ready.
00000040	GE_TUNNEL_UP	Gigabit Ethernet tunnel is up.
00000080	GE_TUNNEL_DOWN	Gigabit Ethernet tunnel is down.
00000100	GE_TUNNEL_CFG_MISMATCH	Gigabit Ethernet tunnel configuration mismatch.

Internal SCN Blade States

Table 32: Internal SCN Blade States

SCN Value	State	Description
00000001	BLADE_UNKNOWN	Blade type is not known.
00000002	BLADE_POWER_ON	Blade is powered on.

SCN Value	State	Description
00000004	BLADE_INIT_DONE	Blade is initialized.
00000008	BLADE_OPERATIONAL	Blade is operational.
00000010	BLADE_BOOT_SUCCESS	Blade boot is successful.
00000020	BLADE_BOOT_FAILURE	Blade boot failed.
00000040	BLADE_UN_INST	Blade is uninstantiated.
00000080	BLADE_POWER_OFF	Blade is powered off.

Loop State Change Notification Reason Codes for LIP

Table 33: Loop SCN Reason Codes (LIP)

LIP SCN Value	Description
8001	Retry loop init
8002	Start loop after gaining sync
8003	Restart loop after port reset
8004	Lip the loop after loop timeout
8005	Retransmitting LIP in ARBF0
8006	Lip the loop if OPN(x,y) returns
8007	Start timeout loop when transit out of G_Port
8008	Start timeout loop if self-loopback
8009	Per N_Port's FLA LINIT ELS
800a	Per N_Port's FLA LPC ELS
800b	Per QL's LOOP_LIP ioctl
800c	Per QL's LOOP_INIT ioctl
800d	Lip due to loop rx buffer overflow
800e	Start loop because of loop diag
8010	Per new phantoms being added (IPO)
8011	bloomInitRetry - loop init timed out
8012	bloomInitRetry - stuck at init state
8013	bloomInitRetry - no RSVD mini-buf for LISM
8014	bloomInitRetry - not pt-to-pt capable
8015	bloomInitRetry - no LISM rx in 2 AL_TIME
8016	bloomInitRetry - RXFIFO during loop init
8017	bloomInitRetry - Retry LIP - Lock Lport lock is set
8019	bloomLismcleanup - tx q is not empty
801a	Lip due to loop rx buffer underflow
801b	Lip due to loop rx buffer overflow
801c	Lip due to XMITTED_CLOSE state timeout
801d	Lip due to TRANSFER state timeout
801e	In Loop Init, Retry needed

LIP SCN Value	Description
801f	LIP received from remote port
f7f7	No valid AL_PA
f8f7	Loop port failure, requesting initialization

Speed Negotiation

Table 34: Speed Negotiation Code Command

Code	Value (hex)	Description
NC	0x01	Negotiation complete with a speed of 1Gb/s.
NC	0x02	Negotiation complete with a speed of 2Gb/s.
NC	0x04	Negotiation complete with a speed of 4Gb/s.
NC	0x08	Negotiation complete with a speed of 8Gb/s.
NC	0x1a	Negotiation complete with a speed of 10Gb/s.
NC	0x10	Negotiation complete with a speed of 16Gb/s.
NC	0x20	Negotiation complete with a speed of 32Gb/s.
NM	N/A	Negotiate master.
NF	N/A	Negotiate follow.
WS	N/A	Signal is okay and actual start of SN - "trigger for start".
EE	N/A	Engineering event. Internal debug information.

```
sw0:admin> portlogdump
time          task      event  port cmd  args
-----
Wed Sep 22 10:02:31 2021
23:55:11.133 SPEE      sn      1   WS  00000000,00000000,00000000
23:55:11.429 SPEE      sn      1   NM  00000000,00000000,00000000
23:55:11.429 SPEE      sn      1   NF  00000000,00000000,00000000
23:55:11.429 SPEE      sn      1   NC  00000004,00000000,00000000
```

I/O Control (IOCTL)

An I/O control (IOCTL) event is an internal message that gives information about the port and the stage of bring-up or takedown of the ports. The following table provides a complete listing of the IOCTL codes.

Table 35: Fabric OS I/O Control Codes

IOCTL Code	Description
01010001	E_Port flow control mode
01010002	Set diag flag
01010003	Clear diag flag
01010004	Get E_Port VCs credits
01010005	Set E_Port VCs credits
01010006	Set the line loopback port
01010007	Get the port topology
01010008	Set the port topology
01010009	LED control
0101000a	Port is an E_Port
0101000b	Port is an F_Port
0101000c	Port is segmented
0101000d	Take the port offline
0101000e	Take the port into LR
0101000f	Take the port down then up
01010010	Is a port disabled?
01010011	Get the port type
01010012	Get the mode of operation
01010013	Set RNID-related info
01010014	Reload a back-end port VC credit
01010015	Port is a true E_Port?
01010016	Load back-end port credit
01010017	Activate the port
01010018	Update LED management control
01010019	HA recovery check
0101001a	Upper-layer faulted port
0101001b	Set the inter-frame gap
0101001c	Get the inter-frame gap
0101001d	Unset the line loopback port
0101001e	Unset the frame loopback port
0101001f	Check the consistency bet
01010020	Get E_Port credits recovery
02010001	Get the physical state
02010002	Set the physical state
02010003	Get the GBIC type
02010004	Module value result
02010005	Set or clear the bypass mode
03010005	Set the auto sn mode to the arg1 value

IOCTL Code	Description
03010006	Get pt spd ala admin.h defines
03010007	Get pt spd cap ala admin.h
03010008	Get pt spd led color
03010009	Set pt spd led color
04010008	Get the loop bitmap
04010009	Get the blm_my_alpa table
0401000a	Get the blm_plt_cam table
0401000b	Get the blm_plt_alpa table
0401000c	Loop port (or looplet) bypass
0401000d	FLA loop initializing
0401000e	FLA loop port control
0401000f	FLA loop status
04010010	L_Port ALPA bitmap
04010011	LIP the loop, TX_UNAVAIL on/off
04010012	Send the MARK primitive signal
04010013	Undo the F_Port IOCTL
04010014	Set alpa in blm_alpa_avail[]
04010015	Clr alpa in blm_alpa_avail[]
05010001	Continue link init/reset
06010002	Send MARK primitive onto the wire
06010003	Get MARK timestamps
06010004	Add the port to the trunk
06010005	Get all trunk masters in a quad
06010006	Update the MARK timestamp with RMT
06010007	Check whether the port is trunkable
06010008	Enable trunking if possible
06010009	Get trunking group info
0601000a	Find the master port
0601000b	Get the master port
0601000c	Get ports within a quad
0601000d	Check whether the port has a master
0601000e	Get the bandwidth of an ISL
07010001	Processing filter stage 1
07010002	Processing filter stage 2
07010003	S/W frame filtering
07010004	Enable hardware zoning
07010005	Disable hardware zoning
07010006	Add members to the port's zone
07010007	Delete members from the port's zone
07010008	Add a zone type (new)

IOCTL Code	Description
07010009	Add a zone group (new)
0701000a	Enable all pt zoning (new)
0701000b	Reset all pt zoning (new)
0701000c	Disable all pt zoning (new)
0701000d	Free zoning token (new)
0701000e	Set up PLOGI cmd trap (new)
0701000f	Set up report LUN trap (new)
07010010	Clear port zoning (new)
07010011	Get rcv/orig ID (new)
07010012	Apply LUN info (new)
07010013	Exclude port from zoning (new)
07010014	Reset the zone for the port
07010015	Propagate the RSCN info to filter
07010016	Set filtering features
07010017	Get filtering features
07010018	Reset all port zoning (new)
07010019	Get zone type data
0701001a	Get zone group data
0701001b	Check zone group data
0701001c	Load sidcam (diag)
0701001d	Load didcam (diag)
0701001e	Load LUN offset (diag)
0701001f	Load zone group RAM (diag)
07010020	Load zone horizontally (diag)
07010021	Load filter sel (diag)
07010022	Load field def (diag)
07010023	Load action regs (diag)
07010024	Get filter stats (diag)
07010025	Clear all filtering hardware (diag)
07010026	Enable frame filter (diag)
07010027	Disable frame filter (diag)
07010028	Reg frozen process hndl
07010029	Load group control
0701002a	portCamShow support and more
0701002b	portCamShow
0701002c	Add a filter counter
0701002d	Delete a filter counter
0701002e	Number of filter hit count
0701002f	Add get perf filter references
07010030	Clear all filter monitors

IOCTL Code	Description
07010031	Clear all filter statuses
07010032	Get perf filter descriptions
07010033	Get all filter data
07010034	Add a filter for FICON/CUP
07010035	Delete a filter for FICON/CUP
07010036	Check whether an SID/DID pair is zoned together
07010037	Add a filter for port mirror
07010038	Delete a filter for port mirror
07010039	Get filter description for port mirror
0701003a	Verify filter description for port mirror
0701003b	Verify filter description port mirror
0701003c	Add/delete discard filter
0701003d	Process offline port
0701003e	Deletes zone group
0701003f	FCACC ingress filter config
07010040	FCACC egress filter config
07010041	Zone FCACC add flow
07010042	Zone FCACC remove flow
07010043	Zone FCACC remove PID
07010044	Zone FCACC soft
07010045	FCACC cleanup
07010046	Filter FCACC HA egress cfg
07010047	Enable FISOF zoning
07010048	Zoning RSCN new
07010049	Zone enable all
0701004a	Zone disable all
0701004b	Zone soft all
08010001	Add the unicast route
08010002	Delete the unicast route
08010003	Add the multicast route
08010004	Delete the multicast route
08010005	Unicast the routing table done
08010006	Add an area route
08010007	Delete an area route
08010008	Get the domain destination port (diag)
0801000a	Add a next hop
0801000b	Add multiple routes
0801000c	Add a path
0801000d	Delete a path
0801000e	Add a route

IOCTL Code	Description
0801000f	Delete a route
08010010	Clear a route
08010011	Config virtual link
08010012	Config route policy
08010013	Config VC mode
08010014	Config VC setting
08010015	Config chip tables
08010016	Config port tables
08010017	Verify add route
08010018	Verify delete routes
08010019	Configure if
0801001a	Verify next hop
0801001b	Verify routing configuration
0801001c	Add loopback area rt
0801001d	Configure STAG
08010021	Add portion of route
08010022	Remove portion of route
08010023	Read routing table, assuming port-based routing
08010024	Set blm_port2vc value
08010025	FCACC Cfg setup
08010026	FCACC Cfg cleanup
12010000	Set Ex_Port Edge ID
12010001	Get Ex_Port Edge ID
12010002	FCR Set SFID
12010003	FCR Clear SFID
12010004	Create backbone translate domain
12010005	Add edge domain
12010006	Delete edge domain
12010007	Purge edge Domain
12010008	Add fabric route
12010009	Delete fabric route
1201000a	Purge fabric route
1201000b	Add proxy device
1201000c	Delete proxy device
1201000d	Purge proxy device
1201000e	Configure ELS trap
1201000f	Configure FCR mode
12010010	Configure routing policy
12010011	Set backcone fabric ID
12010012	FCR get DFAB EGIDS

IOCTL Code	Description
12010013	Get backbonefabric ID
12010014	Get fabric information
12010015	Get fabric routing info
12010016	Get proxy device info
12010017	FCR set local EGID
12010018	FCR LE XD reachable
12010019	FCR LE XD unreachable
09010001	Get buffer and port
09010002	Set avail buffer intr
09010003	Return buffer
09010004	Return Tx buffer
09010005	Get available BB_Credit
09010006	Get bb credit for the Fx_PORT
09010007	Diag return buffer
09010008	Get long distance calculations
09010009	Enable MARK retransmission
09010010	Apply rate limit
09010011	Return an RRDY before the poll
0901000a	Disable MARK retransmission
0901000b	Send MARK primitive with LRTT (link round trip timer) enabled
0901000c	Save link round trip timer from ASIC
0901000d	Save the credits from link round trip timer from other switch
0901000e	Check if port config should be allowed
0901000f	Get port buffer allocations
0a010001	Get F_Port error status
0a010002	Get FI_Port error status
0a010003	Port admin stuff
0a010004	Clea hardware stats SRAM
0a010005	Get common hardware stats
0a010006	Get loop hardware stats
0a010007	Get hardware frame stats
0a010008	Get hardware error stats
0a010009	Get intr stats
0a01000a	pt perf calculation
0a01000b	Port perf calculation
0a01000c	Add a SID-DID pair
0a01000d	Del a SID-DID pair
0a01000e	Get list of EE keys
0a01000f	Get current EE mask
0a010010	Set the SID-DID pair

IOCTL Code	Description
0a010011	Clr CRC cnt for ALPA
0a010012	Get CRC cnt for ALPA
0a010013	Snt wd cnt SID-DID
0a010014	Rcv wd cnt SID-DID
0a010015	CRC err cnt SID-DID
0a010016	Clear all EE monitors
0a010017	Clear all EE status
0a010018	Get ticks when BB credit == 0
0a010019	Get STATSET
0a010020	Replace all SID-DID pairs
0a010021	Clear CRC cntrs for multiple AL_PAs
0a010022	Get CRC cntrs for multiple AL_PAs
0a010023	Clear the TX and/or Rx word counts
0a010024	Get all EE data
0a010025	Trigger the Perf Poll
0a010026	Get chip stat
0a010027	Clear chip stats
0a010028	Are any virtual ports online?
0a010029	FC acceleration allowed
0a01002a	FC acceleration ports
0a01002b	Switch port cap
0a01002c	1250 FC acceleration add flow
0a01002d	1250 FC acceleration remove flow
0a01002e	1250 FC acceleration remove PID
0a01002f	1250 FC acceleration port offline
0a01002c	Add SID-DID PM monitor
0a01002d	Delete SID-DID PM monitor
0a01002e	Start PM monitor polling
0a01002f	Stop PM monitor polling
0a010030	Get SID-DID PM statistics
0a010031	Clear SID-DID PM statistics
0a010032	Get all PM statistics
0a010033	Clear all PM statistics
0a010034	Get PM indices/references
0a010035	Get link table size
0b010001	Cleanup dma
0b010002	Send message
0b010003	Control frame reception
0c010001	Bring port online
0c010002	Reset ASIC happened

IOCTL Code	Description
0c010003	Initialize the chip
0c010004	Mark chip and ports initialized
0c010005	Fault port due to excessive int.
0c010006	linit hold time registers for every chip in the group
0c010007	Initialize XCP connection
0c010008	Tear down XCP connection
0c010009	Initialize PCI config params for chip
0c01000a	Firmwaredownload to iSCSI chip
0c01000b	BP warm start
0c01000c	Poll in case of excessive chip interrupts
0c01000d	Start the polling between cpsas and 1250
0d010001	No longer used
0d010002	Enable port intr
0d010003	Disable pt intr
0d010004	Check if pt intr pending
0d010005	Enable chip intr
0d010006	Disable chip intr
0d010007	Check if chip intr pending
0d010008	Halt chip called by blade fault
0e010001	Clr ASIC offline bit
0e010002	Chk ASIC blade rdy bit
0e010003	Set ASIC blade rdy bit
0e010004	Clr ASIC blade rdy bit
0e010005	Vcheck ASIC PIC-ready bit
0e010006	Set ASIC PIC-ready bit
0e010007	Clear ASIC PIC-ready bit
10010001	Set the bloom status
10010002	Execute I2C GBIC cmd
10010003	Ddisable SID/DID chk
10010004	Verify ASIC can be accessed
10010005	Modify proc entries for asic
10010006	Get ASIC register map
10010007	Get ASIC registers
10010008	Domain name is known
10010009	mcast routing table done
1001000a	Update property of the port
1001000b	Add the ASIC driver msg to appropriate queue
1001000c	Set area ASIC PORT ID ADDR Reg
1001000d	Log LLI and swc data
1001000e	agmode

IOCTL Code	Description
1001000f	Set Condor cfg
10010010	Additional proc entry link
10010011	For AG trunked ports, set route to logically online
11010001	Get fail detect lgc stat
11010002	Set fail detect ctrl bit
11010003	Clr fail detect ctrl bit
11010004	Set Rx-to-Tx parity ctrl
11010005	Get Rx-to-Tx parity err status
11010006	Enable fail detect intr
11010007	Disable fail detection interrupt
11010008	Check for fail detection interrupt
11010009	Doing BZIO polling
1101000a	Get Device Info
1101000b	Set up pt loop diag mode
1101000c	Loop port bypass the ALPD
1101000d	Loop port enable the ALPD
1101000e	Diag message output
1101000f	Chk if FL_Port diag hooked-up
11010010	Chk if FL_Port a lb slave
11010011	Set AL_PA for FL lb test
11010012	Disable FC-AL tx front-end
11010013	Enable FC-AL tx front-end
11010014	Set Flow Control Mode
11010015	ptXxxShow
11010016	Remove all phantom nodes pt
11010017	Add phantom dev (loop only)
11010018	xlate phantom sid and did
11010019	Add phantom node for remote did
1101001a	Test phantom for (S_ID, D_ID)
1101001b	Add a phantom device (loop only)
1101001c	Remove a phantom device
1101001d	Get phantom AL_PA by address ID
1101001e	Get address ID by phantom AL_PA
1101001f	Looplet init (send LIPs)
11010020	Looplet init sequence
11010021	Looplet init AL_PA bitmaps
11010022	Looplet unicast routes
11010023	Get pub/pri/phantom cnts
11010024	F_Port disable port tx before ACC
14010800	Get debug data

IOCTL Code	Description
14010801	ASIC swc unit tests, not used yet
14010900	Test recovery
15010800	Get debug data
15010801	ASIC swc unit tests, not used yet
15010900	Test recovery
13010000	IPSd ioctl
13010001	Normal FC Frames TX to 1250
13010002	Dump BI regs per ptRegShow <BI>
13010003	Dump BI regs per ptRegShow <BI>
13010004	Trigger 1250 to dump error stats
13010005	Destined for BI per VE LINK_UP
13010006	Destined for GigE port tunnel
13010007	Dump GE stats
13010008	Dump GE stats
13010009	Dump GE stats and CP wont block
13010099	1250 HeartBeat Message
16010001	Copy regs to 1250 shared mem
16010002	Copy stats to 1250 shared mem
16010003	Clear Anzio/Sflipper port stats
16010004	1250 heartbeat message
16010005	Send message to SAS Driver
16010006	Pass the BP config
16010007	Enable the GE port - only for Diag
16010008	Disable the GE port - only for Diag
16010009	Run BIST test

Extended Link Service (ELS)

An Extended Link Service (ELS) request is sent to the destination N_Port to perform the requested function or service.

- The R_CTL field of an Extended Link Service request is set to 0x22.
- The R_CTL field of the Extended Link Service reply is set to 0x23.
- The Type field for both requests and replies is 0x01 (`portlogdump` trace does not provide the TYPE information).

The command code for an ELS is always the first word of the payload (word 6) for both the request and the reply.

There are 2148 bytes in a frame, and the `portlogdump` command captures a portion of the frame.

For Tx and Rx events, the first Arg field obtains the portion of the header and one word of the payload, word 6. Arg 1, 2, and 3 belong to the FC-PH header (word 0, 1, 4 = R_CTL, D_ID, S_ID, OX_ID, RX_ID). The last argument (fourth argument) belongs to the payload. See [ELS Example 1](#).

ELS Command Codes

The following table provides a complete reference of the ELS command code values.

Table 36: ELS Command Codes

ELS	Command	Abbreviation Description
01000000	RJT	Reject
02000000	ACC	Accept
03000000	PLOGI	N_Port Login
04000000	FLOGI	F_Port Login
05000000	LOGO	Logout
06000000	ABTX	Abort Exchange
07000000	RCS	Read Connection Status
08000000	RES	Read Exchange Status Block
09000000	RSS	Read Sequence Status Block
0A000000	RSI	Request Sequence Initiative
0B000000	ESTS	Establish Streaming
0C000000	ESTC	Estimate Credit
0D000000	ADVC	Advise Credit
0E000000	RTV	Read Timeout Value
0F000000	RLS	Read Link Status
10000000	ECHO	ECHO
11000000	TEST	Test
11010000	LISM	Select Master
11020000	LIFA	Fabric Assigned
11030000	LIPA	Previously Acquired
11040000	LIHA	Hard Assigned
11050000	LISA0	Soft Assigned (old)
11050100	LISA1	Soft Assigned (new)
11060000	LIRP	Report Position
11070000	LILP	Loop Position
12000000	RRQ	Reinstate Recovery Qualifier
20000000	PRLI	Process Login
21000000	PRLO	Process Logout
22000000	SCN	State Change Notification
23000000	TPLS	Test Process Login State
24000000	TPRLO	Third Party Process Logout
30000000	GAID	Get Alias ID
31000000	FACT	Fabric Activate Alias ID
32000000	FDACT	Fabric Deactivate Alias ID
33000000	NACT	N_Port Activate Alias ID
34000000	NDACT	N_Port Deactivate Alias ID
40000000	QoS	Quality of Service Request
41000000	RVCS	Read Virtual Circuit Status

ELS	Command	Abbreviation Description
50000000	PDISC	Discover N_Port Service Parameters
51000000	FDISC	Discover F_Port Service Parameters
52000000	ADISC	Discover Address
53000000	RNC	Report Node Capability
54000000	FARP	FC Address Resolution Protocol
55000000	FARP_REPLY	FC Address Resolution Protocol Reply
58000000	RPBC	Report Port Buffer Condition
60000000	FAN	Fabric Address Notification
61xxxxxx	RSCN	Registered State Change Notification
62000000	SCR	State Change Registration
63000000	RNFT	Report Node FC-4 Types
68000000	CSR	Clock Synchronization Request
69000000	CSU	Clock Synchronization Update
70000000	LINIT	Loop Initialize
71000000	LPC	Loop Port Control
72000000	LSTS	Loop Status
77000000	RTIN	Request Topology Information
78000000	RNID	Request Node Identification Data
79000000	RLIR	Registered Link Incident Record
7A000000	LIRR	Link Incident Record Registration
7B000000	SLR	Scan Loop Remote
7C000000	SBRP	Set Bit-error Reporting Parameters
7D000000	RPSC	Report Port Speed Capabilities
7E000000	QSA	Query Security Attributes
7F000000	EVFP	Exchange Virtual Fabrics Parameters
16000000h	FPIN	Fabric Performance Impact Notification
17000000h	EDC	Exchange Diagnostic Capabilities
19000000h	RDF	Register Diagnostic Functions
80h	LKA	Link Keep Alive
81h	LCB	Link Cable Beacon
90h	AUTH_ELS	Authentication ELS
97h	RFCN	Request Fabric Change Notification
A0h	FFI_DTM	Define FFI Domain Topology Map
A1h	FFI_RTM	Request FFI Domain Topology Map
A2h	FFI_PSS FFI AE	Principal Switch Selector
A3h	FFI_MUR FFI	Map Update Registration
A4h	FFI_RMUN FFI	Registered Map Update Notification
A5h	FFI_SMU FFI	Suspend Map Updates
A6h	FFI_RMU FFI	Resume Map Updates
B0h	QFPA	Query Fabric Priority Allocation

ELS	Command	Abbreviation Description
B1h	UVEM	Update Virtual Entity Mappings

ELS Example 1

This example shows a FLOGI frame to the fabric F_Port (R_CTL=0x22, ELS Request; D_ID=0xfffffe, fabric F_Port; S_ID=0x000000). S_ID = 0 indicates that the attaching device does not yet have a fabric address.

```
sw0:admin> portlogdump
time          task          event    port cmd  args
-----
Wed Sep 22 10:02:31 2021
23:55:11.507 PORT          Rx3      128  116  22ffffffe,00000000,2018ffff,04000000
```

ELS Example 2

This example shows how the FLOGI frame from the switch to the device (R_CTL=0x23, Extended Link Services Reply; D_ID=0x638000, fabric F_Port; S_ID=0xfffffe) is accepted. D_ID=0xd638000 is the assignment of the fabric address.

```
sw0:admin> portlogdump
time          task          event    port cmd  args
-----
Wed Sep 22 10:02:31 2021
23:55:11.507 PORT          scn      128   1  00000000,00000000,00000001
23:55:11.507 PORT          scn      128  22  00000000,00000000,00000010
23:55:11.507 PORT          scn      128   1  00000000,00000000,00000020
23:55:11.507 PORT          scn      128  22  00000000,00000000,00000008
23:55:11.548 PORT          Tx3      128  116  23638000,00ffffffe,20188306,02000000
```

Switch Fabric Internal Link Services (SW_ILS)

Internal Link Services refers to the service that allows a switch to communicate with itself. A domain controller (or embedded port) communicates to receive updated information.

See ILS for information about the communication when portlogdump shows a well-known address communicating to another well-known address, such as FFFD to FFFD, or FFFCxx to FFFCxx (xx being the domain ID). See [SW_ILS Examples](#).

Brocade-Specific SW_ILS Command Codes

Table 37: Switch Fabric Internal Link Services Command Codes

Value	Code	Description
0x 14000000	IE_HLO	Routing: Hello
0x 15000000	IE_LSU	Routing: Link State Update
0x 16000000	IE_LSA	Routing: Link State Ack
0x 19000000	IE_GAID	Get Alias ID
0x 1a000000	IE_RAID	Return Alias ID

Value	Code	Description
0x 1b000000	IE_RSCN	Inter-switch RSCN
0x 1c000000	IE_INQ	Inquiry
0x 1d000000	IE_GRE	Get Route Entry
0x 1e000000	DRLIR	Distribute Registered Link Incident Records
0x 1f000000	CSW_RSCN	Consolidated Switch RSCN (Vendor-Specific)
0x 20000000	DSCN	Disconnect Class 1 Connection
0x 21000000	LOOPD	Detect Queued Class 1 Connection Request Deadlock
0x 22000000	MR	Merge Request
0x 23000000	ACA	Acquire Change Authorization
0x 24000000	RCA	Release Change Authorization
0x 25000000	SFC	Stage Fabric Configuration
0x 26000000	UFC	Update Fabric Configuration
0x 3000xxxx	ESC	Exchange Switch Capabilities
0x 31000000	ESS	Exchange Switch Support
0x70000000	IE_ZONE	Inter Exchange Zone Update (Vendor-Specific)
0x71000000	IE_SGROUP	Inter Exchange Groupwise Commands
0x72000000	IE_SEC	Inter Exchange Security Entry
0x73000000	IE_SLAPRequest	Inter Exchange SLAP Request
0x74000000	IE_SLAPAcknowledge	Inter Exchange SLAP Acknowledge
0x75000000	IE_SLAPConfirm	Inter Exchange SLAP Confirm
0x76000000	IE_SLAPDone	Inter Exchange SLAP Done
0x77000000	IE_SLAPReject	Inter Exchange SLAP Reject
0x78000000	IE_RCS_INFO	Inter Exchange Reliable Commit Service Info
0x79000000	IE_RCS_ACA	Inter Exchange RCS Acquire Change Authorization
0x7a000000	IE_RCS_SFC	Inter Exchange RCS Stage Fabric Config
0x7b000000	IE_RCS_UFC	Inter Exchange RCS Update Fabric Config
0x7c000000	IE_RCS_RCA	Inter Exchange RCS Release Change Authorization
0x7d000000	IE_RCS_TCO	Inter Exchange RCS Transfer Commit Ownership
0x7e000000	IE_RDTS	Inter Exchange RDTS Request
0x7f000000	IE_ECP	Inter Exchange Exchange Credit Parameters Request
Trunking Support Code		
0x90000000	IE_EMT	Inter Exchange Read MARK Timestamp (VU)
0x91000000	IE_ETP	Inter Exchange Exchange Trunking Parameter

Value	Code	Description
0x92000000	IE_FWN	Firmware Notification
ACL Request		
0x93000000	IE_ACL_REQ	Request ACL Policies
Pause/Resume Request		
0x95000000	IE_PAUSE_RESUME_REQ	Remote Switch Pause for HotCode Load
Diagnostic Command Code		
0x96000000	IE_DIAG_CMD	Diag FCSW Commands
Universal Fabric Config Service (UFCS) Command Code		
0x97000000	IE_UFCS_CMD	UFCS Commands
External Link Services		
0x81000000	SW_RJT	Reject
0x82000000	SW_ACC	Accept
0x83000000	SW_CFN	Change Fabric Name
0x84000000	SW_WTV	Write Timeout Value
0x85000000	SW_ON	Offline Notification

SW_ILS Reject Reason Codes (SW_RJT)

Table 38: SW_ILS: Reject Reason Codes (SW_RJT)

Code	Abbreviation	Description
0x01	SW_INVALID_COMMAND	Invalid ELS command code. The command code is not recognized by the recipient.
0x02	SW_INVALID_VERSION	Invalid revision level. The recipient does not support the specified revision level.
0x03	SW_LOGICAL_ERROR	Logical error. The request identified by the command code and the payload content is invalid or logically inconsistent for the conditions present.
0x04	SW_INVALID_IU_SIZE	Invalid payload size. The size of the payload is inconsistent with the command code and/or any length fields in the payload.
0x05	SW_LOGICAL_BUSY	Logical busy. The port is unable to perform the request at this time. Busy reason explanation code: 01: PHYSICAL_N_PORT_BUSY 03: N_PORT_RESOURCE_BUSY
0x07	SW_PROTOCOL_ERROR	Protocol error. An error has been detected that violates FC-2 protocols and is not covered by another reason code.
0x09	SW_CANT_PERFORM_REQ	Unable to perform command request. The recipient is unable to perform the request at this time.

Code	Abbreviation	Description
0x0b	SW_NOT_SUPPORTED	Command not supported. The recipient does not support the ELS command.
Other value		Reserved.
0xff	SW_VENDOR_UNIQUE	Vendor-unique field indicates an error condition.

Table 39: FC_SW (SW_RJT): Reject Reason Explanation Codes

Code	Abbreviation	Explanation
0x00	SW_NO_EXPLANATION	No additional explanation.
0x01	SW_CLASS_F_ERROR	Class F service parameter error.
0x03	SW_CLASS_N_ERROR	Class N service parameter error.
0x04	SW_UNKNOWN_CTL_MODE	Unknown flow control code.
0x05	SW_UNKNOWN_CTL_PARAMS	Invalid flow control parameters .
0x0d	SW_INVALID_PORT_NAME	Invalid port name.
0x0e	SW_INVALID_SWITCH_NAME	Invalid switch name.
0x0f	SW_TOV_MISMATCH	R_A_TOV or E_D_TOV mismatch..
0x10	SW_INVALID_DLIST	Invalid domain ID list
0x19	SW_COMMAND_IN_PROGRESS	Command already in progress.
0x29	SW_NO_MORE_RESOURCES	Insufficient resources available.
0x2a	SW_NO_DOMAIN_ID	Domain ID not available.
0x2b	SW_INVALID_DOMAIN_ID	Invalid domain ID.
0x2c	SW_NON_SUPPORTED_REQ	Request not supported.
0x2d	SW_NO_LINK_PARAMETERS	Link parameters not yet established.
0x2e	SW_NO_CONT_DOMAIN_IDS	Requested domain IDs not available.
0x2f	SW_EPORT_ISOLATED	E_Port is isolated.
0x30	SW_CANT_TRUNK	Cannot trunk.
0x3a	SW_EPORT_DISABLED	E_Port disabled.
0x3b	SW_SLAP_NOTDONE	SLAP not done.
0x3c	SW_ZONE_NOTDONE	Zoning not done.
0x3d	SW_RDTS_NOTDONE	RDTS not done.
0x3e	SW_NOT_VC_MODE	—
0x3f	SW_HA_FAILOVER	—
0x40	SW_NO_MASTER	—
0x41	SW_INSUFF_VC	—
0x42	SW_CR_RECOV_ALL_VC	—
0x43	SW_DPORT_SEGMENT	—
0x44	SW_ESC_SEGMENT	—
0x45	SW_RRDY_SEGMENT	—
0x46	SW_ANALYTICS_SEGMENT	—

Code	Abbreviation	Explanation
0x47	SW_ZONE_NOT_REQUIRED	—
0x48	SW_ST_DPORT_CFG_CNFLCT_CHANS	—

SW_ILS Examples

The following ILS examples are explained in the following ways:

- The first section (labeled "Example") shows the entire example, and the subsequent sections are broken up line by line.
- For a text description of the events displayed in these examples, see "Example Summary" at the end of each section.

Hello Frame Example

Frame Information

```
sw0:admin> portlogdump
time      task      event    port cmd  args
-----
Wed Sep 22 10:02:31 2021
23:55:08.063 PORT      Tx        1    40  02ffffffd,00ffffffd,8b3effff,14000000
23:55:08.064 PORT      Rx        1     0  c0ffffffd,00ffffffd,8b3e0b1a,00000001
```

Args for Output Line 1

```
02ffffffd,00ffffffd,8b3effff,14000000
```

Table 40: Argument Breakdown for Example (Line 1)

Arg1 02ffffffd	Arg2 00ffffffd	Arg3 8b3effff	Arg4 14000000
02 = RC_CTL (request)	00 = Identifier	8b3e = OX_ID	14000000 = SW_ILS command code (hello). See Brocade-Specific SW_ILS Command Codes .
ffffffd = D_ID (fabric controller)	ffffffd = S_ID (fabric controller)	ffff = RX_ID	

Args for Output Line 2

```
c0ffffffd,00ffffffd,8b3e0b1a,00000001
```

Table 41: Argument Breakdown for Example (Line 2)

Arg1 c0ffffffd	Arg2 00ffffffd	Arg3 8b3e0b1a	Arg4 00000001
CO = RC_CTL (link control acknowledged)	00 = Identifier	8b3e = OX_ID	One frame acknowledged using standardized code.
ffffffd = D_ID (fabric controller)	ffffffd = S_ID (fabric controller)	0b1a = RX_ID	

Example Summary

The fabric controller from one switch sends a handshake "hello" to the other fabric controller on the switch. The handshake is acknowledged.

Trunking Frame Example

Frame Information

```
sw0:admin> portlogdump
time          task          event    port cmd  args
-----
Wed Sep 22 10:02:31 2021
01:18:48.281 PORT      Tx        0    24  02ffffffd,00ffffffd,0c93ffff,90000014
01:18:48.282 PORT      Rx        0     0  c0ffffffd,00ffffffd,0c9308f5,00000001
01:18:48.288 PORT      Rx        0    24  03ffffffd,00ffffffd,0c9308f5,02000014
01:18:48.288 PORT      Tx        0     0  c0ffffffd,00ffffffd,0c9308f5,00000001
Output line 1
01:18:48.281 PORT      Tx        0    24  02ffffffd,00ffffffd,0c93ffff,90000014
```

Args for Output Line 1

```
02ffffffd,00ffffffd,0c93ffff,90000014
```

Table 42: Argument Breakdown for Example (Line 1)

Arg1 02ffffffd	Arg2 00ffffffd	Arg3 0c93ffff	Arg4 9000014
02 = RC_CTL (request)	00 = Identifier	0c93 = OX_ID	9000014 = Trunking IU Preamble
ffffffd = D_ID	ffffffd = S_ID	ffff = RX_ID	

Args for Output Line 2

```
c0ffffffd,00ffffffd,0c9308f5,00000001
```

Table 43: Argument Breakdown for Example (Line 2)

Arg1 c0ffffffd	Arg2 00ffffffd	Arg3 0c9308f5	Arg4 00000001
CO = RC_CTL (link control acknowledged)	00 = Identifier	0c93 = OX_ID	One frame acknowledged using standardized code.
ffffffd = D_ID	ffffffd = S_ID	08f5 = RX_ID	

Args for Output Line 3

```
03ffffffd,00ffffffd,0c9308f5,02000014
```

Table 44: Argument Breakdown for Example (Line 3)

Arg1 03fffffd	Arg2 00fffffd	Arg3 0c9308f5	Arg4 02000014
03 = RC_CTL (reply)	00 = Identifier	0c93 = OX_ID	02 = (Accept)
ffffd = D_ID (fabric controller)	ffffd = S_ID (fabric controller)	08f5 = RX_ID	000014

Args for Output Line 4

```
c0fffffd,00fffffd,0c9308f5,00000001
```

Table 45: Argument Breakdown for Example (Line 4)

Arg1 c0fffffd	Arg2 00fffffd	Arg3 0c9308f5	Arg4 00000001
c0 = RC_CTL (link control acknowledge)	00 = Identifier	0c93 = OX_ID	One frame acknowledged using standardized code.
ffffd = D_ID (fabric controller)	ffffd = S_ID (fabric controller)	08f5 = RX_ID	

Example Summary

The fabric controller on one switch sends a trunking stamp to the fabric controller on the other switch. The request is acknowledged and accepted.

NSD Example

The following example shows the S_ID domain controller (fffc0a) talking to the D_ID domain controller (fffc09).

If they are communicating using a Brocade-specific inter-switch RSCN code, See [Brocade-Specific SW_ILS Command Codes](#) for descriptions.

```
sw0:admin> portlogdump
time          task          event    port cmd  args
-----
Wed Sep 22 10:02:31 2021
16:09:52.553 nsd          rscn      0fffc09 00fffc0a,1b000000,500a1f00,000000001
```

Zoning Codes (NZ)

The SW_ILS command codes in the following table also correlate to zone exchange messaging.

Table 46: Zoning Request Codes for Zoning Exchange

Value	Code	Description
0x22000000	IE_NZ_MR	N/A
0x23000000	IE_NZ_ACA	N/A
0x24000000	IE_NZ_RCA	N/A
0x25000000	IE_NZ_SFC	N/A

Value	Code	Description
0x26000000	IE_NZ_UFC	N/A
0x70000000	IE_ZONE	Zone Update (Vendor-Specific)
0x71000000	IE_SGROUP	Groupwise Commands
0x72000000	IE_SEC	Security Entry
0x73000000	IE_SLAPRequest	SLAP Request
0x74000000	IE_SLAPAcknowledge	SLAP Acknowledge
0x75000000	IE_SLAPConfirm	SLAP Confirm
0x76000000	IE_SLAPDone	SLAP Done
0x77000000	IE_SLAPReject	SLAP Reject
0x78000000	IE_RCS_INFO	Reliable Commit Service Information
0x79000000	IE_RCS_ACA	RCS Acquire Change Authorization
0x7a000000	IE_RCS_SFC	RCS Stage Fabric Config
0x7b000000	IE_RCS_UFC	RCS Update Fabric Config
0x7c000000	IE_RCS_RCA	RCS Release Change Authorization
0x7d000000	IE_RCS_TCO	RCS Transfer Commit Ownership
0x7e000000	IE_RDTS	RDTS Request
0x7f000000	IE_ECP	Exchange Credit Parameters Request

Table 47: Zoning Request Response Codes

Value	Code
0x00	NZ_SUCCESSFUL
0x01	NZ_FABRIC_BUSY
0x02	NZ_FAILED
(0 - 100)	NZ_ERROR_BASE

Table 48: Zoning Reason Codes

Value	Code
0x00	NZ_NO_REASON
0x01	NZ_INVALID_DATA_LEN
0x02	NZ_UNSUPPORTED_CMD
0x04	NZ_NOT_AUTHORIZED
0x05	NZ_INVALID_REQUEST
0x06	NZ_FABRIC_CHANGING
0x07	NZ_UPDATE_NOT_STAGED
0x09	NZ_INVALID_DATA
0x0a	NZ_CANNOT_MERGE
0x0b	ZONING_NO_LICENSE

Table 49: Zoning Command Codes

Code	Abbreviation	Description
1	ZONE_MERGE_REMOTE_RESPONSE	Response sent to remote zoneDB update/merge.
2	ZONE_MERGE_my_RESPONSE	Response received for my zone update/merge.
3	ZONE_MERGE_INTEROP_RESPONSE	Interop-mode response sent to remote zone update/merge.
4	ZONE_CHECK_RESPONSE	Zone check response returned to kernel.
9	ZONE_RCS_PROCESS_CM_RESPONSE	Zone RCS process response.
81	ZONE_MERGE_REMOTE_REQUEST	Remote zoneDB update/merge request.
82	ZONE_MERGE_my_REQUEST	My initiated zone update/merge request.
83	ZONE_MERGE_INTEROP_REQUEST	Interop-mode remote zone update/merge request.
84	ZONE_CHECK_REQUEST	Zone check request from kernel.
89	ZONE_RCS_PROCESS_CM_REQUEST	Zone RCS process request.
90	ZONE_EFF_CFG_CHANGED	Zone EFF configuration changed.

Table 50: Zoning Status Codes

Code	Description
0100	REJECT
0200	ACCEPT
0300	INFO

Table 51: Zoning Detail Codes

Code	Abbreviation
0001	NO_EFFECTIVE_CFG
0002	switchGetWwnIds_FAILED
0003	TARGET_PORT_OFFLINE
0004	my_ORIG_PORT_OFFLINE
0005	SPOOFING_CHECK_FAILED
0006	ZONE_TYPE_SETUP_FAILED_ID1
0007	ZONE_GROUP_SETUP_FAILED_ID1
0008	ZONE_TYPE_SETUP_FAILED_ID2
0009	ZONE_GROUP_SETUP_FAILED_ID2
000a	ZONED_OUT
000b	GET_ID_TO_WWN_FAILED
000c	ZONED_OUT_PDCM

Table 52: TZone - New Zoning SFC Request's Operation Request Values

Zoning Request Value	Code	Description
0x03	NZ_ACTIVATE_ZONESET	
0x04	NZ_DEACTIVATE_ZONESET	—
Fabric Binding SFC Request's Operation Request Values		
0x05	NZ_ACTIVATE_FABBIND_ALLOW	—
0x06	NZ_ACTIVATE_FABBIND_STRICT	—
0x07	NZ_DEACTIVATE_FABBIND	—
0xF0	NZ_SAVE_FULLZONESET	Vendor-specific fabric configuration server (FCS) request operation code used for saving the configuration without activating or deactivating.

Table 53: Zoning Transaction Abort Reason Codes

Value	Code
0xa0	ERR_ZONE_MERGE_RECEIVED
0xa1	ERR_ZONE_CONFIG_CHANGE
0xa2	ERR_ZONE_BAD_CONFIG
0xa3	ERR_ZONE_OP_FAILED
0xa4	ERR_ZONE_CANNOT_START_TRANSACTION
0xa5	ERR_ZONE_SHELL_EXITED
0xa6	ERR_ZONE_NOT_OWNER
0xa7	ERR_ZONE_VALIDATION_FAILED
0xa8	ERR_SYNC_DUMP_OCCURRED

Zoning-Specific Opcodes

SW_ILS (0x7f) ENT_MEMBER - Type of Zoning Members

Table 54: Specific Opcode for 0x7f

SW_ILS (0x7f)	ENT_MEMBER	Type Description
0x01	PORT	Entry describes a physical port.
0x02	ENT_WWN	Entry describes a WWN.
0x04	ENT_BMAP	Entry describes an AL_PA bitmap.
0x08	ENT_NAME	Entry describes a name.

Table 55: Specific Opcode for 0x80

SW_ILS (0x80)	ENT_LUN	LUN Information in entry_t Valid
0x01	ENT_TARGET	e_devType is TARGET.
0x02	ENT_INITIATOR	e_devType is INITIATOR.

Table 56: Zone Configuration Operations Codes

Code (Hex)	Operation	Description
00000001	CREATE	Create an object.
00000002	DELETE	Delete an object.
00000003	ADD	Add a member to an object.
00000004	REMOVE	Remove a member from an object.
00000005	CLEAR	Clear all objects.
00000006	DISABLE	Disable the configuration.
00000007	ENABLE	Enable the configuration.
00000008	SAVE	Save in flash memory.
00000009	MERGE	Merge two configurations.
0000000A	REMOTE	Look up ID on remote switch.
0000000B	CHECK	Checksum configuration.
00000015	TRANS_DISABLE	N/A
00000016	TRANS_ENABLE	N/A
00000017	TRANS_SAVE	N/A
00000018	AD_TRANS_APPLY	AD apply.
00000019	AD_TRANS_SAVE	AD save.
00000020	TRANS_OPEN	N/A
00000064	ZONE_VERSION	N/A
00000073	ZONE_SEGMENT	Request to ask the remote switch to segment the related code.

Table 57: Zone Object Types Code

Code Hex Value	Description
V00	Name Zoning
01	Zone set (Cfg)
02	Zone
03	Zone Alias
04	QLP
05	Cfg_end
06	IPO
08	Enable_cfg
09	Active_cfg

Table 58: Zone Error (TZone-reject) Code

Decimal Code	Abbreviation	Description
0	NOERROR	Generic - no error.
1	NOMEMORY	Generic malloc failure.
2	ZONE RULE CHECK ERROR CODE EZACCEPT	No zoning rule violation.
3	EZBADPORT	Nonexistent port number.
4	FCTYPEMIX	Specific FC type and wildcard mix.
5	ERSINGLEDEV	More than one device when LUN presents.
6	EZLUNMIX	Mixture of devices with and without a LUN at the same port.
7	EZMENMIX	Mix of port and WWN zone members.
8	EZHARDSOFTMIX	Mix of hard and soft zones.
9	EZFAQLMIX	Mixing hard zoning with FA or QL zone.
A	EZLUNMENMIX	Mix of QQQ.
B	ZONE TYPE MANAGEMENT ERROR CODE ZT_SOFTZONE	Soft zoning - no need for ZT.
C	ZT_FABASSIST	FA zone - no need for ZT.
E	ZT_DRIVERERR	Driver returns error.
F	ZG_NO_MORE_CAM	No more CAM entry in port driver.
10	ZCHECKBADWWN	Zone check bad WWN authentication.
11	WWN_IN_PORTZONE	WWN device in hard PORT zone.
12	OFFSET_MASK_FULL	No offset register available.
13	PORT_EPORT	Port is an E_Port.
14	NO_CHANGE_NO_SAVE	Nothing changed, cfgSave is no-op.
15	NO_CHANGE_NO_ENABLE	Nothing changed, cfgEnable is no-op.
16	EMPTY_CFG_W_ENABLE	No new cfg/zone/alias groups defined but has an effective cfg. Happens when local cfg and neighbor's cfg differ by the effective cfg.
17	INDEX_TOO_BIG	A switch in the fabric cannot handle the d,i member.

Zone Example

FC-4 Type Device Data - Zoning Request

```
sw0:admin> portlogdump
time          task          event    port cmd  args
-----
Wed Sep 22 10:02:31 2021
01:36:36.403 PORT          Tx        29    48  02fffc07,00fffc04,09cfffff,7c000028
01:36:36.404 PORT          Rx        29     0  c0fffc04,00fffc07,09cf0d69,00000001
01:36:36.409 PORT          Rx        29    20  03fffc04,00fffc07,09cf0d69,02000000
```

```
01:36:36.409 PORT      Tx      29      0  c0fffc07,00fffc04,09cf0d69,00000001
```

Output Line 1

```
01:36:36.403 PORT      Tx      29      48  02fffc07,00fffc04,09cfffff,7c000028
```

Table 59: Breakdown of Args Fields in Output (Line 1)

Arg1 02fffc07	Arg2 00fffc04	Arg3 09cfffff	Arg4 7c000028
02 = RC_CTL (request)	00 = Identifier	09cf = OX_ID	Zoning IU Preamble:
fffc07 = D_ID	fffc04 = S_ID	ffff = RX_ID	7c = IE_ELS Code (zoning) 00 = Zone Object Type (Name zoning)

Output Line 2

```
01:36:36.404 PORT      Rx      29      0  c0fffc04,00fffc07,09cf0d69,00000001
```

Table 60: Breakdown of Args Fields in Output (Line 2)

Arg1 c0fffc04	Arg2 00fffc07	Arg3 09cf0d69	Arg4 null
c0 = RC_CTL (link control acknowledge)	00 = Identifier	09cf = OX_ID	One frame acknowledged using standardized code.
fffc04 = D_ID	fffc07 = S_ID	0d69 = RX_ID	

Output Line 3

```
01:36:36.409 PORT      Rx      29      20  03fffc04,00fffc07,09cf0d69,02000000
```

Table 61: Breakdown of Args Fields in Output (Line 3)

Arg1 03fffc04	Arg2 00fffc07	Arg3 09cf0d69	Arg4 02000000
03 = RC_CTL (reply)	00 = Identifier	09cf = OX_ID	02 = Zoning IU preamble (accept)
fffc04 = D_ID	fffc07 = S_ID	0d69 = RX_ID	

Output Line 4

```
01:36:36.409 PORT      Tx      29      0  c0fffc07,00fffc04,09cf0d69,00000001
```

Table 62: Breakdown of Args Fields in Output (Line 4)

Arg1 c0fffc07	Arg2 00fffc04	Arg3 09cf0d69	Arg4 00000001
c0 = RC_CTL (link control acknowledge)	00 = Identifier	09cf = OX_ID	One frame acknowledged using standardized code.
fffc07 = D_ID	fffc04 = S_ID	0d69 = RX_ID	

Example summary

Embedded port fffc04 sends a zoning code 70 request to the other embedded port fffc07. Embedded port fffc07 sends a link control acknowledgment.

Fabric OS State Synchronization (FSS)

The primary function of FSS is to deliver State Update messages from active components to their peer standby components. FSS determines if fabric elements are synchronized (and thus "FSS-compliant").

A Fabric OS switch service is composed of a set of components, which is either a user-space service daemon or kernel-space driver. The components have a symbolic name to identify its function inside the switch service and the instance number of the switch on which the component is operating.

FSS monitors the Fabric OS elements (asic driver, ns, zone, web, fabric, fspf, ms, ps, and so on) and reports them as either FSS compliant or not FSS compliant. A fabric service is deemed fault resilient (or FSS compliant) if a set of its components is operating in an active standby mode, and the state replication is carried out from the active components to their corresponding standby components.

The following table outlines each line of FSS portlogdump output.

Table 63: FSS Field Descriptions

Time	Task	Event	Port	Cmd	Arg
Displays time of event	Always FSSk	Can be msg, event, or cmd. See FSS Messages .	Always "0" (FSS is related to CPs, not ports).	0 = Sent or Transmitted (TX). 1 = Received (RX).	Arg1 = Service ID and component ID. See FSSk Service Identification . Arg2 = Send/receive operation data. Arg3 = Optional flags. Arg4 = A text description. See FSS Messages .

FSS Messages

This section refers to the relationship between the event column and the final entry of the args column. See the following table to decode a specific event and arg entry.

```
sw0:admin> portlogdump
time          task          event    port cmd  args
-----
Wed Sep 22 10:02:31 2021
21:54:04.763  FSSK          event    0     0    00000000,00000000,00000005,TRAC
```

Table 64: FSS Messages

Event Type	Code/4th Arg	Description
msg	EXCH	Broadcast message exchange well-known address.
msg	UPDA	Message state update.
msg	ACK	Message - state acknowledgment.
msg	STAR	Message - sync started.
msg	STOP	Message - sync stopped.
msg	RECO	Message - recover.
msg	YIEL	Message - yield.
msg	NONE	Message - no message.
msg	TAKE	Message - standby takes control.
msg	TEST	Message - test point.
event	STAR	Sync start event.
event	UPCO	Up connection event.
event	DOWN	Down connection event.
event	COMP	Image complete event.
event	INCO	Incomplete event.
event	DUMP	A dump is ready.
event	NONE	No event occurred.
event	SYNC	Sync success event.
event	FAIL	Sync failure event.
event	STOP	Sync stopped.
event	RECO	The recovery failed.
event	TAKE	A take control event occurred.
event	YIEL	A yield control event occurred.
event	MISM	A mismatch event occurred.
event	UPDA	A state update event occurred.
event	ACTI	Event reported. The active CP is ready.
event	STAN	Event reported. The standby CP is ready.
event	TXQH	Event reported. Transmissions are high.
event	RXQH	Event reported. Receptions are high.
event	MISS	Event reported. A service is missing.
event	AVAI	Event reported. Service is available.
event	TRAC	A trace of events was run.
cmd	NONE	No command.
cmd	STAR	The sync started.
cmd	STOP	The sync stopped.
cmd	YIEL	Yield control.
cmd	TAKE	Take control.
cmd	RESE	Reset.

Event Type	Code/4th Arg	Description
cmd	FREE	Freeze.
cmd	UNFR	Unfreeze.
cmd	UPDA	State update.
cmd	CONN	Connect.

FSSk Service Identification

The service ID is displayed in the high-order half-word of Arg1.

```
21:54:04.882 FSSK      event      0      0 00020000,00000000,00000000,UPCO
```

The service ID can be viewed by running the `hadump` command.

The following is the output from the `hadump` command.

```
=== FSS Service Dump : fcsW0 ===
== State ==
fcsW0(2): ACTIVE(0), Required -----> **service ID 2
local = IMG_COMP, prev = IMG_NONE, peer = IMG_NONE
  Name      Local      Remote
  fcsW0 (M)  IMG_COMP  IMG_INCOMP -----> component id 0
    swc (M)  IMG_COMP  IMG_INCOMP -----> component id 1
    fcp (M)  IMG_COMP  IMG_INCOMP -----> component id 2
    rt (M)   IMG_COMP  IMG_INCOMP
```

FSSk Component Identification

A list of possible components can be found by using the `hadump` command. The following table lists the component ID and its associated name.

The component ID appears in the low-order half-word of Arg1. Use this number to determine the component that is being referenced.

```
22:15:51.430 FSSK      msg       0      1 00020001,00000000,00000014,UPDA
```

Table 65: FSSk Component Identification

Component ID	Component Name
0x0	fcsW
0x1	swc
0x2	fcp
0x3	rt
0x4	fc
0x5	fabric
0x6	zone
0x7	fspf

Component ID	Component Name
0x8	ns
0x9	ms
0xA	ps
0xB	rsc
0xC	evm
0xD	track
0xE	ts
0xF	slap
0x10	security
0x11	web
0x12	snmp
0x13	fw
0x14	diagfss

Reading FSSk Output in the portlogdump Output

```
sw0:admin> portlogdump
time          task      event   port  cmd   args
-----
Wed Sep 22 10:02:31 2021
18:13:37.979  FSSK      msg      0      0      0002000e,0000012c,00000000,UPDA
18:13:56.584  FSSK      cmd      0      0      00000000,00000000,00000000,STOP
18:13:56.584  FSSK      event    0      0      00000000,00000000,00000000,STOP
18:13:56.584  FSSK      msg      0      0      00000000,00000005,00000000,UPDA
18:13:56.861  FSSK      cmd      0      0      00020000,00000000,00000000,STOP
18:13:56.862  FSSK      event    0      0      00020000,00000000,00000000,STOP
18:13:56.862  FSSK      msg      0      0      00020000,00000005,00000000,UPDA
18:13:56.874  FSSK      cmd      0      0      00040000,00000000,00000000,STOP
18:13:56.875  FSSK      event    0      0      00040000,00000000,00000000,STOP
```

The following steps indicate how to interpret the example (from left to right).

1. The `task` column should display FSSK.
2. Look at the `event` column. All events (msg, cmd, event, and so on) are described in [FSS Messages](#).
3. Bypass the `port` column; it is always "0" because FSS is not a port-related service.
4. Look at the `cmd` column.
 - 0 indicates Sent or Transmitted (TX).
 - 1 indicates Received (RX).
5. Begin reading the `args` column.
 - Arg1 (the first 8 characters) displays the service ID and the component ID. See [FSSk Component Identification](#).
 - Arg2 (the second 8 characters) displays send or receive operation data.
 - Arg3 (the third 8 characters) displays optional flags (send or receive data).
 - Arg4 (the fourth entry in the args column) displays text that helps clarify the output.

- Note the displayed text (for example, UPDA).
- Look back at the event column (for example, msg).
- Use [FSS Messages](#) to find the message description.

ISL Values and Parameters

This section lists the ISL values and parameters for the `portlogdump` command.

ISL Flow Control Mode Values

Table 66: ISL Flow Control Mode Values

Value	Description
hex'0001'	Vendor-specific
hex'0002'	R_RDY flow control
hex'0003 - hex'FFFE'	Vendor-specific
Other values	Reserved

ISL Flow Control Parameters

Table 67: ISL Flow Control Parameters

Size	Item
4	BB_Credit
16	Compatibility Parameters

Switch_Priority Field Values

Table 68: Switch_Priority Field Values

Hexadecimal Value	Description
00	Reserved.
01	Highest priority value ¹ .
02	The switch was the principal switch before sending or receiving the BF ² .
03 to FE	Higher to lower priority values ³ .
FF	The switch is not capable of acting as a principal switch.

1. This value allows the system administrator to establish which switch becomes the principal switch.
2. This switch allows the same switch to become the principal switch if it is still part of the fabric after sending or receiving the Build Fabric SW_ILS.
3. The Switch_Priority value for a given switch is established by means not defined by this standard.

Fibre Channel Common Transport Protocol (FC-CT)

This section covers the variations to the Fibre Channel Common Transport (FC-CT) protocol that are unique.

Name Server (SNS)

The Name Server (also referred to as the Simple Name Server) is a switch service that stores names, addresses, and attributes and that provides them as required to other devices in the fabric. SNS is defined by Fibre Channel standards and exists at the well-known address for the Name Server (fffffc).

NOTE

The Name Server can also be referred to as the *directory service*.

Name Server Commands and Code Descriptions

Table 69: Name Server Command Codes

Code	Mnemonic	Description	Objects in Request CT_IU	Objects in Accept CT_IU
Query with Port ID				
0100	GA_NXT	Get All Next	Port Identifier	All
0101	GID_A	Get Identifiers	A list of Domain_IDs or Domain_ID/Area_IDs	A list of Domain_IDs or Domain_ID/Area_IDs
0112	GPN_ID	Get Port Name	The Port Identifier is hex (Note: The null value for the Port or Node Name object is hex '00 00 00 00 00 00 00 00')	Port Name (Note: The null value for the Port or Node Name object is hex '00 00 00 00 00 00 00 00')
0113	GNN_ID	Get Node Name	Port Identifier	Node Name
0114	GCS_ID	Get Class of Service	Port Identifier	Class of Service
0117	GFT_ID	Get FC-4 Types	Port Identifier	FC-4 Types
0118	GSPN_ID	Get Symbolic Port Name	Port Identifier	Symbolic Port Name
011A	GPT_ID	Get Port Type	Port Identifier	Port Type
011B	GIPP_ID	Get IP Address (Port)	Port Identifier	IP Address (Port)
011C	GFPN_ID	Get Fabric Port Name	Port Identifier	Fabric Port Name
011D	GHA_ID	Get Hard Address	Port Identifier	Hard Address
011E	GFD_ID	Get FC-4 Descriptors	Port Identifier	List of FC-4 Descriptors
011F	GFF_ID	Get FC-4 Features	Port Identifier	FC-4 Features
Query with Port Name				
0121	GID_PN	Get Port Identifiers	Port Name	Port Identifier
012B	GIPP_PN	Get IP Address (Port)	Port Name	IP Address (Port)
Query with Node Name				
0131	GID_NN	Get Port Identifier Node Name	Node Identifiers	List of Port Identifiers
0132	GPN_NN	Get Port Node Names	Node Name	List of Port Identifiers and Port Names
0135	GIP_NN	Get IP Address (Node)	Node Name	IP Address (Node)
0136	GIPA_NN	Get Initial Process Associator	Node Name	Initial Process Associator
0139	GSNN_NN	Get Symbolic Node Name	Node Name	Symbolic Node

Code	Mnemonic	Description	Objects in Request CT_IU	Objects in Accept CT_IU
Query with IP				
0153	GNN_IP	Get Node Name	IP Address (Node)	Node Name
0156	GIPA_IP	Get Initial Process Associator	IP Address (Node)	Initial Process Associator
0171	GID_FT	Get Port Identifiers	None, because the FC-4 type is specified as an encoded value, not as an object.	List of Port Identifiers
0172	GPN_FT	Get FC4-Type Port Name	None, because the FC-4 type is specified as an encoded value, not as an object.	List of Port Identifiers and Port Names
0173	GNN_FT	Get FC-4 Type Node Names	List of Port Identifiers and Port Names	—
Query with Port Type				
01A1	GID_PT	Get Port Identifiers	Port Type (see Name Server port type)	List of Port Identifiers
Query with IP Port				
01B1	GID_IPP	Get Port Identifiers for IP Address (Port)	IP Address (Port)	List of Port Identifiers
01B2	GPN_IPP	Get Port Name	IP Address (Port)	Port Name
Query with FC-4 Features				
01F1	GID_FF	Get Port Identifiers	FC-4 Features	List of Port Identifiers
Registration				
0212	RPN_ID	Register Port Name	Port Identifier, Port Name	None
0213	RNN_ID	Register Node Name	Port Identifier, Node Name	None
0214	RCS_ID	Register Class of Service	Port Identifier, Class	None
0217	RFT_ID	Register FC-4 Types	Port Identifier, FC-4 Types	None
0218	RSPN_ID	Register Symbolic Port Name for this Port ID	Port Identifier, Symbolic Port Name	None
021A	RPT_ID	Register Port Type for this Port ID	Port Identifier, IP Address (Port)	None
021B	RIPP_ID	Register IP Address (Port)	Port Identifier, IP Address (Port)	None
021C	RFPN_ID	Register Fabric Port Name	Port Identifier, Fabric Port Name	None
021D	RHA_ID	Register Hard Address	Port Identifier, Hard Address	None
021E	RFD_ID	Register FC-4 Descriptors	Port Identifier, FC-4 Types and FC-4 Descriptors	None
021F	RFF_ID	Register FC-4 Features	Port Identifier, FC-4 Features	None

Code	Mnemonic	Description	Objects in Request CT_IU	Objects in Accept CT_IU
0235	RIP_NN	Register IP Address for this Node WWN	Node Name, IP Address (Node)	None
0236	RIPA_NN	Register IP Address for this Node WWN	Node Name, Initial Process Associator	None
0239	RSNN_NN	Register Symbolic Node Name for this Node WWN	Node Name, Symbolic Node Name	None
0299	RSDDQ_ID	Register SDDQ (SDDQ action) by Port Identifier (PID)	Port Identifier	None
Deregistration				
0300	DA_ID	Deregister All	Port Identifier	None
FC-CT Command Restrictions The following command codes are not used by any well-known server for the FC-GS-x client/server interface: • Command codes 0400–04FF and E000–EFFF • Fabric internal FC-CT commands • Command codes F000–FFFF: Vendor-specific FC-CT commands				

FC-CT Response Commands

Table 70: FC-CT Response Commands

Value	Response
0001–7FFF	Request CT_IU. (These codes are used by all CT applications; for an example, see Name Server Commands and Code Descriptions .)
8001	Reject Response CT_IU. (These codes are used by all CT applications; for an example, see Name Server Commands and Code Descriptions .)
8002	Accept Response CT_IU (hex '0000': All available information was returned in the Accept CT_IU.)
Other values	Reserved.

FC-CT Reject Reason Codes (RJT)

Table 71: FC-CT Reject Reason Codes

Code	Description
01	Invalid command code
02	Invalid version level
03	Logical error
04	Invalid information unit size
05	Logical busy
07	Protocol error

Code	Description
09	Unable to perform command request
0B	Command not supported
FF	Vendor-specific error (see the Vendor Unique field)
Others	Reserved

FC-CT Reason Code Explanations (NS_RJT)

Table 72: FC-CT Reject Reason Code Explanations

Encoded Value (Bits 15-8)	Description
00	No additional explanation
01	Port Identifier not registered
02	Port Name not registered
03	Node Name not registered
04	Class of Service not registered
05	IP Address (node) not registered
06	Initial Process Associator not registered
07	FC-4 TYPEs not registered
08	Symbolic Port Name not registered
09	Symbolic Node Name not registered
0A	Port Type not registered
0B	IP Address (port) not registered
0C	Fabric Port Name not registered
0D	Hard Address not registered
0E	FC-4 Descriptor not registered
0F	FC-4 Features not registered
10	Access denied
11	Unacceptable Port Identifier
12	Database empty
13	No object registered in the specified scope
Others	Reserved

Fabric Internal FC-CT Commands

Table 73: Fabric Internal FC-CT Commands

Code	Mnemonic	Description
0410	GE_ID	Get entries, based on port identifier
0420	GE_PN	Get entries, based on port name
0430	GE_NN	Get entries, based on node name

Code	Mnemonic	Description
0450	GE_IP	Get entries, based on IP address
04A0	GE_PT	Get entries, based on port type
04B0	GE_ZM	Get entries, based on zone member
04C0	GE_ZN	Get entries, based on zone name
04D0	GE_IPP	Get entries, based on port IP address
04E0	GE_FF	Get entries based on FC-4 features

Name Server Request Types

Table 74: Name Server Request Types

Hexadecimal Code	Description
01 xx	Get Objects (Query)
02 xx	Register Objects
03 xx	Deregister Objects
0400-04FF and E000-EFFF	Fabric internal FC-CT commands
F000- FFFF	Vendor-specific FC-CT commands

Name Server Objects

Table 75: Name Server Objects

Object Mnemonic	Object Name	Description
A	Aggregated objects	Contains objects 1 through D
ID	Port Identifier	3-byte address identifier
PN	Port Name	8-byte Name_Identifier
NN	Node Name	8-byte Name_Identifier
CS	Class of Service	32-bit or 128-bit Internet Protocol address
IPA	Initial Process Associator	8-byte Process_Associator
FT	FC-4 TYPEs	32-byte field (8 words), one bit per TYPE supported
SPN	Symbolic Port Name	Variable length (0 to 255 bytes) field
SNN	Symbolic Node Name	Variable length (0 to 255 bytes) field
PT	Port Type	1-byte encoded Port Type
IPP	IP Address (Port)	32-bit or 128-bit Internet Protocol address
FPN	Fabric Port Name	8-byte Name_Identifier
HA	Hard Address	3-byte address identifier
FD	FC-4 Descriptor	Variable length (0 to 255 bytes) field
FF	FC-4 Features	128-byte array, 4 bits per TYPE

Name Server Port Types

Table 76: Name Server Port Types

Code	Description
0	NSPT_UNKNOWN
1	N_PORT
2	NL_PORT
3	NFL_PORT
0x04-0x80	Reserved
0x7F special value for all of the above ports	Nx_PORT
0x81	F_PORT
0x82	FL_PORT
0x83	LT_PORT
0x84	E_PORT

FC-4 Type Codes

The FC-4 Type Code provides the type of protocol service (such as FC-CT, FCP, FCIP, and so on).

Table 77: FC-4 Type Codes

Code	Service
0x04	ISO/IEC 8802-2 LLC/SNAP (in order)
0x05	FCIP
0x08	SCSI_FCP
0x09	SCSI-GPP
0x20	FC-CT used by Fibre Channel Services, such as NS, MS, AS, and so on
0x21	FC-FG
0x22	FC-SW
0x23	FC-AL (not used)
0x24	FC-SNMP
0x25-0x27	Fabric Services
0x30-0x33	Scalable Coherent Interface
0x40	HIPPI-FP
0x58	Virtual Interface
0x5b	Fabric
0xDF	RNID General Topology Discover (from FC-SW-5)
0xe0-0xff	Vendor-specific

Server-to-Server Protocol Data Unit Command/Response Codes

Table 78: Server-to-Server Protocol Data Unit Command/Response Codes

Brocade-Specific Code	Response
0x0001	NSS_REQUEST
0x0002	NSS_RESPONSE
0x0003	NSS_INFORM
0x0004	NSS_DELETE

NSS_CT Command/Response Codes

The following table contains the CT_VU_NSS (Brocade, 0x0c) vendor-specific Name Server Protocol Data Unit Command/Response codes.

Table 79: NSS_CT Command/Response Codes

Code	Response
0x0001	NSS_REQUEST
0x0002	NSS_RESPONSE
0x0003	NSS_INFORM
0x0004	NSS_DELETE
0x0410	NSS_GE_ID
0x041d	NSS_GQP_PAIR
0x041e	NSS_GQP_ID
0x041f	NSS_GIDX
0x0420	NSS_GE_PN
0x0430	NSS_GE_NN
0x0450	NSS_GE_IP
0x0470	NSS_GE_FT
0x04A0	NSS_GE_PT

Management Server

The Management Server (MS) provides a single management access point within the Fibre Channel fabric.

The Management Server (MS) well-known address is FFFFA.

The Management Server covers the following areas:

- The Fabric Configuration Server provides for the configuration management of the fabric (see [Fabric Configuration Server](#)).
- The Unzoned Name Server provides access to Name Server information that is not subject to zone constraints (see [Name Server \(SNS\)](#)).
- The Fabric Zone Server provides access to, and control of, zone information (see [Fabric Zone Server \(ZS\)](#)).

Fabric Configuration Server

The Fabric Configuration Server (FCS) provides a way for management applications to discover the Fibre Channel fabric topology and attributes. Requests for the Fabric Configuration Server are carried over the common transport. The Fabric Configuration Server is intended to be distributed among fabric elements, making the Fabric Configuration Server immediately available to an N_Port once it has successfully completed fabric login. However, the Fabric Configuration Server is not restricted or required to be part of a fabric, and it may be any N_Port or NL_Port.

Fabric Configuration Server Codes

Fabric Configuration Server registration, deregistration, and queries are managed through protocols containing a set of Request CT_IUs and Response CT_IUs supported by the Fabric Configuration Server. Refer to [FC-CT Response Commands](#).

Management Server Response Codes

Refer to [FC-CT Response Commands](#) for all FC_CT response codes.

Management Server Command Codes

The primary management switch (FCS switch) can also be used as an access point for Management Server access, access by SNMP software that polls for fabric status, a focal point for fabric-related SNMP traps, and an access point for SAN management software. For example, a client Nx_Port communicates its Management Server request (as defined in FC-GS-4) to a switch via the well-known address FFFFFA. An example of a management application that uses the Management Server is the Brocade API.

Table 80: Management Server Command Codes

Code	Mnemonic	Description	Objects in Request CT_IU	Objects in Accept CT_IU
0x0100	MS_GTIN	Get Topology Information	The Request CT_IU for GTIN contains the request payload defined for the Request Topology Information Extended Link Service.	The Accept CT_IU for GTIN contains the ACC payload defined for the Request Topology Information Extended Link Service.
0x0101	MS_GIEL	Get Interconnect Element List	—	List of interconnect element names and types
0x0111	MS_GIET	Get Interconnect Element List	Interconnect element name	Interconnect element type
0x0112	MS_GDID	Get Domain ID	Interconnect element name	Domain identifier
0x0113	MS_GMID	Get Management Identifier	Interconnect element name	Management identifier
0x0114	MS_GFN	Get Fabric Name	Interconnect element name	Fabric Name 0x0115
0x0115	MS_GLIEN	Get Logical IE Name	Interconnect element name	Interconnect element logical name
0x0116	MS_GMAL	Get Management Address list	Interconnect element name	Interconnect element management address list

Code	Mnemonic	Description	Objects in Request CT_IU	Objects in Accept CT_IU
0x0117	MS_GIEIL	Get IE Information list	Interconnect element name	Interconnect element information list
0x0118	MS_GPL	Get Switch Port List	Interconnect element name	List of port names, port types, port TX types, and port module types
0x0121	MS_GPT	Get Switch Port Type	Port name	Port type
0x0122	MS_GPPN	Get Switch Physical Port Number	Port WWN	Port number
0x0124	MS_GAPNL	Get Attached Port Name List	Port WWN	List of attached port names
0x0126	MS_GPS	Get Switch Port State	Port WWN	Port state (see the Port State table)
0x0128	MS_GATIN	Get Attached Topology Information	Port WWN	Attached topology information (4-byte format)
Get Platform-Related Information				
0x0191	MS_GPLNL	Get Platform Node Name List	Platform name	List of Platform Node Names
0x0192	MS_GPLT	Get Platform Type	Platform name	See the Platform Type Table
0x0194	MS_GPLA	Get Platform Attributes	Platform name	Platform Mgmt Address List
0x01A1	MS_GNPL	Get Platform Name-Node Name	Platform node name	Platform Name
0x01A2	MS_GPNL	Get Platform Name List	None	List of Platform Names
0x01B1	MS_GNID	Get Node Identification Data	Platform node name	None. The Accept CT_IU for GNID contains the ACC payload defined for the Request Node Identification Data Extended Link Service.
0x0215	MS_RIELN	Register IE Logic Name	Interconnect element name, interconnect element logical name	None
Register Platform-Related Information				
0x0280	MS_RPL	Register Platform	Platform name, platform type, platform mgmt address list, platform node name list	None
0x0291	MS_RPLN	Register Platform Node Name	Platform name, platform node name	None
0x0292	MS_RPLT	Register Platform Type	Platform name, platform type	None
0x0293	MS_RPLM	Register Platform Mgmt Address	Platform name, platform mgmt address	None

Code	Mnemonic	Description	Objects in Request CT_IU	Objects in Accept CT_IU
Deregister Platform-Related Information				
0x0380	MS_DPI	Deregister Platform	Platform name	None
0x0391	MS_DPLN	Deregister Platform Node Name	Platform node name	None
0x0392	MS_DPLM	Deregister Platform Mgmt Addr	Platform mgmt address	None
0x0393	MS_DPLML	Deregister Platform Mgmt Address List	Platform name	None
Port Performance Information				
0x0400	MS_GPST	Get Port Statistics	—	—
0x0401	MS_GPERR	Get Port Errors	—	—
0x0402	MS_PCLST	Clear Port Stats	—	—
0x0403	MS_PENAB	Port Enable	—	—
0x0404	MS_PDISA	Port Disable	—	—
Routing Information				
0x0405	MS_GROUT	Get a Route Between Two End Ports	—	—
0x0406	MS_GLROUT	Nexthop Info From Remote Switch	—	—
0x0407	MS_GPATH	Output Ports to Reach a Domain	—	—
0x0408	MS_GROUT	Set Static Route	—	—
0x0750	MS_DELRROUT	Delete Static Route	—	—
Fabric Hierarchy				
0x0501	MS_GFABRIC	Return All Switch and Port WWNs	—	—
0x0502	MS_GSW	Return Switch and Port WWNs	—	—
Switch Information				
0x0505	MS_GSWITCH	Get Switch Information	—	—
0x0506	MS_SSWITCH	Set Switch Information	—	—
0x0507	MS_GSWITCH2	Get Switch Information	—	—
0x0508	MS_SSWITCH2	Set Switch Information 2.0+	—	—
API Version Information				
0x0509	MS_GAPIVERSION	Get API Version	—	—
0x050a	MS_GSSWITCH_NG	Get Switch Info ng	—	—
0x050b	MS_SSWITCH_NG	Set Switch Info ng	—	—
0x05010	MS_GPORTLOG	Get Port Log	—	—
0x05011	MS_GERRLOG	Get Error Log	—	—

Code	Mnemonic	Description	Objects in Request CT_IU	Objects in Accept CT_IU
0x05012	MS_GFRULOG	Get FRU History Log	—	—
0x05013	MS_GPORTNVLOG	Get Port Flash Log	—	—
Port Information				
0x0605	MS_GPORT	Get Port Information	—	—
0x0606	MS_SPORT	Set Port Information	—	—
0x0607	MS_GPSTATS	Get Port Stats Information	—	—
0x0608	MS_SPSTATS	Set Port Stats Information	—	—
0x0609	MS_GDEVICE	Get device information	—	—
0x060a	MS_GDEVICE2	Get Device, String Len = 256	—	—
0x060b	MS_GPERRS	Get Port Error Information	—	—
0x060c	MS_SPERRS	Set Port Error Information	—	—
0x060d	MS_GENVATTR	Asset Management	—	—
0x060e	MS_GFLPORT	Get FL_Port Info	—	—
0x060f	MS_GMODULE	Get Port Module Info	—	—
0x0610	MS_SMODULE	Set Port Module Info	—	—
0x0611	MS_GPORT2	Get Port Info 2	—	—
0x0612	MS_SPORT2	Set Port Info 2	—	—
0x0613	MS_GPLATINFO	Get Platform State Info	—	—
0x0614	MS_GPLATALL	Get All Platform Database	—	—
0x0615	MS_GCP	Get CP Info	—	—
0x0616	MS_SFRU	Set FRU Attributes	—	—
0x0617	MS_GENVATTR2	Switch Enclosure Attributes 2	—	—
0x0618	MS_GPORT_NG	Get Port Info NG	—	—
0x0619	MS_SPORT_NG	Set Port Info NG	—	—
0x0620	MS_START_PORT_DIAG	Start Port Diag	—	—
0x0621	MS_STOP_PORT_DIAG	Stop Port Diag	—	—
0x0622	MS_GET_PORT_DIAG_PF	Get Port Diag Profile	—	—
0x0623	MS_GET_PORT_DIAG_ST	Get Port Diag Status	—	—
0x0624	MS_GET_PORT_NAME	Get Port Name	—	—
0x0625	MS_SET_PORT_NAME	Set Port Name	—	—
0x0626	MS_GNPERRS	Get the Node Port Errr Stats	—	—
0x0627	MS_SNPERRS	Get the Node Port Error Stats	—	—

Code	Mnemonic	Description	Objects in Request CT_IU	Objects in Accept CT_IU
0x0630	MS_GTCT	Telnet Command Tunneling	—	—
RCOM				
0x0701	MS_RCOM	Get Group Commands	—	—
0x0705	MS_FW_LICENSE	—	—	—
0x0706	MS_FW_GET_CA	—	—	—
0x0707	MS_FW_GET_TH	Fabric Watch. Get Threshold.	—	—
0x0708	MS_FW_APPLY_ALARM	Fabric Watch. Apply Alarm.	—	—
0x0709	MS_FW_APPLY_BOUNDARY	Fabric Watch. Apply Boundary.	—	—
0x070a	MS_FW_CANCEL_ALARM	Fabric Watch. Cancel Alarm.	—	—
0x070b	MS_FW_CANCEL_BOUNDARY	Fabric Watch. Cancel Boundary.	—	—
0x070c	MS_FW_SET_ALARM_LEVEL	Fabric Watch. Set Alarm Level.	—	—
0x070d	MS_FW_SET_ALARM	Fabric Watch. Set Alarm.	—	—
0x070e	MS_FW_SET_BN_LEVEL	Fabric Watch. Set Boundary Level.	—	—
0x070f	MS_FW_SET_BN_BS	Fabric Watch. Set Boundary.	—	—
0x0710	MS_FW_SET_BN_HIGH	Fabric Watch. Set Boundary High level.	—	—
0x0711	MS_FW_SET_BN_LOW	Fabric Watch. Set Boundary Low Level.	—	—
0x0712	MS_FW_SET_BN_TB	Fabric Watch. Set Boundary.	—	—
0x0713	MS_FW_SET_BN_UNIT	Fabric Watch. Set Boundary Unit.	—	—
0x0714	MS_FW_SET_TH_STATUS	Fabric Watch. Set Threshold Status.	—	—
0x0715	MS_FW_SET_TH_BI	Fabric Watch. Set Threshold.	—	—
0x0716	MS_FW_SET_TH_BT	Fabric Watch. Set Threshold.	—	—
0x0717	MS_FW_INIT_CONFIG	Fabric Watch. Initial Configuration.	—	—
0x0718	MS_FW_INSERT_CONFIG	Fabric Watch. Insert Configuration.	—	—
0x0719	MS_FW_UPDATE_CONFIG	Fabric Watch. Update Configuration.	—	—

Code	Mnemonic	Description	Objects in Request CT_IU	Objects in Accept CT_IU
0x071a	MS_FW_LOAD_CONFIG	Fabric Watch. Load Configuration.	—	—
0x071d	MS_EVENT	Management Server Event.	—	—
0x071e	MS_EVENT_ENABLE_FW	Management Server Event - Enable Fabric Watch.	—	—
0x071f	MS_EVENT_DISABLE_FW	Management Server Event - Disable Fabric Watch.	—	—
0x0720	MS_LICENSE_ADD	Management Server - License Addition Reported.	—	—
0x0721	MS_LICENSE_RM	Management Server - License Removal Reported.	—	—
0x0722	MS_LICENSE_GET	Management Server - Get License.	—	—
0x0723	MS_LICENSE_GETALL	Management Server - Get All Licenses.	—	—
0x0726	MS_PRODUCT_GET	Management Server - Get Product.	—	—
0x0727	MS_PRODUCT_GETALL	Management Server - Get All Products.	—	—
0x0728	MS_DOWNLOAD_START	Management Server - Download Start Reported.	—	—
0x0729	MS_DOWNLOAD_PACKET	Management Server - Download Packet Reported.	—	—
0x072a	MS_DOWNLOAD_ABORT	Management Server - Download Aborted.	—	—
0x072b	MS_DOWNLOAD_END	Management Server - Download Ended.	—	—
0x072c	MS_UPLOAD_START	Management Server - Ppload Started.	—	—
0x072d	MS_UPLOAD_PACKET	Management Server - Packet Upload Reported.	—	—
0x072e	MS_UPLOAD_ABORT	Management Server - Upload Aborted.	—	—
0x072f	MS_UPLOAD_END	Management Server - Upload Ended.	—	—
0x0730	MS_EVENT_ENABLE_TC	Management Server - Enable Track Changes.	—	—

Code	Mnemonic	Description	Objects in Request CT_IU	Objects in Accept CT_IU
0x0731	MS_EVENT_DISABLE_TC	Management Server - Disable Track Changes.	—	—
0x0732	MS_DOWNLOAD_SELF_START	Management Server - Self-start Download Reported.	—	—
0x0733	MS_DOWNLOAD_SELF_ABORT	Management Server - Self-start Download Aborted.	—	—
In-Band SGroup Command				
0x0801	MS_SG_GET	Management Server - get.	—	—
0x0802	MS_SG_SET	Management Server - set.	—	—
0x0803	MS_SG_DEL	Management Server - delete.	—	—
0x0801 - 0x804	—	Does not appear in v4.2.0.	—	—
0x0810	MS_SEC_GET_CSR	Management Server - Security.	—	—
0x0811	MS_SEC_SET_CERT	Management Server - Security - set certificate.	—	—
0x0812	MS_SEC_SET_KEY_CERT	Management Server - Security - set key certificate.	—	—
0x0813	MS_SEC_COUNTER	Management Server - Security Counters.	—	—
0x0814	MS_SEC_GEN_CSR	Management Server - CSR Generation.	—	—
0x0815	MS_SEC_COUNTER2	Management Server - Security Counter 2.	—	—
0x0816	MS_SEC_GET_BANNER	Management Server - Security - get Banner.	—	—
0x0817	MS_SEC_SET_BANNER	Management Server - Security - set Banner.	—	—
0x1000	MS_FC_API	Management Server - Forward - Compatible API.	—	—
FC-SW-2 MS Command Codes				
0xE000	MS_EXGPLDB	Exchange Platform Database.	—	—
0xE001	MS_MRGPLDB	Merge Platform Database.	—	—

Code	Mnemonic	Description	Objects in Request CT_IU	Objects in Accept CT_IU
0xE010	MS_PLCOMIT	Commit the Previous Reg/Dereg Plat Cmd.	—	—
0xE020	MS_GCAP	Get Management Server Capabilities.	—	—
Brocade Vendor-Specific Platform-Related Information				
0xF000	MS_PLACTV	Activate Platform Management Services	—	—
0xF001	MS_PLDACTV	Deactivate Platform Management Services	—	—
0xF002	MS_TDMGMT	Enable or disable TD Management Services	—	—
s All MSVU frames are non-FC-GS commands.				
0xF003	MSVU_RPL	Registers Platform Name of AG	—	—
0xF004	MSVU_RPLN	Registers Platform Node Name of AG	—	—
0xF005	MSVU_RPLM	Registers Platform Management Address	—	—
0xF006	MSVU_RPAB	Registers Platform Attribute Block of Data from AG	—	—
0xF007	MSVU_GAGINFO	Get AG Info Command	—	—
0xF008	MSVU_DPL	Deregister Platform	—	—
0xF009	MSVU_DPLN	Deregister Platform node	—	—
0xF00A	MSVU_DPLM	Deregister Platform Management Address	—	—
0xF00B	MSVU_DPLML	Deregister Platform Management Address List	—	—
0xF00C	MSVU_DPAB	Deregister Platform Attribute Block	—	—
0xF00D	MSVU_DBSHOW	Displays the AG Database	—	—
0xF00E	MSVU_GAGINFO_V2	Get AG Information Version 2	—	—
0xF00F	MSVU_AG_ADD_DEV	Register AG Device Details	—	—
0xF010	MSVU_AG_DEL_DEV	Deregister AG Device Details	—	—

Code	Mnemonic	Description	Objects in Request CT_IU	Objects in Accept CT_IU
0xF011	MSVU_RPAB_V2	Register Platform Attribute Block Version 2	—	—
0xF012	MSVU_GAGINFO_V3	Get AG Info With Larger RPAB	—	—
0xF013	MSVU_RPLE	Register EDGE AG Platform	—	—
0xF014	MSVU_GAGINFO_EDGEAG	Get EDGE AG Info Version 1	—	—
Switch Default Zoning Behavior				
0x0805	MS_GSWITCHDZB	Get Switch Default Zoning Behavior	—	—
0x0806	MS_SSWITCHDZB	Set Switch Default Zoning Behavior	—	—

Management Server Reason Codes and Explanations

If a Fabric Configuration Server request is rejected with a reason code of "Unable to perform command request," then it is because of one of the reason codes explained in the following table.

Table 81: Management Server Reason Codes and Explanations

Code	Reason
00	No additional explanation
01	Invalid Name_Identifier for Interconnect Element or Port
10	Interconnect Element List not available
11	Interconnect Element Type not available
12	Domain Identifier not available
13	Management Identifier not available
14	Fabric Name not available
15	Interconnect Element Logical Name not available
16	Management Address List not available
17	Interconnect Element Information List not available
0x18-2F	Reserved for IE
30	Port List not available
31	Port Type not available
32	Physical Port Number not available
33	Reserved
34	Attached Port Name List not available
35	Reserved
36	Port State not available
50	Unable to register Interconnect Element Logical Name
60	Platform Name does not exist

Code	Reason
61	Platform Name already exists
62	Platform Node Name does not exist
63	Platform Node Name already exists
64	EXPL_PLATFORM_DATABASE_CONFLICT
65	EXPL_PLATFORM_FUNC_UNABLE_TO_ACTIVATE
66	M_E_P_UNABLE_TO_ACTIVATE MSRJT_EXPL_PLATFORM_FUNC_UNABLE_TO_ACTIVATE MSRJT_EXPL_PLATFORM_FUNC_SEC_CONFLICT
67	MSRJT_EXPL_NO_PLATFORM_MGMTADDR
F0	EXPL_AUTHORIZATION_EXCEPTION
F1	EXPL_AUTHEN_EXCEPTION
F2	EXPL_DATABASE_FULL
0x01	MSRJT_EXPL_WWN_INVALID
0x91	MSRJT_EXPL_NO_PORT_STAT
0x92	MSRJT_EXPL_NO_PORT_ERRS
0x93	MSRJT_EXPL_PORT_CLR_FAIL
0x94	MSRJT_EXPL_PORT_ENABLE_FAIL
0x95	MSRJT_EXPL_PORT_DISABLE_FAIL
0x96	MSRJT_EXPL_NO_ROUT_INFO
0x97	MSRJT_EXPL_NO_LOCAL_ROUTE
0x98	MSRJT_EXPL_NO_PATH_INFO
0x99	MSRJT_EXPL_SET_STATIC_ROUTE_FAILED
0xa1	MSRJT_EXPL_DELETE_STATIC_ROUTE_FAILED
0xa5	MSRJT_EXPL_NO_SUCH_SWITCH
Definitions for Port Info Access	
0xb5	MSRJT_EXPL_NO_SUCH_PORT
0xc5	MSRJT_EXPL_INVALID_ARG
0xc6	MSRJT_EXPL_FW_INVALID_CLASS_AREA
0xc7	MSRJT_EXPL_FW_INVALID_INDEX
0xc8	MSRJT_EXPL_FW_INVALID_LEVEL_INDICATOR
0xc9	MSRJT_EXPL_FW_INVALID_EVENT_TYPE
0xca	MSRJT_EXPL_FW_INVALID_ALARM_MATRIX
0xcb	MSRJT_EXPL_FW_INVALID_BUFFER_SIZE
0xcc	MSRJT_EXPL_FW_INVALID_LOW
0xcd	MSRJT_EXPL_FW_INVALID_HIGH
0xce	MSRJT_EXPL_FW_INVALID_TB
0xcf	MSRJT_EXPL_FW_INVALID_UNIT_STRING
0xd0	MSRJT_EXPL_FW_INVALID_STATUS
0xd1	MSRJT_EXPL_FW_INVALID_BT
0xd2	MSRJT_EXPL_FW_INVALID_WWN

Code	Reason
0xd3	MSRJT_EXPL_FW_DOWNLOAD_FAILED
0xd4	MSRJT_EXPL_FW_INVALID_PROFILE
0xd5	MSRJT_EXPL_FW_LOAD_FAILED
0xd6	MSRJT_EXPL_FW_INSERT_FAILED
0xd7	MSRJT_EXPL_FW_DOWNLOAD_INIT_FAILED
0xd8	MSRJT_EXPL_FW_TOO_MANY_PROXY
0xd9	MSRJT_EXPL_FW_PROXY_NOT_FOUND
0xda	MSRJT_EXPL_FW_NO_LICENSE
Secure SAN PKI Installation Support	
0xdb	MSRJT_EXPL_CERT_ALREADY_INSTALLED
0xdc	MSRJT_EXPL_CERT_REQ_FAILED
Firmware Download Errors	
0xdd	MSRJT_EXPL_CORRUPT_FLASH
0xde	MSRJT_EXPL_RLS_SERVICE_DISABLE
Port Configuration Errors	
0xe1	MSRJT_EXPL_PORTCFG_FAILED
0xe2	MSRJT_EXPL_PORTCFG_BADPORT
0xe3	MSRJT_EXPL_PORTCFG_BADARG
0xe4	MSRJT_EXPL_PORTCFG_BADNUMARG
0xe5	MSRJT_EXPL_PORTCFG_CFGABT
0xe6	MSRJT_EXPL_PORTCFG_NOLICENSE
0xe7	MSRJT_EXPL_PORTCFG_BADSWTYPE
0xe8	MSRJT_EXPL_PORTCFG_ISQLPORT
0xe9	MSRJT_EXPL_PORTCFG_ISLPORT
0xea	MSRJT_EXPL_PORTCFG_ISGPORT
0xeb	MSRJT_EXPL_PORTCFG_MCASTLB_LBEXIST
0xec	MSRJT_EXPL_PORTCFG_LONGDIST_MCASTON
0xed	MSRJT_EXPL_PORTCFG_LONGDIST_NOLDFAB
0xee	MSRJT_EXPL_PORTCFG_BADPTTYPE
0xef	MSRJT_EXPL_PORTCFG_BADSTRING

Fabric Zone Server (ZS)

The Fabric Zone Server (ZS) adds and removes activations, and queries are managed through protocols containing a set of Request CT_IUs and Response CT_IUs supported by the Fabric Zone Server. For a Fabric Zone Server request, the payload is transported from the requestor to the Fabric Zone Server using a Request CT_IU. The corresponding Fabric Zone Server response is transported from the Fabric Zone Server to the requestor, in the exchange established by the requestor, using a Response CT_IU.

The request codes described in [Fabric Zone Server \(ZS\) Codes](#) are based on Section 6.4.6.3 (Basic Zoning Management Commands) of FC-GS-8 REV 11.02 dated March 24, 2017. See [Target Driven Peer Zone Request Codes](#) for more information.

Fabric Zone Server (ZS) Codes

Table 82: Fabric Zone Server Request Command Codes

Hexadecimal Code	Mnemonic and Description	Attributes in Request CT_IU	Attributes in Accept CT_IU
0x0100	GZC Get Capabilities	None	Capabilities
0x0111	GEST Get Enforcement State	None	Enforcement State
0x0112	GZSN Get Zone Set List	None	List of Zone Set Names and Number of Zones
0x0113	GZD Get Zone List	Zone Set Name	List of Zone Names and Number of Zone Members
0x0114	GZM Get Zone Member List	Zone Name	List of Zone Member Identifier Types and Zone Member Identifiers
0x0115	*GAZS Get Active Zone Set	None	Zone Set Name, Number of Zones, List of Zone Names, Number of Zone Members, List of Zone Member Identifier Types, and Zone Member Identifiers
0x0116	*GZS Get Zone Set	Zone Set Name	Zone Set Name, Number of Zones, List of Zone Names, Number of Zone Members, List of Zone Member Identifier Types, and Zone Member Identifiers
0x0200	ADZS Add Zone Set	Zone Set Name, Number of Zones, List of Zone Names, Number of Zone Members, List of Zone Member Identifier Types, and Zone Member Identifiers	None
0x0201	AZSD Activate Zone Set Direct	Zone Set Name, Number of Zones, List of Zone Names, Number of Zone Members, List of Zone Member Identifier Types, and Zone Member Identifiers	None
0x0202	AZS Activate Zone Set	Zone Set Name	None
0x0203	DZS Deactivate Zone Set	None	None
0x0204	AZM Add Zone Members	Zone Name, List of Zone Member Identifier Types, and Zone Member Identifiers	None
0x0205	AZD Add Zone	Zone Set Name, Zone Name	None

Hexadecimal Code	Mnemonic and Description	Attributes in Request CT_IU	Attributes in Accept CT_IU
0x0300	RZM Remove Zone Members	Zone Name, List of Zone Member Identifier Types, and Zone Member Identifiers	None
0x0301	RZD Remove Zone	Zone Set Name, Zone Name	None
0x0302	RZS Remove Zone Set	Zone Set Name	None
The following definitions are based on Section 6.4.7.7 (Enhanced Zoning Management Commands) of FC-GS-7 REV 10.2 dated July 21, 2014.			
0x0117	ZS_GAR Get Activation Results	None	CT_IU Preamble, Number of Interconnect Element Entries, Interconnect Element Name, Type, and Reason Code
0x0120	ZS_GZA Get Zone Attribute Object Name	Zone Name	Zone Attribute Object Name
0x0122	ZS_GZSE Get Zone Set List-Enhanced	Null	List of Zone Set Names
0x0123	ZS_GZDE Get Zone List-Enhanced	Zone Set Name	List of Zone Names
0x0124	ZS_GZME Get Zone Member List-Enhanced	Zone Name	Zone Member List
0x0128	ZS_GAL* Get Alias List	Null	Alias List
0x0129	ZS_GAM* Get Alias Member List	Alias Name	Alias Member List
0x0142	ZS_GFEZ* Get Fabric Enhanced Zoning Support	None	Fabric Enhanced Zoning Support Flags, List of Switch Enhanced Zoning Support Flags
0x012A	ZS_GAPZ* Get Active Peer Zone	Zone Name	Zone Name, Zone Attribute Block, and Zone Member List
0x012B	ZS_GAN* Get Alias Names	Zone Member Object	Alias Name List
0x0220	ZS_CZS Create Zone Set	Zone Set Name, Zone Name List	Null
0x0224	ZS_AZME Add Zone Members Enhanced	Zone Name, Zone Member List	Null
0x0225	ZS_CZ Create Zone	Zone Name, Zone Member List	Null
0x0227	ZS_SZA Set Zone Attributes	Zone Name, Zone Attribute Object Name	Null
0x0229	ZS_CA Create Alias	Alias Name, Alias Member List	Null
0x022A	ZS_AAM Add Alias Members	Alias Name, Alias Member List	Null

Hexadecimal Code	Mnemonic and Description	Attributes in Request CT_IU	Attributes in Accept CT_IU
0x022B	ZS_AAPZ* Add/Replace Active Peer Zone	Zone Name, Zone Attribute Block, Zone Member List	Null
0x0321	ZS_RZ Remove Zones	Zone Set Name, Zone Name List	Null
0x0324	ZS_RZME Remove Zone Members Enhanced	Zone Name, Zone Member List	Null
0x0325	ZS_RAPZ* Remove Active Peer Zone	Zone Name	Null
0x032A	ZS_RAM Remove Alias Members	Alias Name, Alias Member List	Null
0x032B	ZS_DLZS Delete Zone Set	Zone Set Name	Null
0x032c	ZS_DLZ Delete Zone	Zone Name	Null
0x032d	ZS_DLA Delete Alias	Alias Name	Null
0x400	ZS_CMIT Commit Zone Change	Zone Name	Null
0x7FF8	GMI Get More Information	Original Transaction ID, Information Offset, Fragment ID	Information forming the requested fragment

An asterisk (*) after the mnemonic indicates that codes are supported officially.

Table 83: Zone Server Reject CT_IU FC-GS-8 Reason Codes

Hexadecimal Code	Mnemonic
0x01	CT_INVALID_COMMAND
0x02	CT_INVALID_VERSION
0x03	CT_LOGICAL_ERROR
0x04	CT_INVALID_IU_SIZE
0x05	CT_LOGICAL_BUSY
0x07	CT_PROTOCOL_ERROR
0x09	CT_CANT_PERFORM_REQ
0x0b	CT_NOT_SUPPORTED

Table 84: Zone Server Reject CT_IU FC-GS-8 Reason Code Explanations

Hexadecimal Code	Mnemonic
0x00	ZS_RJT_EXPL_NONE
0x01	ZS_RJT_EXPL_ZONES_NOT_SUPPORTED
0x10	ZS_RJT_EXPL_ZONESET_NAME_UNKNOWN
0x11	ZS_RJT_EXPL_NO_ZONESET_ACTIVE
0x12	ZS_RJT_EXPL_ZONE_NAME_UNKNOWN

Hexadecimal Code	Mnemonic
0x13	ZS_RJT_EXPL_ZONE_STATE_UNKNOWN
0x14	ZS_RJT_EXPL_INCORRECT_PAYLOAD_LENGTH
0x15	ZS_RJT_EXPL_ZONESET_TOO_LARGE
0x16	ZS_RJT_EXPL_DEACTIVATE_FAILED
0x17	ZS_RJT_EXPL_REQUEST_NOT_SUPPORTED
0x18	ZS_RJT_EXPL_CAPABILITY_NOT_SUPPORTED
0x19	ZS_RJT_EXPL_MEMBER_TYPE_NOT_SUPPORTED
0x1A	ZS_RJT_EXPL_INVALID_ZONESET

Table 85: Zone Server Reject CT_IU Enhanced FC-GS-8 Reason Code Explanations

Hexadecimal Code	Mnemonic
0x20	ZS_RJT_EXPL_ENHANCED_CMDS_NOT_SUPPORTED
0x21	ZS_RJT_EXPL_ZONE_SET_ALREADY_EXISTS
0x22	ZS_RJT_EXPL_ZONE_ALREADY_EXISTS
0x23	ZS_RJT_EXPL_ALIAS_ALREADY_EXISTS
0x24	ZS_RJT_EXPL_ZONE_SET_UNKNOWN
0x25	ZS_RJT_EXPL_ZONE_UNKNOWN
0x26	ZS_RJT_EXPL_ALIAS_UNKNOWN
0x28	ZS_RJT_EXPL_UNKNOWN_ZONE_ATTRIBUTE
0x29	ZS_RJT_EXPL_FABRIC_UNABLE_TO_WORK_IN_ENH_MODE
0x30	ZS_RJT_EXPL_COMMIT_FAILED
0x33	ZS_RJT_EXPL_REQUEST_IN_PROCESS
0x34	RJT_EXPL_COMMIT_IN_PROCESS
0x37	ZS_RJT_EXPL_CONSISTENCY_CHECKS_FAILED
0x38	ZS_RJT_EXPL_PROVIDED_ZONE_NOT_PEER_ZONE
0x39	ZS_RJT_EXPL_ACTIVE_ZONE_NOT_PEER_ZONE

Table 86: Vendor Unique (VU) Reason Codes

Hexadecimal Code	Mnemonic
0x00	ZS_RJT_VU_EXPL_NONE
0x01	ZS_RJT_VU_INV_MODE
0x02	ZS_RJT_VU_INV_AD
0x03	ZS_RJT_VU_ZS_ACT_NONE
0x04	ZS_RJT_VU_AD_INACTIVE
0x05	ZS_RJT_VU_INV_ZN_NAME_LEN
0x06	ZS_RJT_VU_INV_ZN_NAME
0x07	ZS_RJT_VU_INV_ATTR
0x08	ZS_RJT_VU_INV_MEM_CNT

Hexadecimal Code	Mnemonic
0x09	ZS_RJT_VU_INV_ZN_MEMBER
0x0A	ZS_RJT_VU_TRANS_IN_PROG
0x0B	ZS_RJT_VU_FAB_UNSTABLE
0x0C	ZS_RJT_VU_ZN_DUPLICATE
0x0D	ZS_RJT_VU_PRZ_IN_REG_ZN
0x0E	ZS_RJT_VU_INV_PRZ
0x0F	ZS_RJT_VU_PRZ_IN_PROG
0x10	ZS_RJT_VU_INTRNAL_ERR
0x11	ZS_RJT_VU_INV_FC_SID
0x12	ZS_RJT_VU_DEV_UNAUTH
0x13	ZS_RJT_VU_DEV_NOT_IN_AD
0x14	ZS_RJT_VU_DEF_DB_EXIST
0x15	ZS_RJT_VU_NON_PRIMARY_FCS
0x16	ZS_RJT_VU_ALIAS_TDPZ_NOT_SUP
0x17	ZS_RJT_VU_ENH_ZN_OBJ_NOT_SUP
0x18	ZS_RJT_VU_NOT_DEF_DB_ZONE_SET
0x19	ZS_RJT_VU_SYSTEM_ZONE_SET
0x1A	ZS_RJT_VU_INVALID_GMI_REQUEST
0x1B	ZS_RJT_VU_ZNDB_UPDATED
0x1C	ZS_RJT_VU_REQ_RETRY_MAX_LIMIT

Target Driven Peer Zone Request Codes

The following table describes the values for the Target Driven Peer Zone request codes.

Table 87: Target Driven Peer Zone Request Codes

Value	Code	Description
0x012A	GAPZ	Get Active Peer Zone
0x022B	AAPZ	Add/Replace Active Peer Zone
0x0325	RAPZ	Remove Active Peer Zone
0x0142	GFEZ	Get Fabric Enhanced Zoning Support

Decoding Target Driven Peer Zone Requests and Responses

The following examples describe the decoding of various Target Driven Peer Zone requests and responses.

GFEZ Incoming Request and Accept Response

The following example shows the GFEZ incoming request and accept response.

```
sw0:admin> portlogdumpport 41
time      task      event port cmd  args
-----
```

```

Wed Sep 22 10:02:31 2021
22:30:09.305 PORT    Rx3   41   16   02ffffffa,00032900,10a8ffff,01000000
22:30:09.306 FCPH    read  41   16   02ffffffa,00032900,8f000000,00000000,10a89f23
22:30:09.306 FCPH    seq   41   10   20290000,10a89f23,00000565,0000001c,00000000
22:30:09.306 zone    ctin  41   fa   00000142
22:30:09.306 zone    ctout 41   fa   00078002,00000001,00000002,00000003
22:30:09.307 FCPH    write 41   48   03032900,00ffffffa,8f000000,00000000,10a89f23
22:30:09.307 FCPH    seq   41   30   20980000,10a89f23,00000701,00040000,00000000
22:30:09.307 PORT    Tx3   41   48   03032900,00ffffffa,10a89f23,01000000

```

Output Line 4: GFEZ Incoming Request

```
22:30:09.306 zone    ctin  41   fa   00000142
```

The argument breakdown for the sample argument “00000142” in output line 4 is as follows:

- 0000 = Bitmap for the number of arguments
- 0142 = GFEZ request

Output Line 5: GFEZ Accept Response

```
22:30:09.306 zone    ctout 41   fa   00078002,00000001,00000002,00000003
```

Argument breakdown for output line 5:

Arg1 00078002	Arg2 00000001	Arg3 00000002	Arg4 00000003
0007 = Bitmap for the number of arguments	00000001 = Fabric GFEZ flags	00000002 = Number of switches in the fabric	00000003 = Local switch's GFEZ flags
8002 = CT accept response			

GAPZ Incoming Request and Accept Response

The following example shows the GAPZ incoming request and accept response.

```

sw0:admin> portlogdumpport 41
time      task      event port cmd  args
-----
Wed Sep 22 10:02:31 2021
22:42:06.616 PORT    Rx3   41   88   02ffffffa,00032900,10b0ffff,01000000
22:42:06.616 FCPH    read  41   88   02ffffffa,00032900,93000000,00000000,10b09fa7
22:42:06.616 FCPH    seq   41   58   20290003,10b09fa7,00000565,0000001c,00000000
22:42:06.617 zone    ctin  41   fa   000f012a,0000000c,74657374,5f7a6f6e,65000000
22:42:06.617 zone    ctout 41   fa   00038002,00000001,00000001
22:42:06.617 FCPH    write 41   64   03032900,00ffffffa,93000000,00000000,10b09fa7
22:42:06.617 FCPH    seq   41   40   20980003,10b09fa7,00000701,00040000,00000000
22:42:06.617 PORT    Tx3   41   64   03032900,00ffffffa,10b09fa7,01000000

```

Output Line 4: GAPZ Incoming Request

```
22:42:06.617 zone    ctin  41   fa   000f012a,0000000c,74657374,5f7a6f6e,65000000
```

Argument breakdown for output line 4:

Arg1 000f012a	Arg2 0000000c	Arg3 74657374	Arg4 5f7a6f6e	Arg5 65000000
000f = Bitmap for the number of arguments	0000000c = Zone name length	74657374 = Zone name	5f7a6f6e = Zone name	65000000 = Zone name

Arg1 000f012a	Arg2 0000000c	Arg3 74657374	Arg4 5f7a6f6e	Arg5 65000000
012a = GAPZ request				

Output Line 5: GAPZ Accept Response

```
22:42:06.617 zone ctout 41 fa 00038002,00000001,00000001
```

Argument breakdown for output line 5:

Arg1 00038002	Arg2 00000001	Arg3 00000001
0003 = Bitmap for the number of arguments	00000001 = Number of zone attribute entries	00000001 = Number of zone members
8002 = CT accept response		

AAPZ Incoming Request and Accept Response

The following example shows the AAPZ incoming request and accept response.

```
sw0:admin> portlogdumpport 41
time      task      event port cmd  args
-----
Wed Sep 22 10:02:31 2021
22:15:36.090 PORT    Rx3    41    64    02ffffffa,00032900,10a1ffff,01000000
22:15:36.090 FCPH    read   41    64    02ffffffa,00032900,8c000000,00000000,10a19eb1
22:15:36.090 FCPH    seq    41    40    20290000,10a19eb1,00000565,0000001c,00000000
22:15:36.094 zone    ctin   41    fa    000f022b,302a0005,337e97e9,00000001,00000001
22:15:36.095 zone    ctout  41    fa    00008002
22:15:36.096 FCPH    write  41    16    03032900,00ffffffa,8c000000,00000000,10a19eb1
22:15:36.096 FCPH    seq    41    10    20980000,10a19eb1,00000701,0004001c,00000000
22:15:36.096 PORT    Tx3    41    16    03032900,00ffffffa,10a19eb1,01000000
```

Output Line 4: AAPZ Incoming Request

```
22:15:36.094 zone ctin 41 fa 000f022b,302a0005,337e97e9,00000001,00000001
```

Argument breakdown for output line 4:

Arg1 000f022b	Arg2 302a0005	Arg3 337e97e9	Arg4 00000001	Arg5 00000001
000f = Bitmap for the number of arguments	302a0005 = Upper 4 bytes of initiator WWN	337e97e9 = Lower 4 bytes of initiator WWN	00000001 = Number of zone attributes	00000001 = Number of zone members
022b = AAPZ request				

Output Line 5: AAPZ Accept Response

```
22:15:36.095 zone ctout 41 fa 00008002
```

The argument breakdown for the sample argument “00008002” in output line 5 is as follows:

- 0000 = Bitmap for the number of arguments
- 8002 = CT accept response

RAPZ Incoming Request and Accept Response

The following example shows the RAPZ incoming request and accept response.

```
sw0:admin> portlogdumpport 41
time      task      event port cmd  args
```

```

-----
Wed Sep 22 10:02:31 2021
22:45:40.565 PORT    Rx3    41    88    02ffffffa,00032900,10b3ffff,01000000
22:45:40.565 FCPH    read   41    88    02ffffffa,00032900,94000000,00000000,10b39fc0
22:45:40.565 FCPH    seq    41    58    20290003,10b39fc0,00000565,0000001c,00000000
22:45:40.567 zone    ctin   41    fa    00030325,302a0005,337e97e9
22:45:40.568 zone    ctout  41    fa    00008002
22:45:40.568 FCPH    write  41    16    03032900,00ffffffa,94000000,00000000,10b39fc0
22:45:40.568 FCPH    seq    41    10    20980003,10b39fc0,00000701,0004001c,00000000
22:45:40.568 PORT    Tx3    41    16    03032900,00ffffffa,10b39fc0,01000000
22:45:50.798 nsd      rscn   41    32900 00ffffffd,61040014,00031900,00031901
22:45:50.798 FCPH    write  41    20    00032900,00ffffffd,00000000,00000000,00000000
22:45:50.798 FCPH    seq    41    14    00210000,00000000,000044f3,00010180,00000000
22:45:50.798 PORT    Tx3    41    20    22032900,00ffffffd,9fcacfff,61040014

```

Output Line 4: RAPZ Incoming Request

```
22:45:40.567 zone    ctin   41    fa    00030325,302a0005,337e97e9
```

Argument breakdown for output line 4:

Arg1 00030325	Arg2 302a0005	Arg3 337e97e9
0003 = Bitmap for the number of arguments	302a0005 = Upper 4 bytes of initiator WWN	337e97e9 = Lower 4 bytes of initiator WWN
0325 = RAPZ request		

Output Line 5: RAPZ Accept Response

```
22:45:40.568 zone    ctout  41    fa    00008002
```

The argument breakdown for the sample argument “00008002” in output line 5 is as follows:

- 0000 = Bitmap for the number of arguments
- 8002 = CT accept response

CT Reject Response

The following example shows the CT Reject response.

```

sw0:admin> portlogdumpport 41
time      task      event port cmd   args
22:55:37.903 PORT    Rx3    41    76    02ffffffa,00032900,10bbffff,01000000
22:55:37.904 FCPH    read   41    76    02ffffffa,00032900,98000000,00000000,10bba012
22:55:37.904 FCPH    seq    41    4c    20290000,10bba012,00000565,0000001c,00000000
22:55:37.907 zone    ctin   41    fa    000f022b,302a0005,337e97e9,00000023,00000000
22:55:37.907 zone    ctout  41    fa    00078001,00000009,0000001a,00000008
22:55:37.907 FCPH    write  41    16    03032900,00ffffffa,98000000,00000000,10bba012
22:55:37.907 FCPH    seq    41    10    20980000,10bba012,00000701,0004001c,00000000
22:55:37.907 PORT    Tx3    41    16    03032900,00ffffffa,10bba012,01000000

```

Output Line 5: Reject Response

```
22:55:37.907 zone    ctout  41    fa    00078001,00000009,0000001a,00000008
```

Argument breakdown for output line 5:

Arg1 00078001	Arg2 00000009	Arg3 0000001a	Arg4 00000008
0007 = Bitmap for the number of arguments	00000009 = CT reject reason	0000001a = CT reject explanation	00000008 = VU code
8001 = CT reject response			

The following table provides the CT accept/reject responses for GAL, GAM, GAN, GZS, and GAZS Zone Server requests.

ZS Request/Response	Arg1	Arg2	Arg3	Arg4	Arg5
GAL Request	00000128 0000 - Number of arguments 0128 - GAL ZS code	None	None	None	None
GAL Accept response	00038002 0003 - Number of arguments 8002 - CT accept response	00000128 0000 - Not in use 0128 - GAL ZS code	00000007 00000007 - Number of aliases listed in payload	None	None
GAM Request	000f0129 000f - Number of arguments 0129 - GAM ZS code	00000010 00000010 - Alias name length with any padding bytes to make it word aligned (multiples of four)	444f4d5f 444f4d5f - 0–3 chars of alias name	38325f46 38325f46 - 4–7 chars of alias name	504f5254 504f5254 - 8–11 chars of alias name
GAM Accept response	00038002 0003 - Number of arguments 8002 - CT accept response	00000129 0000 - Not in use 0129 - GAM ZS code	00000004 00000004 - Number of alias members	None	None
GAN Request	0007012b 0007 - Number of arguments 012b - GAN ZS code	01000000 01 - Zone member identifier type 000000 - reserved	300a50eb 300a50eb - Upper 4 bytes of WWN	1abb6cfd 1abb6cfd - Lower 4 bytes of WWN	None
GAN Accept response	00078002 0007 - Number of arguments 8002 - CT accept response code	0000012b 0000 - Not in use 012b - GAN ZS code	00000001 00000001 - Number of alias entries with one member	00000002 00000002 - Number of alias entries with multiple members	None
GZS Request	00000116 0000 - Number of arguments 0116 - GZS ZS code	None	None	None	None

ZS Request/Response	Arg1	Arg2	Arg3	Arg4	Arg5
GZS Accept response	00078002 0007 - Number of arguments 8002 - CT accept response	00000116 0000 - Not in use 0116 - GZS ZS code	000000fe 000000fe - Total size of zone set in bytes	00000005 00000005 - Number of zones listed in zone set	None
GAZS Request	00000115 0000 - Number of arguments 0115 - GAZS ZS code	None	None	None	None
GAZS Accept response	00078002 0007 - Number of arguments 8002 - CT accept response	00000115 0000 - Not in use 0115 - GAZS ZS code	000000e8 000000ed - Total size of active zone set	00000010 00000010 - Number of zones listed in active zone set	None
CT Reject response for ZS request	00078001 0007 - Number of arguments 8001 - CT Reject response code	00000005 00000005 - CT reject reason	00000000 00000000 - CT reject explanation	0000000b 0000000b - CT vendor unique code	None
GMI (Get More Information) Request	00077ff8 Lower 16 bits: 7ff8 (GMI ct cmd code) Upper 16 bits: 0007 (3 bits are set so number of arguments is 3)	00000500 (transaction ID for which GMI is sent).	00000016 Words offset	00000007 is the fragment ID	None
GMI (Get More Information) Accept Response	000f7ff8 Lower 16 bits: 7ff8 (GMI ct cmd code) Upper 16 bits: 000f (4 bits are set so number of arguments is 4)	00000500 (transaction ID)	00000090 Words residual size	000001f0 Words total size of response requested by CT command or GMI buffer size	00010129 Lower 16 bits: 0129 (ct cmd code of original CT request i.e GAM). Upper 16 bits: 0001 (first GMI for the CT request)

NOTE

See [Fabric Zone Server \(ZS\) codes](#) for more information about CT reject reason codes, CT reject reason code explanations, and VU codes.

Host Bus Adapter Management Server

The Host Bus Adapter (HBA) Management Server is defined to allow the registration and retrieval of HBA Management information.

For an HBA Management Server request, the payload shall be transported from the requestor to the HBA Management Server using a Request CT_IU. The corresponding HBA Management Server response is transported from the HBA Management Server to the requestor, in the exchange established by the requestor, using a Response CT_IU.

The request codes described in [Host Bus Adapter Management Server Codes](#) are based on Section 6.7.4.3.2 (CT_IU preamble values) of FC-GS-7 -Rev 10.2 July 21, 2014.

Host Bus Adapter Management Server Codes

Table 88: HBA Management Server Request Command Codes

Hexadecimal Code	Mnemonic and Description	Attributes in Request CT_IU	Attributes in Accept CT_IU
0x0100	GRHL Get Registered HBA List	Null	Registered HBA List
0x0101	GHAT Get HBA Attributes	HBA Identifier	Registered Port List, HBA Attribute Block
0x0102	GRPL Get Registered Port List	HBA Identifier	Registered Port List
0x0110	GPAT Get Port Attributes	Port_Name	Port Attribute Block
0x0120	GPAS Get Port Statistics	Port_Name	Port Statistic Block
0x0200	RHBA Register HBA	HBA Identifier, Registered Port List, HBA Attribute Block	None
0x0201	RHAT Register HBA Attributes	HBA Identifier, HBA Attribute Block	None
0x0210	RPRT Register Port	HBA Identifier, Port_Name, Port Attribute Block	None
0x0211	RPA Register Port Attributes	Port_Name, Port Attribute Block	None
0x0300	DHBA Deregister HBA	HBA Identifier	None
0x0301	DHAT Deregister HBA Attributes	HBA Identifier	None
0x0310	DPRT Deregister Port	Port_Name	None
0x0311	DPA Deregister Port Attributes	Port_Name	None

Table 89: Host Bus Adapter (HBA) Management Server Reject CT_IU GS4 Reason Codes

Hexadecimal Code	Mnemonic
0x01	CT_INVALID_COMMAND
0x02	CT_INVALID_VERSION
0x03	CT_LOGICAL_ERROR
0x04	CT_INVALID_IU_SIZE
0x05	CT_LOGICAL_BUSY
0x07	CT_PROTOCOL_ERROR
0x09	CT_CANT_PERFORM_REQ
0x0b	CT_NOT_SUPPORTED

Table 90: Host Bus Adapter (HBA) Management Server Reject CT_IU GS4 Reason Code Explanations

Hexadecimal Code	Mnemonic and Description
0x00	FDMI_NO_ADDITIONAL_EXP
0x10	FDMI_HBA_ALREADY_REG
0x11	FDMI_HBA_ATTRIB_NOT_REG
0x12	FDMI_HBA_ATTRIB_MULTIPLE
0x13	FDMI_HBA_ATTRIB_LENGTH_INVALID
0x14	FDMI_HBA_ATTRIB_NOT_PRESENT
0x15	FDMI_PORT_ORIG_NOT_IN_LIST
0x16	FDMI_PORT_HBA_NOT_IN_LIST
0x17	FDMI_HBA_NOT_REG
0x20	FDMI_PORT_ATTRIB_NOT_REG
0x21	FDMI_PORT_NOT_REG
0x22	FDMI_PORT_ATTRIB_MULTIPLE
0x23	FDMI_PORT_ATTRIB_LENGTH_INVALID
0x24	FDMI_PORT_ALREADY_REG
0x30	FDMI_PORT_DYNAMIC_DATA_NOTSUPPORTED
0x41	FDMI_HBA_DYNAMIC_DATA_NOTSUPPORTED
0x31	FDMI_PORT_NOT_HBA_PORT
0x32	FDMI_PORT_UNSUPPORTED_VENDOR

Decoding Host Bus Adapter Management Server Requests and Responses

The following examples describe the decoding of various host bus adapter (HBA) requests and responses.

RHBA Request

```
17:31:54.097 fdmi      ctin      3      fa  00030200,30470005,33009048
```

Argument breakdown:

Arg1 00030200	Arg2 30470005	Arg3 33009048
0003 = Bitmap of the total number of arguments, in hex	30470005 = First 4 bytes of HBA WWN	33009048 = Last 4 bytes of HBA WWN
0200 = RHBA request code		

RHBA Accept Response

```
17:31:54.100 fdmi      ctout     3      fa  00008002
```

The argument breakdown for the sample argument 00008002 is as follows:

- 0000 = Bitmap of the total number of arguments, in hex
- 8002 = CT Accept response

RHBA Reject Response

```
17:32:08.417 fdmi      ctout     3      fa  00038001,00000009,00000010
```

Argument breakdown:

Arg1 00038001	Arg2 00000009	Arg3 00000010
0003 = Bitmap of the total number of arguments, in hex	000000 = Reserved	000000 = Reserved
8001 = CT Reject response	09 = CT reject reason code	10 = Reject explanation

RPA Request

```
17:31:54.116 fdmi      ctin      3      fa  00030211,30470105,33009048
```

Argument breakdown:

Arg1 00030211	Arg2 30470105	Arg3 33009048
0003 = Bitmap of the total number of arguments, in hex	30470005 = First 4 bytes of port WWN	33009048 = Last 4 bytes of port WWN
0211 = RPA request code		

RPA Response

```
17:31:54.116 fdmi      ctout     3      fa  00008002
```

The argument breakdown for the sample argument 00008002 is as follows:

- 0000 = Bitmap of the total number of arguments, in hex
- 8002 = CT Accept response

RPRT Request

```
14:21:20.027 fdmi      ctin      6      fa  00030210,300150eb,1afcfc08
```

Argument breakdown:

Arg1 00030210	Arg2 300150eb	Arg3 1afcfc08
0003 = Bitmap of the total number of arguments, in hex	300150eb = First 4 bytes of HBA WWN	1afcfc08 = Last 4 bytes of HBA WWN
0210 = RPRT request code		

RPRT Response

```
14:21:20.029 fdmi      ctout     6      fa  00008002
```

The argument breakdown for the sample argument 00008002 is as follows:

- 0000 = Bitmap of the total number of arguments, in hex
- 8002 = CT Accept response

GHAT Request

```
17:40:31.112 fdmi      ctin      3      fa  00030101,30470005,33009048
```

Argument breakdown:

Arg1 00030101	Arg2 30470005	Arg3 33009048
0003 = Bitmap of the total number of arguments, in hex	30470005 = First 4 bytes of HBA WWN	33009048 = Last 4 bytes of HBA WWN
0101 = GHAT request code		

GHAT Response

```
17:40:31.113 fdmi      ctout      3      fa  00008002
```

The argument breakdown for the sample argument 00008002 is as follows:

- 0000 = Bitmap of the total number of arguments, in hex
- 8002 = CT Accept response

GRPL Request

```
17:46:44.733 fdmi      ctin       3      fa  00030102,30470005,33009048
```

Argument breakdown:

Arg1 00030102	Arg2 30470005	Arg3 33009048
0003 = Bitmap of the total number of arguments, in hex	30470005 = First 4 bytes of HBA WWN	33009048 = Last 4 bytes of HBA WWN
0102 = GRPL request code		

GRPL Response

```
17:46:44.733 fdmi      ctout      3      fa  00008002
```

The argument breakdown for the sample argument 00008002 is as follows:

- 0000 = Bitmap of the total number of arguments, in hex
- 8002 = CT Accept response

GPAT Request

```
17:48:54.331 fdmi      ctin       3      fa  00030110,30470005,33009048
```

Argument breakdown:

Arg1 00030110	Arg2 30470005	Arg3 33009048
0003 = Bitmap of the total number of arguments, in hex	30470005 = First 4 bytes of HBA WWN	33009048 = Last 4 bytes of HBA WWN
0110 = GPAT request code		

GPAT Response

```
17:48:54.332 fdmi      ctout      3      fa  00008002
```

The argument breakdown for the sample argument 00008002 is as follows:

- 0000 = Bitmap of the total number of arguments, in hex
- 8002 = CT Accept response

RHAT Request

```
17:54:06.421 fdmi      ctin      3      fa  00030201,30470005,33009048
```

Argument breakdown:

Arg1 00030201	Arg2 30470005	Arg3 33009048
0003 = Bitmap of the total number of arguments, in hex	30470005 = First 4 bytes of HBA WWN	33009048 = Last 4 bytes of HBA WWN
0201 = RHAT request code		

RHAT Response

```
17:54:06.422 fdmi      ctout     3      fa  00008002
```

The argument breakdown for the sample argument 00008002 is as follows:

- 0000 = Bitmap of the total number of arguments, in hex
- 8002 = CT Accept response

DHAT Request

```
17:56:03.694 fdmi      ctin      3      fa  00030301,30470005,33009048
```

Argument breakdown:

Arg1 00030301	Arg2 30470005	Arg3 33009048
0003 = Bitmap of the total number of arguments, in hex	30470005 = First 4 bytes of HBA WWN	33009048 = Last 4 bytes of HBA WWN
0301 = DHAT request code		

DHAT Response

```
17:56:03.695 fdmi      ctout     3      fa  00008002
```

The argument breakdown for the sample argument 00008002 is as follows:

- 0000 = Bitmap of the total number of arguments, in hex
- 8002 = CT Accept response

DPA Request

```
14:21:25.358 fdmi      ctin      6      fa  00030311,300151eb,1afcfc08
```

Argument breakdown:

Arg1 00030311	Arg2 300151eb	Arg3 1afcfc08
0003 = Bitmap of the total number of arguments, in hex	300151eb = First 4 bytes of HBA WWN	1afcfc08 = Last 4 bytes of HBA WWN
0311 = DPA request code		

DPA Response

```
14:21:25.359 fdmi      ctout     6      fa  00008002
```

The argument breakdown for the sample argument 00008002 is as follows:

- 0000 = Bitmap of the total number of arguments, in hex
- 8002 = CT Accept response

Application Server

The Application Server provides a way to manage application-specific services such as application identifiers. The Application Server registration, deregistration, and queries are managed through protocols containing a set of request CT_IUs and response CT_IUs supported by the Application Server.

For an Application Server request, the payload is transported from the requestor to the Application Server using a request CT_IU. The corresponding Application Server response is transported from the Application Server to the requestor, in the exchange established by the requestor, using a response CT_IU.

The request codes described in [Application Server Codes](#) are based on Section 6.9.2.2 (CT_IU preamble values) of FC-GS-8 dated December 2015.

Application Server Codes

Table 91: Application Server Request Command Codes

Hexadecimal Code	Mnemonic and Description	Attributes in Request CT_IU	Attributes in Accept CT_IU
0x0100	GAPPIA_ENT Get Application Identifier Allocations - entity identifier	List of entity identifiers	List of application identifier allocation objects
0x0103	GAPPIA_IDAPP Get Application Identifier Allocations - N_Port_ID and application identifier	List of N_Port_ID and application identifier pairs	List of application identifier allocation objects
0x0200	RAPP_IDENT Register Application Identifier - N_Port_ID and entity identifier	List of N_Port_ID and entity identifier pairs	List of application identifier allocation objects
0x0300	DAPP_IDENT Deregister Application Identifier - N_Port_ID and entity identifier	List of N_Port_ID and entity identifier pairs	List of N_Port_ID and entity identifier pairs
0x0301	DALLAPP_ID Deregister All Application Identifiers - N_Port_ID	N_Port_ID	None
Other	Reserved	—	—
0104h	GENTATTR_IDAP Get Entity Attributes by N_Port_ID and Application Identifier	List of N_Port_ID and application identifier pairs	List of entity attribute allocation objects
0105h	GALLENTATTR_ID Get Entity Attributes by N_Port_ID	N_Port_ID	List of entity attribute allocation objects
0106h	GENTATTR_ENT Get Entity Attributes by Entity Identifier	List of entity identifiers	List of entity attribute allocation objects
0201h	RENTATTR_APPIA Register Entity Attributes with Application Identifier Allocation	Application identifier allocation object	Entity attribute allocation object containing the registered entity attribute(s) from the request
0302h	DENTATTR_APPIA Deregister Entity Attributes with Application Identifier Allocation	Application identifier allocation object	None

Table 92: Application Server Reject CT_IU GS4 Reason Codes

Hexadecimal Code	Mnemonic
0x01	CT_INVALID_COMMAND
0x02	CT_INVALID_VERSION
0x03	CT_LOGICAL_ERROR
0x04	CT_INVALID_IU_SIZE
0x05	CT_LOGICAL_BUSY
0x07	CT_PROTOCOL_ERROR
0x09	CT_CANT_PERFORM_REQ
0x0b	CT_NOT_SUPPORTED

Table 93: Application Server Reject CT_IU GS4 Reason Code Explanations

Hexadecimal Code	Mnemonic and Description
0x00	APPSRVR_RJT_EXPL_NO_ADDITIONAL_EXP
0x10	APPSRVR_RJT_EXPL_ACCESS_DENIED
0x29	APPSRVR_RJT_EXPL_NO_RESOURCES
0x40	APPSRVR_RJT_EXPL_NO_OBJ_IN_SCOPE
Others	Reserved

Decoding Application Server Requests and Responses

The following examples describe the decoding of various Application Server requests and responses.

GAPPIA_ENT Request

```
08:41:56.782 apps      ctin      10      fa  00030100,80000000,03766d31
```

Argument breakdown:

Arg1 00030100	Arg2 80000000	Arg3 03766d31
0003 = Bitmap of the total number of arguments, in hex	80 = Control bit (End of list)	03766d31 = Entity ID 4 bytes in hex
0100 = GAPPIA_ENT request code	000000 = Reserved	

GAPPIA_ENT Response

```
08:41:56.782 apps      ctout     10      fa  00018002,80000000
```

Argument breakdown:

Arg1 00018002	Arg2 80000000
0001 = Bitmap of the total number of arguments, in hex	80 = Control bit (End of list)
8002 = CT accept response	000000 = Reserved

GAPPIA_IDAPP Request

```
09:11:09.568 apps      ctin      10      fa  00030103,80520a00,0ea2eee8
```

Argument breakdown:

Arg1 00030103	Arg2 80520a00	Arg3 0ea2eee8
0003 = Bitmap of the total number of arguments, in hex	80 = Control bit (End of list)	0ea2eee8 = Application ID
0103 = GAPPIA_IDAPP request code	520a00 = PID	

GAPPIA_IDAPP Response

```
09:11:09.568 apps      ctout     10      fa  00018002,80000000
```

Argument breakdown:

Arg1 00018002	Arg2 80000000
0001 = Bitmap of the total number of arguments, in hex	80 = Control bit (End of list)
8002 = CT accept response	000000 = Reserved

RAPP_IDENT Request

```
09:28:31.523 apps      ctin      10      fa  00030200,00520a00,00000001
```

Argument breakdown:

Arg1 00030200	Arg2 00520a00	Arg3 00000001
0003 = Bitmap of the total number of arguments, in hex	00 = Reserved	00000001 = Number of Entity ID entries
0200 = RAPP_IDENT (Application Server request code)	520a00 = PID	

RAPP_IDENT Accept Response

```
09:28:31.523 apps      ctout     10      fa  00018002,80000000
```

Argument breakdown:

Arg1 00018002	Arg2 80000000
0001 = Bitmap of the total number of arguments, in hex	80 = Control bit (End of list)
8002 = CT accept response	000000 = Reserved

RAPP_IDENT Reject Response

```
09:28:31.523 apps      ctout     10      fa  00018001,00070029
```

Argument breakdown:

Arg1 00018001	Arg2 00070029
0001 = Bitmap of the total number of arguments, in hex	0007 = CT reject reason code
8001 = CT reject response	0029 = CT reject explanation

DAPP_IDENT Request

```
09:31:51.877 apps      ctin      10      fa  00030300,00520a00,00000001
```

Argument breakdown:

Arg1 00030300	Arg2 00520a00	Arg3 00000001
0003 = Bitmap of the total number of arguments, in hex	00 = Reserved	00000001 = Number of Entity ID entries
0300 = DAPP_IDENT request code	520a00 = PID	

DAPP_IDENT Accept Response

```
09:31:51.877 apps      ctout     10      fa  00018002,80520a00
```

Argument breakdown:

Arg1 00018002	Arg2 80520a00
0001 = Bitmap of the total number of arguments, in hex	80 = Control bit (End of list)
8002 = CT accept response	520a00 = PID

DAPP_IDENT Reject Response

```
09:36:27.072 apps      ctout     10      fa  00018001,00094000
```

Argument breakdown:

Arg1 00018001	Arg2 00094000
0001 = Bitmap of the total number of arguments, in hex	0009 = CT reject reason code
8001 = CT reject response	4000 = CT reject explanation

DALLAPP_ID Request

```
09:45:23.507 apps      ctin      10      fa  00030301,00520a00,00000000
```

Argument breakdown:

Arg1 00030301	Arg2 00520a00	Arg3 00000000
0003 = Bitmap of the total number of arguments, in hex	00 = Reserved	00000000 = For future use
0301 = DALLAPP_ID request code	520a00 = PID	

DALLAPP_ID Accept Response

```
09:45:23.507 apps      ctout      10      fa  00018002,00520a00
```

Argument breakdown:

Arg1 00018002	Arg2 00520a00
0001 = Bitmap of the total number of arguments, in hex	00 = Reserved
8002 = CT accept response	520a00 = PID

DALLAPP_ID Reject Response

```
09:51:35.596 apps      ctout      10      fa  00018001,00094000
```

Argument breakdown:

Arg1 00018001	Arg2 00094000
0001 = Bitmap of the total number of arguments, in hex	0009 = CT reject reason code
8001 = CT reject response	4000 = CT reject explanation

RENTATTR_APPIA ID Request

```
19:52:57.464 apps      ctin       2      fa  00030201,00030200,00000209
```

Argument breakdown:

Arg1 00030201	Arg2 00030200	Arg3 00000209
0003 = Total number of arguments	00 = Reserved	00000209 = Application ID
0201 = RENTATTR_APPIA	030200 = PID	

RENTATTR_APPIA Accept Response

```
19:52:57.465 apps      ctout      2      fa  00018002,00030200
```

Argument breakdown:

Arg1 00018002	Arg2 00030200
0001 = Total number of arguments	00 = Reserved
8002 = CT accept response	030200 = PID

RENTATTR_APPIA Reject Response

```
19:52:57.465 apps      ctout      2      fa  00018001,00070000
```

Argument breakdown:

Arg1 00018001	Arg2 00070000
0001 = Total number of arguments	0007 = CT reject reason code
8001 = CT reject response	0000 = CT reject explanation

DENTATTR_APPIA ID Request

```
19:54:05.497 apps      ctin      2      fa  00030302,00030200,00000209
```

Argument breakdown:

Arg1 00030302	Arg2 00030200	Arg3 00000209
0003 = Total number of arguments	00 = Reserved	00000209 = Application ID
0302 = DENTATTR_APPIA	030200 = PID	

DENTATTR_APPIA Accept Response

```
19:54:05.498 apps      ctout     2      fa  00018002,00030200
```

Argument breakdown:

Arg1 00018002	Arg2 00030200
0001 = Total number of arguments	00 = Reserved
8002 = CT accept response	030200 = PID

DENTATTR_APPIA Reject Response

```
19:55:57.475 apps      ctout     2      fa  00018001,00070000
```

Argument breakdown:

Arg1 00018001	Arg2 00070000
0001 = Total number of arguments	0007 = CT reject reason code
8001 = CT reject response	0000 = CT reject explanation

GETATTR_ENT ID Request

```
20:07:39.319 apps      ctin      2      fa  00030106,80000000,03766d31
```

Argument breakdown:

Arg1 00030106	Arg2 80000000	Arg3 03766d31
0003 = Total number of arguments	80 = Control bit (End of list)	03766d31 = First four bytes of the Entity Identifier
0302 = GETATTR_ENT	000000 = Reserved	

GETATTR_ENT Accept Response

```
20:07:39.320 apps      ctout     2      fa  00018002,80000000
```

Argument breakdown:

Arg1 00018002	Arg2 80000000
0001 = Total number of arguments	80 = Control bit (End of list)
8002 = CT accept response	000000 = Reserved

GETATTR_ENT Reject Response

```
19:52:57.465 apps      ctout     2      fa  00018001,00070000
```

Argument breakdown:

Arg1 00018001	Arg2 00070000
0001 = Total number of arguments	0007 = CT reject reason code
8001 = CT reject response	0000 = CT reject explanation

GETATTR_IDAPP ID Request

20:08:03.617 apps ctin 2 fa 00030104,80030200,00000209

Argument breakdown:

Arg1 00030104	Arg2 80030200	Arg3 00000209
0003 = Total number of arguments	80 = Control bit (End of list)	00000209= Application ID
0104 = GETATTR_IDAPP	030200 = PID	

GETATTR_IDAPP Accept Response

20:08:03.618 apps ctout 2 fa 00018002,80000000

Argument breakdown:

Arg1 00018002	Arg2 80000000
0001 = Total number of arguments	80 = Control bit (End of list)
8002 = CT accept response	000000 = Reserved

GETATTR_IDAPP Reject Response

19:52:57.465 apps ctout 2 fa 00018001,00070000

Argument breakdown:

Arg1 00018001	Arg2 00070000
0001 = Total number of arguments	0007 = CT reject reason code
8001 = CT reject response	0000 = CT reject explanation

GALLENTATTR_ID ID Request

20:09:19.749 apps ctin 2 fa 00030105,00030200,00000000

Argument breakdown:

Arg1 00030105	Arg2 00030200	Arg3 00000000
0003 = Total number of arguments	00 = Reserved	00000000 = Reserved
0105 = GALLENTATTR_ID	030200 = PID	

GALLENTATTR_ID Accept Response

20:09:19.750 apps ctout 2 fa 00018002,00000000

Argument breakdown:

Arg1 00018002	Arg2 00000000
0001 = Total number of arguments	00000000 = Reserved
8002 = CT accept response	

GALLENTATTR_ID Reject Response

```
19:52:57.465 apps      ctout      2      fa  00018001,00070000
```

Argument breakdown:

Arg1 00018001	Arg2 00070000
0001 = Total number of arguments	0007 = CT reject reason code
8001 = CT reject response	0000 = CT reject explanation

Alias Service Request Codes (FC-GS-1)

The following table describes the values for the Alias Service request codes.

Table 94: Alias Service Request Codes (FC-GS-1)

Value	Code	Description
0	ASRV_OK	Alias Service OK
0	ASRV_ACC	Alias Service Accepted
1	ASRV_REJ	Alias Service see FS_RJT reason code explanation
2	ASRV_NOBUF	Alias Service - No buffer
3	ASRV_INVALID	Alias Service - Invalid parameter
4	ASRV_BADPTR	Alias Service - Bad pointer
11	ASRV_DB_ENTRY_EXIST	Related to database
12	ASRV_DB_NOENTRY	Alias Service - No entry
19	ASRV_DB_CORRUPTED	Alias Service - This is a critical message

Decoding a ctin Event

```
sw0:admin> portlogdump
time      task      event  arg1 arg2 Word0      word1      word2      word3      word4
-----
17:39:18.142 ficu      ctin    6    20  000f0104,00310600,00000004,00000123,006e5dfd
```

Table 95: ctin Event Arguments

Arg1	Arg2
Port number received/sent DIB	DIB data size (in hex)

Table 96: PID for Channel Sending/Receiving the DIB Frame

Word	Bits 31-24	Bits 23-16	Bits 15-8	Bits 7-0
0	—	—	DIB Type	Function Byte (CCW, Status, Ctrl)
1	LPAR ID	PID for Channel Sending/Receiving the DIB Frame		
2	Most Recent Link Function	Most Recent Ctrl Function	Most Recent Status Function	Most Recent CCW Function Byte
3	DIB CCWNO			
4	DIB Token			

```
sw0:admin> portlogdump
time          task          event    port cmd  args
-----
Wed Sep 22 10:02:31 2021
23:55:28.843 nsd0          ctin      1    fc  00010173,00000008
```

Note the fc in the cmd field. FC = Name Server for NS entries.

NOTE

If the first 16-bit field is 0003, the argument in positions 1 and 2 is set, and you should have two arguments. In other words, two arguments follow arg 1.

Table 97: ctin Event Arguments

Arg1 00010173	Arg2 00000008
0001 means that only one additional argument follows after argument one (in this example, 00000008).	0173 is the FC-CT command code. 0173 means "GNN_FT - Get FC-4 Node Name." The FC-4 object defines arg 2 as "00000008". Arg 2 belongs to word 4 of the GNN_FT frame. See Decoding a ctout Event . Argument 2, "00000008", means SCSI- FCP.

Table 98: Get FC4-Type Node Name (0173 Frame)

Word	Bits 31-24	Bits 23-16	Bits 15-8	Bits 7-0
0	FC-CT Rev=01	IN_ID (S to zero by the Requesting_CT)		
1	GS_TYPE	GS_Subtype	GS_Subtype	Reserved
2	Command Code=0173		Maximum/Residual Size	
3	Reserved	Reason Code	Reason Code Explanation	Vendor-specific
4	Reserved	Domain ID Scope	Area ID Scope	FC-4 Type Code=08

Decoding a ctout Event

```
sw0:admin> portlogdump
time          task          event    arg1 arg2 Word0      word1      word2      word3      word4
-----
17:39:18.146 ficu          ctout      6      20  000f0310,00310600,00100004,00000123,006e5dfd
```

Table 99: ctout Event Arguments

Arg1	Arg2
Port number received/sent DIB	DIB data size (in hex)

Table 100: PID for Channel Sending/Receiving the DIB Frame

Word	Bits 31-24	Bits 23-16	Bits 15-8	Bits 7-0
0	—	—	DIB Type	Function Byte (CCW, Status, Ctrl)
1	LPAR ID	PID for Channel Sending/Receiving the DIB Frame		
2	Most Recent Link Function	Most Recent Ctrl Function	Most Recent Status Function	Most Recent CCW Function Byte
3	DIB CCWNO			
4	DIB Token			

```
sw0:admin> portlogdump
time          task          event    port cmd  args
-----
Wed Sep 22 10:02:31 2021
23:55:28.843 nsd0          ctout     1    fc  00018001,00090700
```

Note the fc in the cmd field. FC = Name Server for NS entries.

Table 101: ctout Event Argument

Arg1 00018001	Arg2 00090700
0001 indicates whether subsequent args are valid. - A "0001" entry (1 = 0001 in binary) means that only one additional argument follows after argument 1 (in this example, 0001). - If the first 16-bit field is "0003", then the argument in position 1 and 2 is set, and you should have two arguments. In other words, two arguments follow argument 1.	Arg 2 represents the FC-CT response code. - If the second 16-bit field is a reject ("8001"), then argument 2 is a reject FC-CT Reject Reason Codes (RJT) - If the second 16-bit field is an accept ("8002"), then arguments 2 and 3 are the IU response objects.

Table 102: Accept Get FC4-Type Node Name (0173 Frame)

Word	Bits 31-24	Bits 23-16	Bits 15-8	Bits 7-0
0	FC-CT Rev=01	IN_ID (S to zero by the Requesting_CT)		
1	GS_TYPE	GS_Subtype	Options	Reserved
2	Command Code=8001		Maximum/Residual Size	
3	Reserved	Reason Code=09	Reason Code Explanation =07	Vendor-specific
4	Control	Port Identifier #1		
5	Reserved			
6-7	Node Name #1			

Fibre Channel Protocol Information

The following sections refer to the Fibre Channel Protocol information.

Well-Known Ordered Sets

A transmission word uses 8B/10B mapping and begins with the K28.5 character. Ordered sets occur outside of frames and include the following items:

- Primitive signals: Indicate events.
- Frame delimiters: Mark frame boundaries and describe frame contents.
- Primitive sequences: Indicate or initiate port states.

Ordered sets are used to differentiate Fibre Channel control information from data frames and to manage the transport of frames. The supported Ordered Sets is Point-to-Point Link.

Point-to-Point Link: Primitive Signals

The point-to-point link primitive signals in the following table indicate switch events.

Table 103: Point-to-Point Link: Primitive Signals

Abbreviation	Primitive	Signal Ordered Set
Idle	Idle	K28.5 - D21.4 - D21.5 - D21.5
R_RDY	Receiver_Ready	K28.5 - D21.4 - D10.2 - D10.2
VC_RDY	Virtual Circuit Ready	K28.5 - D21.7 - VC_ID - VC_ID
BB_SCs	buffer-to-buffer State Change (SOF)	K28.5 - D21.4 - D22.4 - D22.4
BB_SCr	buffer-to-buffer State Change (R_RDY)	K28.5 - D21.4 - D22.6 - D22.6
SYNx	Clock Synchronization Word X	K28.5 - D31.3 - CS_X - CS_X
SYNy	Clock Synchronization Word Y	K28.5 - D31.3 - CS_Y - CS_Y
SYNz	Clock Synchronization Word Z	K28.5 - D31.3 - CS_Z - CS_Z

Point-to-Point Link: Primitive Sequences

The point-to-point link primitive sequences in the following table indicate port states.

Table 104: Point-to-Point Link: Primitive Sequences

Primitive Sequence	Definition	Ordered Set
Not_Operational (NOS)	• Loss-of-Synchronization for more than a timeout period (R_T_TOV) while in the Word Synchronization Acquired State • Loss-of-Signal while in the Word Synchronization Acquired State • Timeout (R_T_TOV) during the Link Reset Protocol	K28.5 D21.2 D31.5 D5.2
Offline (OLS)	The FC_Port transmitting the sequence • Initiates the Link Initialization Protocol • Receives and recognizes NOS • Enters the Offline State	K28.5 D21.1 D10.4 D21.2

Primitive Sequence	Definition	Ordered Set
Link_Reset (LR)	Transmitted by an FC_Port to initiate the Link Reset Protocol or to recover from a Link Timeout.	K28.5 D9.2 D31.5 D9.2
Link_Reset_Response (LRR)	Transmitted by an FC_Port to indicate that it is receiving and recognizes the LR primitive sequence.	K28.5 D21.1 D31.5 D9.2

Port State Machine Values (pstate)

Table 105: Port State Machine Values

State Machine Values		
0	AC	Active state
ID	LE Idle	—
1	LR1	Link Reset: LR transmit state
LR2	Link Reset: LR receive state	—
LR3	Link Reset: LRR receive state	—
LF1	Link Failure: NOS transmit state	—
LF2	Link Failure: NOS receive state	—
3	OL1	Offline: OLS transmit state
OL2	Offline: OLS receive state	—
OL3	Offline: wait for OLS state	—
4	NOS	Not Operational
9	OL2_LR3WT	Wait for buffer state: OL2 to LR3
10	LR1_LR3WT	Wait for buffer state: LR1 to LR3
11	LR2_LR3WT	Wait for buffer state: LR2 to LR3
12	LR2_ACWT	Wait for buffer state: LR2 to AC

Well-Known Addresses

In the Fibre Channel protocol, a well-known address is a logical address that is defined by the Fibre Channel standards as assigned to a specific function and that is stored on the switch.

Table 106: Well-Known Addresses

Well-Known Address	Description
0xFFFFFFFF	BROADCAST – Frames transmitted to this address are broadcast to all operational N_Ports.
0xFFFFFE	FABRIC_F_PORT – A fabric is required to support this address to accept fabric login (FLOGI) requests from an F_Port or FL_Port associated with an N_Port or group of NL_Ports on an arbitrated loop.

Well-Known Address	Description
0xFFFFFD	FABRIC_CONTROLLER – This address is responsible for managing the fabric. It initializes the fabric and routes frames to the well-known address.
0xFFFFFC	NAME_SERVER – This address provides a registration service allowing an N_Port to register information in a database or initiate database queries to retrieve information about other ports.
0xFFFFFB	TIME_SERVER – An optional service that facilitates the maintenance of the system time between ports.
0xFFFFFA	MANAGEMENT_SERVER – This is an optional service that is used to collect and report management information such as link usage, error statistics, and link quality.
0xFFFFF9	Quality of Service Facilitator (QoSF) for Class-4 Bandwidth and Latency Management (FC_PH2).
0xFFFFF8	ALIAS_SERVER – An optional service to manage the assignment of alias address identifiers.
0xFFFFF7	Security-Key Distribution Service – An optional service to manage the distribution of encryption security keys to facilitate secure communication between N_Ports.
0xFFFFF6	Clock Synchronization Server (FC-PH3)
0xFFFFF5	MULTICAST SERVER (FC-PH3) – An optional service that manages the reliable multicast function in Class-6. ACK and RJT responses from members of a multicast group and sending a single reply to the multicast originator.
0xFFFFF4 - 0xFFFFF0	Reserved
S_ID and D_ID Assignments	
0xFFFBxx	Multicast (group in lower byte).
0xFFFCxx	Embedded_Port (domain in lower byte).

Revision History

FOS-91x-portlogdump-RM100; 15 December 2021

Initial document version.

Copyright Statement

Copyright © 2021 Broadcom. All Rights Reserved. The term “Broadcom” refers to Broadcom Inc. and/or its subsidiaries. For more information, go to www.broadcom.com. All trademarks, trade names, service marks, and logos referenced herein belong to their respective companies.

Broadcom reserves the right to make changes without further notice to any products or data herein to improve reliability, function, or design. Information that is furnished by Broadcom is believed to be accurate and reliable. However, Broadcom does not assume any liability arising out of the application or use of this information, nor the application or use of any product or circuit described herein, neither does it convey any license under its patent rights nor the rights of others.

The product described by this document may contain open source software covered by the GNU General Public License or other open source license agreements. To find out which open source software is included in Brocade products, to view the licensing terms applicable to the open-source software, and to obtain a copy of the programming source code, please download the open-source disclosure documents in the Broadcom Customer Support Portal (CSP). If you do not have a CSP account or are unable to log in, please contact your support provider for this information.

