

StorageWorks by Compaq

Fabric Operating System Reference Guide

Part Number: AA-RQ6FA-TE

First Edition: January 2002

Product Version: Version 3.0

This document provides a detailed description of the telnet commands in the Fabric OS. It also provides descriptions of the error message formats and the list of error messages as well as a summary of the telnet commands that are available with licensed products such as Zoning, Quickloop, or Fabric Watch.

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Printed in the U.S.A

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1 Telnet Commands

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About this Guide

This Reference Guide provides information to help you look up descriptions for the telnet commands used to administer and configure Compaq StorageWorks Fibre Channel SAN Switches:

- Provides a detailed description of the telnet commands in the Fabric OS.
- Provides error message formats as well as a list of error messages with descriptions.
- Provides a summary of telnet commands that are available with licensed products such as Zoning, Quickloop, or Fabric Watch.
- Contact technical support for additional assistance.

Intended Audience

This book is intended for use by System Administrators and Technicians who are experienced with the following:

- *StorageWorks*™ Fibre Channel SAN Switches by Compaq.
- Fabric Operating System V3.0 or later

Related Documentation

In addition to this guide, Compaq provides corresponding information:

- Advanced Performance Monitor User Guide—AA-RR7UA-TE
- MIB Reference Guide—AA-RQ6HA-TE
- Zoning User guide—AA-RQ6YA-TE
- Fabric Operating System Procedures User Guide—AA-RQ6EA-TE
- ISL Trunking User Guide—AA-RR82A-TE
- Web Tools User Guide—AA-RQ6GA-TE
- Quickloop User Guide—AA-RR7LA-TE
- Extended Fabric User Guide—AA-RR7QA-TE
- Fabric Watch User Guide—AA-RR7YA-TE

Prerequisites

Before you use this reference guide to look up the various Fabric OS commands, make sure you consider the items in the Document Conventions section that follows.

Document Conventions

The conventions included in Table 1 apply in most cases.

Table 1: Document Conventions

Element	Convention
Key names, menu items, buttons, and dialog box titles	Bold
File names and application names	<i>Italics</i>
User input, command names, system responses (output and messages)	Monospace font COMMAND NAMES are uppercase unless they are case sensitive
Variables	<i>Monospace, italic font</i>
Website addresses	Sans serif font (http://www.compaq.com)

Symbols in Text

These symbols may be found in the text of this guide. They have the following meanings.



WARNING: Text set off in this manner indicates that failure to follow directions in the warning could result in bodily harm or loss of life.



CAUTION: Text set off in this manner indicates that failure to follow directions could result in damage to equipment or data.

IMPORTANT: Text set off in this manner presents clarifying information or specific instructions.

NOTE: Text set off in this manner presents commentary, sidelights, or interesting points of information.

Symbols on Equipment



Any enclosed surface or area of the equipment marked with these symbols indicates the presence of electrical shock hazards. Enclosed area contains no operator serviceable parts.

WARNING: To reduce the risk of injury from electrical shock hazards, do not open this enclosure.



Any RJ-45 receptacle marked with these symbols indicates a network interface connection.

WARNING: To reduce the risk of electrical shock, fire, or damage to the equipment, do not plug telephone or telecommunications connectors into this receptacle.



Any surface or area of the equipment marked with these symbols indicates the presence of a hot surface or hot component. Contact with this surface could result in injury.

WARNING: To reduce the risk of injury from a hot component, allow the surface to cool before touching.



Power supplies or systems marked with these symbols indicate the presence of multiple sources of power.

WARNING: To reduce the risk of injury from electrical shock, remove all power cords to completely disconnect power from the power supplies and systems.



Any product or assembly marked with these symbols indicates that the component exceeds the recommended weight for one individual to handle safely.

WARNING: To reduce the risk of personal injury or damage to the equipment, observe local occupational health and safety requirements and guidelines for manually handling material.

Rack Stability



WARNING: To reduce the risk of personal injury or damage to the equipment, be sure that:

- The leveling jacks are extended to the floor.
 - The full weight of the rack rests on the leveling jacks.
 - In single rack installations, the stabilizing feet are attached to the rack.
 - In multiple rack installations, the racks are coupled.
 - Only one rack component is extended at any time. A rack may become unstable if more than one rack component is extended for any reason.
-

Getting Help

If you still have a question after reading this guide, contact service representatives or visit our website.

Compaq Technical Support

In North America, call Compaq technical support at 1-800-OK-COMPAQ, available 24 hours a day, 7 days a week.

NOTE: For continuous quality improvement, calls may be recorded or monitored.

Outside North America, call Compaq technical support at the nearest location. Telephone numbers for worldwide technical support are listed on the Compaq website: <http://www.compaq.com>.

Be sure to have the following information available before calling:

- Technical support registration number (if applicable)
- Product serial numbers
- Product model names and numbers
- Applicable error messages
- Operating system type and revision level
- Detailed, specific questions

Compaq Website

The Compaq website has the latest information on this product, as well as the latest drivers. Access the Compaq website at: <http://www.compaq.com/storage>. From this website, select the appropriate product or solution.

Compaq Authorized Reseller

For the name of your nearest Compaq Authorized Reseller:

- In the United States, call 1-800-345-1518.
- In Canada, call 1-800-263-5868.
- Elsewhere, see the Compaq website for locations and telephone numbers.

Telnet Commands

agtcfgDefault

Reset the SNMP agent configuration to default values.

Synopsis

```
agtcfgDefault
```

Availability

admin

Description

Use this command to reset the configuration of the SNMP agent to default values:

- sysDescr—The default value is Fibre Channel Switch.
- sysLocation—The default value is End User Premise.
- sysContact—The default value is Field Support.
- swEventTrapLevel—The default value is 0 (off).
- authTraps—The default value is 0 (off).

The IP addresses of the trap recipient for each community defaults to 0.0.0.0 or no trap recipient. The 6 communities are:

Community 1: Secret Code

Community 2: OrigEquipMfr

Community 3: private

Community 4: public

Community 5: common

Community 6: FibreChannel

NOTE: For more information about SNMP configuration parameters refer to the `agtcfgSet` command.

Operands

None.

Example

To set the SNMP agent configuration parameters to default values, and verify they were set, input the following command string:

```
switch:admin> agtcfgDefault
Committing configuration...done.
agent configuration reset to factory default
switch:admin>
switch:admin> agtcfgShow
Current SNMP Agent Configuration
Customizable MIB-II system variables:
    sysDescr = Fibre Channel Switch.
    sysLocation = End User Premise
    sysContact = Field Support.
    swEventTrapLevel = 0
    authTraps = 0 (OFF)
SNMPv1 community and trap recipient configuration:
Community 1: Secret C0de (rw)
    No trap recipient configured yet
Community 2: OrigEquipMfr (rw)
    No trap recipient configured yet
Community 3: private (rw)
    No trap recipient configured yet
Community 4: public (ro)
    No trap recipient configured yet
Community 5: common (ro)
    No trap recipient configured yet
Community 6: FibreChannel (ro)
    No trap recipient configured yet
switch:admin>
```

See Also

`agtcfgSet`
`agtcfgShow`

agtcfgSet

Modify the SNMP agent configuration.

Synopsis

```
agtcfgSet
```

Availability

admin

Description

Use this command to modify the configuration of the SNMP agent in the switch. Set the values for the following items:

- `sysDescr` - Specify the switch description (in MIB-II definition). The default value is `Fibre Channel Switch`.
- `sysLocation` - Specify the location of the switch (in MIB-II). The default value is `End User Premise`.
- `sysContact` - Specify the contact information for this switch. The default value is `Field Support`.
- `swEventTrapLevel` - Specify the event trap level in conjunction with an event's severity level. When an event occurs, and if its severity level is at or below the set value (that is, more critical), the SNMP trap, `swEventTrap`, is sent to configured trap recipients. The default value is 0 which means that no `swEventTrap` is sent. Possible values are:

```
0 - None
1 - critical
2 - error
3 - warning
4 - informational
5 - debug
```

NOTE: See `errShow` for more information.

- `authTrapsEnabled` - Specify whether authorization traps are passed to the trap recipient. The default value is `False` (off), meaning no messages are sent. A value of `True` (on) means that authorization trap messages are sent to the community IP addresses configured below. For SNMPv1 and SNMPv2c, this indicates that a request containing a community string is not known to the agent.
- There are six communities, each with a respective trap recipient, supported by the agent. The first three communities are for read-write access (rw) and the last three are for read-only access (ro).

Specify the IP address for each management station:

Community 1: `Secret C0de` - The default value for this trap recipient is '0.0.0.0'.

Community 2: `OrigEquipMfr` - The default value for this trap recipient is '0.0.0.0'.

Community 3: `private` - The default value for this trap recipient is '0.0.0.0'.

Community 4: `public` - The default value for this trap recipient is '0.0.0.0'.

Community 5: `common` - The default value for this trap recipient is '0.0.0.0'.

Community 6: `FibreChannel` - The default value for this trap recipient is '0.0.0.0'.

Operands

None.

Example

To modify the SNMP configuration values, input the following command string:

```
switch:admin> agtcfgSet
Customizing MIB-II system variables ...
At each prompt, do one of the following:
  o <Return> to accept current value,
  o enter the appropriate new value,
  o <Control-D> to skip the rest of configuration, or
  o <Control-C> to cancel any change.
To correct any input mistake:
  <Backspace> erases the previous character,
  <Control-U> erases the whole line,
  sysDescr: [FC Switch]
  sysLocation: [End User Premise]
  sysContact: [Field Support]
```

```
swEventTrapLevel: (0..5) [3] 4
authTrapsEnabled (true, t, false, f): [true]
SNMP community and trap recipient configuration:
Community (rw): [Secret C0de]
  Trap Recipient's IP address in dot notation: [192.168.1.51]
Community (rw): [OrigEquipMfr]
  Trap Recipient's IP address in dot notation: [192.168.1.26]
Community (rw): [private]
  Trap Recipient's IP address in dot notation: [0.0.0.0]
  192.168.64.88
Community (ro): [public]
  Trap Recipient's IP address in dot notation: [0.0.0.0]
Community (ro): [common]
  Trap Recipient's IP address in dot notation: [0.0.0.0]
Community (ro): [FibreChannel]
  Trap Recipient's IP address in dot notation: [0.0.0.0]
switch:admin>
```

NOTE: The current value for each item is displayed in brackets.

See Also

agtcfgDefault
agtcfgShow

agtcfgShow

Display the SNMP agent configuration.

Synopsis

```
agtcfgShow
```

Availability

All users

Description

Use this command to display the configuration of the SNMP agent in the switch. The following information is displayed:

- `sysDescr`—Displays the switch description.
- `sysLocation`—Displays the location of the switch.
- `sysContact`—Displays the contact information for this switch.
- `swEventTrapLevel`—Displays the event trap level. Possible values are:

```
0 - None
1 - critical
2 - error
3 - warning
4 - informational
5 - debug
```

NOTE: See `errshow` for more information on the event trap level.

- `authTraps` - Displays whether authorization traps are passed to the trap recipient. The default value is 0 (off), meaning no messages are sent. A value of 1 (on) means that authorization trap messages are sent to the community IP addresses configured below. For SNMPv1 and SNMPv2c, this indicates that a request containing a community string is not known to the agent.
- There are six communities, each with a respective trap recipient, supported by the agent. The first three communities are for read-write access (rw) and the last three are for read-only access (ro).

For an SNMP Management Station to receive a trap generated by the agent, the admin user must configure a trap recipient IP address of the Management Station.

Community 1: Secret C0de - Displays the IP address for this trap recipient.

Community 2: OrigEquipMfr - Displays the IP address for this trap recipient.

Community 3: private - Displays the IP address for this trap recipient.

Community 4: public - Displays the IP address for this trap recipient.

Community 5: common - Displays the IP address for this trap recipient.

Community 6: FibreChannel - Displays the IP address for this trap recipient.

NOTE: For more information about these SNMP configuration parameters refer to the `agtcfgset` command.

Operands

None.

Example

To display SNMP agent configuration information, input the following command string:

```
switch:admin> agtcfgShow
Current SNMP Agent Configuration
Customizable MIB-II system variables:
    sysDescr = FC Switch
    sysLocation = End User Premise
    sysContact = Field Support.
    swEventTrapLevel = 3
    authTraps = 1 (ON)

SNMPv1 community and trap recipient configuration:
Community 1: Secret C0de (rw)
    Trap recipient: 192.168.1.51
Community 2: OrigEquipMfr (rw)
    Trap recipient: 192.168.1.26
Community 3: private (rw)
    No trap recipient configured yet
Community 4: public (ro)
    No trap recipient configured yet
Community 5: common (ro)
    No trap recipient configured yet
Community 6: FibreChannel (ro)
    No trap recipient configured yet
```

See Also

`agtcfgDefault`, `agtcfgSet`

aliasShow

Display alias server information.

Synopsis

```
aliasShow
```

Availability

All users

Description

Use this command to display local alias server information. If there is no local alias group, the following message is displayed:

```
There is no entry in the Local Alias Server
```

If there are multiple entries in the local alias group, they are displayed.

NOTE: This command is not related to the ZONING feature.

The `aliasShow` command field descriptions are contained in Table 1–1.

Table 1–1: aliasShow Fields Description

Field	Description
Alias ID	Multicast address presented in format FFFBxx, where xx is the name of the multicast group.
Creator	Fibre channel address ID of Nx_Port that created alias group.
Creator token	Alias token provided to map to the alias group; it consists of the following entries: rb—Routing bits. type —Upper level application type. grptype—Alias group type; can only be 10 for multicast. qlfr—Alias qualifier of group.
Member list	A list of member address IDs.

Operands

None.

Example

To display the entries in the local alias server, input the following command string:

```
switch:admin> aliasShow
The Local Alias Server has 1 entry
Alias ID Creator Token [rb, type, grptype, qlfr] Member List
ffffb01 fffffd [40, 05, 10, 60000010 12000069] {021200 0208e2}
```

See Also

fabricShow
switchShow

aliAdd

Add a member to a zone alias.

Synopsis

```
aliAdd "aliName", "member; member"
```

Availability

admin

Description

Use this command to add one or more members to an existing zone alias. The alias member list cannot contain another zone alias.

NOTE: This command requires a Zoning License.

Operands

This command has the following operands:

"aliNam"	Specify the name of a zone alias in quotation marks. This operand is required.
"member"	Specify a member or list of members to be added to the alias, in quotation marks, separated by semicolons (;). An alias member can be specified by one or more of the following methods: <ul style="list-style-type: none">• Physical fabric port numbers• Worldwide names• QuickLoop AL_PAs This operand is required.

Example

To add worldwide names to the following aliases, input the following command string:

```
switch:admin> aliAdd "array2", "1,2"  
switch:admin> aliAdd "array1", "21:00:00:20:37:0c:72:51"  
switch:admin> aliAdd "loop1", "0x02; 0xEF"
```

See Also

aliCreate, aliDelete, aliRemove, aliShow

aliCreate

Create a zone alias.

Synopsis

```
aliCreate "aliName", "member; member"
```

Availability

admin

Description

Use this command to create a new zone alias.

A zone alias name must begin with a letter and can be followed by any number of letters, digits and underscore characters. Names are case sensitive, for example "Ali_1" and "ali_1" are different zone aliases. Blank spaces are ignored.

The zone alias member list must have at least one member (empty lists are not allowed). The alias member list cannot contain another zone alias.

NOTE: This command requires a Zoning License.

Operands

This command has the following operands:

"aliName"	Specify a name for the zone alias in quotation marks. This operand is required.
"member"	Specify a member or list of members to be added to the alias, in quotation marks, separated by semicolons (;). An alias member can be specified by one or more of the following methods: <ul style="list-style-type: none"> Physical fabric port numbers Worldwide names QuickLoop AL_PAs This operand is required.

Example

To create zone aliases using worldwide names, input the following command string:

```
switch:admin> aliCreate "array1", "3,5; 3,8"  
switch:admin> aliCreate "array2", "21:00:00:20:37:0c:66:23"  
switch:admin> aliCreate "loop1", "0x02; 0xEF; 5,4"
```

See Also

- aliAdd
- aliDelete
- aliRemove
- aliShow

aliDelete

Delete a zone alias.

Synopsis

```
aliDelete "aliName"
```

Availability

admin

Description

Use this command to delete a zone alias.

This command changes the Defined Configuration. For the change to become effective, an appropriate zone configuration must be enabled using the `cfgEnable` command. For the change to be preserved across switch reboots, it must be saved to flash memory using the `cfgSave` command.

NOTE: This command requires a Zoning License.

Operands

This command has one operand:

"aliName"	Specify the name of zone alias to be deleted in quotation marks. This operand is required.
-----------	---

Example

To delete the zone alias "array2," input the following command string:

```
switch:admin> aliDelete "array2"
```

See Also

```
aliAdd  
aliCreate  
aliRemove  
aliShow
```

aliRemove

Remove a member from a zone alias.

Synopsis

```
aliRemove "aliName", "member; member"
```

Availability

admin

Description

Use this command to remove one or more members from an existing zone alias.

The member list is located by an exact string match, therefore, it is important to maintain the order when removing multiple members. For example, if a zone alias contains "1,2; 1,3; 1,4" then removing "1,3; 1,4" succeeds, but removing "1,4; 1,3" fails.

If all members are removed, the zone alias is deleted.

This command changes the Defined Configuration. For the change to become effective, an appropriate zone configuration must be enabled using the `cfgEnable` command. For the change to be preserved across switch reboots, it must be saved to flash memory using the `cfgSave` command.

NOTE: This command requires a Zoning License.

Operands

This command has the following operands:

"aliName"	Specify the name of the zone alias to have members removed in quotation marks. This operand is required.
"member"	Specify a member or list of members to be removed from the alias, in quotation marks, separated by semicolons (;). An alias member can be specified by one or more of the methods in the following list:

"member" (continued)	<ul style="list-style-type: none">• Physical fabric port numbers• Worldwide names• QuickLoop AL_PAs <p>This operand is required.</p>
-------------------------	--

Example

To remove a worldwide name from "array1,"input the following command string:

```
switch:admin> aliRemove "array1", "3,5"  
switch:admin> aliRemove "array1", "21:00:00:20:37:0c:76:8c"  
switch:admin> aliRemove "array1", "0xEF"
```

See Also

aliAdd
aliCreate
aliDelete
aliShow

aliShow

Display zone alias information.

Synopsis

```
aliShow ["pattern"]
```

Availability

All users

Description

Use this command to display zone configuration information.

If no parameters are specified, all zone configuration information (both defined and enabled) is displayed. See `cfgShow` for a description of this display.

If a parameter is specified, it is used as a pattern to match zone alias names; those that match in the defined configuration are displayed.

NOTE: This command requires a Zoning License.

Operands

This command has the following operand:

"pattern"	A POSIX style regular expression used to match zone alias names. This operand must be enclosed in quotation marks. Patterns may contain: <ul style="list-style-type: none">• Question mark (?) that matches any single character• Asterisk (*) that matches any string of characters• Ranges that match any character within the range. Ranges must be enclosed in brackets, for example, [0-9] or [a-f] This operand is optional.
-----------	--

Example

To show all zone aliases beginning with "arr," input the following command string:

```
switch:admin> aliShow "arr*"
alias: array1  21:00:00:20:37:0c:76:8c
alias: array2  21:00:00:20:37:0c:66:23
```

See Also

`aliAdd`, `aliCreate`, `aliDelete`, `aliRemove`

backSpace

Set an alternate backspace character.

Synopsis

```
backSpace [0 | 1]
```

Availability

All users (display)

admin (modify)

Description

This command changes the backspace character used by the shell between the default value of BACKSPACE (hex 08) and an alternate value of DEL (hex 7F).

Operands

This command has the following operand:

0 or 1	Specify 0 to use the standard backspace character (BACKSPACE). Specify 1 to use the alternate backspace character (DEL). This operand is optional.
--------	--

Specify the command with no operand to display the current setting.

Example

To display the current backspace character and change it to DEL, input the following command string:

```
switch:admin> backSpace
BackSpace character is BACKSPACE (hex 08)
switch:admin> backSpace 1
Committing configuration...done.
BackSpace character is DEL (hex 7F)
```

bcastShow

Display broadcast routing information.

Synopsis

```
bcastShow
```

Availability

All users

Description

Use this command to display the broadcast routing information for all ports in the switch. The broadcast routing information indicates all ports that are members of the broadcast distribution tree that is, ports that are able to send and receive broadcast frames.

Normally, all F_Ports and FL_Ports are members of the broadcast distribution tree. The broadcast path selection protocol selects the E_Ports that are part of the broadcast distribution tree. The E_Ports are chosen in such a way to prevent broadcast routing loops.

The bcastShow command field descriptions are shown in Table 1–2.

Table 1–2: bcastShow Fields Description

Field	Description
Group	The multicast group ID of the broadcast group.
Member Ports	A map of all ports in broadcast tree.
Member ISL Ports	A map of all E_Ports in broadcast tree.
Static ISL Ports	Reserved.

The broadcast routing information for the ports is displayed as a set of hexadecimal bit maps.

Operands

None.

Examples

To display the broadcast routing information for all ports in the switch, input the following command string:

```
switch:admin> bcastShow
Group      Member Ports      Member ISL Ports      Static ISL Ports
-----
256        0x00012083        0x00002080            0x00000000
```

See Also

`mcastShow`
`portRouteShow`

bsn

Display the SAN Switch serial number.

Synopsis

bsn

Availability

admin

Description

Use this command to display the SAN Switch serial number.

Operands

None.

Examples

To display the serial number input the following command string:

```
switch:admin> bsn  
DP000013855
```

See Also

ssn

camTest

Test the functionality of Content Addressable Memory (CAM).

Synopsis

```
camTest [passCount]
```

Availability

admin

Description

Use this command to verify that Content Addressable Memory (CAM) is functionally correct. The CAM is used by QuickLoop to translate the SID.

NOTE: This command may not be executed on an enabled switch. You must first disable the switch using the `switchDisable` command.

Operands

This command has the following operand:

passCount	Specify the number of times to execute this test. The default value is 1. This operand is optional.
-----------	---

Example

To verify that Content Addressable Memory (CAM) is functioning correctly, input the following command string:

```
switch:admin> camTest 2
Running CAM Test ..... passed.
```

Errors

Below are possible error messages if failures are detected:

DIAG-CAMINIT
DIAG-XMIT
DIAG-CAMSID

See Also

ramTest
portRegTest
centralMemoryTest
cmiTest
sramRetentionTest
turboRamTest
statsTest
filterTest
portLoopbackTest
spinSilk

centralMemoryTest

Perform a bit write and read test of the ASIC central memory.

Synopsis

```
centralMemoryTest [passCount, dataType, dataSeed]
```

Availability

admin

Description

Use this command to verify the address and data bus of the ASIC SRAMs that serve as central memory.

NOTE: This command may not be executed on an enabled switch. You must first disable the switch using the `switchDisable` command.

Operands

This command has the following operands:

passCount	Specify the number of times to execute this test (default is 1). This operand is optional
dataType	Specify the data type to use when writing the central memory. The <code>dataTypeShow</code> command lists data types allowed. The default datatype value is <code>QUAD_RAMP</code> . This operand is optional.
dataSeed	Specify the initial seed value used in generating the data pattern. For example, a <code>QUAD_RAMP</code> pattern with a seed value of <code>0xdead</code> is as follows: <code>0xdead, 0xdeae, 0xdeaf, 0xdeb0...</code> Some data types, such as <code>BYTE_LFSR</code> , do not require a seed value. The default value for <code>dataseed</code> is a randomly generated number. This operand is optional.

Example

To test the ASIC central memory, input the following command string:

```
switch:admin> centralMemoryTest
Running Central Memory Test ... passed.
```

Errors

Below are possible error messages if failures are detected:

```
DIAG-TIMEOUT
DIAG-BADINT
DIAG-CMERRTYPE
DIAG-CMERRPTN
DIAG-CMBISRTO
DIAG-CMBISRF
DIAG-PORTABSENT
DIAG-LCMTO
DIAG-LCMRS
DIAG-LCMEM
DIAG-CMNOBUF
DIAG-LCMEMTX
```

See Also

```
ramTest
portRegTest
cmiTest
sramRetentionTest
turboRamTest
camTest
statsTest
filterTest
portLoopbackTest
spinSilk
```

cfgAdd

Add a member to a zone configuration.

Synopsis

```
cfgAdd "cfgName", "member; member"
```

Availability

admin

Description

Use this command to add one or more members to an existing zone configuration.

Quickloop names can be added as members with the restriction that all members must be confined to a single Quickloop. Quickloop members can overlap a looplet.

NOTE: This command requires a Zoning License.

Operands

This command has the following operands:

"cfgName"	Specify a name for the zone configuration in quotation marks. This operand is required.
"member"	Specify a member or list of members to be added to zone configuration, in quotation marks, separated by semicolons (;). Members can be specified in one or more of the following methods: <ul style="list-style-type: none"> • Zone names • QuickLoop names This operand is required.

Example

To add two new zones to the configuration "Test_cfg," input the following command string:

```
switch:admin> cfgAdd "Test_cfg", "zone2; zone3; loop1"
```

See Also

cfgClear, cfgCreate, cfgDelete, cfgDisable, cfgEnable, cfgRemove, cfgSave, cfgShow

cfgClear

Clears all zone configurations.

Synopsis

cfgClear

Availability

admin

Description

Use this command to clear all zone information in the transaction buffer. All defined zone objects in the transaction buffer are deleted. If an attempt is made to commit the empty transaction buffer while a zone configuration is enabled, a warning is displayed, to first disable the enabled zone configuration or to provide a valid configuration with the same name.

After clearing the transaction buffer using the `cfgClear` command, use the `cfgDisable` command to commit the transaction, and clear the zone configuration in flash for all the switches.

NOTE: This command requires a Zoning License.

Operands

None.

Example

To clear all zones, then commit the changes to both volatile and non-volatile memory (assuming no enabled configurations), input the following command string:

```
switch:admin> cfgClear  
switch:admin> cfgSave
```

See Also

`cfgDisable`
`cfgEnable`
`cfgSave`

cfgCreate

Create a zone configuration.

Synopsis

```
cfgCreate "cfgName", "member; member"
```

Availability

admin

Description

Use this command to create a new zone configuration.

A zone configuration name must begin with a letter and can be followed by any number of letters, digits and underscore characters. Names are case sensitive, for example "Cfg_1" and "cfg_1" are different zone configurations. Blank spaces are ignored.

The zone configuration member list must have at least one member (empty lists are not allowed).

NOTE: This command requires a Zoning License.

Operands

This command has the following operands:

"cfgName"	Specify a name for the zone configuration in quotation marks. This operand is required.
"member"	Specify a member or list of members to be added to zone configuration, in quotation marks, separated by semicolons (;). Members can be specified in one or more of the following methods: <ul style="list-style-type: none"> • Zone names • QuickLoop names This operand is required.

Example

To create a configuration containing three zones, input the following command string:
switch:admin> cfgCreate "Test_cfg", "zone1; zone2; zone3"

See Also

- cfgAdd
- cfgClear
- cfgDelete
- cfgDisable
- cfgEnable
- cfgRemove
- cfgSave
- cfgShow

cfgDelete

Delete a zone configuration.

Synopsis

```
cfgDelete "cfgName"
```

Availability

admin

Description

Use this command to delete a zone configuration. This command changes the Defined Configuration. For the change to become effective, an appropriate zone configuration must be enabled using the `cfgEnable` command.

For the change to be preserved across switch reboots, it must be saved to flash memory using the `cfgSave` command.

NOTE: This command requires a Zoning License.

Operands

This command has the following operand:

"cfgName"	Specify the name of zone configuration to be deleted in quotation marks. This operand is required.
-----------	---

Example

To delete a zone configuration, input the following command string:

```
switch:admin> cfgDelete "Test_cfg"
```

See Also

`cfgAdd`, `cfgClear`, `cfgCreate`, `cfgDisable`, `cfgEnable`, `cfgRemove`, `cfgSave`, `cfgShow`

cfgDisable

Disables an effective zone configuration.

Synopsis

```
cfgDisable
```

Availability

admin

Description

This command disables the current zone configuration. The fabric returns to non-zoning mode where all devices see each other. It also commits the zone configuration in the transaction buffer to volatile and non-volatile memory. This command stops the current zoning transaction.

After clearing the transaction buffer using the `cfgClear` command, use the `cfgDisable` command to commit the transaction, and clear the zone configuration in flash for all the switches.

If a transaction is open on a different switch in the fabric when this command is run, the transaction on the other switch is automatically aborted. A message is displayed on the other switch notifying the transaction abort.

NOTE: This command requires a Zoning License.

Operands

None.

Example

To disable the current zone configuration, input the following command string:

```
switch:admin> cfgDisable
```

See Also

```
cfgClear  
cfgEnable  
cfgSave
```


cfgEnable

Enables a zone configuration.

Synopsis

```
cfgEnable "cfgName"
```

Availability

admin

Description

Use this command to commit any zone configuration in the transaction buffer to the volatile and non-volatile memory and enable the specified zone configuration. This command ends the current zoning transaction.

The specified zone configuration is built by checking for undefined zone names, zone alias names, or other inconsistencies; by expanding zone aliases, removing duplicate entries, and then installing the effective configuration.

If the build fails, the previous state is preserved (zoning remains disabled, or the previous Effective configuration remains in effect). If the build succeeds, the new configuration replaces the previous configuration.

Execute the `cfgShow` command for a description of defined and effective configurations.

If a transaction is open on a different switch in the fabric when this command is run, the transaction on the other switch is automatically aborted. A message is displayed on the other switch notifying the transaction abort.

NOTE: This command requires a Zoning License.

Operands

This command has the following operand:

"cfgName"	Specify the name of a zone configuration in quotation marks. This operand is required.
-----------	---

Example

To enable the zone configuration “Test_cfg,” input the following command string:

```
switch:admin> cfgEnable "Test_cfg"  
zone config "Test_cfg" is in effect
```

See Also

```
cfgClear  
cfgDisable  
cfgSave  
cfgShow
```

cfgRemove

Remove a member from a zone configuration.

Synopsis

```
cfgRemove "cfgName", "member; member"
```

Availability

admin

Description

Use this command to remove a member from an existing zone configuration.

The member list is located by an exact string match, therefore, it is important to maintain the order when removing multiple members. For example, if a zone configuration contains "cfg2; cfg3; cfg4" then removing "cfg3; cfg4" succeeds, but removing "cfg4; cfg3" fails.

If all members are removed, the zone configuration is deleted.

NOTE: This command requires a Zoning License.

Operands

The following operands are required:

"cfgName"	Specify a name of a zone configuration, in quotation marks.
"member"	Specify a member or list of members to be deleted from the zone configuration, in quotation marks, separated by semicolons (;). Members can be specified in one or more of the following methods: <ul style="list-style-type: none"> • Zone names • QuickLoop names

Example

To remove a zone from a configuration, input the following command string:

```
switch:admin> cfgRemove "Test_cfg", "zone3"
```

See Also

cfgAdd, cfgClear, cfgCreate, cfgDelete, cfgDisable, cfgEnable, cfgSave, cfgShow

cfgSave

Save zone configuration to flash memory.

Synopsis

```
cfgSave
```

Availability

admin

Description

Use this command to save the current zone configuration. The defined configuration and the name of the enabled configuration are written to flash memory in all switches in the fabric.

The saved configuration is automatically reloaded by the switch on power up and, if a configuration was enabled at the time it was saved, the same configuration is reinstalled with an automatic `cfgEnable` command.

Because the saved configuration is reloaded at power on, only valid configurations are saved. `cfgSave` verifies that the enabled configuration is valid by performing the same tests as `cfgEnable`. If the tests fail, an error is displayed and the configuration is not saved. Tests may fail if a configuration has been modified since the last `cfgEnable`.

NOTE: This command requires a Zoning License.

Operands

None.

Example

To enable a zone configuration, then save it, input the following command string:

```
switch:admin> cfgEnable "Test_cfg"  
zone config "Test_cfg" is in effect  
switch:admin> cfgSave  
Updating flash...
```

See Also

`cfgClear`, `cfgDisable`, `cfgEnable`, `cfgShow`

cfgShow

Display zone configuration information.

Synopsis

```
cfgShow ["pattern"]
```

Availability

All users

Description

Use this command to display zone configuration information.

If no operand is specified, all zone configuration information (both defined and enabled) is displayed.

If an operand is specified, it is used as a pattern to match zone configuration names in the defined configuration; those that match the pattern are displayed.

The defined configuration is the complete set of all zone objects that have been defined in the fabric. There can be multiple zone configurations defined, but only one can be enabled at a time. There may be inconsistencies in the definitions, zones or aliases that are referenced but not defined, or there may be duplicate members.

The enabled configuration is the currently zone configuration enabled. The devices that an initiator sees in the fabric are based on this configuration. The enabled configuration is built when a specified zone configuration is enabled.

NOTE: This command requires a Zoning License.

Operands

This command has the following operand:

"pattern"	<p>Specify a POSIX style regular expression enclosed in quotation marks and used to match zone configuration names. Patterns can contain:</p> <ul style="list-style-type: none"> • Question mark "?" that matches any single character • Asterisk "*" that matches any string of characters • Ranges that match any character within the range. For example, [0-9] or [a-f]. <p>This operand is optional.</p>
-----------	--

Example

To show defined configuration information, input the following command string:

```
switch:admin> cfgShow "Test"  
cfg:   Test1Blue_zone  
cfg:   Test_cfgRed_zone; Blue_zone
```

To show all configuration information, input the following command string:

```
switch:admin> cfgShow  
Defined configuration:  
  
cfg:   USA1Blue_zone  
cfg:   USA_cfgRed_zone; Blue_zone  
zone:  Blue_zone1,1; array1; 1,2; array2  
zone:  Red_zone1,0; loop1  
alias: array121:00:00:20:37:0c:76:8c;  
       21:00:00:20:37:0c:71:02  
alias: array221:00:00:20:37:0c:76:22;  
       21:00:00:20:37:0c:76:28  
alias: loop121:00:00:20:37:0c:76:85;  
       21:00:00:20:37:0c:71:df  
  
Enabled configuration:  
  
cfg:   USA_cfg  
zone:  Blue_zone1,1  
       21:00:00:20:37:0c:76:8c  
       21:00:00:20:37:0c:71:02  
       1,2  
       21:00:00:20:37:0c:76:22  
       21:00:00:20:37:0c:76:28  
zone:  Red_zone1,0  
       21:00:00:20:37:0c:76:85  
       21:00:00:20:37:0c:71:df
```

See Also

cfgAdd, cfgClear, cfgCreate, cfgDelete, cfgDisable,
cfgEnable, cfgRemove, cfgSave

cfgTransAbort

Aborts the current zoning transaction.

Synopsis

```
cfgTransAbort
```

Availability

admin

Description

Use this command to abort the current zoning transaction. All changes made since the transaction was started will be removed and the zone configuration database restored to the state before the transaction was started.

NOTE: This command requires a Zoning License.

Operands

None.

Example

To abort the current transaction, input the following command string:

```
switch:admin> cfgTransAbort
```

See Also

```
cfgSave  
cfgDisable  
cfgEnable
```

cmemRetentionTest

Test the data retention of the central memory SRAMs.

Synopsis

```
cmemRetentionTest [passCount]
```

Availability

admin

Description

Use this command to verify data retention in the central memory SRAMs in the ASIC.

NOTE: This command may not be executed on an enabled switch. You must first disable the switch using the `switchDisable` command.

Operands

This command has the following operand:

passCount	Specify the number of times to execute this test. The default value is 1. This operand is optional.
-----------	---

Example

To run the data retention test on the central memory SRAMS, input the following command string:

```
switch:admin> cmemRetentionTest  
Running CMEM Retention Test ... passed.
```

Errors

Listed below are possible error messages if failures are detected:

DIAG-LCMRS
DIAG-LCMTO
DIAG-LCMEM

See Also

`camTest`, `centralMemoryTest`, `cmiTest`, `crossPortTest`,
`portLoopbackTest`, `ramTest`, `spinSilk` `sramRetentionTest`

cmiTest

Test the quad connections between two ASIC connections.

Synopsis

```
cmiTest [passCount]
```

Availability

admin

Description

Use this command to verify that the multiplexed 4-bit Control Message Interface (CMI) point to point connection between four quads located between two ASICs is functioning properly. This command is also used to verify that a message with a bad checksum sets the error and interrupt status bits of the destination quad and that a message with a good checksum does not set an error or interrupt bit in any ASIC.

NOTE: This command may not be executed on an enabled switch. You must first disable the switch using the `switchDisable` command.

The Test method is displayed below. Complete the following for each source quad X and each destination quad Y in the switch. Do not complete this test if quad X = quad Y.

1. Generate the CMI data D.
2. Send data from source quad X to destination quad Y.
3. Check destination quad Y for the following:
 - The capture flag is set.
 - The data is received as expected (D).
 - If a good checksum test, the CMI error bit and the EMI error interrupt status bit are not set.
 - If a bad checksum test, the CMI error bit and the CMI error interrupt status bit are set.
4. Check that all quads (other than Y) do not have:
 - The capture flag set.

- The CMI error bit set.
- The CMI error interrupt status bit set.

Operands

This command has the following operand:

passCount	Specify the number of times to execute this test. The default value is 1. This operand is optional.
-----------	---

Example

To run a quad to quad connection test between two ASICs, input the following command string:

```
switch:admin> cmiTest  
Running CMI Test ..... passed.
```

Errors

Below are possible error messages if failures are detected:

DIAG-CMISA1
DIAG-CMINOCAP
DIAG-CMICKSUM
DIAG-CMIINVCAP
DIAG-CMIDATA
DIAG-INTNIL
DIAG-BADINT

See Also

ramTest
portRegTest
centralMemoryTest
sramRetentionTest
turboRamTest
camTest
statsTest
filterTest
portLoopbackTest
spinSilk

configDefault

Reset a subset of configuration settings to the default values.

Synopsis

```
configDefault
```

Availability

admin

Description

Use this command to reset certain configuration settings to the default values.

All configuration parameters, with the following exceptions, are reset to default values:

- Ethernet MAC address, IP address, and subnetmask
- IP gateway address
- License keys
- OEM customization
- SNMP configuration
- System name
- World Wide Name
- ZONING configuration

NOTE: Refer to the `configure` command for more information on default values for configuration parameters.

NOTE: This command may not be executed on an enabled switch. You must first disable the switch using the `switchDisable` command.

Some configuration parameters are cached by the system. To avoid unexpected switch behavior, reboot the system after executing this command.

Operands

None.

Example

To restore the system configuration to default values, input the following command string:

```
switch:admin> configDefault  
Committing configuration...done.
```

See Also

```
agtcfgDefault  
configure  
switchDisable  
switchEnable
```

configDownload

Load the switch configuration file from a host system.

Synopsis

```
configDownload ["host","user","file"[,"passwd"]]
```

Availability

admin

Description

Use this command to load the switch configuration file from a host system. The configuration file is ASCII text and may have been generated using `configUpload`, or it may have been created by a user to download specific configuration changes.

The download process uses either FTP or the RSHD protocol (TCP service 514).

To restore the configuration file from a Windows NT system using FTP, the FTP server may have to be installed from the distribution media and enabled.

To restore the configuration file from a Windows NT system using RSHD, two utilities are supplied, RSHD.EXE and CAT.EXE. The FTP server or RSHD must be running before a download can be initiated.

This command can be invoked without any operands, and becomes an interactive session where you are prompted for input, including choice of FTP or RSHD. If invoked with three operands RSHD is used; otherwise, presence of the password operand selects FTP.

A switch's identity cannot be changed by `configDownload`. These parameters (such as the switch's name and IP address) are ignored.

The download process is additive; that is, the lines read from the file are added to the current switch configuration. This enables you to change a single configuration variable by downloading a file with a single line. All other variables remain unchanged. This is particularly important when downloading a zoning configuration. Since the new zoning information is added to the current configuration, there may not be any conflicts. Typically this command is used to add a consistent change to the current zoning configuration, or to replace the current zoning configuration, in which case `cfgClear` must be invoked before `configDownload`.

Operands

This command has the following operands:

"host"	Specify a host name or IP address in quotation marks; for example, "citadel" or "192.168.1.48". The configuration file is downloaded from this host system. This operand is optional.
"user"	Specify a user name in quotation marks; for example, "jdoe". This user name is used to gain access to the host system. This operand is optional.
"file"	Specify a file name in quotation marks; for example, "config.txt". Absolute path names may be specified using forward slash (/). Relative path names search for the file in the user's home directory on UNIX hosts, and in the directory where the FTP server is running on Windows hosts. This operand is optional.
"passwd"	Specify a password in quotation marks. If present, the command uses FTP to transfer the file. This operand is optional.

Example

To load a backup configuration file from a host system, input the following command string:

```
switch:admin> configDownload "citadel","jdoe","config.txt"  
Committing configuration...done.  
download complete
```

Errors

The possible reasons for a failure of this command are as follows:

- The host name is not known to the switch
- The host IP address cannot be contacted
- The user does not have permission on the host
- The user runs a script that prints something at login
- The file does not exist on the host
- The file is not a switch configuration file
- The RSHD or FTP server is not running on the host
- The configuration data contains errors.

See Also

configDefault
configUpload
configShow
configure

configShow

Display system configuration settings.

Synopsis

```
configShow ["textfilter"]
```

Availability

All users

Description

Use this command to view system configuration settings set by the `configure` command, as well as the following settings:

- Ethernet MAC address
- NVRAM boot settings

Operands

This command has the following operand:

"textfilter"	Specify a text string in quotation marks that limits the output of the command to only those entries that contain the text string. The filter does not apply to the ethernet MAC address and NVRAM data display settings.
--------------	--

Example

To display system configuration settings, input the following command string:

```
switch:admin> configShow

Ethernet address: 0:60:69:0:60:10
Nvram data: fei(0,0)host:/usr/switch/firmware e=192.168.1.62
g=192.168.1.254 u=user tn=switch
Type <CR> to continue, Q<CR> to stop:
diag.postDisable:      0
fabric.domain:         1
fabric.ops.BBCredit:   16
fabric.ops.E_D_TOV:    2000
fabric.ops.R_A_TOV:    10000
fabric.ops.dataFieldSize: 2112
fabric.ops.mode.fcpProbeDisable: 0
fabric.ops.mode.isolate: 0
fabric.ops.mode.tachyonCompat: 0
fabric.ops.mode.unicastOnly: 0
```



```
fabric.ops.mode.useCsCtl:      0
fabric.ops.mode.vcEncode:     0
fabric.ops.vc.class.2:       2
fabric.ops.vc.class.3:       3
fabric.ops.vc.config:        0xc0
fabric.ops.vc.linkCtrl:      0
fabric.ops.vc.multicast:      7
fc4.fcIp.address:            192.168.65.62
fc4.fcIp.mask:                255.255.255.0
fcAL.fanFrameDisable:        0
fcAL.useAltBBCredit:         0
lcdContrast:                  128
licenseKey:                    None
rpc.rstatd:                    1
rpc.rusersd:                   1
```

See Also

```
agtcfgShow
configure
diagDisablePost
diagEnablePost
ipAddrShow
licenseShow
syslogdIp
```

configUpload

Create a backup file of switch configuration information on a host workstation.

Synopsis

```
configUpload ["host","user","file"[,"passwd"]]
```

Availability

admin

Description

Use this command to upload the switch configuration to a host file.

The upload process uses either FTP or the RSHD protocol (TPC service 514). Both of these services are widely available on UNIX hosts, but less so on Windows hosts. On Windows NT, the FTP server may have to be installed from the distribution media and enabled, or on Windows NT or Windows 9x, there are several freeware and shareware FTP servers available.

The two supplied utilities RSHD . EXE and CAT . EXE, currently do not support uploads, only downloads. Therefore, in a Windows environment, FTP must be used, and the FTP server must be running before an upload can occur.

If the **configUpload** command is entered without operands, the user is prompted for input, including choice of FTP or RSHD. If invoked with three operands, RSHD is used; otherwise, presence of the fourth operand (password) selects FTP.

Operands

This command has the following operands:

"host"	Specify a host name or IP address in quotation marks; for example, "citadel" or "192.168.1.48". The configuration file is downloaded from this host system. This operand is optional.
"user"	Specify a user name in quotation marks; for example, "jdoe". This user name is used to gain access to the host. This operand is optional.

"file"	Specify a file name in quotation marks; for example, "config.txt". Absolute path names may be specified using forward slash (/). Relative path names create the file in the user's home directory on UNIX hosts, and in the directory where the FTP server is running on Windows hosts. This operand is optional.
"passwd"	Specify a password in quotation marks. If present, the command uses FTP to transfer the file. This operand is optional.

Example

To create a backup file of switch configuration information, input the following command string:

```
swd5:admin> configUpload "citadel", "jdoe", "config.txt", "passwd"
upload complete
switch:admin>
```

If you enter the command with no operands, you are prompted for the appropriate values:

```
switch:admin> configUpload
Server Name or IP Address [citadel]: 192.168.15.42
User Name [None]: user21
File Name [config.txt]: config-switch.txt
Protocol (RSHD or FTP) [FTP]: ftp
Password: xxxxxx
upload complete
switch:admin>
```

Errors

Listed below are possible reasons for a failure of this command:

- The host name is not known to the switch
- The host IP address cannot be contacted
- The user does not have permission on the host
- The user runs a script that prints something at login
- The RSHD or FTP server is not running on the host

See Also

```
configDefault
configDownload
configShow
configure
```

configure

Modify system configuration settings.

Synopsis

configure

Availability

admin

Description

Use this command to change the following system configuration settings:

- Fabric parameters
- Virtual channel settings
- Switch Operating Mode
- Zoning Operation parameters
- RSCN Transmission Mode
- NS Pre-zoning Mode
- Arbitrated Loop parameters
- System services
- Portlog events enable

NOTE: Do not run this command on an operational switch. First disable the switch using the `switchDisable` command.

The `configure` command is navigated using a series of menus. Top level menus, and associated submenus consist of a text prompt, a list of acceptable values, and a default value (in brackets).

Use the options in the following list to control input:

- Return—When entered at a prompt with no preceding input, accepts the default value (if applicable) and moves to the next prompt.
- Interrupt (control-C)—Aborts the command immediately and ignores all changes made. This keystroke is common on many computers, but can be different on your system
- End-of-file (control-D)—When entered at a prompt with no preceding input, terminates the command and saves changes made. This keystroke is common on many computers, but may be different on your system.

Fabric Parameters

There are a number of settings which control the overall behavior and operation of the Fabric. Some of these values, such as the domain, are assigned automatically by the Fabric and may differ from one switch to another in the fabric. Other parameters, such as the BB credit, can be changed for specific applications or operating environments, but **must** be in agreement among all switches to allow formation of the fabric.

The Fabric parameters are described in Table 1–3:

Table 1–3: Configure Command Fabric parameters

Field	Default	Range
Domain	1	1..239
BB Credit	16	1 to 27
R_A_TOV	10000	4000..120000
E_D_TOV	2000	1000 to 5000
Data Field Size	2112	256 to 2112
Sequence Level Switching	0	0 or 1
Disable Device Probing	0	0 or 1
Suppress Class F Traffic	0	0 or 1
SYNC IO mode	0	0 or 1
VC Encoded Address Mode	0	0 or 1
Core Switch PID Format	0	0 or 1
Per-frame Route Priority	0	0 or 1
Long Distance Fabric	0	0 or 1

Descriptions of the switch fabric setting fields are described in Table 1–4:

Table 1–4: Switch Fabric Field Descriptions

Field	Description
Domain	<p>The domain number uniquely identifies the switch in a Fabric. This value is automatically assigned by the Fabric if there is a conflict.</p> <p>The range of valid values varies depending on the switch model and other system parameter settings (refer to VC Encoded Address Mode).</p> <p>It is best to sequentially assign the Domain addresses.</p>
BB Credit	<p>The buffer-to-buffer (BB) credit represents the number of buffers available to attached devices for frame receipt. The range of allowed values varies depending on other system settings (see Unicast-only Operation).</p>
R_A_TOV	<p>The Resource Allocation Time Out Value (R_A_TOV) is displayed in milliseconds. This variable works with the variable E_D_TOV to determine switch actions when presented with an error condition.</p> <p>NOTE: Default value is 10 seconds.</p> <p>Allocated circuit resources with detected errors are not released until the time value has expired. If the condition is resolved prior to the time out, the internal time out clock resets and waits for the next error condition.</p>
E_D_TOV	<p>Error Detect Time Out Value (E_D_TOV) is displayed in milliseconds. This timer is used to flag a potential error condition when an expected response is not received (an acknowledgment or reply in response to packet receipt, for example) within the set time limit.</p> <p>NOTE: Default value is 2 seconds.</p> <p>If the time for an expected response exceeds the set value, then an error condition occurs.</p>
Data Field Size	<p>The data field size specifies the largest possible value, in bytes, and advertises this value to other switches in the fabric during construction of the fabric as well as to other devices when they connect to the fabric. Setting this to a value smaller than 2112 may result in decreased performance.</p>

Table 1-4: Switch Fabric Field Descriptions (Continued)

Field	Description
Sequence Level Switching	<p>When Sequence Level Switching is set to 1, frames of the same sequence from a particular source are transmitted together as a group. When this feature is set to 0, frames are transmitted interleaved among multiple sequences.</p> <p>Under normal conditions, Sequence Level Switching should be disabled for better performance. However, some host adapters have performance issues when receiving interleaved frames from multiple sequences. When there are such devices attached to the fabric, Sequence Level Switching should be enabled.</p>
Disable Device Probing	<p>When Disable Device Probing is set to 1, devices that do not register with the Name Server are not present in the Name Server data base. Set this mode only if the switch N_Port discovery process (PLOGI, PRLI, INQUIRY) causes an attached device to fail.</p>
Suppress Class F Traffic	<p>When this mode is set to 1, all class F interswitch frames are transmitted as class 2 frames. This is to support remote fabrics which involve ATM gateways which don't support class F traffic.</p>
SYNC IO mode	<p>When Sync IO mode is set to 1, FSPF frames are sent in synchronous mode (expecting ACKs back from the other side for every frame) which helps in detecting the failures in the link between the ATM gateways in remote fabrics.</p>
VC Encoded Address Mode	<p>When VC Encoded Address Mode is set to 1, frame source and destination address utilize an address format compatible with Compaq StorageWorks Fibre Channel Switches. Set this mode only if the fabric includes this type of switch.</p>
Core Switch PID Format	<p>This is used to set the 256 port PID format that is used for core switches.</p>
Per-frame Route Priority	<p>In addition to the eight virtual channels used in frame routing priority, support is also available for per-frame based prioritization when this value is set. When Per-frame Route Priority is set to 1, the virtual channel ID is used in conjunction with a frame header to form the final virtual channel ID.</p>

Table 1–4: Switch Fabric Field Descriptions (Continued)

Field	Description
Long Distance Fabric	When this mode is set to 1, ISLs in a fabric can be up to 100Km long. The exact distance level is determined by the per-port configuration on the E_Ports of each ISL. Both E_Ports in an ISL must be configured to run the same long distance level, otherwise, the fabric will be segmented. The Extended Fabric License is required to set this mode.

Virtual Channel Settings

The switch enables fine tuning for a specific application, by configuring the parameters for eight virtual channels. The first two virtual channels are reserved for switch internal functions and are not available for modification.

The default virtual channel settings have already been optimized for switch performance. Changing the default values can improve switch performance, but can also degrade performance. Do not change these settings without fully understanding the effects of the changes.

The Virtual Channel Setting fields are described in Table 1–5:

Table 1–5: Configure Command Virtual Channel Settings

Field	Default	Range
VC Priority 2	2	2 to 3
VC Priority 3	2	2 to 3
VC Priority 4	2	2 to 3
VC Priority 5	2	2 to 3
VC Priority 6	3	2 to 3
VC Priority 7	3	2 to 3

NOTE: VC Priority = the class of frame traffic given priority for a Virtual Channel.

Switch Operating Mode

The functionality of this parameter is currently not supported.

Zoning Operation Parameters

There are two Zoning Operation Parameter fields as shown in the following table:

Standard Mode	Specify 1 to force the switch to issue interswitch traffic conforming to FCSW Specify 0 to enable proprietary interswitch traffic NOTE: The default value is 0 . This value must be set to 1 for interoperability.
Disable NodeName Zone Checking	Specify 1 to disable using Node WWN when specifying nodes in the zone database Specify 0 to enable using Node WWN when specifying nodes in the zone data NOTE: The default value is 1 . This value must be set to 1 for interoperability.

RSCN Transmission Mode

There is one RSCN Transmission Mode field:

End-device RSCN Transmission Mode	Specify 0 for RSCN with single PID Specify 1 for RSCN with multiple PIDs Specify 2 for Fabric RSCN
-----------------------------------	---

NS Pre-zoning Mode

There is one NS Pre-zoning Mode field:

Pre-zoned responses Mode	Specify 0 for Standard Mode Specify 1 for Pre-zoning On
--------------------------	--

Arbitrated Loop Settings

The Arbitrated Loop Setting fields are described in Table 1–6.

Table 1–6: Configure Command Arbitrated Loop Settings

Field	Default	Range	Description
Send FAN frames?	1	0 or 1	Specifies that fabric address notification (FAN) frames be sent to public loop devices to notify them of their node ID and address. When set to 1, frames are sent; when set to 0 frames are not sent.
Always send RSCN?	0	0 or 1	Following the completion of loop initialization, a remote state change notification (RSCN) is issued when FL_Ports detect the presence of new devices or the absence of pre-existing devices. When set to a 1, a RSCN is issued upon completion of loop initialization, regardless of the presence or absence of new or preexisting devices.
Enable CLOSE on OPEN received?	1	0 or 1	If this is set to a 1, a CLS is returned immediately to an OPN if no buffers are available (required for TachLite).
Do Not Allow AL_PA 0x00?	0	0 or 1	This option disallows ALPA values from being 0.
Initialize All Looplets?	0	0 or 1	When set to a 1, all looplets including the ones not in the same zone are always re-initialized. This is required for certain RAID subsystems to work properly during failover.

System Services

The System Services fields are described in Table 1–7.

Table 1–7: Configure Command System Services Parameters

Field	Default	Range	Description
rstatd	Off	On/Off	<p>Dynamically enables or disables a server that returns information about system operation information through remote procedure calls (RPC). The protocol provides for a wide-range of system statistics; however, only ethernet interface statistics (see ifShow) and system up time (see uptime) are supported.</p> <p>The retrieval of this information is supported by a number of operating systems which support RPC. Most UNIX-based systems (HP-UX, Irix, Linux, Solaris, etc.) use the rup and rsysinfo commands to retrieve the information. See your local system documentation for the appropriate usage of the these or equivalent commands</p>
rusersd	Off	On/Off	<p>Dynamically enables or disables a server that returns information about the user logged into the system through remote procedure calls (RPC). The information returned includes user login name, the system name, login protocol or type, login time, idle time, and remote login location (if applicable).</p> <p>The retrieval of this information is supported by a number of operating systems which support RPC. On most UNIX-based systems (HP-UX, Irix, Linux, Solaris, etc.) the command to retrieve the information is rusers. See your local system documentation for the appropriate usage of this or equivalent command.</p>
rapid	On	On/Off	Dynamically enables or disables a service that handles RPC requests for the API server.
Disable RLS probing	On	On/Off	This disables Read Link Error Status probing of the ALPAs.

Portlog Events Enable

Use these parameters to specify which events create an entry in the port log. The Portlog Events fields are described in Table 1–8.

Table 1–8: Configure Command Portlog Events Parameters

Field	(Valid Values) Default Value
start: a switch start or re-start event	(on, off): [on]
disable: a port is disabled	(on, off): [on]
enable: a port is enabled	(on, off): [on]
ioctl: a port I/O control is executed	(on, off): [on]
Tx: a frame is transmitted	(on, off): [on]
Tx1: a frame is transmitted, class 1	(on, off): [on]
Tx2: a frame is transmitted, class 2	(on, off): [on]
Tx3: a frame is transmitted, class 3	(on, off): [on]
Rx: a frame is received	(on, off): [on]
Rx1: a frame is received, class 1	(on, off): [on]
Rx2: a frame is received, class 2	(on, off): [on]
Rx3: a frame is received, class 3	(on, off): [on]
stats: port status or statistics	(on, off): [on]
scn: a state change notification	(on, off): [on]
pstate: a port changes physical state	(on, off): [on]
reject: a received frame is rejected	(on, off): [on]
busy: a received frame is busied	(on, off): [on]
ctin: a CT based request is received	(on, off): [on]
ctout: a CT based response is transmitted	(on, off): [on]
errlog: a message is added to the error log	(on, off): [on]
loopscn: a loop state change notification	(on, off): [on]
create: a task is created	(on, off): [on]
debug: generic debug info	(on, off): [on]
nbrfsm: neighbor state transition	(on, off): [on]
timer: timer	(on, off): [on]
sn: speed negotiation	(on, off): [on]

Operands

None.

Example

To set the configuration parameters for a switch, input the following command string:

```
switch:admin> configure
Configure...

Fabric parameters (yes, y, no, n): [no] yes

  Domain: (1..239) [1]
  BB credit: (1..27) [16]
  R_A_TOV: (4000..120000) [10000]
  E_D_TOV: (1000..5000) [2000] 5000
  Data field size: (256..2112) [2112]
  Sequence Level Switching: (0..1) [0]
  Disable Device Probing: (0..1) [0]
  Suppress Class F Traffic: (0..1) [0] 1
  SYNC IO mode: (0..1) [0]
  VC Encoded Address Mode: (0..1) [0] 1
  Core Switch PID Format: (0..1) [0]
  Per-frame Route Priority: (0..1) [0]
  Long Distance Fabric: (0..1) [0]

Virtual Channel parameters (yes, y, no, n): [no] yes

  VC Priority 2: (2..3) [2]
  VC Priority 3: (2..3) [2]
  VC Priority 4: (2..3) [2]
  VC Priority 5: (2..3) [2]
  VC Priority 6: (2..3) [3]

Switch Operating Mode (yes, y, no, n): [no]
Zoning Operation parameters (yes, y, no, n): [no]
RSCN Transmission Mode (yes, y, no, n): [no]
Arbitrated Loop parameters (yes, y, no, n): [no]
System services (yes, y, no, n): [no]
Portlog events enable (yes, y, no, n): [no]
Committing configuration...done.
switch:admin>
```

See Also

```
configDefault
configShow
ifShow
ipAddrSet
syslogdIp
```

crossPortTest

Test the functional operation of the switch.

Synopsis

```
crossPortTest [passCount, loopbackmode, speedmode]
```

Availability

admin

Description

Use this command to verify the functional operation of the switch. This command verifies operation by sending frames from a port transmitter and looping the frames back through an external fiber cable into another port receiver. This command exercises all of the switch components from the main board to the GBIC, from the GBIC to the fiber cable, from the fiber cable to the GBIC, and from the GBIC back to the main board.

The cables can be connected to any port combination as long as the cables and GBICs connected are of the same technology. For example, a short wavelength GBIC port is connected to another short wavelength GBIC port using a short wavelength cable, or a long wavelength port is connected to another long wavelength port.

For complete testing, ports connected should be from different ASICs. For example, in the SAN Switch 8-EL or 16-EL, ports 0-3 are assigned to ASIC 0, ports 4-7 are assigned to ASIC 1, ports 8-11 are assigned to ASIC 2, and ports 12-15 are assigned to ASIC 3. A connection from port 0 to port 15 exercises the transmit path between all four ASICs. A connection from port 0 to port 3 tests only the internal transmit path in ASIC 0.

Only one frame is transmitted and received at a given time and the port LEDs flicker green while the test is running.

At each pass, the frame is created from a different data type. There are seven data types:

1. CSPAT: 0x7e, 0x7e, 0x7e, 0x7e, ...
2. BYTE_LFSR: 0x69, 0x01, 0x02, 0x05, ...
3. CHALF_SQ: 00x4a, 0x4a, 0x4a, 0x4a, ...
4. QUAD_NOT: 0x00, 0xff, 0x00, 0xff, ...

5. CQTR_SQ: 0x78, 0x78, 0x78, 0x78, ..
6. CRPAT: 0xbc, 0xbc, 0x23, 0x47, ...
7. RANDOM: 0x25, 0x7f, 0x6e, 0x9a, ...

If seven passes are requested, the seven different data types are used in the test. If eight passes are requested, the first seven frames use unique data types, and the eighth is the same as the first.

crossPortTest Modes

There are three test modes. These modes can be used together to test specific ports.

1. switchEnable or switchDisable mode
2. singlePortAlso mode
3. GBIC mode

SwitchOnline and SwitchOffline Mode

The `crossPortTest` command can be executed when the switch is enabled or disabled.

In ONLINE mode (where the switch is enabled prior to executing the `crossPortTest` command) only ports which are cable loopbacked to ports in the same switch are tested. Ports connected outside of the switch are ignored.

To run the `crossPortTest` command successfully the test must find at least one port (if `singlePortAlso` loopback mode is active) or two ports (if `singlePortAlso` loopback mode is not active) cable loopbacked to each other. If this criteria is not met, one of the following two messages is displayed:

```
Need at least one port(s) connected to run this test
(singlePortAlso active)
```

or:

```
Need at least two port(s) cross-connected to run this test
(singlePortAlso not active)
```

In OFFLINE mode (when the switch is disabled prior to executing the `crossPortTest` command) all ports are assumed to be cross port cabled to different ports in the same switch. If one or more ports are not connected, the test aborts.

The test determines which port is connected to which port transmitting frames. If any ports are not properly connected (improperly seated GBICs or cables, bad GBICs or cables, or improper connection), the following message is displayed:

```
One or more ports is not active, please double check fibres on all ports.
```

LoopBack Mode

There are three loopback modes that can be used when executing the **crossPortTest** command. The three modes are specified by entering one of the three values shown in the following table:

Enter a	to get the result of
1	Singleportalso loopback mode. This is a port that loops back to itself. A loopback cable must be used to physically connect the send and receive channels for a single port, before this operand is specified.
2	External loopback mode. The external loopback test creates a test loop between two ports on different ASICs and also tests the Serializer Deserializer functionality.
5	Internal loopback mode. The internal loopback test creates a test loop between two ports on a single ASIC.

GBIC Mode

Use the `setGbicMode` command to activate GBIC mode by executing the following command prior to executing the `crossPortTest` command:

```
switch:admin> setGbicMode 1
```

When activated, only ports with GBICs present are tested by the `crossPortTest` command. For example, if only port 0 and port 3 contain GBICs, the `crossPortTest` command limits testing to port 0 and port 3.

The state of GBIC mode is saved in flash memory and remains active after reboots or power cycles until it is disabled as follows:

```
switch:admin> setGbicMode 0
```


Operands

This command has the following operands:

passCount	Specify the number of times (or number of frames per port) to execute this test. This number can be entered in either decimal or hex. If omitted, the default value is 0xffffffff. This operand is optional.
loopbackmode	Specify the loopback mode. Valid values are: 1 —for singleportalso mode 2 —for external loopback mode 5 —for internal loopback mode
speedmode	Specify the speed of the connection to test. Valid values are: 0 —Auto negotiate 1 —1GB 2 —2GB 3 —odd ports 1g, even ports 1G 4 —odd ports 2g, even ports 1G 5 —even ports 1G, odd ports Auto negotiate 6 —even ports 2G, odd ports Auto negotiate This operand is optional.

Example

To execute a functional test of all the ports on a switch 100 times, input the following command string:

```
switch:admin> crossPortTest 100, 1
Running Cross Port Test .....
One moment please ...
switchName:      switch
switchType:      2.2
switchState:     Testing
switchRole:      Disabled
switchDomain:    1 (unconfirmed)
switchId:        fffc01
switchWwn:      10:00:00:60:69:00:73:71
port  0:  cu  Testing   Loopback->15
port  1:  sw  Testing   Loopback->11
port  2:  sw  Testing   Loopback->6
port  3:  lw  Testing   Loopback->4
port  4:  lw  Testing   Loopback->3
```

```
port 5: sw Testing Loopback->8
port 6: sw Testing Loopback->2
port 7: sw Testing Loopback->12
port 8: sw Testing Loopback->5
port 9: sw Testing Loopback->14
port 10: sw Testing Loopback->13
port 11: sw Testing Loopback->1
port 12: sw Testing Loopback->7
port 13: sw Testing Loopback->10
port 14: sw Testing Loopback->9
port 15: cu Testing Loopback->0
passed.
```

Errors

Below are possible error messages if failures are detected:

```
DIAG-INIT
DIAG-PORTDIED
DIAG-XMIT
DIAG-TIMEOUT
DIAG-ERRSTAT
DIAG-STATS
DIAG-PORTWRONG
DIAG-DATA
```

See Also

```
camTest
portLoopbackTest
portRegTest
ramTest
spinSilk
sramRetentionTest
```

date

Display or set the switch date and time.

Synopsis

```
date ["newDate"]
```

Availability

All users (display)
admin (set)

Description

Use this command with no operands to display date and time. Use the `newdate` operand to set the date and time. Date and time are specified as a string in the format:

```
"mmddhhmmyy"
```

where:

```
mm is the month, valid values are 01-12
dd is the date, valid values are 01-31
hh is the hour, valid values are 00-23
mm is minutes, valid values are 00-59
yy is the year, valid values are 00-99
```

Year values greater than 69 are interpreted as 1970-1999, year values less than 70 are interpreted as 2000-2069.

The date function does not support daylight saving time or time zones.

All switches maintain current date and time in flash memory. Date and time are used for logging events. Switch operation does not depend on the date and time; a switch with an incorrect date value still functions properly.

Operands

This command has the following operand:

"newDate"	Specify the new date and time in quotation marks. This operand is optional.
-----------	--

Example

To display the current date and time, then change it to Feb 27 12:30:00 2001, input the following command string:

```
switch:admin> date
Fri Jan 29 17:01:48 1999
switch:admin> date "0227123001"
Thu Feb 27 12:30:00 2001
```

See Also

```
errLogShow
portLogShow
uptime
```

diagClearError

Clear the diag software flag to allow for retest.

Synopsis

```
diagClearError [port]
```

Availability

admin

Description

Use this command to clear the diagnostic software flag that indicates whether a port is BAD or OK. The current flag settings are displayed by using the `diagShow` command. This command resets the flag to allow the bad port to be retested; otherwise the test skips the port.

This command does not clear the error log entry. Instead, it generates the following DIAG-CLEAR_ERR message for each port software flag cleared. For example, the following message is for a diagnostic error cleared from port 3:

```
0x10f9d560 (tShell): Apr  9 08:35:50
Error DIAG-CLEAR_ERR, 3,
Pt13 (Lm3) Diagnostics Error Cleared
Err# 0001
```

Operands

This command has the following operand:

port	Specify the port where you want to reset the diagnostic software flag. Valid values for port number vary depending on the switch type. This operand is optional.
------	--

NOTE: If no operand is specified, the default is to clear all bad port flags.

Example

To clear the `diag` software flag, input the following command string:

```
switch:admin> diagClearError
0x10f9d5e0 (tShell): Apr  6 13:25:36
Error DIAG-CLEAR_ERR, 3,
Pt7 (Lm1) Diagnostics Error Cleared
Err# 0001
```

See Also

`diagShow`

diagDisablePost

Disable POST execution at reboot.

Synopsis

```
diagDisablePost
```

Availability

admin

Description

Use this command to disable Power On Self Test (POST) execution at switch reboot. This mode is saved in flash memory and POST remains disabled until it is enabled using the `diagEnablePost` command.

A switch rebooted without POST enabled issues the following DIAG-POSTSKIPPED error message:

```
0x10fc0c10 (tSwitch): Apr  6 13:24:42
Error DIAG-POST_SKIPPED, 3,
Skipped POST tests: assuming all ports are healthy,
Err# 0004
```

POST includes the following tests:

- `ramTest` - Bit write and read test of SDRAMs in the switch.
- `portRegTest` - Bit write and read test of the ASIC SRAMs and registers.
- `centralMemoryTest` - Bit write and read test of the ASIC central memory.
- `cmiTest` - ASIC to ASIC connection test of the CMI bus.
- `sramRetentionTest` - Data retention test of the SRAMs in ASIC.
- `turboRAMTest` - Functional test of RAM.
- `camTest` - Functional test of the CAM memory.
- `statsTest` - Runs a statistics counter diagnostic test.
- `filterTest` - Functional test of filter configuration.
- `portLoopbackTest` - Functional test of switch by sending and receiving frames from the same port.
- `spinsilk` - Functional test of port to port path at maximum switch speed.

NOTE: The cold boot (power reset) runs the long ramTest while the warm boot (software reset) runs the short ramTest.

Operands

None.

Example

To disable the POST during future power ups, input the following command string:

```
switch:admin> diagDisablePost  
Committing configuration...done.  
On next reboot, POST will be skipped.
```

See Also

diaghelp
diagEnablePost

diagEnablePost

Enable POST execution at next reboot.

Synopsis

```
diagEnablePost
```

Availability

admin

Description

Use this command to enable Power On Self Test (POST) execution at the next switch reboot. This mode is saved in flash memory and POST remains enabled until it is disabled using the `diagDisablePost` command. POST includes the following tests:

- `ramTest` - Bit write and read test of SDRAMs in the switch.
- `portRegTest` - Bit write and read test of the ASIC SRAMs and registers.
- `centralMemoryTest` - Bit write and read test of the ASIC central memory.
- `cmiTest` - ASIC to ASIC connection test of the CMI bus.
- `sramRetentionTest` - Data retention test of the SRAMs in ASIC.
- `turboRAMTest` - Functional test of RAM.
- `camTest` - Functional test of the CAM memory.
- `statsTest` - Runs a statistics counter diagnostic test.
- `filterTest` - Functional test of filter configuration.
- `portLoopbackTest` - Functional test of switch by sending and receiving frames from the same port.
- `spinsilk` - Functional test of port to port path at maximum switch speed.

NOTE: The cold boot (power reset) runs the long `ramTest` while the warm boot (software reset) runs the short `ramTest`.

Operands

None.

Example

To enable the POST during future power ups, input the following command string:

```
switch:admin> diagEnablePost  
Committing configuration...done.  
On next reboot, POST will be executed.
```

See Also

```
diaghelp  
diagDisablePost
```

diagHelp

Display diagnostic command information.

Synopsis

```
diagHelp
```

Availability

all users

Description

Use this command to display diagnostic command information.

Operands

None.

Example

To display information about diagnostic commands, input the following command string:

```
switch:admin> diagHelp

ramTest                System DRAM diagnostic
portRegTest            Port register diagnostic
centralMemoryTest      Central memory diagnostic
cmiTest                CMI bus connection diagnostic
camTest                Quickloop CAM diagnostic
statsTest              Statistics counter diagnostic
filterTest             Frame Filtering Test
portLoopbackTest       Port internal loopback diagnostic
sramRetentionTest      SRAM Data Retention diagnostic
turboRamTest           ASIC builtin Turbo RAM Test
cmemRetentionTest      Central Mem Data Retention diagnostic
crossPortTest          Cross-connected port diagnostic
spinSilk               Cross-connected line-speed exerciser
diagClearError         Clear diag error on specified port
diagDisablePost        Disable Power-On-Self-Test
diagEnablePost         Enable Power-On-Self-Test
setGbicMode            Enable tests only on ports with GBICs
setSplbMode            Enable 0=Dual, 1=Single port LB mode
supportShow            Print version, error, portLog, etc.
diagShow               Print diagnostic status information
parityCheck            Dram Parity 0=Disabled, 1=Enable
spinFab                ISL link diagnostic.
loopPortTest           L-Port cable loopback diagnostic

switch:admin>
```

diagShow

Print diagnostic results since the last boot.

Synopsis

```
diagShow [nSeconds]
```

Availability

All users

Description

Use this command to print the following information generated since the last switch reboot:

- State of all ports in the switch resulting from diagnostics run since the last reboot. Ports that passed diagnostic testing are marked OK. Ports that failed one or more diagnostic tests are marked BAD.
- Current state of ports. Active ports are UP and inactive ports are DN.
- Current speed configuration for all ports:
- Frame counts for active ports. The number of frames transmitted is listed as `frTx` and the number of frames received is listed as `frRx`.

The “`LLI_errs`” is the total of the port's eight statistic error counters: `ENC_in`, `CRC_err`, `TruncFrm`, `FrmTooLong`, `BadEOF`, `Enc_out`, `BadOrdSet`, `DiscC3`.

- State of central memory based on the results of diagnostics run since the last reboot. OK if previous `centralMemoryTest` executions passed; FAULTY if the switch failed `centralMemoryTest`.
- Total diagnostic frames transmitted and received since last reboot.

The totals represent the cumulative number of frames transmitted and received by the diagnostic functional tests `portLoopbackTest`, `crossPortTest`, or `spinSilk` (for the transmitted count only) for all ports since the last reboot. If the switch is rebooted with POST disabled, `diagShow` indicates the total as 0.

NOTE: The transmitted and received values should be the same. If they are not the same it may indicate an error has occurred in one of the ports during one of the tests above.

This command may also be executed by using the `s` (Stats) option of the QCSL `diag` prompt which is generated when a diagnostic test is keyboard interrupted.

It can also be looped by specifying the `nseconds` operand. This operand enables you to specify a repeat interval for this command. If a repeat interval is specified the command continues to execute until interrupted. For example `diagShow 4` executes the `diagShow` command every four seconds unless stopped by a keyboard interrupt.

Also use this command to isolate a bad GBIC. A changing “`LLI_errs`” value prefixed by “`**`” indicates a port is continuing to detect errors.

Operands

This command has the following operand:

nSeconds	Specify the repeat interval (in seconds) between executions of the <code>diagShow</code> command. If a repeat interval is specified the command continues to execute until interrupted. If this operand is not used, the default behavior is to display the information once. Valid values are from 1 to 2^{**32} . This operand is optional.
-----------------	--

Example

To print the diagnostic results since the last boot, input the following command string:

```
switch:admin> diagShow
Diagnostics Status:  Wed Apr 5 03:09:20 2000
port#:   0    1    2    3    4    5    6    7
diags:  OK   OK   OK   OK   OK   OK   OK   OK
state:  UP   UP   UP   UP   UP   UP   UP   UP
speed:  1G   1G   1G   1G   1G   1G   1G   1G

    lm0:          100 frTx          100 frRx          0 LLI_errs. <looped-15>
    lm1:           100 frTx          100 frRx          0 LLI_errs. <looped-11>
    lm2:           100 frTx          100 frRx          0 LLI_errs. <looped-6>
    lm3:           100 frTx          100 frRx          0 LLI_errs. <looped-4>
    lm4:           100 frTx          100 frRx          0 LLI_errs. <looped-3>
    lm5:           100 frTx          100 frRx          0 LLI_errs. <looped-8>
    lm6:           100 frTx          100 frRx          0 LLI_errs. <looped-2>
    lm7:           100 frTx          100 frRx          0 LLI_errs. <looped-12>
    lm8:           100 frTx          100 frRx          0 LLI_errs. <looped-5>
    lm9:           100 frTx          100 frRx          0 LLI_errs. <looped-14>
    lm10:          100 frTx          100 frRx          0 LLI_errs. <looped-13>
    lm11:          100 frTx          100 frRx          0 LLI_errs. <looped-1>
    lm12:          100 frTx          100 frRx          0 LLI_errs. <looped-7>
    lm13:          100 frTx          100 frRx          0 LLI_errs. <looped-10>
    lm14:          100 frTx          100 frRx          0 LLI_errs. <looped-9>
    lm15:          100 frTx          100 frRx          0 LLI_errs. <looped-0>

Central Memory OK
```

```
Total Diag Frames Tx: 800  
Total Diag Frames Rx: 1400
```

See Also

`diagClearError`

dlsReset

Turn off Dynamic Load Sharing (DLS) option.

Synopsis

```
dlsReset
```

Availability

admin

Description

Use this command to turn off DLS when a fabric change occurs.

Routing is generally based on the incoming port and the destination domain. This means that all the traffic coming in from a port (either E_Port or Fx_Port) directed to the same remote domain is routed through the same output E_Port.

To optimize fabric routing, when there are multiple equivalent paths to a remote switch, traffic is shared among all the paths. Load sharing is recomputed when a switch is booted up or every time a change in the fabric occurs. A change in the fabric is defined as an E_Port going up or down, or an Nx_Port going up or down.

If DLS is turned off (using `dlsReset`), load sharing is performed only at boot time or when an Nx_Port comes up. Optimal load sharing is rarely achieved with DLS disabled.

If DLS is turned on (using `dlsSet`), routing changes can affect working ports. For example, if an Fx_Port goes down, another Fx_Port may be rerouted from one E_Port to a different E_Port. The switch minimizes the number of routing changes, but some are necessary in order to achieve optimal load sharing.

These changes can further affect the performance of a the fabric if the in-order delivery (IOD) option is on. With the IOD option (refer to the `iodSet` command), routes are not available for a few seconds after a fabric change. The time needed to reset the fabric routing varies based on the size of the fabric. Some frame loss may occur because as the fabric is reconfiguring routes, frames are dropped if they are delivered out of order. No frame loss occurs if IOD is off, but there is still a short period of time when traffic is not forwarded. This period of time is significantly shorter than when IOD is on, and is usually less than 1 second.

Use this command only if devices connected to the fabric cannot handle occasional routing changes.

Operands

None.

Examples

To disable the dynamic load sharing option, input the following command string:

```
switch:admin> dlsReset
Committing configuration...done.
switch:admin> dlsShow
DLS is not set
```

See Also

dlsSet
dlsShow

dlsSet

Turn on Dynamic Load Sharing (DLS) option.

Synopsis

```
dlsSet
```

Availability

admin

Description

Use this command to turn on DLS when a fabric change occurs.

Routing is generally based on the incoming port and the destination domain. This means that all the traffic coming in from a port (either E_Port or Fx_Port) directed to the same remote domain is routed through the same output E_Port.

To optimize fabric routing, when there are multiple equivalent paths to a remote switch, traffic is shared among all the paths. Load sharing is recomputed when a switch is booted up or every time a change in the fabric occurs. A change in the fabric is defined as an E_Port going up or down, or an Nx_Port going up or down.

If DLS is turned off (using `dlsReset`), load sharing is performed only at boot time or when an Nx_Port comes up. Optimal load sharing is rarely achieved with DLS disabled.

If DLS is turned on (using `dlsSet`), routing changes can affect working ports. For example, if an Fx_Port goes down, another Fx_Port may be rerouted from one E_Port to a different E_Port. The switch minimizes the number of routing changes, but some are necessary in order to achieve optimal load sharing.

These changes can further affect the performance of a the fabric if the in-order delivery (IOD) option is on. With the IOD option (refer to the `iodSet` command), routes are not available for a few seconds after a fabric change. The time needed to reset the fabric routing varies based on the size of the fabric. Some frame loss may occur because as the fabric is reconfiguring routes, frames are dropped if they are delivered out of order. No frame loss occurs if IOD is off, but there is still a short period of time when traffic is not forwarded. This period of time is significantly shorter than when IOD is on, and is usually less than 1 second.

Operands

None.

Examples

To enable the dynamic load sharing option, input the following command string:

```
switch:admin> dlsSet
Committing configuration...done.
switch:admin> dlsShow
DLS is set
```

See Also

dlsReset
dlsShow

dlsShow

Display the setting of the Dynamic Load Sharing (DLS) option.

Synopsis

```
dlsShow
```

Availability

All users

Description

Use this command to display whether DLS is on or off. There can be two messages displayed:

```
DLS is set
```

The DLS option is turned on. Load sharing is reconfigured with every change in the fabric.

```
DLS is not set
```

The DLS option is turned off. Load sharing is only reconfigured when the switch is rebooted or an Nx_Port comes up.

Operands

None.

Example

To display the current DLS option setting, input the following command string:

```
switch:admin> dlsShow
DLS is set
```

See Also

```
dlsSet
dlsReset
```

errDisplayFilter

Display or set the level of error filtering.

Synopsis

```
errDisplayFilter [level]
```

Availability

All users (display)
admin (set)

Description

Use this command to view or configure the error levels that are displayed on the front panel. Errors with a higher level (lower severity) than the value specified are stored in the error log but are not displayed on the front panel.

NOTE: This command can only be used on a switch with a front panel display.

Operands

This command has the following operand:

level	Specify the new error filtering level. Valid values are 1—critical 2—error 3—warning 4—information 5—Debug Only error levels equal or lower (equal or more severe) than the specified value are displayed. This operand is optional.
-------	---

NOTE: When the command is used with no operand, the current level is displayed.

Example

To display the current filter level, then change it to 3, enter the following command string:

```
switch:admin> errDisplayFilter
All errors will be reported on the front panel.
switch:admin> errDisplayFilter 3
Committing configuration...done.
```

NOTE: This example specifies that only errors of severity 1 through 3 are displayed.

See Also

`errLogShow`

errDump

Display the error log without page breaks.

Synopsis

```
errDump
```

Availability

All users

Description

Use this command to display the error log without page breaks. This command displays the same information as `errShow`, but `errShow` enables you to scroll through the entries using the Enter button.

See `errShow` for a description of the error log.

Operands

None.

Example

To display the error log without page breaks:

```
switch:admin> errDump
Error 02
-----
0x103e9500 (tSwitch): Feb  5 16:59:09
    Error DIAG-TIMEOUT, 1, portLoopbackTest: pass 1,
    Port 1 receive timeout.
Error 01
-----
0x103e9500 (tSwitch): Feb  5 16:42:39
    Error SYS-BOOT, 3, Restart reason: Reboot
```

See Also

`errShow`
`uptime`

errShow

Scroll through the error log.

Synopsis

```
errShow
```

Availability

All users

Description

Use this command to display the error log. This command enables you to scroll through the entries using the Enter key. Use `errDump` to display the same information without line breaks.

Each entry in the log follows the format below:

```
Error Number
-----
taskId (taskName): Time Stamp (count)
Error Type, Error Level, Error Message
Diag Err#
```

where:

- Error Number = each error in the log is assigned a number beginning with one. If the number of errors exceeds the size of the log, the most recent errors are shown.
- Task ID = the ID and name of the task recording the error.
- Time Stamp = the date and time of the first occurrence of the error.
- Error Count = the repeat count is shown in parenthesis for errors that occur multiple times. The maximum count is 999.
- Error Type = an upper case string showing the firmware module and error type. The switch manual contains a detailed explanation of error types.
- Error Level = one of the following:
 - 0**—panic (the switch reboots)
 - 1**—critical
 - 2**—error

- 3—warning
- 4—information
- 5—debug

- Error Message = additional information about the error.
- Diag Err# = the error code number. This is a hexadecimal 4-digit code representing the error type.

Diagnostic Error Codes

Table 1–9 lists the error code numbers, the POST test that generates this error number, and the type of error.

Table 1–9: Diagnostic Error Codes (Sheet 1 of 4)

Error Number	Test	Error Type
0001	n/a	DIAG-CLEAR_ERR
0002	n/a	DIAG-BURNIN_START
0003	n/a	DIAG-BURNIN_STOP
0004	n/a	DIAG-POST_SKIPPED
0110	ramTest	DIAG-MEMORY
0111	ramTest	DIAG-MEMSZ
0112	ramTest	DIAG-MEMNULL
040F	portRegTest	DIAG-BUS_TIMEOUT
0415	portRegTest	DIAG-REGERR
0416	portRegTest	DIAG-REGERR_UNRST
0B0F	sramRetentionTest	DIAG-BUS_TIMEOUT
0B15	sramRetentionTest	DIAG-REGERR
0B16	sramRetentionTest	DIAG-REGERR_UNRST
0FA0	turboRamTest	DIAG-TBRAM_WTEST
0FA1	turboRamTest	DIAG-TBRAM_INC_WRTEST
0FA2	turboRamTest	DIAG-TBRAM_DEC_WRTEST
1020	centralMemoryTest	DIAG-CMBISRTO
1021	centralMemoryTest	DIAG-CMBISRF
1025	centralMemoryTest	DIAG-LCMRS
1026	centralMemoryTest	DIAG-LCMTO

Table 1–9: Diagnostic Error Codes (Sheet 2 of 4)

Error Number	Test	Error Type
1027	centralMemoryTest	DIAG-LCMEM
1028	centralMemoryTest	DIAG-LCMEMT
1029	centralMemoryTest	DIAG-CMNOBUF
102A	centralMemoryTest	DIAG-CMERRTYPE
102B	centralMemoryTest	DIAG-CMERRPTN
102C	centralMemoryTest	DIAG-INTNOTCLR
1030	centralMemoryTest	DIAG-BADINT
106F	centralMemoryTest	DIAG-TIMEOUT
1F25	cmemRetentionTest	DIAG-LCMRS
1F26	cmemRetentionTest	DIAG-LCMTO
1F27	cmemRetentionTest	DIAG-LCMEM
2030	cmiTest	DIAG-BADINT
2031	cmiTest	DIAG-INTNIL
2032	cmiTest	DIAG-CMISA1
2033	cmiTest	DIAG-CMINOCAP
2034	cmiTest	DIAG-CMIINVCAP
2035	cmiTest	DIAG-CMIDATA
2036	cmiTest	DIAG-CMICKSUM
223B	camTest	DIAG-CAMINIT
223C	camTest	DIAG-CAMSID
2271	camTest	DIAG-XMIT
2640	portLoopbackTest	DIAG-ERRSTAT (ENCIN)
2641	portLoopbackTest	DIAG-ERRSTAT (CRC)
2642	portLoopbackTest	DIAG-ERRSTAT (TRUNC)
2643	portLoopbackTest	DIAG-ERRSTAT (2LONG)
2644	portLoopbackTest	DIAG-ERRSTAT (BADEOF)
2645	portLoopbackTest	DIAG-ERRSTAT (ENCOUT)
2646	portLoopbackTest	DIAG-ERRSTAT (BADORD)
2647	portLoopbackTest	DIAG-ERRSTAT (DISCC3)

Table 1–9: Diagnostic Error Codes (Sheet 3 of 4)

Error Number	Test	Error Type
264F	portLoopbackTest	DIAG-INIT
265F	portLoopbackTest	DIAG-PORTDIED
2660	portLoopbackTest	DIAG-STATS (FTX)
2661	portLoopbackTest	DIAG-STATS (FRX)
2662	portLoopbackTest	DIAG-STATS (C3FRX)
266E	portLoopbackTest	DIAG-DATA
266F	portLoopbackTest	DIAG-TIMEOUT
2670	portLoopbackTest	DIAG-PORTABSENT
2671	portLoopbackTest	DIAG-XMIT
3040	crossPortTest	DIAG-ERRSTAT (ENCIN)
3041	crossPortTest	DIAG-ERRSTAT (CRC)
3042	crossPortTest	DIAG-ERRSTAT (TRUNC)
3043	crossPortTest	DIAG-ERRSTAT (2LONG)
3044	crossPortTest	DIAG-ERRSTAT (BADEOF)
3045	crossPortTest	DIAG-ERRSTAT (ENCOUT)
3046	crossPortTest	DIAG-ERRSTAT (BADORD)
3047	crossPortTest	DIAG-ERRSTAT (DISCC3
304F	crossPortTest	DIAG-INIT
305F	crossPortTest	DIAG-PORTDIED
3060	crossPortTest	DIAG-STATS (FTX)
3061	crossPortTest	DIAG-STATS (FRX)
3062	crossPortTest	DIAG-STATS (C3FRX)
306E	crossPortTest	DIAG-DATA
306F	crossPortTest	DIAG-TIMEOUT
3070	crossPortTest	DIAG-PORTABSENT
3071	crossPortTest	DIAG-XMIT
3078	crossPortTest	DIAG-PORTWRONG
3840	spinSilk	DIAG-ERRSTAT (ENCIN)
3841	spinSilk	DIAG-ERRSTAT (CRC)

Table 1–9: Diagnostic Error Codes (Sheet 4 of 4)

Error Number	Test	Error Type
3842	spinSilk	DIAG-ERRSTAT (TRUNC)
3843	spinSilk	DIAG-ERRSTAT (2LONG)
3844	spinSilk	DIAG-ERRSTAT (BADEOF)
3845	spinSilk	DIAG-ERRSTAT (ENCOUT)
3846	spinSilk	DIAG-ERRSTAT (BADORD)
3847	spinSilk	DIAG-ERRSTAT (DISCC3)
384F	spinSilk	DIAG-INIT
385F	spinSilk	DIAG-PORTDIED
3870	spinSilk	DIAG-PORTABSENT
3871	spinSilk	DIAG-XMIT
3874	spinSilk	DIAG-PORTSTOPPED

Operands

None.

Example

The following illustrates two entries in the error log:

```
switch:admin> errShow
Error 02
-----
0x10fbd880 (tSwitch): Feb 5 17:03:19
      Error DIAG-POST_SKIPPED, 3,
Skipped POST tests: assuming all ports are healthy,
Err# 0004

Type <CR> to continue, Q<CR> to stop:
Error 01
-----
0x103e9500 (tSwitch): Feb 5 16:58:39
      Error SYS-BOOT, 3, Restart reason: Reboot
```

See Also

```
errDump
firmwareDownload
reboot
uptime
```

fabricShow

Displays fabric membership information.

Synopsis

```
fabricShow
```

Availability

All users

Description

Use this command to display information about switches and multicast alias groups in the fabric. Multicast alias groups are created on demand by request from N_Ports attached to the alias server; typically no groups are listed.

If the switch is initializing, or disabled, the message “no fabric” is displayed. If the fabric is reconfiguring, some or all switches may not be shown. Otherwise, the fields in the following table are shown:

Switch ID	The switch Domain_ID and embedded port D_ID.
Worldwide Name	The switch WWN.
Enet IP Addr	The switch ethernet IP address.
FC IP Addr	The switch FC IP address.
Name	The switch symbolic name. An arrow (>) indicates the principal switch.
If multicast alias groups exist, the following fields are shown:	
Group ID	The alias group number and D_ID.
Token	The alias group token (assigned by the N_Port).

Operands

None.

Example

The following example shows a fabric of four switches. “sw180” is the principal switch. Three of the switches are configured to run IP over Fibre Channel. There is one multicast alias group.

```
switch:admin> fabricShow
Switch IDWorldwide NameEnet IP AddrFC IP AddrName
-----
  0: fffc4010:00:00:60:69:00:06:56192.168.64.59192.168.65.59"sw5"
  1: fffc410:00:00:60:69:00:02:0b192.168.64.180192.168.65.180
"sw180"
  2: fffc4210:00:00:60:69:00:05:91192.168.64.60192.168.65.60"sw60"
  3: fffc4310:00:00:60:69:10:60:1f192.168.64.1870.0.0.0 "sw187"
The Fabric has 4 switches

Group ID      Token
-----
0: fffb01 40:05:00:00:10:00:00:60:69:00:00:15
```

See Also

switchShow

fanShow

Display fan status.

Synopsis

fanShow

Availability

All users

Description

Use this command to display the current status of the switch fans. The format of the display varies according to the switch model and number of fans. Some switch models show fan speed measured in RPM (revolutions per minute).

Fan status is shown as one of the following:

- OK—fan is functioning correctly.
- Absent—fan is not present.
- Below minimum—fan is present but rotating too slowly or stopped.

Operand

None.

Example

To display the status and RPMs for the fans, input the following command string:

```
switch:admin> fanShow
Fan #1 is OK, speed is 8220 RPM
Fan #2 is OK, speed is 8400 RPM
Fan #3 is OK, speed is 8130 RPM
Fan #4 is OK, speed is 8310 RPM
Fan #5 is OK, speed is 8220 RPM
Fan #6 is OK, speed is 8430 RPM
switch:admin>
```

See Also

psShow
tempShow

faShow

Display Fabric Assist Information

Synopsis

faShow

Availability

All users

Description

Use this command to display information about Fabric Assist host ports. This command displays the port number and PID for each Fabric Assist host port located on the switch. It also displays a listing of each target that has a Fabric Assist phantom on the host's port. The target's PID, assigned phantom ALPA, preferred ALPA and current online/offline status is displayed.

The message “No Fabric Assist Host Ports on this Switch” is displayed if Fabric Assist is disabled, or if there are no Fabric Assist host ports on the switch.

If the switch was unable to assign a phantom for the target then the message “No Phantom” will be displayed in the Status column. This switch will be unable to create a phantom if there are no available ALPAs on the loop, or if there are more than 125 phantoms zoned to hosts on any one switch.

If the preferred alpa can not be assigned as the target's alpa, then the alpa field of the target will be left blank and “ALPA Conflict” will be displayed in the Status column. In this situation the target's phantom won't be created.

The display columns are described in Table 1–10.

Table 1–10: Display Columns

Name	Description
Fabric Assist Mode	Enabled or Disabled
Port	The port number of the Fabric Assist host
PID	The 24-bit Fibre Channel address of the host
Fabric Assist	The Online/Offline status of the host
Target	The 24-bit Fibre Channel address of a zoned Target that current has a phantom assigned to the host.

Table 1–10: Display Columns (Continued)

Name	Description
ALPA	The assigned phantom ALPA for the target.
PREF_ALPA	The preferred ALPA given for the target
Status	The Online/Offline status of the target.

Operands

None.

Example

The following example shows two Fabric Assist host ports on the switch:

```
switch:admin> faShow
Fabric Assist Mode: Enabled
```

Port	PID	Fabric Assist	Target	ALPA	PREF_ALPA	Status			
00	0x011001	Online	0x011498	(0xef)	(0xef)	Online			
			0x011497	(0x97)		Online			
			0x011490	(0x90)		Online			
			0x01148f	(0x8f)		Online			
			0x011488	(0x88)		Online			
			0x011484	(0x84)		Online			
			0x011482	(0x82)		Online			
			0x011481	(0x81)		Online			
			0x011480	(0x80)		Online			
			0x01147c	(0x7c)		Online			
			0x01147a	(0x7a)		Online			
			0x011475	(0x75)		(0xef)	ALPA Conflict		
			01	0x0111ef		Online	0x0115ab	(0xab)	Online
							0x0115b4	(0xb4)	Online
							0x0115b3	(0xb3)	Online
0x0115b2	(0xb2)	Online							
0x0115b1	(0xb1)	Online							
0x0115ae	(0xae)	Online							
0x0115ad	(0xad)	Online							
0x0115ac	(0xac)	Online							

See Also

fazoneCreate

faStatsShow

faStatsShow

Display statistics about Fabric Assist.

Synopsis

faStatsShow

Availability

All users

Description

Use this command to display statistical information about Fabric Assist host ports. This command displays the port number for each Fabric Assist host port located on the switch. It also displays the total number LIPs performed by the port since activation of Fabric Assist zoning.

This command also display the total number of LIPs that were initiated by Fabric Assist, and which Fabric Assist PID caused the LIP to be sent.

The message “No Fabric Assist Host Ports on this Switch” is displayed if Fabric Assist is disabled, or if there are no Fabric Assist host ports on the switch.

Each line of output is described in Table 1–11.

Table 1–11: Fabris Assist Host Port Display

Name	Description
port	The port number of the Fabric Assist host.
Total LIPs	The total number of LIPs detected on the port since Fabric Assist was enabled.
Fabric Assist LIPs	Total number of LIPs initiated by Fabric Assist.
Last Caused by	The PID of the port that caused the last Fabric Assist initiated LIP.

Operands

None

Example

The following example shows three Fabric Assist host ports on the switch.

```
w1:admin> faStatsShow
Port  Total LIPs   Fabric Assist LIPs  Last Caused by
-----
00    3            1                    0x011001
01    1            1                    0x0511ef
03    1            1                    0x0511ef
```

See Also

fazoneCreate

faShow

fastboot

Reboot the switch, bypassing POST.

Synopsis

```
fastboot
```

Availability

```
admin
```

Description

Use this command to reboot the switch, bypassing Power On Self Test (POST). The reboot takes effect immediately as the switch resets and executes normal power-on booting sequence. However, POST is skipped. This reduces boot time significantly.

If POST has been disabled using the `diagDisablePost` command, then `fastboot` is the same as `reboot`. However, `fastboot` skips the POST on the current reboot, while `diagDisablePost` skips POST on all future reboots until cancelled by `diagEnablePost`.

While the switch is rebooting, the telnet session is closed and all Fibre Channel ports are inactive. If the switch is part of a fabric, the remaining switches reconfigure.

Operands

None.

Example

To reboot the switch, bypassing the POST, input the following command string:

```
switch:admin> fastboot
Rebooting...
```

See Also

```
diagDisablePost
diagEnablePost
reboot
```

fazoneAdd

Add a member to a Fabric Assist zone.

Synopsis

```
fazoneAdd "fazoneName", "member; member"
```

Availability

Admin

Description

This command adds one or more members to an existing Fabric Assist zone. `fazoneName` is the name of an existing Fabric Assist zone. The member list is list of members enclosed in quotation marks and separated by semicolons.

- Physical fabric port numbers
- WWNs
- Zone alias names
- Exactly one Fabric Assist host member

NOTE: This command does not change the defined configuration (which you can view using the **cfgShow** command) until the **cfgSave** command is issued. For the change to become effective, an appropriate Fabric Assist zone configuration must be enabled using the **cfgEnable** command. For the change to be preserved across switch reboots, it must be saved to non-volatile memory using the **cfgSave** command.

Operands

This command has the following operands:

"fazoneName"	A name for the Fabric Assist zone in quotation marks. This operand is required.
"member"	A list of Fabric Assist Zone members. The list must be enclosed in quotation marks, and each member must be separated by a semi-colon. This operand is required.

Example

To add aliases for some disk arrays to “Blue_fazone”, insert the following command string:

```
switch:admin> fazoneAdd “Blue_fazone”, “array3; array4; array5”
```

To add a Fabric Assist host member to “Blue_fazone”, insert the following command string:

```
switch:admin> fazoneAdd “Blue_fazone”, “H{5,6}”
```

See Also

fazoneCreate
fazoneDelete
fazoneRemove

fazoneCreate

Create a Fabric Assist zone.

Synopsis

```
fazoneCreate "fazoneName", "fazoneMemberList"
```

Availability

Admin

Description

This command creates a new Fabric Assist zone. You must specify the name and memberlist for this Fabric Assist zone. The name cannot have been previously used for any other Fabric Assist zone object. The member list must be enclosed in quotation marks and each member must be separated by a semicolon.

Fabric Assist zone members can be one or more of the following:

- Physical fabric port numbers
- WWNs
- Fabric Assist zone alias names
- Exactly one Fabric Assist host member

A Fabric Assist zone name is a C language-style name. It is a name beginning with a letter and followed by any number of letters, digits and underscore characters. Names are case sensitive, for example "Zone_1" and "fazone_1" are different Fabric Assist zones. White space is ignored.

The Fabric Assist zone member list has at least one member (empty lists are not allowed). The members are described by a semi-colon separated list of member definitions. Physical fabric port numbers are specified as a pair of decimal numbers "s, p" where "s" is the switch number (domain ID) and "p" is the port number on that switch. For example, "2, 12" specifies port 12 on switch number 2.

When a Fabric Assist zone member is specified by physical fabric port number, then any and all devices connected to that port are in the Fabric Assist zone. If this port is an arbitrated loop, then all devices on the loop are in the Fabric Assist zone. WWNs are specified as eight hex numbers separated by colons, for example

“10:00:00:60:69:00:00:8a”. Zoning has no knowledge of the fields within a WWN; the eight bytes are simply compared with the Node and Port Names presented by a device in a login frame (FLOGI or PLOGI).

When a Fabric Assist zone member is specified by Node Name, then all ports on that device are in the Fabric Assist zone. When a Fabric Assist zone member is specified by Port Name, only that single device port is in the Fabric Assist zone. Zone alias names have the same format as Fabric Assist zone names and are created with the **aliCreate** command. The alias must resolve to a list of one or more physical fabric port numbers, WWNs, or a Fabric Assist host.

A Fabric Assist host member is defined by wrapping the physical fabric port or a physical device (a WWN) between “H{” and “}”. For example, “H{ 5 , 6 }” or “H{10:00:00:60:69:00:00:8a}” is a Fabric Assist host. The type of Fabric Assist zone members used to define a Fabric Assist zone may be mixed and matched. For example, a Fabric Assist zone defined with the following members: “2,12; 2,14; 10:00:00:60:69:00:00:8a” would contain devices connected to switch 2, ports 12 and 14, and the device with a WWN of “10:00:00:60:69:00:00:8a” (either Node Name or Port Name - whichever port in the fabric it is connected to.)

NOTE: This command does not change the defined configuration (which you can view using the **cfgShow** command) until the **cfgSave** command is issued. For the change to become effective, an appropriate Fabric Assist zone configuration must be enabled using the **cfgEnable** command. For the change to be preserved across switch reboots, it must be saved to non-volatile memory using the **cfgSave** command.

Operands

The following operands are required:

“fazoneName”	Specify a name for the Fabric Assist zone. The name must be enclosed in quotation marks. This command is required.
“fazoneMemberList”	Specify the members for a Fabric Assist zone. This member list must be enclosed and quotation marks and each member must be separated by a semicolon. This operand is required.

Example

To create three Fabric Assist zones using a mixture of port numbers and Fabric Assist zone aliases, insert the following command string:

```
witch:admin> fazoneCreate "fazone1", "H{1,0}; loop1"  
switch:admin> fazoneCreate "fazone2", "H{1,1}; array1; 1,2; array2"  
switch:admin> fazoneCreate "fazone3", "1,0; loop1; H{1,2}; array2"
```

See Also

- fazoneAdd
- fazoneDelete
- fazoneRemove
- fazoneShow

fazoneDelete

Delete a Fabric Assist mode zone.

Synopsis

```
fazoneDelete "fazoneName"
```

Availability

Administrator

Description

Use this command to delete an existing Fabric Assist mode zone on a fabric.

This command does not change the defined configuration (which you can view using the **cfgShow** command) until the **cfgSave** command is issued. For the change to become effective, an appropriate Fabric Assist zone configuration must be enabled using the **cfgEnable** command. For the change to be preserved across switch reboots, it must be saved to non-volatile memory using the **cfgSave** command.

Operands

The following operand is required:

"fazoneName"	Name for the zone to be deleted, in quotes.
--------------	---

Example

The following entry deletes a Fabric Assist mode zone:

```
switch:admin> fazoneDelete "FaZone02"
```

See Also

fazoneCreate
faShow
faStatsShow

fazoneRemove

Remove members from a Fabric Assist mode zone.

Synopsis

```
fazoneRemove "fazoneName", "fazoneMember; fazoneMember"
```

Availability

Admin

Description

This command removes one or more members from an existing Fabric Assist zone.

Each deleted member must be found by an exact string match. Order is important when removing multiple members of a Fabric Assist zone. For example, if a Fabric Assist zone contains "array2; array3; array4" then removing "array4; array3" fails, but removing "array3; array4" succeeds. If issuing this command results in all members being removed, the Fabric Assist zone is deleted.

This command does not change the defined configuration (which you can view using the **cfgShow** command) until the **cfgSave** command is issued. For the change to become effective, an appropriate Fabric Assist zone configuration must be enabled using the **cfgEnable** command. For the change to be preserved across switch reboots, it must be saved to non-volatile memory using the **cfgSave** command.

Operands

The following operands are required:

"fazoneName"	A name for the Fabric Assist zone in quotes
"fazoneMemberList"	A semi-colon separated list of members in quotes.

Example

To remove "array2" from "Blue_fazone" insert the following command string:

```
switch:admin> fazoneRemove "Blue_fazone", "array2"
```

See Also

fazoneAdd, fazoneCreate, fazoneDelete, fazoneShow

fazoneShow

Display fazone information.

Synopsis

```
fazoneShow [pattern [, transflag]]
```

Availability

All users

Description

Use this command to display fazone information. Specifying this command with no parameters or with the second parameter set to zero displays all fazone configuration information for both Defined and Effective configurations. Defined configuration information is shown from the transaction buffer. Refer to the **cfgShow** command for a description of this display.

If a parameter is specified, it is used as a pattern to match fazone names, and those that match in the Defined configuration are displayed.

Patterns may contain:

- a question mark (?) which matches any single character
- an asterisk (*) which matches any string of characters
- a numeric or alpha range of values (for example, 0-9 or a-f) which match any character within the range.

Operands

This command has the following operands:

pattern	Specify a value to search for the name of an fazone. This can be any POSIX style expression. Variables such as, question marks, asterisk, or ranges can be used. This operand is optional.
transflag	Specify 0 to display the information from the transaction, or specify 1 to display information from the original buffer.

Example

To display all fazones beginning with the letters A through C, insert the following command string:

```
switch:admin> fazoneShow "[A-C]*"
fazone:  Blue_fazone
         1,1; array1; 1,2; array2
```

See Also

- fazoneAdd
- fazoneCreate
- fazoneDelete
- fazoneRemove

filterTest

Frame Filter test for Compaq StorageWorks Fibre Channel San Switch ASICs.

Synopsis

```
filterTest [passCount]
```

Availability

admin

Description

This command verifies that the SAN Switch 8-EL or 16-EL ASIC frame level filtering logic including every type of filter actions:

- FLTACT_LIST_A - action to handle the subgroup A based filtering
- FLTACT_LIST_B - action to handle the subgroup B based filtering
- FLTACT_FROZEN - action to handle the frame frozen process
- FLTACT_DISCARD - action to discard frame
- FLTACT_FORWARD - action to forward frame

This command can be run on every port, and send the frame in internal loop back mode. The filter test requires two different ports in same quadrant due to the fact that the filter logic sits in transmitter port can not work if frame is sent directory from the embedded port.

In this test, the filter definition covers the different filtering conditions as described in Table 1–12:

Table 1–12: Filter Test Numbers, Definitions, and Action Types

#	Filter Definition	Action Type
0	unconditional match	Forward
1	unconditional match	List A
2	unconditional match	List B
3	unconditional match	Frozen
4	unconditional match	Discard
5	SCAM no match and ALPA match	List A
6	SCAM&DCAM match and ALPA match	List A

Table 1–12: Filter Test Numbers, Definitions, and Action Types (Continued)

#	Filter Definition	Action Type
7	Zone A match and ALPA match	List A
8	Zone B match and ALPA match	List B
9	Zone A&B match and ALPA match	List B
10	Zone AIB match and ALPA match	Frozen
11	Zone AIB match and ALPA match	Discard

Operands

This command has the following operand:

passcount	Specify the number of times to execute this test. The default value is 1. This operand is optional.
-----------	---

Example

To run the filterTest, input the following command string:

```
switch:admin> filterTest  
Running Filter Test ..... passed.
```

See Also

```
ramTest  
portRegTest  
cmiTest  
centralMemoryTest  
sramRetentionTest  
turboRamTest  
camTest  
statsTest  
portLoopbackTest  
spinSilk
```

firmwareDownload

Download a switch firmware file from a host.

Synopsis

```
firmwareDownload ["host","user","file" [, "passwd"]]
```

Availability

admin

Description

Use this command to download a switch firmware file from a host into the switch flash memory.

The download process uses either FTP (File Transfer Protocol) or the RSHD protocol (TCP service 514).

On Windows NT and Windows 2000, the FTP server may have to be installed from the Windows NT/2000 distribution media and enabled, or on Windows NT or Windows 9x there are several good freeware and shareware FTP servers available. To use RSHD on Windows NT or 9x, two utilities are supplied on the StorageWorks SAN Switch CDROM with the firmware file, RSHD.EXE and CAT.EXE, together with instructions on how to install and run them. The FTP server or RSHD must be running before a firmware download can occur.

If this command is invoked without operands, you are prompted for input, including the choice of FTP or RSHD. If it is invoked with three operands, RSHD is used; the addition of the fourth operand (password) selects FTP.

Once the download begins, numbers are displayed (size of .text, .data, and .bss sections, and the file checksum) followed by status lines indicating download progress. This display varies depending on switch model, but all displays print a period "." per page of firmware read or written.

After a download successfully completes, the switch must be rebooted to activate the new firmware.

You can also download firmware through the WEB TOOLS interface.

Operands

This command has the following operands:

“host”	Specify a host name or IP address in quotation marks; for example, “citadel” or “192.168.1.48”. The configuration file is downloaded from this host system. This operand is optional.
“user”	Specify a user name in quotation marks; for example, “jdoe”. This user name is used to gain access to the host. This operand is optional.
“file”	Specify a file name in quotation marks; for example, “firmware.txt”. Absolute path names may be specified using forward slash (/). Relative path names create the file in the user’s home directory on UNIX hosts, and in the directory where the FTP server is running on Windows hosts. This operand is optional.
“passwd”	Specify a password in quotation marks. If present, the command uses FTP to transfer the file. This operand is optional.

Example

To download a firmware file, input the following command string:

```
switch:admin> firmwareDownload  
"citadel","jdoe","/home/firmware/v2.2"  
55696+6984+133172, csum 7eca  
writing flash 0 .....  
writing flash 1 .....  
download complete
```

Errors

The following can cause the download to fail:

- The host name is not known to the switch
- The host IP address cannot be contacted
- The user does not have permission on the host
- The user runs a script that prints something at login

- The path to the firmware may be case sensitive
- The file does not exist on the host
- The file is not a switch firmware file
- The file is corrupted
- The RSHD or FTP server is not running on the host

See Also

reboot
version

fpgaDownload

Download an FPGA netlist file from a host.

Synopsis

```
fpgaDownload [host,user,file [,passwd]]
```

Availability

Admin

Description

Use this command to download a switch FPGA file from a host into the switch flash memory. New FPGA netlist is made available periodically to add features or to remedy defects. Contact customer support to obtain information about available FPGA versions.

The download process uses either FTP (File Transfer Protocol) or the RSHD protocol (TCP service 514). Both of these services are widely available on Unix hosts, but less so on Windows hosts.

On Windows NT, the FTP server may have to be installed from the distribution media and enabled, or on Windows NT or Windows 9x there are several good freeware and shareware FTP servers available. To use RSHD on Windows NT or 9x, two utilities are supplied with the FPGA file, RSHD.EXE and CAT.EXE, together with instructions on how to install and run them. The FTP server or RSHD must be running before an FPGA download can occur.

The command may be invoked without any parameters, in which case the user is prompted for input, including choice of FTP or RSHD. If invoked with three parameters RSHD is used, otherwise presence of the fourth parameter (FTP password) selects FTP.

Once the download starts, some numbers are displayed (size of FPGA data, and the file checksum) followed by some status lines showing the download progress. This display varies depending on switch model, but all displays print a period "." per page of FPGA netlist file read or written.

The download may fail for many reasons:

- Host name is not know to the switch
- Host IP address cannot be contacted
- User does not have permission on the host

- User runs a script that prints something at login
- File doesn't exist on the host
- File is not a switch FPGA file
- File is corrupted
- RSHD or FTP server isn't running on the host

After the download completes successfully, the switch must be rebooted for the new FPGA to take effect.

The FPGA may also be downloaded via the switch's World Wide Web interface.

Operands

The following operands are optional:

"host"	Specify a host name or IP address in quotes, for example, "citadel" or "192.168.1.48". The FPGA file is downloaded from this host.
"user"	Specify a user name in quotes, for example, "jdoe". This user name is used to gain access to the host.
"file"	Specify a file name in quotes, for example, "fpga_netlist". Absolute path names may be specified using forward slash "/". Relative path names look for the file in the user's home directory on Unix hosts, and in the directory where the FTP or RSHD server is running on Windows hosts.
passwd	Specify the user password, if applicable. If this operand is specified, FTP is used as the download protocol.

Example

To download an FPGA file from host "citadel", using account "jdoe", and file "/home/jdoe/fpga_netlist", insert the following command string:

```
switch:admin> fpgaDownload
"citadel","jdoe","/home/jdoe/fpga_netlist"
size: 1038624, data csum 7eca
writing flash 0 .....
writing flash 1 .....
download complete
```

See Also

reboot

fspfShow

Display FSPF protocol information.

Synopsis

```
fspfShow
```

Availability

All users

Description

Use this command to display the Fibre Channel Shortest Path First (FSPF) protocol information, and internal data structures. FSPF is implemented by a single task, called `tFspf`.

The display shows the fields as described in Table 1–13:

Table 1–13: fspfShow display fields

Field	Description
version	Version of FSPF protocol.
domainID	Domain number of local switch.
isl_ports	Bit map of all E_Ports.
minLSArrival	FSPF constant.
minLSInterval	FSPF constant.
LSoriginCount	Internal variable.
startTime	Start time of tFspf task (milliseconds from boot).
fspfQ	FSPF input message queue.
fabP	Pointer to fabric data structure.
agingTID	Ager timer ID.
agingTID	Ager time out value, in milliseconds.
lSrDlyTID	Link State Record delay timer ID.
lSrDelayTo	Link State Record delay time out value, in milliseconds.
lSrDelayCount	Counter of delayed Link State Records.
ddb_sem	FSPF semaphore ID.

Table 1–13: fspfShow display fields (Continued)

Field	Description
event_sch	FSPF scheduled events bit map.
lsrRefreshCnt	Internal variable.

Operands

None.

Examples

To display FSPF protocol information, input the following command string:

```
switch:admin> fspfshow
version          = 2
domainID        = 3
isl_ports       = 0x00000020
minLSArrival    = 3
minLSInterval   = 5
LSoriginCount   = 0
startTime       = 16784
fspfQ           = 0x10f48f10
fabP            = 0x10f49f90
agingTID        = 0x10f3c100
agingTo         = 10000
lsrDlyTID       = 0x10f3c0b0
lsrDelayTo      = 5000
lsrDelayCount   = 0
ddb_sem         = 0x10f48ee0

fabP:
event_sch       = 0x0
lsrRefreshCnt   = 0
```

See Also

```
bcastShow
mcastShow
topologyShow
uRouteShow
```

fwAlarmsFilterSet

This command determines whether alarms are enabled for Fabric Watch.

Synopsis

```
fwAlarmsFilterSet [0|1]
```

Availability

admin

Description

Use this command to configure alarm filtering for Fabric Watch. By turning off the alarms, all non-environment class alarms are suppressed. By turning on the alarms, all class alarms are generated.

NOTE: This command requires a Fabric Watch License.

Operands

This command has the following operand:

0 or 1	Specify 1 for enabling the alarms, Specify 0 for disabling the alarms. The default value is 0 (alarms are deactivated). This operand is optional.
--------	--

Example

To enable alarms in Fabric Watch, input the following command string:

```
switch:admin> fwAlarmsFilterSet  
Committing configuration...done.  
FW: Alarms are disabled  
switch:admin> fwAlarmsFilterSet 1  
Committing configuration...done.  
FW: Alarms are enabled
```

See Also

```
fwAlarmsFilterShow
```

fwAlarmsFilterShow

Shows alarm filtering for Fabric Watch.

Synopsis

```
fwAlarmsFilterShow
```

Availability

All users

Description

Use this command to display whether alarm filtering is enabled or disabled.

NOTE: This command requires a Fabric Watch License.

Operands

none

Example

To display the status of alarm filtering in Fabric Watch, input the following command string:

```
switch:admin> fwAlarmsFilterShow
FW: Alarms are enabled
switch:admin> fwAlarmsFilterShow
FW: Alarms are disabled
```

See Also

```
fwAlarmsFilterSet
```

fwClassInit

Initializes all classes under Fabric Watch.

Synopsis

```
fwClassInit
```

Availability

admin

Description

Use this command to initialize all classes under Fabric Watch

NOTE: This command requires a Fabric Watch License.

Operands

None

Example

To initialize all classes under Fabric Watch enter the following text:

```
switch:admin> fwClassInit
gbicRegister: re-register 0x0 0x10f6c260
fwClassInit: Fabric Watch initialized
```

See Also

```
fwConfigReload
fwConfigure
fwShow
```


fwConfigure

Displays and allows modification of the Fabric Watch configuration and status.

Synopsis

```
fwConfigure
```

Availability

admin

Description

Use this command to display and modify threshold information for the Fabric Watch configuration. Switch elements monitored by Fabric Watch are divided into classes, which are further divided into areas. In addition, each area can include from 0 to 16 thresholds.

NOTE: This command requires a Fabric Watch License.

The Fabric Watch classes and areas are provided in Table 1–14.

Table 1–14: fwConfigure Fabric Watch Classes and Area

Class	Area
Fabric	Loss of E_Port
	Fabric reconfigure
	Segmentation changes
	Domain ID changes
	Zoning changes
	Fabric to QuickLoop changes
	Fabric logins
	GBIC state change
Environmental	Temperature
	Fan
	Power supply

Table 1–14: fwConfigure Fabric Watch Classes and Area (Continued)

Class	Area
Port	Link failure count
	Loss of synchronization count
	Loss of signal count
	Primitive sequence protocol error
	Invalid transmission word
	Invalid CRC count
	Receive performance
	Transmit performance
	State changes
E_Port	Link failure count
	Loss of synchronization count
	Loss of signal count
	Primitive sequence protocol error
	Invalid transmission word
	Invalid CRC count
	Receive performance
	Transmit performance
	State changes
F/FL_Port (optical)	Link failure count
	Loss of synchronization count
	Loss of signal count
	Primitive sequence protocol error
	Invalid transmission word
	Invalid CRC count
	Receive performance
	Transmit performance
	State changes

Table 1–14: fwConfigure Fabric Watch Classes and Area (Continued)

Class	Area
Port	Link failure count
	Loss of synchronization count
	Loss of signal count
	Primitive sequence protocol error
	Invalid transmission word
	Invalid CRC count
	Receive performance
	Transmit performance
	State changes
E_Port	Link failure count
	Loss of synchronization count
	Loss of signal count
	Primitive sequence protocol error
	Invalid transmission word
	Invalid CRC count
	Receive performance
	Transmit performance
	State changes
F/FL_Port (optical)	Link failure count
	Loss of synchronization count
	Loss of signal count
	Primitive sequence protocol error
	Invalid transmission word
	Invalid CRC count
	Receive performance
	Transmit performance
	State changes

Table 1–14: fwConfigure Fabric Watch Classes and Area (Continued)

Class	Area
Port	Link failure count
	Loss of synchronization count
	Loss of signal count
	Primitive sequence protocol error
	Invalid transmission word
	Invalid CRC count
	Receive performance
	Transmit performance
	State changes
E_Port	Link failure count
	Loss of synchronization count
	Loss of signal count
	Primitive sequence protocol error
	Invalid transmission word
	Invalid CRC count
	Receive performance
	Transmit performance
	State changes
F/FL_Port (optical)	Link failure count
	Loss of synchronization count
	Loss of signal count
	Primitive sequence protocol error
	Invalid transmission word
	Invalid CRC count
	Receive performance
	Transmit performance
	State changes

Table 1–14: fwConfigure Fabric Watch Classes and Area (Continued)

Class	Area
F/FL_Port (copper)	Link failure count
	Loss of synchronization count
	Loss of signal count
	Primitive sequence protocol error
	Invalid transmission word
	Invalid CRC count
	Receive performance
	Transmit performance
	State changes
	GBIC
Received power	
Transmitted power	
Current	

Operands

None

Example

To display the Fabric Watch configuration and status, enter the following text:

```
switch:admin> fwConfigure
1 : Environment class
2 : GBIC class
3 : Port class
4 : Fabric class
5 : E-Port class
6 : F/FL Port (Copper) class
7 : F/FL Port (Optical) class
8 : quit
```

```
Select a class => : (1..8) (8) 1
1 : Temperature
2: fan
3: Power Supply
4: return to previous page
Select an area => : (1..4) [4] 1
Index ThresholdName Status CurVal LastEvent LastEventTime LastVal
LastState
=====
1 envTemp001 enabled 33 C started 10:28:59 on 02/01/2000 0 C
Informative
2 envTemp002 enabled 34 C started 10:28:59 on 02/01/2000 0 C
Informative
3 envTemp003 enabled 36 C started 10:28:59 on 02/01/2000 0 C
Informative
4 envTemp004 enabled 35 C started 10:28:59 on 02/01/2000 0 C
Informative
5 envTemp005 enabled 36 C started 10:28:59 on 02/01/2000 0 C
Informative

1 : refresh
2 : disable a threshold
3 : enable a threshold
4 : advanced configuration
5 : return to previous page
Select choice => : (1..5) [5]
```

See Also

```
fwClassInit
fwConfigReload
fwShow
```

fwConfigReload

Reloads the Fabric Watch configuration.

Synopsis

```
fwConfigReload
```

Availability

admin

Description

Use this command to reload the Fabric Watch configuration. This command should only be used after downloading a new Fabric Watch configuration file from a host.

NOTE: This command requires a Fabric Watch License.

Operands

None

Example

To reload the saved Fabric Watch configuration, enter the following text:

```
switch:admin> fwConfigReload
fwConfigReload: Fabric Watch configuration reloaded
```

See Also

```
configUpload
configDownload
fwClassInit
fwConfigure
fwShow
```

fwHelp

Display Fabric Watch command information.

Synopsis

```
fwHelp
```

Availability

all users

Description

Use this command to display commands used to configure Fabric Watch.

Operands

None.

Example

To display a summary of Fabric Watch telnet commands, input the following command string:

```
switch:admin> fwHelp
fwAlarmsFilterSet      Configure alarms filtering for Fabric Watch
fwAlarmsFilterShow    Show alarms filtering for Fabric Watch
fwClassInit           Intialize all Fabric Watch classes
fwConfigure           Configure Fabric Watch
fwConfigReload        Reload Fabric Watch configuration
fwSetToCustom         Set boundary & alarm level to custom
fwSetToDefault        Set boundary & alarm level to default
fwShow               Show thresholds monitored by Fabric Watch
fwMailCfg            Email Alert by Fabric Watch

switch:admin>
```

See Also

```
diagHelp
```

fwMailCfg

Configures email alerts in Fabric Watch.

Synopsis

```
fwMailCfg
```

Availability

All users.

Description

Use this command to configure email alerts in Fabric Watch.

When this command is executed a menu of configuration tasks are displayed. Select the configuration task by entering a value 1 through 6:

1. Show Mail Configuration Information
2. Disable EmailAlert
3. Enable EmailAlert
4. Send Test Mail
5. Set Mail Address for EmailAlert
6. quit

Select an item => : (1..6) [6] 5

Email alerts take the form of 9 classes:

- 0 = Environment class
- 1 = GBIC class
- 2 = Port class
- 3 = Fabric class
- 4 = E-Port class
- 5 = F/FL Port (Copper) class
- 6 = F/FL Port (Optical) class
- 7 = Alpa Performance Monitor class

8 = End-to-End Performance Monitor class

9 = Filter Performance Monitor class

When configuring an email alert for a specific class you must specify the following information:

- Mail Server—Specify the IP address of the mail server.
- Domain Name—Specify the domain name of the mail server. For example, compaq.com.
- Mail Recipients—Specify the name of the users who will be notified. The format should be user@domain.com. For example, john.doe@compaq.com.

Operands

None.

Example

To configure an email address recipient in Fabric Watch, input the following command string:

```
switch:admin> fwMailCfg

1 : Show Mail Configuration Information
2 : Disable EmailAlert
3 : Enable EmailAlert
4 : Send Test Mail
5 : Set Mail Address for EmailAlert
6 : quit
Select an item => : (1..6) [6] 5

Mail Config Menu
-----
0 : Environment class
1 : GBIC class
2 : Port class
3 : Fabric class
4 : E-Port class
5 : F/FL Port (Copper) class
6 : F/FL Port (Optical) class
7 : Alpha Performance Monitor class
8 : End-to-End Performance Monitor class
9 : Filter Performance Monitor class
10 : quit
Select an item => : (0..10) [10] 0
Enter Mail Server IP address : [0.0.0.0] 123.456.789.123
Enter Domain Name : [mail.com] mail.com
Mail To: [user@mail.com] jdoe@compaq.com
Committing configuration...done.
```

MailAlert Configuration is Successful !

```
1 : Show Mail Configuration Information
2 : Disable EmailAlert
3 : Enable EmailAlert
4 : Send Test Mail
5 : Set Mail Address for EmailAlert
6 : quit
Select an item => : (1..6) [6] 6
switch:admin>
```

See Also

`fwhelp`

fwSetToCustom

Sets boundary and alarm levels to custom values.

Synopsis

```
fwSetToCustom
```

Availability

admin

Description

Use this command to set boundary and alarm levels to custom for all classes and areas for Fabric Watch.

NOTE: This command requires a Fabric Watch License.

Operands

none

Example

To set alarm levels to custom values, input the following command string:

```
switch:admin> fwSetToCustom  
Committing configuration...done.
```

See Also

```
fwSetToDefault
```

fwSetToDefault

Sets boundary and alarm levels to the default values.

Synopsis

```
fwSetToDefault
```

Availability

admin

Description

Use this command to set boundary and alarm levels to default for all classes and areas for Fabric Watch.

NOTE: This command requires a Fabric Watch License.

Operands

none.

Example

To set alarm levels to default values, input the following command string:

```
switch:admin> fwSetToDefault  
Committing configuration...done.
```

See Also

`fwSetToCustom`

fwShow

Displays the thresholds monitored by Fabric Watch

Synopsis

```
fwShow [pattern]
```

Availability

All users

Description

Use to display the thresholds monitored by Fabric Watch. If no parameters are entered, a summary of all thresholds is displayed and printed. If a valid threshold name is entered as a parameter, detailed information pertaining only to that threshold is displayed and printed.

NOTE: This command requires a Fabric Watch License.

Operands

This command has the following operand:

"pattern"	Specify a POSIX style regular expression enclosed in quotation marks and used to match zone configuration names. Patterns can contain: <ul style="list-style-type: none">• Question mark "?" that matches any single character• Asterisk "*" that matches any string of characters• Ranges that match any character within the range (for example, [0-9] or [a-f]). This operand is optional.
-----------	---

Example

To display the thresholds monitored by Fabric Watch, enter the following text:

```
switch:admin> fwShow
=====
Name                Label                Last Value
-----
envTemp001          Env Temperature 1    33 C
envTemp002          Env Temperature 2    33 C
envTemp003          Env Temperature 3    36 C
envTemp004          Env Temperature 4    35 C
envTemp005          Env Temperature 5    36 C
envFan001           Env Fan 1             5070 RPM
envFan002           Env Fan 2             3090 RPM
envFan003           Env Fan 3             3150 RPM
envFan004           Env Fan 4             5130 RPM
envPS002            Env Power Supply 2    0 (1 OK/0 FAULT

switch:admin> fwShow "envTemp001"
Env Temperature 1:
  Monitored for:      1283 (21 mins)
  Last checked:      10:50:21 on 02/01/2000
  Lower bound:       0 C
  Upper bound:       75 C
  Buffer Size:       10
  Value history:     33 C
  Disabled? No
  Locked? No
```

See Also

```
fwClassInit
fwConfigReload
fwConfigure
```

gbicShow

Display serial ID GBIC information.

Synopsis

```
gbicShow [port]
```

Availability

All users

Description

Use this command to display information about Serial Identification GBICs (also known as module definition "4" GBICs). These GBICs provide extended information that describes the GBICs capabilities, interfaces, manufacturer, and other information.

Use this command with no operand to display a summary of all GBICs in the switch. The summary shows the GBIC type (see `switchShow` for an explanation of the two letter codes) and, for Serial ID GBIC, the vendor name and GBIC serial number.

Use this command with a port number operand to display detailed information about the Serial ID GBIC in that port.

For Finisar "smart" GBICs, four additional fields are displayed: module temperature, received optical power, transmitted optical power (longwave only), and laser diode drive current.

Operands

This command has the following operand:

port	Specify the port number to be displayed. Valid values for port number vary depending on the switch type. This operand is optional.
------	---

Example

To display GBIC summary information for an eight port switch, followed by detailed information for a Finisar "smart" GBIC, input the following command string:

```
switch:admin> gbicShow
port 0: id Vendor: FINISAR CORP. Serial No: 103980
port 1: id Vendor: HEWLETT-PACKARD Serial No:9809100953460702
port 2: id Vendor: FINISAR CORP. Serial No: 103960
port 3: sw
```



```
port 4: sw
port 5: cu
port 6: sw
port 7: sw
switch:admin>
switch:admin> gbicShow 2
Identifier: 1      GBIC
Connector: 1      SC
Transceiver: 010d102202000000 100_MB/s SM M5 M6 Longwave
Inter_dist

Encoding: 1      8B10B
Baud Rate: 12    (units 100 megabaud)
Length 9u: 100  (units 100 meters)
Length 50u: 55  (units 10 meters)
Length 625u: 55 (units 10 meters)
Length Cu: 0    (units 1 meter)
Vendor Name: FINISAR CORP.
Vendor OUI: 00:5a:41
Vendor PN: FTR 1319
Vendor Rev: S
Options: 001a Loss_of_Sig Tx_Fault Tx_Disable
BR Max: 0
BR Min: 0
Serial No: 103960
Date Code: 990119
Temperature: 39 Centigrade
RX Power: 0 uWatts
TX Power: 289 uWatts
Current: 15 mAmps
```

See Also

switchShow

h

Display shell history.

Synopsis

h

Availability

All users

Description

Use this command to view the shell history. The shell history mechanism is similar to the UNIX Korn shell history facility, it has a built-in line-editor similar to UNIX vi that allows previously typed commands to be edited. The command h displays the 20 most recent commands typed into the shell; old commands fall off the top as new ones are entered.

To edit a command, press ESC to access edit mode, then use UNIX vi commands. The ESC key switches the shell to edit mode. The RETURN key gives the line to the shell from either editing or input mode.

The Basic UNIX vi commands are listed in Table 1–15.

Table 1–15: UNIX vi Commands

Command	Description
k	get the previous shell command
j	get the next command
h	move the cursor left
l	move the cursor right
a	append
i	insert
x	delete
u	undo

Operands

None.

Example

To display previous shell commands, input the following command string:

```
switch:admin> h  
1 version  
2 switchShow  
3 portDisable 2  
4 portEnable 2  
5 switchShow
```

help

Display help information for commands.

Synopsis

```
help [command]
```

Availability

All users

Description

Use this command without a operand to display an alphabetical list of commands. At the end of the list are additional commands that display groups of commands, for example `diagHelp` displays a list of diagnostic commands.

The list shows only commands that are available to the current user; this can vary according to:

- Login user level
- License key
- Switch model

To access help information for a specific command, enter the command name as an operand.

Operands

This command has the following operand:

command	Specify the command name, with or without quotation marks. This operand is optional.
---------	---

Example

The first example provides help information on the `login` command. The second example provides help information on the `configure` command.

```
switch:admin> help login
...
switch:admin> help "configure"
...
```

See Also

`diagHelp`, `licenseHelp`, `routeHelp`

i

Display task summary.

Synopsis

i [taskId]

Availability

All users

Description

Use this command to display a synopsis of all tasks in the switch, or for a specific task if a taskId is supplied. One line is displayed for each task containing the fields described in Table 1–16.

Table 1–16: Field Description

Field	Description
NAME	Task name
ENTRY	Symbol name or address where task began execution
TID	Task ID
PRI	Priority
STATUS	Task status (see below)
PC	Program counter
SP	Stack pointer
ERRNO	Most recent error code for this task
DELAY	If task is delayed, number of clock ticks remaining

Table 1–17 lists and describes task status.

Table 1–17: Task Status

Task Status	Description
READY	Task is not waiting for any resource other than the CPU
PEND	Task is blocked due to the unavailability of a resource
DELAY	Task is asleep for a duration
SUSPEND	Task is unavailable for execution (but not delayed or ended)
DELAY+S	Task is both delayed and suspended
PEND+S	Task is both pended and suspended
PEND+T	Task is pended with a time out
PEND+S+T	Task is pended with a time out, and also suspended
DEAD	Task no longer exists

Operands

This command has the following operand:

taskId	Specify the task name or task ID for the task to be displayed.
--------	--

Example

To display the task summary, input the following command string:

```
switch:admin> i tFabric
```

NAME	ENTRY	TID	PRI	STATUS	PC	SP	ERRNO	DELAY
tFabri	_fabTask	103aae2	100	PEND	10191b78	103ab1e0	0	0

```
switch:admin> i
```

NAME	ENTRY	TID	PRI	STATUS	PC	SP	ERRNO	DELAY
tExcTsk	_excTask	103f7eb0	0	PEND	10191b78	103f8200	3d0001	0
tLogTsk	_logTask	103f5f30	0	PEND	10191b78	103f6280	0	0
tShell	_shellTask	103b8970	1	READY	10177460	103b8be0	1c0001	0
tRlogin	_rlogind	103de0e0	2	PEND	10173e80	103de7d0	0	0
tTelnet	_telnetd	103dc150	2	PEND	10173e80	103dc5c0	0	0
tTimrs	_timerTask	103cf270	10	PEND	10191b78	103cf5f0	0	0
tErrLg	_errLogTask	103d0810	20	PEND	10191b78	103d0b90	0	0
tNetTsk	_netTask	103f0370	50	READY	10174f20	103f0740	0	0
tSwTch	_swtchTask	103d1db0	80	PEND+T	10191b78	103d21b0	3d0004	9
tPBmen	_menuTask	103c8e30	90	PEND	10191b78	103c91f0	0	0
tRecve	_portRxTsk	103c5690	100	PEND	10191b78	103c5a10	0	0
tTrnsmt	_portTxTsk	103c40f0	100	PEND	10191b78	103c4470	0	0
tFabric	_fabricTsk	103aae20	100	PEND	10191b78	103ab1e0	0	0
tFspf	_fspfTask	103a8c70	100	PEND	10191b78	103a8ff0	0	0
tFcph	_fcphTask	103af890	120	PEND+T	10191b78	103afc1	3d0004	2
tFcp	_fcpTask	103ad660	150	READY	10191b78	103ad9e0	3d0004	0

tNSd	_ns_svr	10397050	150	PEND	10191b78	103973e0	0	0
tASd	_as_svr	1036f5b0	150	PEND	10191b78	1036f930	0	0

See Also

diagHelp
routeHelp

ifModeSet

Set the link operating mode for a network interface.

Synopsis

```
ifModeSet ["interface"]
```

Availability

admin

Description

Use this command to set the link operating mode for a network interface.

Use `ifShow` to list network interfaces available on the system.

An operating mode is confirmed with a "y" or "yes" at the prompt. If the operating mode selected differs from the current mode, the change is saved and the command exits.

The system must be rebooted for changes to take effect.

Changing the link mode is not supported for all network interfaces or for all ethernet network interfaces. At present, this command is only functional for "fei" interfaces.

Exercise care when using this command. Forcing the link to an operating mode not supported by the network equipment to which it is attached may result in an inability to communicate with the system through its ethernet interface.

Operands

This command has the following operand:

"interface"	Specify the name of the interface in quotation marks. For example, "fei0", where: fei is the network interface, and 0 is the physical unit.
-------------	--

Example

To force the link for the "fei0" ethernet interface from auto-negotiate operation to 10 Mbps / Half duplex operation, input the following command string:

```
switch:admin> ifModeSet "fei0"  
Auto-negotiate (yes, y, no, n): [no]
```



```
100 Mbps / Full Duplex (yes, y, no, n): [no]
100 Mbps / Half Duplex (yes, y, no, n): [no]
10 Mbps / Full Duplex (yes, y, no, n): [no]
10 Mbps / Half Duplex (yes, y, no, n): [no] yes
Committing configuration...done.
```

See Also

`ifModeShow`
`ifShow`

ifModeShow

Display the link operating mode for a network interface.

Synopsis

```
ifModeShow ["interface"]
```

Availability

All users

Description

Use this command to display the link operating mode for a network interface.

Operands

This command has the following operand:

"interface"	Specify the name of the interface in quotation marks. For example, "fei0", where fei is the network interface and 0 is the physical unit.
-------------	---

Example

To display the link operating mode for the "fei0" ethernet interface, input the following command string:

```
switch:admin> ifModeShow "fei0"  
fei (unit number 0):  
Link mode: Auto-negotiate
```

See Also

ifModeSet
ifShow
ifShow

ifShow

Display network interface information.

Synopsis

```
ifShow ["ifName"]
```

Availability

All users

Description

Use this command to display network interface status. If the operand `ifName` is provided, only the that interface is displayed. If `ifName` is omitted, all interfaces are displayed. Each switch has three interfaces:

1. “ei” or “fei” —the 10BaseT or 100BaseT ethernet interface
2. “lo” — the loopback interface
3. “fc” —the Fibre Channel interface

The “fc” interface is displayed for switches running IP over Fibre Channel that have been assigned an FC-IP address. For each interface selected, the information in the following list is displayed:

- Flags (for example, loopback, broadcast, arp, running, debug)
- Internet address
- Broadcast address
- Netmask and subnetmask
- Ethernet address
- Route metric
- Maximum transfer unit
- Number of packets received and sent
- Number of input errors, output errors, and collisions

Operands

This command has the following operand:

"ifName"	Specify the name of an interface, in quotation marks. This operand is optional.
----------	--

Example

To display ethernet interface information for a switch with a 10BaseT connection, input the following command string:

```
switch:admin> ifShow "ei"
ei (unit number 0):
  Flags: (0x63) UP BROADCAST ARP RUNNING
  Internet address: 192.168.1.65
  Broadcast address: 192.168.1.255
  Netmask 0xffffffff Subnetmask 0xffffffff
  Ethernet address is 00:60:69:00:00:8a
  Metric is 0
  Maximum Transfer Unit size is 1500
  42962 packets received; 127 packets sent
  0 input errors; 0 output errors
  7 collisions
```

See Also

ipAddrSet
ipAddrShow

interfaceShow

Display FSPF interface information.

Synopsis

```
interfaceShow [port]
```

Availability

All users

Description

Use this command to display data structures associated with FSPF interfaces (E_Ports) on the switch.

There are two data structures that save data associated with FSPF interfaces:

- the permanently allocated Interface Descriptor Block (IDB)
- the neighbor data structure. This data structure is allocated when a switch port becomes an E_Port. The neighbor data structure contains all the information relating to the switch that is connected to an adjacent switch.

This command displays the content of both data structures, if they have been allocated.

Use this command without specifying a port number, to display the interface information for all ports on the switch (including non E_Ports).

The InterfaceShow fields description information is contained in Table 1–18.

Table 1–18: InterfaceShow Fields Description

Field	Description
idbP	Pointer to IDB.
nghbP	Pointer to neighbor data structure.
ifNo	Interface number.
cost	Cost of sending a frame over the ISL connected to this interface. A value of 1000 indicates a 1 Gb/s link. A value of 500 indicates a 2 Gb/s link.
delay	Conventional delay incurred by a frame transmitted on this ISL. A fixed value required by the FSPF protocol.

Table 1–18: InterfaceShow Fields Description (Continued)

Field	Description
lastScn	Type of the last State Change Notification received on this interface.
lastScnTime	Time the last State Change Notification was received on this interface.
upCount	Number of times this interface came up, with respect to FSPF.
lastUpTime	Last time this interface came up.
downCount	Number of times this interface went down.
lastDownTime	Last time this interface went down.
downReason	Type of last State Change Notification that caused this interface to go down.
iState	Current state of this interface. The state can be UP or DOWN. An interface in DOWN state does not have an allocated neighbor data structure and cannot be used to route traffic to other switches.
state	Current state of this interface. This <code>E_Port</code> is used to route traffic to other switches only if the state is 'NB_ST_FULLL'.
nghbCap	Neighbor capabilities. Should be 0.
nghbld	Domain ID of the neighbor (adjacent) switch.
idbNo	IDB number. Should be equal to <code>portnumber</code>
remPort	Port number on the remote switch connected to this port.
nflags	Internal FSPF flags.
initCount	Number of times this neighbor was initialized, without the interface going down.
&dbRetransList	Pointer to the database retransmission list.
&lSrRetransList	Pointer to the Link State Records (LSR) retransmission list.
&lSrAckList	Pointer to the Link State Acknowledgements (LSA) retransmission list.
inactTID	Inactivity timer ID.
helloTID	Hello timer ID.
dbRtxTID	Database retransmission timer ID.
lSrRtxTID	LSR retransmission timer ID.

Table 1–18: InterfaceShow Fields Description (Continued)

Field	Description
inactTo	Inactivity time out value, in milliseconds. When this time out expires, the adjacency with the neighbor switch is broken and new paths are computed to all possible destination switches in the fabric.
helloTo	Hello time out value, in milliseconds. When this time out expires, a Hello frame is sent to the neighbor switch through this port.
rXmitTo	Retransmission time out value, in milliseconds. It is used to retransmit topology information to the neighbor switch. If no acknowledgement is received within rXmitTo, frame is retransmitted.
nCmdAcc	Total number of commands accepted from the neighbor switch. Number includes Hellos, Link State Updates (LSU) and Link State Acknowledgements.
nInvCmd	Number of invalid commands received from the neighbor switch. Usually commands with an FSPF version number higher than the one running on the local switch.
nHloIn	Number of Hello frames received from the neighbor switch.
nInvHlo	Number of invalid Hello frames (Hello frames with invalid parameters) received from the neighbor switch.
nLsuIn	Number of LSUs received from the neighbor switch.
nLsaIn	Number of LSAs received from the neighbor switch.
attHloOut	Number of attempted transmissions of Hello frames to the neighbor switch.
nHloOut	Number of Hello frames transmitted to the neighbor switch.
attLsuOut	Number of attempted transmissions of LSUs to the neighbor switch.
nLsuOut	Number of LSUs transmitted to the neighbor switch.
attLsaOut	Number of attempted transmissions of LSAs to the neighbor switch.
nLsaOut	Number of LSAs transmitted to the neighbor switch.

Operands

This command has the following operand:

port	Specify the port number to display the interface data structures for. Valid values for port number vary depending on the switch type. This operand is required.
------	--

Examples

To display FSPF interface information, input the following command string:

```
switch:admin> interfaceShow 4
idbP          = 0x10f61f40
Interface 4 data structure:
nghbP        = 0x10f61d90
ifNo         = 4
cost         = 1000
delay        = 1
lastScn      = 5
lastScnTime  = Mar 29 12:57:52.833
upCount      = 2
lastUpTime   = Mar 29 12:57:52.833
downCount    = 1
lastDownTime = Mar 29 12:57:47.566
downReason   = 2
iState= UP
Type <CR> to continue, Q<CR> to stop:
< ... sample output truncated ... >
```

See Also

portShow
switchShow

InteropMode

Enables or disables SAN Switch interoperability with switches from other manufacturers.

Synopsis

```
interopMode [mode]
```

Availability

Admin

Description

Use this command to enable or disable interoperability mode for individual switches. This feature enables other manufacturers' switches to be used in a Compaq fabric.

This command must be executed on all SAN Switches in the fabric. Each switch must be rebooted after changing interoperability mode. Other manufacturers' switches may require the execution of one or more commands that select interoperability mode for their switches.

In a heterogeneous fabric, several features are not available in order to provide maximum compatibility between switches.

Switch Requirements

- All SAN switches must be running Fabric OS 3.0 or greater.
- A Zoning license and a Fabric license must be installed on each SAN Switch.

McData Firmware Requirements

- McData ED-5000 or equivalent OEM versions that are plug-compatible
- Firmware release 3.2

Supported Features

The following features are supported on SAN Switches only:

- Fabric Watch
- Fabric Access API functions can be accessed from the SAN Switches only, but other manufacturers' switch information is reported. The object information and zoning actions are configurable from the API.

- Then translative mode, which registers private storage target devices into the fabric, can be used in a heterogeneous fabric as long as the devices are directly connected to SAN Switches. The devices will be accessible from any port on the fabric.

Unsupported Features

In a heterogeneous fabric, the following optional features are not supported and cannot be installed on any switch in the Fabric:

- QuickLoop
- QuickLoop Fabric Assist
- Remote Switch
- Extended Fabrics
- Trunking
- Secure Fabric OS

The following Fabric OS features are not supported:

- Alias Server
- Platform Service
- Virtual Channels
- FC-IP

Configuration Restrictions

In interoperable fabrics, the following restrictions apply:

- There is an architecture maximum of 31 switches. However, the actual configuration tested is less.
- Compaq domain IDs must be in the 97 to 127 value range for successful connection to McData switches. The firmware automatically assigns a valid domain ID, if necessary, when **interopmode** is enabled on the switch.

Zoning Restrictions

In interoperable fabrics, Zoning has the following restrictions:

- Only Zoning by port WWN is allowed.
- Zone members specified by node WWN will be ignored.

- Port zoning is not allowed. Specifying a zone member by Port ID will be rejected in interoperability mode.
- QuickLoop zones, QuickLoop Fabric Assist zones, and Broadcast zones are not supported.
- When no zoning configuration is in effect, the default effective configuration is all ports are isolated and no data traffic is permitted. This is in contrast to the Brocade standard behavior - when interoperability mode is off - where all data traffic is enabled.
- Compaq SAN Switches provide hardware enforcement of the port WWN zones only for devices attached to its ports. Devices attached to end-ports on other manufacturers' switches or other series switches are enforced by Name Server (soft) zoning only.
- WebTools can be used for zone configuration as long as the switches are directly connected with each other. If WebTools is used to setup zoning, then WebTools must be used as the only zone management method.

Pre-Configuration Planning

Before enabling interoperability mode, the individual fabrics should be inspected for compatibility.

- Zones should be inspected to ensure that they meet the zone criteria and restrictions.
- Remove or disable any unsupported optional features.
- Disable the Platform Management functions using the **msPIMgmtDeactivate** command.
- Remove any QuickLoop configurations.

Enabling Interoperability Mode

To enable interoperability mode on a fabric:

1. All switches on both fabrics should be taken offline.
 - For SAN Switches ,use the **switchDisable** command.
 - For McData switches ,use the Switch Online State function.
2. On McData switches:
 - Disable the Active Zone.
 - Set Operating Mode to Open Fabric 1.0.
3. On each SAN Switch:
 - Enable interoperability using the **interopmode** command.
 - Reboot each switch using the **fastBoot** command.
4. Connect the two fabrics together by establishing E-port connections between the SAN Swithes and the McData switches.
5. Enable the McData switch using the Switch Online State function.

Operands

This command has the following operand:

mode	Specify 1 to enable interoperability mode Specify 0 to disable interoperability mode This operand is optional.
------	--

If no operand is specified the current value is displayed.

Examples

To view the current interoperability mode, insert the following command string:

```
switch:admin> interopmode  
interopMode is 0
```

To enable interoperability mode, insert the following command string:

```
switch:admin> interopmode 1  
Committing configuration...done.  
interopMode is 1  
switch:admin>
```

See Also

configure

iodReset

Turn off the In Order Delivery (IOD) option.

Synopsis

```
iodReset
```

Availability

admin

Description

Use this command to allows out of order delivery of frames during fabric topology changes.

This is the default behavior, and allows fast rerouting after a fabric topology change.

Operands

None.

Examples

To turn off the IOD option, input the following command string:

```
switch:admin> iodReset  
Committing configuration...done.
```

See Also

```
iodSet  
iodShow
```

iodSet

Turn on In Order Delivery (IOD) option.

Synopsis

```
iodSet
```

Availability

admin

Description

Use this command to enforce in order delivery of frames during a fabric topology change.

In a stable fabric, frames are always delivered in order, even when the traffic between switches is shared among multiple paths. However, when topology changes occur in the fabric (for instance, a link goes down), traffic is rerouted around the failure. When topology changes occur, generally, some frames are delivered out of order. This command insures that frames are not delivered out-of-order, even during fabric topology changes.

The default behavior is for the IOD option to be on.

This command should be used with care, because it can cause a delay in the establishment of a new path when a topology change occurs.

Operands

None.

Examples

To turn on the IOD option, input the following command string:

```
switch:admin> iodSet  
Committing configuration...done.
```

See Also

```
iodReset  
iodShow
```

iodShow

Display the state of the In Order Delivery (IOD) option.

Synopsis

```
iodShow
```

Availability

All users

Description

Use this command to display whether the IOD option is on or off.

Operands

None.

Example

To display the current setting of the IOD option, input the following command string:

```
switch:admin> iodShow  
IOD is set
```

See Also

```
iodSet  
iodReset
```


ipAddrSet

Set ethernet and FC IP addresses.

Synopsis

ipAddrSet

Availability

admin

Description

Use this command to set the ethernet and FC IP addresses. You are prompted for the following information:

- Ethernet IP Address (IP address of the ethernet port)
- Ethernet Subnetmask (IP subnet mask of the ethernet port)
- Fibre Channel IP Address (IP address of the Fibre Channel ports)
- Fibre Channel Subnetmask (IP subnet mask of the Fibre Channel ports)
- Gateway Address (IP address of the gateway)

After each prompt, the current value is shown. You may:

- Press `return` to retain the current value
- Enter an IP address in conventional dot notation
- Enter `none`
- Press `control-C` to cancel changes
- Press `control-D` to accept changes and end input

The final prompt allows you to set the new IP addresses immediately; enter `y` to set new addresses immediately, enter `n` to delay the changes until the next switch reboot. Entering `y` closes the telnet session.

The default IP address for a Compaq switch is 10.77.77.77.

A change to these values issues a domain address format RSCN, refer to FC-FLA for a description of RSCNs.

Operands

None.

Example

To enable IP over Fibre Channel, input the following command string:

```
switch:admin> ipAddrSet
Ethernet IP Address [192.168.1.65]:
Ethernet Subnetmask [none]:
Fibre Channel IP Address [none]: 192.168.65.65
Fibre Channel Subnetmask [none]:
Gateway Address [192.168.1.1]:
Committing configuration...done.
Set IP addresses now?
[y = set now, n = next reboot]: y
```

See Also

ifShow
ipAddrShow

ipAddrShow

Display ethernet and FC IP addresses.

Synopsis

```
ipAddrShow
```

Availability

All users

Description

Use `ipAddrShow` to display ethernet and Fibre Channel IP addresses:

- Ethernet IP Address (IP address of the ethernet port)
- Ethernet Subnetmask (IP subnet mask of the ethernet port)
- Fibre Channel IP Address (IP address of the Fibre Channel ports)
- Fibre Channel Subnetmask (IP subnet mask of the Fibre Channel ports)
- Gateway Address (IP address of the gateway)

NOTE: IP addresses are displayed in conventional dot ('.') notation.

All Fibre Channel ports on a switch have the same IP address and subnet mask. The Fibre Channel IP address displays `none` if the switch is not configured to run IP over Fibre Channel.

Operands

None.

Example

To display the switch IP addresses, input the following command string:

```
switch:admin> ipAddrShow
Ethernet IP Address: 192.168.1.65
Ethernet Subnetmask: none
Fibre Channel IP Address: 192.168.65.65
Fibre Channel Subnetmask: none
```

See Also

```
ifShow
ipAddrSet
```

islShow

Display ISL information.

Synopsis

```
islShow
```

Availability

all users

Description

Use this command to display the current connections and status of the ISL of each port on this switch. The following information is displayed:

- the WWN where the ISL is connected to
- the speed of the connection
- whether this ISL is trunked

Operands

None.

Example

To show ISL link information on a switch, input the following command string:

```
switch:admin> islShow
1: 3 -> 5    10:00:00:60:69:20:3a:a5    switch_13  sp: 2G  bw: 2G
2: 6 -> 11   10:00:00:60:69:04:11:25    switch_22  sp: 2G  bw: 2G
3: 11 -> 6   10:00:00:60:69:04:11:25    switch_22  sp: 2G  bw: 2G
switch:admin>
```

See Also

```
switchShow
```

islTopoCheck

Display ISL sgroup connections for a switch.

Synopsis

```
islTopoCheck
```

Availability

admin

Description

This command displays the ISL sgroup connections and status for this switch. This command is used to verify that the switch is properly cabled and configured. A switch with properly configured ISL connections reports a status of OK for each of these ports.

NOTE: This command is used for the Compaq StorageWorks Fibre Channel IS/32 or IS/64 Switches only.

Operands

None.

Example

The following code example displays an `islTopoCheck` on a misconfigured IS/32 or IS/64 switch. In a proper configuration, all of the switches would have valid domains and valid names and each of the ports status would be OK.

```
switch:admin> islTopoCheck
ISL data for type: S32_6_1, sgroup: My_group
idx  domain  expected wwnname
01   01      10:00:00:60:69:20:02:9f  jr_1003
02   02      10:00:00:60:69:10:a0:4e  switch
03  -01      00:00:00:00:00:00:00:03  -UNKNOWN-
04  -01      00:00:00:00:00:00:00:04  -UNKNOWN-
05  -01      00:00:00:00:00:00:00:05  -UNKNOWN-
06  -01      00:00:00:00:00:00:00:06  -UNKNOWN-
Domain: 2, wwn: 10:00:00:60:69:10:a0:4e
isl port  expected switch  port  actual switch  port  status
0  08 -> jr_1003      : 00  jr_1003      : 00  OK
1  09 -> jr_1003      : 01  jr_1003      : 01  OK
2  10 -> jr_1003      : 02  jr_1003      : 03  Wrong port
3  11 -> jr_1003      : 03  -UNKNOWN-    :-01  Bad status
4  12 -> -UNKNOWN-    : 12  -UNKNOWN-    :-01  Bad status
5  13 -> -UNKNOWN-    : 13  jr_1003      : 07  Wrong switch
```

```
6 14 -> -UNKNOWN-      : 14  -UNKNOWN-      :-01 Bad status
7 15 -> -UNKNOWN-      : 15  -UNKNOWN-      :-01 Bad status
```

See Also

islTopoShow

islTopoShow

Displays ISL switch group topology and status.

Synopsis

```
islTopoShow [sgroup]
```

Availability

All users.

Description

This command displays the current connections and status for all the switches in the ISL switch groups that the current switch is a member of. The status for every port and switch combination in each active ISL group is displayed.

Operands

This command has the following operand:

sgroup	Specify a switch group or switch group type to display the ISL connection status for that specific switch group or switch group type.
--------	---

If no operand is entered, the default behavior is to display the topology status for all ISL sgroups of which the current switch is a member.

NOTE: This command is used for the Compaq StorageWorks Fibre Channel IS/32 or IS/64 switches only.

Example

The following example shows the results of **islTopoShow** on a misconfigured IS/32 or IS/64 switch. In a proper configuration, all of the switches would have valid domains and names and each of the ports status would be OK.

```
switch:admin> islTopoShow
ISL data for type: S32_6_1, sgroup: My_group
idx  domain  expected wwn          name
01   01     10:00:00:60:69:20:02:9f  jr_1003
02   02     10:00:00:60:69:10:a0:4e  switch
03   -01     00:00:00:00:00:00:00:03  -UNKNOWN-
04   -01     00:00:00:00:00:00:00:04  -UNKNOWN-
```

```
05 -01 00:00:00:00:00:00:00:05 -UNKNOWN-
06 -01 00:00:00:00:00:00:00:06 -UNKNOWN-
```

Switch idx: 1 Domain: 1, wwn: 10:00:00:60:69:20:02:9f

islport	expected switchport	actual switchport	status
0 00 ->	es_6 : 08	es_6 :08	OK
1 01 ->	es_6 : 09	es_6 : 09	OK
2 02 ->	es_6 : 10	-UNKNOWN- :-01	No record
3 03 ->	es_6 : 11	es_6 : 10	Wrong port
4 04 ->	-UNKNOWN- : 08	-UNKNOWN- :-01	No record
5 05 ->	-UNKNOWN- : 09	-UNKNOWN- :-01	No record
6 06 ->	-UNKNOWN- : 10	-UNKNOWN- :-01	No record
7 07 ->	-UNKNOWN- : 11	es_6 : 13	Wrong switch
8 08 ->	-UNKNOWN- : 08	-UNKNOWN- :-01	No record
9 09 ->	-UNKNOWN- : 09	-UNKNOWN- :-01	No record
10 10 ->	-UNKNOWN- : 10	-UNKNOWN- :-01	No record
11 11 ->	-UNKNOWN- : 11	-UNKNOWN- :-01	No record
12 12 ->	-UNKNOWN- : 08	-UNKNOWN- :-01	No record
13 13 ->	-UNKNOWN- : 09	-UNKNOWN- :-01	No record
14 14 ->	-UNKNOWN- : 10	-UNKNOWN- :-01	No record
15 15 ->	-UNKNOWN- : 11	-UNKNOWN- :-01	No record

Switch idx: 2 Domain: 2, wwn: 10:00:00:60:69:10:a0:4e

isl port	expected switch port	actual switch port	status
0 08 ->	jr_1003 : 00	jr_1003 : 00	OK
1 09 ->	jr_1003 : 01	jr_1003 : 01	OK
2 10 ->	jr_1003 : 02	jr_1003 : 03	Wrong port
3 11 ->	jr_1003 : 03	-UNKNOWN- :-01	No record
4 12 ->	-UNKNOWN- : 12	-UNKNOWN- :-01	No record
5 13 ->	-UNKNOWN- : 13	jr_1003 : 07	Wrong switch
6 14 ->	-UNKNOWN- : 14	-UNKNOWN- :-01	No record
7 15 ->	-UNKNOWN- : 15	-UNKNOWN- :-01	No record

See Also

islTopoCheck

licenseAdd

Add license key to switch.

Synopsis

```
licenseAdd "license"
```

Availability

admin

Description

Use this command to add a license key to a switch. The license key string is case sensitive; it must be entered exactly as issued.

When the key has been entered, use the `licenseShow` command to check that the key has been correctly entered and the licensed product installed. Once the key has been installed, the product is immediately available.

NOTE: A QuickLoop only switch must be rebooted after adding a Fabric license. License keys are required to enable optional switch firmware features.

Operands

This command has the following operand:

"license"	Specify a license key in quotation marks. This operand is required.
-----------	--

Example

To add a license key to the switch, input the following command string:

```
switch:admin> licenseAdd "bQebzbRdScRfc0iK"
adding license key "bQebzbRdScRfc0iK"
Committing configuration...done.
```

See Also

```
licenseRemove
licenseShow
```

licenseHelp

Display commands used to administer license keys.

Synopsis

```
licenseHelp
```

Availability

```
admin
```

Description

Use this command to display a list of the commands used to administer license keys.

Operands

None.

Example

To display license commands, input the following command string:

```
switch:admin> licenseHelp
licenseAdd      Add a license key to this switch
licenseRemove   Remove a license key from this switch
licenseShow     Show current license key
```

See Also

```
licenseAdd
licenseRemove
licenseShow
```

licenseRemove

Remove the license key from a switch.

Synopsis

```
licenseRemove "license"
```

Availability

admin

Description

Use this command to remove an existing license key from a switch. The existing license key must be entered exactly as shown by `licenseShow`, including case.

When the key has been entered, use the `licenseShow` command to check that the key has been removed and the licensed product uninstalled. Once the license key has been removed, the switch must be rebooted.

With no license keys installed, `licenseShow` displays "No licenses".

Operands

The following operand is required:

"license"	Specify the license key in quotation marks. This operand is required.
-----------	--

Example

To remove a license key from the switch, input then following command string:

```
switch:admin> licenseRemove "bAaAabRdScRfc0iK"
removing license key "bAaAabRdScRfc0iK"
Committing configuration...done.
```

See Also

```
licenseAdd
licenseShow
```

licenseShow

Display current license keys.

Synopsis

```
licenseShow
```

Availability

All users

Description

Use this command to display current license keys along with a list of licensed products enabled by these keys; none is displayed if no license keys are installed.

Operands

None.

Example

In this example, the switch has two keys, the first key enables two licensed products and the second key enables a third:

```
switch:admin> licenseShow
cQebzbRdScRfc0iK:
  Web license
  Zoning license
AybbzQQ9edTzcc0X:
  Fabric license
```

See Also

```
licenseAdd
licenseRemove
```

linkCost

Set or print the FSPF cost of a link.

Synopsis

```
linkCost [port], [cost]
```

Availability

admin

Description

Use this command to set or display the cost of an Inter-Switch Link (ISL). The cost of a link is a dimensionless positive number. It is used by the FSPF path selection protocol to determine the path that a frame takes going from the source to the destination switch. The chosen path is the path with minimum cost. The cost of a path is the sum of the costs of all the ISLs traversed by the path. The cost of a path is also known as the "metric".

FSPF supports load sharing over a number of equal cost paths.

Every ISL has a default cost that is inversely proportional to the bandwidth of the ISL. For a 1Gb per second ISL, the default cost is 1000. For a 2Gb per second ISL, the default cost is 500.

The maximum value for link cost is 2147483647 positive, and the minimum value is -2147483648.

This command changes the actual link cost only, it does not affect the default cost. The `interfaceShow` command displays both the default and the actual cost.

Without operands, this command displays the actual cost of all the ISLs. With one operand, it displays the actual cost of a specific ISL. With two operands, it sets the cost of a specific ISL.

Operands

This command has the following operands:

port	Specify the port number to modify or display the link cost. Valid values for port number vary depending on the switch type. This operand is optional.
------	--

cost	Specify the new cost of the link connected to the specified port number. This operand is optional.
------	--

NOTE: If no operands are specified, the current values for all ports on the switch are displayed.

Examples

To display the FSPF cost of a link, and reset the cost, input the following command string:

```
switch:admin> linkCost 1
Interface:  1 cost 1000
switch:admin> linkCost 1, 2000
Committing configuration...done.
switch:admin> linkCost 1
Interface:  1 cost 2000
```

See Also

interfaceShow
LSDBshow
topologyShow
uRouteShow

login

Login as a new user.

Synopsis

```
login
```

Availability

All users

Description

Use this command to login to the switch with another user name and password, without first logging out from the original session. If the user was originally connected using a telnet or rlogin session, that session is left open.

This command allows you to access commands that you cannot access at your current user level.

Operands

None.

Example

To change the login from “user” to “admin”:

```
switch:user> login
login: admin
Password: xxxxxx
switch:admin>
```

See Also

logout

logout

Logout from a telnet, rlogin or serial port session.

Synopsis

```
logout
```

Availability

All users

Description

Use this command to logout from a telnet, rlogin or serial port session. Telnet and rlogin connections are closed, the serial port returns to the “login:” prompt.

The commands `exit` and `quit` are accepted as synonyms for `logout`, as is control-D entered at the beginning of a line.

Operands

None.

Example

To log out from a rlogin session:

```
switch:admin> logout  
Connection closed.
```

See Also

`login`

LSDbShow

Display the FSPF Link State Database.

Synopsis

LSDbShow [domain]

Availability

All users

Description

Use this command to display a link state database record for switches in the fabric.

There are two data structures - the permanently allocated Link State Database Entry and the Link State Record (LSR) that is allocated when a switch is connected to the fabric. The LSR for domain 'n' describes the links between the switch with domain number 'n' and its neighbor switches. For a link to be reported in the LSR, the neighbor for that link must be in NB_ST_FULL state.

This command displays the content of both data structures, if the LSR is present.

Without operands, this command displays the whole Link State Database.

The display shows the fields as described in Table 1–19.

Table 1–19: LSDbShow display fields

Field	Description
Domain	Domain number described by this LSR. A (self) keyword after the domain number indicates LSR describes the local switch.
IsrP	Pointer to LSR.
earlyAccLSRs	Number of LSRs accepted even though they were not sufficiently spaced apart.
ignoredLSRs	Number of LSRs not accepted because they were not sufficiently spaced apart.
lastIgnored	Last time an LSR was ignored.
installTime	Time this LSR was installed in the database, in seconds since boot.

Table 1–19: LSDBShow display fields (Continued)

Field	Description
lseFlags	Internal variable.
uOutlfs	Internal variable
uPathCost	Internal variable.
uOldHopCount	Internal variable.
uHopsFromRoot	Internal variable.
mOutlfs	Internal variable.
parent	Internal variable.
mPathCos	Internal variable.
mHopsFromRoot	Internal variable.
lsAge	Age, in seconds, of this LSR. An LSR is removed from the database when its age exceeds 3600 seconds.
reserved	Reserved for future use.
type	Type of the LSR. Always 1.
options	Always 0.
lsId	ID of this LSR. It is identical to the domain number.
advertiser	ID (domain number) of the switch that originated this LSR.
incarn	Incarnation number of this LSR.
length	Total length (in bytes) of this LSR. Includes header and link state information for all links.
chksum	Checksum of total LSR, with exception of lsAge field.
linkCnt	Number of links in this LSR. Each link represents a neighbor in NB_ST_FULL state.
flags	Always 0.
LinkId	ID of this link. It is the domain number of the switch on the other side of the link.
out port	Port number on the local switch.
rem port	Port number of the port on the other side of the link.
cost	Cost of this link. The default cost for a 1 Gb/s link is 1000.
costCnt	Always 0.

Table 1–19: LSDbShow display fields (Continued)

Field	Description
type	Always 1.

Operands

This command has the following operand:

domain	Specify the domain number of LSR to be displayed. This operand is optional.
--------	--

Examples

To display the Link State Record for the local switch, as indicated by `self` keyword (the local switch has four links in `NB_ST_FULL` state, three of them connected to switch 5, and one connected to switch 4.

```
switch:admin> lsdbshow
```

```
Domain = 7 (self), Link State Database Entry pointer = 0x103946a0
lsrP           = 0x1035bb30
earlyAccLSRs  = 1
ignoredLSRs   = 0
lastIgnored   = Never
installTime   = 0x4f20a (324106)
lseFlags      = 0xa
uOutIfs       = 0x0
uPathCost     = 0
uOldHopCount  = -1161889074
uHopsFromRoot = 0
mOutIfs       = 0x20
parent        = 0x4
mPathCost     = 2000
mHopsFromRoot = 2
```

```
Link State Record:
```

```
Link State Record pointer = 0x1035bb30
lsAge           = 138
reserved       = 0
type           = 1
options        = 0x0
lsId           = 7
advertiser     = 7
incarn         = 0x80000217
length         = 92
chksum         = 0x2fdd
linkCnt = 4,   flags = 0x0
LinkId = 4, out port = 3, rem port = 2, cost = 1000, costCnt = 0, type = 1
LinkId = 5, out port = 5, rem port = 5, cost = 1000, costCnt = 0, type = 1
LinkId = 5, out port = 6, rem port = 3, cost = 1000, costCnt = 0, type = 1
LinkId = 5, out port = 7, rem port = 4, cost = 1000, costCnt = 0, type = 1
```

See Also

interfaceShow
nbrStateShow

mcastShow

Display multicast routing information.

Synopsis

```
mcastShow [group_ID]
```

Availability

All users

Description

Use this command to display the multicast routing information, as it is known by the FSPF path selection and routing task, for all ports in the switch. The multicast routing information indicates, for each multicast group, all the ports that are members of that group, that is ports that are able to send and receive multicast frames on that group.

The multicast routing information is shown for all the multicast groups, or for a specific group if a group ID is supplied.

Normally, an F_Port or FL_Port is a member of the multicast group only if it has joined the group using the Alias Server protocol. On the other hand, E_Ports that are part of the multicast group are selected by the multicast path selection protocol. They are chosen in a way that prevents multicast routing loops.

The multicast paths are active for all the multicast groups at all times, regardless of whether a multicast group contains any members.

The multicast routing information is shown as a set of bit maps. Each bit in the bit map represents a port, with the least significant bit representing port 0. A bit set to 1 indicates that a port is part of the multicast distribution tree.

The mcast Show fields are described in Table 1–20.

Table 1–20: mcastShow Fields Description

Field	Description
Group	Multicast group ID.
Member Ports	Bit map of all ports in the multicast tree for that multicast group.
Member ISL Ports	Bit map of all E_Ports in the multicast tree for that multicast group.

Table 1–20: mcastShow Fields Description (Continued)

Field	Description
Static ISL Ports	Reserved. It should be all zeroes.

Operands

This command has the following operand:

group_ID	Specify the multicast group to be displayed. This operand is optional.
----------	---

Example

To display multicast routing information:

```
switch:admin> mcastShow 9
GroupMember Ports  Member ISL Ports  Static ISL Ports
-----
9  0x00002083      0x00002080      0x00000000
```

See Also

bcastShow
portRouteShow

msConfigure

Configure the Management Server.

Synopsis

msConfigure

Availability

admin

Description

Use this command to display and configure parameters used to access the Management Server. The Management Server allows a storage area network (SAN) management application to retrieve and administer fabric and interconnect elements such as switches. It is located at the Fibre Channel address, FFFFFAh.

If the Access Control List (ACL) is empty (this is the default value), the Management Server is accessible to all systems connected in-band to the fabric. To restrict access, specify the World Wide Name (WWN) for one or more management applications; access is then restricted to those WWNs.

The ACL is implemented on a per switch basis and should be configured on the switch to which the management application station is directly connected.

This command is interactive and provides the following choices:

- 0—Done (with the administration)
- 1—Display the access control list (ACL)
- 2—Add member based on its Port/Node WWN
- 3—Delete member based on its Port/Node WWN

If a change is made, you are prompted to save the changed ACL to flash memory. The saved ACL is restored on future reboot.

Operands

None.

Example

To display the Management Server access control list.

```
switch:admin> msConfigure
0 Done
1 Display the access list
2 Add member based on its Port/Node WWN
3 Delete member based on its Port/Node WWN
select : (0..3) [1]
MS Access List consists of (5): {
 20:01:00:60:69:00:60:10
 20:02:00:60:69:00:60:10
 20:03:00:60:69:00:60:10
 20:02:00:60:69:00:60:03
 20:02:00:60:69:00:60:15
}
0 Done
1 Display the access list
2 Add member based on its Port/Node WWN
3 Delete member based on its Port/Node WWN
select : (0..3) [1] 0
done ...
switch:admin>
```

See Also

- msPlCapabilityShow
- msPlMgmtActivate
- msPlMgmtDeactivate
- msPlClearDB
- msTdDisable
- msTdEnable

msPlatShow

Displays the Management Server Platform Database.

Synopsis

```
msPlatShow
```

Availability

admin

Description

This command enables an admin user to display the Management Server Platform Database. It displays the Platform name and associated attributes of each Platform object in the database.

Platform Database Management is available in firmware v2.3 and above. Lower level firmware releases do not support Platform Database Management.

Operands

None.

Example

To display the Management Server platform database for a fabric:

```
switch:admin> msPlatShow
-----
Platform Name: [9] "first obj"
Platform Type: 5 : GATEWAY
Number of Associated M.A.: 1
Associated Management Addresses:
  [35] "http://java.sun.com/products/plugin"
Number of Associated Node Names: 1
Associated Node Names:
  10:00:00:60:69:20:15:71
-----
Platform Name: [10] "second obj"
Platform Type: 7 : HOST_BUS_ADAPTER
Number of Associated M.A.: 1
Associated Management Addresses:
  [30] "http://java.sun.com/products/1"
Number of Associated Node Names: 2
Associated Node Names:
  10:00:00:60:69:20:15:79
  10:00:00:60:69:20:15:75
```

See Also

msPlCapabilityShow
msPlMgmtActivate
msPlMgmtDeactivate
msPlClearDB
msPlatShow

msPIClearDB

Clears the Management Server Platform Database on all switches in the fabric.

Synopsis

```
msPlClearDB
```

Availability

```
admin
```

Description

This command enables an admin user to clear the entire Management Server Platform Database on all switches in the fabric. Since this operation is non-recoverable (once issued, the database will be erased), it should not be used unless it is intended to resolve a database conflict between two joining fabrics or to establish an entire new fabric with an empty database.

Limitations

Platform database management is available in v2.3 and above. Lower level firmware releases will not be able to support Platform Database Management.

Operands

None.

Example

To clear the Management Server platform database on all switches in the fabric:

```
switch:admin> msPlClearDB
Fabric-wise Platform DB Delete operation in progress...
switch:admin>Done...
```

See Also

```
msPlMgmtDeactivate
msPlatShow
msPlCapabilityShow
msPlMgmtActivate
```

msPlCapabilityShow

Display the Platform Database Management Capability.

Synopsis

```
msPlCapabilityShow
```

Availability

admin

Description

This command enables an admin user to query a fabric for the Platform Database Management capability. Based on the result of this command, the admin user can then decide if it is ok to activate the Platform database management service on all switches in the fabric.

When this command is issued, information is gathered from every switch of the fabric and each switch's ability to handle the Platform database management is displayed.

Limitations

Platform Database Management is available in firmware v2.3 and above. Lower level firmware releases do not support Platform Database Management.

Operands

None.

Example

To display Platform Database Management capability on a fabric:

```
switch:admin> msPlCapabilityShow
Platform
Switch WWN                               Service Capable  Capability  Name
=====
10:00:00:60:69:04:01:94                   Yes            0x0000008f  "sqa55"
10:00:00:60:69:10:53:48                   Yes            0x0000000b  "test53"
10:00:00:60:69:10:54:c8                   Yes            0x0000000b  "test52"
10:00:00:60:69:02:39:70                   Yes            0x0000000b  "test54"
10:00:00:60:69:20:10:52                   Yes            0x0000000b  "sqa43"
10:00:00:60:69:10:53:3c                   Yes            0x0000000b  "test51"
10:00:00:60:69:04:11:17                   Yes            0x0000008f  "sqa57"
```

Capability Bit Definitions:

Bit 0: Basic Configuration Service Supported.
Bit 1: Platform Management Service Supported.
Bit 2: Topology Discovery Service Supported.
Bit 3: Unzoned Name Server Service Supported.
Bit 4: M.S. Fabric Zone Service Supported.
Bit 5: Fabric Lock Service Supported.
Bit 6: Timer Service Supported.
Bit 7: RSCN Small Payload Supported.
Others: Reserved.

Done.

See Also

msPlMgmtActivate
msPlMgmtDeactivate
msPlatShow
msPlClearDB

msPlMgmtActivate

Activates the Platform DB Management service on all switches in the fabric.

Synopsis

```
msPlMgmtActivate
```

Availability

admin

Description

This command enables an admin user to activate the Management Server Platform Database Management Service on all switches in the fabric. It is recommended that the admin user run the `msPlCapabilityShow` command before issuing this command. If any switch within the fabric is not capable of handling the Platform Management service, this command is rejected. When this command is issued, all the switches in the fabric will have the Platform database management service ENABLED.

The activation is saved to the non-volatile storage of each switch, so even after a reboot, a switch will boot up with Platform Management service ENABLED.

By default, the Platform Management service is DISABLED.

Platform Database Management is available in firmware v2.3 and above. Lower level firmware releases do not support Platform Database Management.

Operands

None.

Example

To activate Platform Database Management on all switches in the fabric:

```
switch:admin> msPlMgmtActivate
Request Fabric to activate Platform Management services.... Done.
switch:admin>
```

See Also

```
msPlMgmtDeactivate
msPlatShow
msPlCapabilityShow
msPlClearDB
```

msPlMgmtDeactivate

Deactivates the Platform DB Management service on all switches in the fabric.

Synopsis

```
msPlMgmtDeactivate
```

Availability

admin

Description

This command enables an admin user to deactivate the Platform DB Management service. This command deactivates the Platform DB Management service of each switch in the fabric and commits the changes to the non-volatile storage of each switch.

Once deactivated, even in the event of a reboot, the switch will initialize with the service DISABLED.

By default, the Platform Management service is DISABLED.

Platform Database Management is available in firmware v2.3 and above. Lower level firmware releases do not support Platform Database Management.

Operands

None.

Example

To deactivate the Platform Database on all switches in the fabric:

```
switch:admin> msPlMgmtDeactivate
Request Fabric to Deactivate Platform Management services....
Done.
switch:admin>
```

See Also

```
msPlatShow
msPlCapabilityShow
msPlMgmtActivate
msPlClearDB
```

msTDEnable

Enable the Management Server Topology Discovery Management service.

Synopsis

```
msTdEnable ["ALL"]
```

Availability

admin

Description

Use this command to enable the Management Server Topology Discovery Management Service locally or fabric-wide. This command enables the Topology Discovery Management Service on the local switch and commits the change to the flash memory of the local switch. If the optional operand "ALL" is given, then the command is executed on the entire fabric.

Once enabled, even in the event of a reboot, the switch will be boot up with the Management Server Topology Discovery Management Service enabled.

Topology Discovery Management requires the attached devices which include attached switches to support the RNID ELS command.

Operands

This command has the following operand:

"ALL"	Specify "ALL" to enable the Topology Discovery Management function on all switch's in the fabric. The operand "ALL" must be enclosed in quotation marks and must be in capital letters. This operand is optional.
-------	--

Example

To enable the Management Server Topology Discovery service locally or fabric-wide:

```
switch:admin> msTdEnable  
Committing configuration...done.  
switch:admin> msTdEnable "ALL"  
Committing configuration...done.
```

See Also

msTdDisable

msTDDisable

Disable the Management Server Topology Discovery Management service.

Synopsis

```
msTdDisable ["ALL"]
```

Availability

admin

Description

Use this command to disable the Management Server Topology Discovery Management Service locally or fabric-wide. This command will disable the Topology Discovery Management Service of the local switch and commit the changes to flash memory of the local switch. If the optional parameter "ALL" is given, then the command is executed on the entire fabric.

Once disabled, even in the event of a power boundary, the switch will be boot up with the Management Server Topology Discovery Management Service DISABLED.

NOTE: Topology Discovery Management requires the attached devices which include attached switches to support the RNID ELS command.

Operands

This command has the following operand:

"ALL"	Specify "ALL" to disable the Topology Discovery Management function on all switch's in the fabric. The operand "ALL" must be enclosed in quotation marks and must be in capital letters. This operand is optional.
-------	---

Example

To disable the Management Server Topology Discovery service locally or fabric-wide:

```
switch:admin> msTdDisable
This will erase all NID entries. Are you sure? (yes, y, no, n):
[no] y
Committing configuration...done.
switch:admin> msTdDisable "ALL"
This will erase all NID entries. Are you sure? (yes, y, no, n):
[no] y
Committing configuration...done.
```

See Also

msTdEnable

nbrStatsClear

Reset FSPF interface counters.

Synopsis

```
nbrStatsClear [port]
```

Availability

All users

Description

Use this command to reset the counters of FSPF frames transmitted and received on an interface.

Use this command with no operand to reset counters on all interfaces.

Operands

This command has the following operand:

port	Specify the port number for the counters to be reset. Valid values for port number vary depending on the switch type. This operand is optional.
------	--

Examples

To display how to reset the counters on port 4:

```
switch:admin> interfaceShow 4
idbP   = 0x10f61f40
Interface 4 data structure:
nghbP  = 0x10f61d90
ifNo   = 4
defaultCost= 1000
cost   = 1000
delay  = 1
lastScn= 5
lastScnTime= Mar 29 12:57:52.833
upCount= 2
lastUpTime= Mar 29 12:57:52.833
downCount= 1
lastDownTime= Mar 29 12:57:47.566
downReason= 2
iState = UP
Type <CR> to continue, Q<CR> to stop:
Neighbor 4 data structure:
state  = NB_ST_FULL
```

```
lastTransition= Mar 29 12:57:52.865
nghbCap= 0x0
nghbId = 2
idbNo = 4
remPort= 1
nflags = 0x3
```

```
< ... sample output truncated ... >
```

See Also

```
interfaceShow
portShow
switchShow
```

nbrStateShow

Display FSPF neighbor's state.

Synopsis

```
nbrStateShow [port]
```

Availability

All users

Description

Use this command to display information about neighbors to the local switch, or information about a specific neighbor if a port number is supplied. A neighbor is a switch that is directly attached to the local switch.

The display shows the fields described in Table 1–21.

Table 1–21: nbrStateShow Fields Description

Field	Description
Local Domain ID	Domain number of local switch.
Local Port	E_Port (interface) on local switch.
Domain	Domain number of remote switch.
Remote Port	E_Port (interface) on remote switch.
State	State of the neighbor. The E_Port is used to route frames only if the neighbor is in NB_ST_FULL state.

Operands

This command has the following operand:

port	Specify the port on the local switch that connects to the neighbor being displayed. Valid values for port number vary depending on the switch type. This operand is optional.
------	--

Examples

To display information about switches directly connected to the local switch:

```
switch:admin> nbrStateShow
Local Domain ID: 15
Local Port      Domain      Remote Port  State
-----
2               13         13          NB_ST_FULLL
6               13         9           NB_ST_FULLL
7               13         8           NB_ST_FULLL
13              3          7           NB_ST_FULLL
```

See Also

`interfaceShow`

nsAllShow

Display global Name Server information.

Synopsis

```
nsAllShow [type]
```

Availability

All users

Description

Use this command to display the 24-bit Fibre Channel addresses of all devices in all switches in the fabric. If the operand `type` is supplied, only devices of specified FC-PH type are displayed. If `type` is omitted, all devices are displayed.

NOTE: Specifying the `type` operand causes the switch to send out a query to every switch in the fabric. On a large fabric it is recommended NOT to run a script that repeatedly issues the `nsAllShow` command with a `type` operand specified.

Operands

This command has the following operand:

type	<p>Specify the FC-PH type code. This operand is optional. The valid values for this operand are 0 to 255. Below are two specific FC-PH device type codes:</p> <p>8 —FCP type device 4 , 5 —FC-IP type device</p> <p>Other FC-PH types are displayed in the format "<i>x</i> ports supporting FC4 <i>code</i>" where <i>x</i> is the number of ports of a type, and <i>code</i> is the FC-PH type code.</p>
------	---

Example

To display all devices in the Fabric, followed by all type 8 (SCSI-FCP) devices and all type 5 (SCSI-FCIP) devices:

```
switch:admin> nsAllShow
  12 Nx_Ports in the Fabric {
    011200 0118e2 0118e4 0118e8 0118ef 021200
    0214e2 0214e4 0214e8 0214ef
  }
switch:admin> nsAllShow 8
```

```
      8 FCP Ports {
      0118e2 0118e4 0118e8 0118ef 0214e2 0214e4 0214e8 0214ef
      }
switch:admin> nsAllShow 5
      2 FC-IP Ports in the Fabric {
      011200 021200}
```

See Also

nsShow
switchShow

nsShow

Display local Name Server information.

Synopsis

nsShow

Availability

All users

Description

Use this command to display local Name Server information, including information about devices connected to this switch, and cached information about devices connected to other switches in the fabric.

The following message is displayed if there is no information in this switch:

There is no entry in the Local Name Server

There still may be devices connected to other switches in the fabric. The command nsAllShow displays information from all switches.

Each line of output is described in Table 1–22.

Table 1–22: nsShow Output Description

Display Name	Description
*	Indicates a cached entry from another switch.
Type	U for unknown, N for N_Port, NL for NL_Port.
PID	24-bit Fibre Channel address.
COS	List of classes of service supported by device.
PortName	Device port worldwide name.
NodeName	Device node worldwide name.
TTL	Time-to-live (in seconds) for cached entries, or NA (not applicable) if the entry is local.

There may be additional lines if the device has registered any of the following information (the switch automatically registers SCSI inquiry data for FCP target devices):

- FC4s supported
- IP address
- IPA
- Port and node symbolic names
- Fabric port name
- hard address and/or port IP address

Operands

None.

Example

To display local name server information:

```
switch:admin> nsShow
The Local Name Server has 7 entries {
Type  Pid          COS          PortName          NodeName          TTL(sec)
*N    011200;      2,3;10:00:00:60:69:00:ab:ba; 10:00:00:60:69:00:ab:ba  60
      FC4s: FCIP
N     021200;      2,3;10:00:00:60:69:00:03:19; 30:00:00:60:69:00:03:19; na
      FC4s: FCIP
N     021300;      3;10:00:00:60:69:00:02:d6;  20:00:00:60:69:00:02:d6; na
NL    0214e2;      3;21:00:00:fa:ce:00:21:1e;  20:00:00:fa:ce:00:21:1e; na
      FC4s: FCP [STOREX RS2999FCPH3 MT09]
NL    0214e4;      3;21:00:00:fa:ce:00:21:e1;  20:00:00:fa:ce:00:21:e1; na
      FC4s: FCP [STOREX RS2999FCPH3 CD09]
NL    0214e8;      3;21:00:00:fa:ce:04:83:c9;  20:00:00:fa:ce:04:83:c9; na
      FC4s: FCP [STOREX RS2999FCPH3 NS09]
NL    0214ef;      3;21:00:00:ad:bc:04:6f:70;  20:00:00:ad:bc:04:6f:70;na
      FC4s: FCP [STOREX RS2999FCPH3 JB09]
}
```

See Also

nsAllShow
switchShow

parityCheck

Enable or disable DRAM parity checking.

Synopsis

```
parityCheck [0|1]
```

Availability

admin

Description

This command enables DRAM parity checking. The mode is saved in flash memory and stays in that mode until the next execution of parityCheck.

The mode becomes active as soon as this command is executed. It does not require a reboot to take effect.

The DRAM parity checking, when enabled causes ramTest to perform several additional tests of the parity memory. It also enables the parity checking hardware to verify proper parity on all DRAM read operations. DRAM parity checking is only available on specific switch models. If the current switch does not support parity checking an error is displayed.

Operands

This command has the following operand:

0 or 1	<p>Specify a 1 to enable DRAM parity checking</p> <p>Specify a 0 to disable it.</p> <p>The default (if no operand is specified) is to disable parity checking.</p> <p>This operand is optional.</p>
--------	---

Example

To enable and disable DRAM parity checking:

```
switch:admin> parityCheck 1
Committing configuration...done.
Parity check is now ON.
```

```
switch:admin> parityCheck 0
Committing configuration...done.
Parity check is now OFF.
```

```
switch:admin> parityCheck 0  
Parity not supported on system model: 4  
Parity check already OFF.
```

See Also

ramTest

passwd

Change system login name and password.

Synopsis

```
passwd ["user"]
```

Availability

All users

Description

Use this command to change the system login name and password.

To change the login name and password for a specific user, enter the command with the optional "user" operand.

To change the login names and passwords for all users up to and including the current user's security level, enter the command without the "user" operand.

In either case, the user is first prompted to change the login name. The current login name is shown in brackets. Enter a new login name on this line or enter a carriage return to leave the previous login name. If the login name supplied is not already in use by another user, the user is then prompted for the old password. If the password entered matches the current password, the user is then prompted twice for the new password. If the two copies do not match, the process is repeated at most two more times until the command fails for that user.

The password must have from 8 to 40 characters. You can change the login name without changing the associated password.

Table 1–23 contains a description of the options needed control input.

Table 1–23: passwd Options Description

Option	Description
Return	When entered at a prompt with no preceding input, accepts the default value (if applicable) and moves to the next prompt.

Table 1–23: passwd Options Description (Continued)

Option	Description
Control-C (interrupt)	Aborts the command immediately and ignores all changes made. This key combination may be different on your system.
Control-D (end of file)	When entered at a prompt with no preceding input, terminates the command and saves changes made. This key combination may be different on your system.

Operands

This command has the following operand:

"user"	Specify the name of the user, in quotation marks, for whom the login name and password are to be changed. This operand is optional.
--------	--

Example

To change the admin user name and password:

```
switch:admin> passwd "admin"
New username [admin]: maint
Old password: *****
New password: *****
Re-enter new password: *****
Committing configuration...done.
```

Errors

All error messages are preceded by the command name with one of the following messages appended. These errors are described in Table 1–24.

Table 1–24: passwd Error Description

Error	Description
"user" is not a valid user name.	You have not specified a user name that is a valid, recognized user name on the system.
Permission denied.	You do not have permission to change the login name or password specified.

Table 1–24: passwd Error Description (Continued)

Error	Description
That user name is already being used.	You cannot change the user name to that of a previously existing user.
Incorrect password.	You have not entered the correct password when prompted for the old password.
Password unchanged.	You have entered the carriage return special input case, choosing not to change the password.
Number of failure attempts exceeded.	You have made 3 unsuccessful attempts to enter and verify a new password.
Passwords do not match; try again.	You have not correctly verified the new password.

See Also

login
logout

perfAddEEMonitor

Add end-to-end monitor to a port.

Synopsis

```
perfAddEEMonitor port, "SourceID", "DestID"
```

Availability

admin

Description

Use this command to add an End-to-End monitor to a port. The monitor counts the number of words received, number of words transmitted and number of CRC errors detected with frames qualified using either of following two conditions.

- for frames received at the port (with End-to-End monitor installed) the frame SID is the same as "SourceID" and frame DID is the same as "DestID". Both RX_COUNT and CRC_COUNT will be updated accordingly.
- for frames transmitted from the port (with End-to-End monitor installed) the frame DID is the same as "SourceID" and frame SID is the same as "DestID", TX_COUNT will be updated accordingly.

Depending on the application, any port along the routing path can be selected for such monitoring.

For example, to monitor traffic flowing from point A, receiving at port C and transmitting at port D to reach point B, and the traffic flowing back from B to A. You can install a monitor on port C, specify point A as "SourceID" and point B as "DestID". Then RX_COUNT counts the traffic flow from A to B, CRC_COUNT counts the frames with CRC error from A to B. TX_COUNT counts the traffic from B to A.

Similarly, you can install a monitor on port D, specify point B as "SourceID" and point A as "DestID". Then RX_COUNT counts the traffic from B to A, CRC_COUNT counts the frames with CRC errors from B to A and TX_COUNT counts the traffic from A to B.

End-to-End monitors traffic on receiving port, respective to "SourceID", only, which implies in the above example, install a monitor on port D with point A as "SourceID" and point B as "DestID" will not generate any counts.

Both RX_COUNT and CRC_COUNT are associated with frames received at port. TX_COUNT is associated with frames transmitted from port.

After a successful execution of this command, a monitor number is displayed. The monitor number is provided for easy manipulation of these performance monitors.

Operands

This command has the following operands:

port	Specify the port number where you want to add an EE frame monitor. This operand is required.
SourceID	Specify the 3-byte SID (Source ID) of the originator device. It should be in "0xDDAAPP" format, where DD is Domain ID, AA is Area ID and PP is ALPA ID. For example, 0x058e0f, has a Domain ID of "5", an Area ID of "8e" and an ALPA ID of "f".
DestID	Specify the 3-byte DID (Destination ID) of the destination device. It should be in "0xDDAAPP" format, where DD is Domain ID, AA is Area ID and PP is ALPA ID. For example, 0x058e0f, has a Domain ID of "5", an Area ID of "8e" and an ALPA ID of "f".

Example

```
To add an end-to-end monitor to port 2:
switch:admin> perfAddEEMonitor 2, "0x058e0f", "0x1182ef"
End-to-End monitor number 0 added.
switch:admin>
```

See Also

```
perfAddIPMonitor
perfAddReadMonitor
perfAddRWMonitor
perfAddSCSIMonitor
perfAddUserMonitor
perfAddWriteMonitor
```

perfAddIPMonitor

Add a filter-based monitor for IP frame count.

Synopsis

```
perfAddIPMonitor port[, "alias"]
```

Availability

admin

Description

Use this command to define filter-based monitors to count the number of IP traffic frames.

After a successful execution of this command, a monitor number is displayed. The monitor number is provided for easy manipulation of these filter-based performance monitors. The optional user defined alias is also displayed if one was specified. All valid monitor numbers and user-defined aliases can be displayed with the **perfShowFilterMonitor** command.

There is no need to define multiple IP frame monitors on a port.

Operands

This command has the following operands:

port	Specify the port number where you want to add an IP frame monitor. This operand is required.
alias	Specify a name for this monitor. This character string can be a maximum of 10 characters long and must be enclosed in quotation marks. The default alias is IP_Frame. This operand is optional.

Example

To add an IP monitor to port 2:

```
switch:admin> perfAddIPMonitor 2
IP traffic frame monitor #0 added
switch:admin>
```

See Also

perfAddeEMonitor
perfAddReadMonitor
perfAddRWMonitor
perfAddSCSIMonitor
perfAddUserMonitor
perfAddWriteMonitor

perfAddReadMonitor

Add a filter-based monitor for the SCSI Read command.

Synopsis

```
perfAddReadMonitor port[, "alias"]
```

Availability

admin

Description

Use this command to define filter-based monitors to count the number of SCSI FCP Read commands in Fibre Channel frames.

After a successful execution of this command, a monitor number is displayed. The monitor number is provided for easy manipulation of these filter-based performance monitors. The optional user defined alias is also displayed if one was specified. All valid monitor numbers and user-defined aliases can be retrieved with the `perfShowFilterMonitor` command.

The maximum number of filters is 8 per port including user-defined filters, read filters, write filters, and read/write filters.

Operands

This command has the following operands:

port	Specify the port number where you want to add a SCSI Read frame monitor. This operand is required.
alias	Specify a name for this monitor. This character string can be a maximum of 10 characters long and is truncated if more characters are specified. This operand must be enclosed in quotation marks. The default alias is SCSI_RD. This operand is optional.

Example

To add a SCSI Read monitor to port 2:

```
switch:admin> perfAddReadMonitor 2
SCSI Read filter monitor #2 added
switch:admin>
```

See Also

```
perfAddEEMonitor
perfAddIPMonitor
perfAddRWMonitor
perfAddSCSIMonitor
perfAddUserMonitor
perfAddWriteMonitor
```

perfAddRWMonitor

Add a monitor for the SCSI Read and Write commands.

Synopsis

```
perfAddRWMonitor port[, "alias"]
```

Availability

admin

Description

Use this command to define filter-based monitors to count the number of SCSI FCP Read and Write commands in Fibre Channel frames.

After a successful execution of this command, a monitor number is displayed. The monitor number is provided for easy manipulation of these filter-based performance monitors. The optional user defined alias is also displayed if one was specified. All valid monitor numbers and user-defined aliases can be retrieved with the `perfShowFilterMonitor` command.

The maximum number of filters is 8 per port including user-defined filters, read filters, write filters, and read/write filters.

Operands

This command has the following operands:

port	Specify the port number where you want to add a SCSI Read and Write frame monitor. This operand is required.
alias	Specify a name for this monitor. This character string can be a maximum of 10 characters long and is truncated if more characters are specified. This operand must be enclosed in quotation marks. The default alias is <code>SCSI_RW</code> . This operand is optional.

Example

To add a SCSI Read and Write monitor to port 2:

```
switch:admin> perfAddRWMonitor 2
SCSI Read/Write monitor #1 is added
switch:admin>
```

See Also

```
perfAddeEMonitor
perfAddIPMonitor
perfAddReadMonitor
perfAddSCSIMonitor
perfAddUserMonitor
perfAddWriteMonitor
```

perfAddSCSIMonitor

Add a monitor for SCSI frame count.

Synopsis

```
perfAddSCSIMonitor port[, "alias"]
```

Availability

admin

Description

Use this command to define filter-based monitors to count the number of SCSI traffic frames.

After a successful execution of this command, a monitor number is displayed. The monitor number is provided for easy manipulation of these filter-based performance monitors. The optional user defined alias is also displayed if one was specified. All valid monitor numbers and user-defined aliases can be retrieved with the `perfShowFilterMonitor` command.

There is no need to define multiple SCSI frame counters on a port.

Operands

This command has the following operands:

port	Specify the port number where you want to add a SCSI traffic frame monitor. This operand is required.
alias	Specify a name for this monitor. This character string can be a maximum of 10 characters long and is truncated if more characters are specified. This operand must be enclosed in quotation marks. The default alias is <code>SCSI_Frame</code> . This operand is optional.

Example

To add a SCSI traffic frame monitor to port 2:

```
switch:admin> perfAddSCSIMonitor 2
SCSI traffic frame monitor #0 added
switch:admin>
```


See Also

perfAddeEMonitor
perfAddIPMonitor
perfAddReadMonitor
perfAddRWMonitor
perfAddUserMonitor
perfAddWriteMonitor

perfAddUserMonitor

Add a user-defined filter-based monitor.

Synopsis

```
perfAddUserMonitor port, "grouplist" [, "alias"]
```

Availability

admin

Description

Use this command to define a special mechanism to qualify frames for statistics gathering to fit your own special need.

Each group of elements with same offset will have their comparison result (OR-ed) together before the combined result of each group get (AND-ed) together for final comparison result. If the final result is logic 1, then the monitor counter will be increased by one.

After a successful execution of this command, a monitor number is displayed. The monitor number is provided for easy manipulation of these filter-based performance monitors. The optional user-defined alias is also displayed if one was specified. All valid monitor numbers and user-defined aliases can be retrieved with the `perfShowFilterMonitor` command.

The maximum number of filters is 8 per port including user defined filters, read filters, write filters, and read/write filters. In addition there should be no more than 6 different Offsets for each port and no more than 4 different values per Offset defined by user.

Operands

This command has the following operands:

port	Specify the port number where you want to add a user defined monitor. This operand is required.
------	--

grouplist	<p>Specify up to 6 sets of Offset, Mask, and ValueList separated by a semicolon (;). The entire grouplist operand must be enclosed in quotation marks.</p> <p>This operand is required.</p> <p>The grouplist operand must be specified in the following format:</p> <pre>"offset, Mask, ValueList; offset, Mask, ValueList"</pre> <p>For example: "4, 0xff, 0x22; 12, 0xff, 0x01"</p> <p>The grouplist component values are as follows:</p> <p>Offset - Specify the offset within the frame.:</p> <ul style="list-style-type: none"> • Offset 0 is the first byte of the SOF, • Offset 4 is the first byte of the frame header. <p>The Offset must be in decimal format. Valid values for Offset are 0, [4-63]. Offset 0 is a special case which can be used to monitor the first 4 bytes SOFx frames. EOF can not be monitored.</p> <p>Mask - Specify the mask value to be applied (ANDed) to frame contents.</p> <p>ValueList - Specify up to four values that need to be captured from frame contents. The ValueList can be either hexadecimal or decimal format.</p> <p>SOFx frames are considered a special case.</p> <p>The Offset is specified as 0x0, valueList are specified with:</p> <ul style="list-style-type: none"> 0—SOF 1—SOFc1 2—SOFi1 3—SOFn1 4—SOFi2 5—SOFn2 6—SOFi3 7—SOFn3
-----------	--

alias	Specify a name for this monitor. This character string can be a maximum of 10 characters long and is truncated if more characters are specified. This operand must be enclosed in quotation marks. This operand is optional.
-------	--

Example

To add a filter based monitor for all Extended Link Service request (R_CTL=0x22 and TYPE=0x01) to port 2:

```
switch:admin> perfAddUserMonitor 2, "4, 0xff, 0x22; 12, 0xff, 0x01"  
User monitor #0 successfully added  
switch:admin>
```

As a special case, to add a filter based monitor for SOFi3 on port 2:

```
switch:admin> perfAddUserMonitor 2, "0, 0xff, 6"  
User monitor #1 successfully added  
switch:admin>
```

See Also

- perfAddEEMonitor
- perfAddIPMonitor
- perfAddReadMonitor
- perfAddRWMonitor
- perfAddSCSIMonitor
- perfAddWriteMonitor

perfAddWriteMonitor

Add a filter-based monitor for the SCSI Write command.

Synopsis

```
perfAddWriteMonitor port [, "alias"]
```

Availability

admin

Description

Use this command to define filter-based monitors to count the number of SCSI FCP Write commands in Fibre Channel frames.

After a successful execution of this command, a monitor number is displayed. The monitor number is provided for easy manipulation of these filter-based performance monitors. The optional user-defined alias is also displayed if one was specified. All valid monitor numbers and user-defined aliases can be retrieved with the `perfShowFilterMonitor` command.

The maximum number of filters is 8 per port including user-defined filters, read filters, write filters and read/write filters.

Operands

This command has the following operands:

port	Specify the port number where you want to add a SCSI Write command monitor. This operand is required.
"alias"	Specify a name for this monitor. This character string can be a maximum of 10 characters long and is truncated if more characters are specified. This operand must be enclosed in quotation marks. The default alias is SCSI_Write. This operand is optional.

Example

To add a SCSI Write command monitor to a port:

```
switch:admin> perfAddWriteMonitor 2
SCSI Write monitor #0 successfully added
switch:admin>
```

See Also

```
perfAddeEMonitor
perfAddIPMonitor
perfAddReadMonitor
perfAddrWMonitor
perfAddSCSIMonitor
perfAddUserMonitor
```

perfCfgClear

Clear the previously saved performance monitoring configuration settings from flash memory.

Synopsis

```
perfCfgClear
```

Availability

admin

Description

Use this command to clear the previously saved end-to-end and filter configuration settings (data structures) of performance monitoring from flash memory.

Operands

None.

Example

To clear the performance monitoring information from flash memory:

```
switch:admin> perfcfgClear
This will clear Performance Monitoring settings in FLASH ROM.
The RAM settings won't change. Do you want to continue? [y|n]y
Please wait ...
Committing configuration...done.
Performance Monitoring configuration cleared from FLASH.
switch:admin>
```

See Also

```
perfCfgRestore
perfCfgSave
```

perfCfgRestore

Restore performance monitoring configuration settings from flash memory.

Synopsis

```
perfCfgRestore
```

Availability

admin

Description

Use this command to restore the performance monitoring configuration information from flash memory.

Operands

None.

Example

To restore the performance monitoring configuration information from flash memory:

```
switch:admin> perfCfgRestore
This will overwrite current Performance Monitoring
settings in RAM. Do you want to continue? [y|n]y
Please wait ...
Performance monitoring configuration restored from FLASH ROM.
switch:admin>
```

See Also

```
perfCfgClear
perfCfgSave
```


perfCfgSave

Save performance monitoring configuration settings to flash memory.

Synopsis

```
perfCfgSave
```

Availability

admin

Description

Use this command to save the current end-to-end and filter configuration settings (data structures) of performance monitoring into flash memory. This enables the performance monitoring configuration to be saved over power off cycles.

Operands

None.

Example

To save the current performance monitoring configuration to firmware:

```
switch:admin> perfCfgSave
This will overwrite previously saved Performance Monitoring
settings in FLASH ROM. Do you want to continue? [y|n]y
Please wait ...
Committing configuration...done.
Performance monitoring configuration saved in FLASH ROM.
switch:admin>
```

See Also

```
perfCfgClear
perfCfgRestore
```

perfClrAlpaCrc

Clear an ALPA device's CRC count by the port and ALPA.

Synopsis

```
perfClrAlpaCrc port[, ALPA]
```

Availability

admin

Description

Use this command to clear specific ALPA device's CRC error counter. If the ALPA is provided as an operand only the counters for that device are reset; if no ALPA is specified this command clears the CRC counters for all ALPA devices on the specified port.

Operands

This command has the following operands:

port	Specify the port number where you want to reset the CRC error counters. This clears the CRC error counter for all ALPA devices connected to the port. This operand is required.
ALPA	Specify the ALPA address if you want to clear the CRC error counter for a particular device. This operand is optional.

Example

To clear CRC count on a particular ALPA on port 15, and then clear CRC count for all ALPAs on port 15:

```
switch:admin> perfClrAlpaCrc 15, 0x59
CRC error count at ALPA 0x59 on port 15 is cleared.
switch:admin>

switch:admin> perfClrAlpaCrc 15
This will clear all ALPA CRC Counts on port 15
Do you want to continue? [y|n]y
Please wait ...
All alpa CRC counts are cleared on port 15.
switch:admin>
```

See Also

`perfShowAlpaCrc`

perfDeleEMonitor

Delete an end-to-end monitor on port.

Synopsis

```
perfDeleEMonitor port[, monitor]
```

Availability

admin

Description

Use this command to delete an end-to-end monitor on a port.

Operands

This command has the following operands:

port	Specify the port number where you want to delete an end-to-end monitor. This operand is required.
monitor	Specify the monitor number you want to delete. Monitor numbers are defined when you create the monitor on a port. When not specified, all monitors on the port are deleted. This operand is optional.

Example

To delete an end-to-end monitor:

```
switch:admin> perfDeleEMonitor 2, 5  
End-to-End monitor number 5 deleted  
switch:admin>
```

See Also

```
perfShowEEMonitor  
perfAddeEMonitor
```

perfHelp

Display performance monitoring help information.

Synopsis

```
perfHelp
```

Availability

All users.

Description

Use this command to display the available performance monitoring help commands.

Operands

None.

Example

To display commands related to performance monitoring:

```
switch:admin> perfHelp

perfCfgSave           Save Performance configuration
perfCfgRestore        Restore Performance configuration
perfCfgClear          Clear Performance settings from RAM
perfClrAlpaCrc        Clear ALPA device's CRC count
perfShowAlpaCrc       Get ALPA CRC count by port and ALPA
perfAddEEMonitor      Add end-to-end monitor to a port
perfDelEEMonitor      Delete an end-to-end monitor on port
perfShowEEMonitor     Show user-defined end-to-end monitors
perfSetPortEEMask     Set overall mask for E-to-E monitors
perfShowPortEEMask    Show the current end-to-end mask
perfAddUserMonitor    Add filter-based monitor
perfAddReadMonitor    Add filter-based monitor - SCSI Read
perfAddWriteMonitor   Add filter-based monitor - SCSI Write
perfAddRWMonitor      Add monitor - SCSI Read and Write
perfAddSCSIMonitor    Add monitor for SCSI frame count
perfAddIPMonitor      Add monitor for IP traffic frame count
perfDelFilterMonitor  Remove filter-based monitor
perfShowFilterMonitor Show filter-based monitors

switch:admin>
```

perfDelFilterMonitor

Delete a filter-based monitor.

Synopsis

```
perfDelFilterMonitor port[, monitor]
```

Availability

admin

Description

Use this command to delete a filter-based monitor.

After a successful execution of this command, the telnet shell confirms that this monitor has successfully been deleted. Prior to issuing this command, verify all the valid monitor numbers and user-defined aliases on a specific port using the **perfShowFilterMonitor** command to make sure that the right monitor will be deleted.

Operands

This command has the following operands:

port	Specify the port number where you want to remove a filter monitor. This operand is required.
monitor	Specify the monitor number you want to delete. Monitor numbers are defined when you create the monitor on a port. If not specified, all monitors on the port are deleted. This operand is optional.

Example

To delete filter monitor 4 on port 2:

```
switch:admin> perfDelFilterMonitor 2, 4
The specified filter-based monitor is deleted.
switch:admin>
```

See Also

```
perfShowFilterMonitor
perfAddUserMonitor
```

perfSetPortEEMask

Set overall mask for end-to-end (EE) monitors.

Synopsis

```
perfSetPortEEMask
port,"TxSIDMsk","TxDIDMsk","RxSIDMsk","RxDIDMsk"
```

Availability

admin

Description

Use this command to set the mask for the EE monitors of a port. This command enables a user to selectively choose the kind of Fibre Channel frames in which the number of words are to be counted.

EE monitors are defined by the `perfAddeEEMonitor` command using SID and DID pairs. This command can be used to match the entire SID or DID to trigger the monitor to count Fibre Channel words. It can also be used to match one or two of the three fields (Domain ID, Area ID and ALPA ID) in SID and DID pair to trigger the monitor.

The EE mask is used to setup a flag on each field to control whether the field is used to trigger the monitor.

When a flag bit is set (ff), the corresponding field will be used to qualify the triggering of the monitor. If a flag is reset (00), then that field is ignored and its value will not be used to qualify monitor-triggering.

There is only one EE mask per port. The mask is applied to all eight EE monitors available on a port. The default EE mask value upon power-on is all eight EE monitors set. When you reset mask, the counters are also reset to 0.

Operands

This command has the following operands:

port	Specify the port number where you want to modify the end-to-end monitors. This operand is required.
------	--

TxSIDMsk	<p>Specify the source ID mask in "dd:aa:pp" format, where "dd" is Domain ID mask, "aa" is Area ID mask and "pp" is ALPA ID mask. For example, "00:ff:00" uses TxSID Area ID to trigger EE monitor comparison.</p> <p>Specify the following values to turn on or off a specific field: 00 - Specifies that the field does not trigger EE monitors. ff - Specifies that the field triggers EE monitors. This operand must be enclosed in quotation marks. This operand is required.</p>
TxDIDMsk	<p>Specify the destination ID mask in "dd:aa:pp" format. This operand must be enclosed in quotation marks. This operand is required.</p>
RxSIDMsk	<p>Specify the source ID mask in "dd:aa:pp" format. This operand must be enclosed in quotation marks. This operand is required.</p>
RxDIDMsk	<p>Specify the destination ID mask in "dd:aa:pp" format. This operand must be enclosed in quotation marks. This operand is required.</p>

Example

To set the overall mask for end-to-end monitors:

```
switch:admin> perfSetPortEEMask 6, "00:00:00", "ff:ff:ff",  
"00:00:ff", "ff:00:00"  
The EE mask on port 6 is set and EE counters are reset.  
switch:admin>
```

See Also

`perfAddeEEMonitor`

perfShowAlpaCrc

Display the ALPA CRC count by port or by ALPA.

Synopsis

```
perfShowAlpaCrc port[, ALPA]
```

Availability

admin

Description

Use this command to display a specific ALPA device CRC error count by the port or ALPA. If the ALPA operand is specified, only the CRC count for that ALPA device is displayed. If the ALPA operand is not specified, the CRC count for all the ALPA devices on a specified port are displayed. CRC count is a 64-bits counter. When the count is over 32 bits, the CRC count value is displayed in hexadecimal. Otherwise, CRC count is displayed in decimal format.

Operands

This command has the following operands:

port	Specify the port number where you want to count the CRC errors. This operand is required.
ALPA	Specify the ALPA address if you want to get the CRC errors for a particular device. This operand is optional.

Example

To display the CRC error count for all ALPA devices on port 5:

```
switch:admin> perfShowAlpaCrc 5
AL_PA   CRC count
-----
0x01    0
switch:admin>
```

See Also

perfClrAlpaCrc

perfShowEEMonitor

Display end-to-end monitor information and frame traffic on a port.

Synopsis

```
perfShowEEMonitor port[, interval]
```

Availability

admin

Description

Use this command to display end-to-end monitor information and frame traffic on a port. This command can display (if no interval operand is specified):

- Key - the monitor number
- SID - Sending ID
- DID - Destination ID
- Owner_app - TELNET or WEB_TOOLS
- Owner_ip_addr - the IP address of the owner of the filter monitor
- Tx_count - Transmitting frame count
- Rx_count - Receiving frame count
- Crc_count - CRC error count

If you do not specify a value for the interval operand this command displays end to end monitor information and a cumulative count of the traffic detected by the monitor. If you specify a value for the interval operand this command displays a snapshot of the traffic at the specified interval.

Operands

This command has the following operands:

port	The port number where you want to display the end-to-end traffic. This operand is required.
interval	Specify an interval in seconds. This operand is optional.

Examples

To display end-to-end monitor frame traffic on port 5 at an interval of once a second:

```
switch:admin> perfShowEEMonitor 5, 1
perfShowEEMonitor 4 1: Tx/Rx are # of bytes and crc is # of crc errors
0
1
2
3
4
=====
crc Tx Rx crc Tx Rx crc Tx Rx crc Tx Rx
=====
0 0 0 0 0 0 0 0 0 0 0 0 0 0 0
0 53m 4.9m 0 53m 4.9m 0 53m 4.9m 0 53m 0 0 53m 0
0 53m 4.4m 0 53m 4.4m 0 53m 4.4m 0 53m 0 0 53m 0
0 53m 4.8m 0 53m 4.8m 0 53m 4.8m 0 53m 0 0 53m 0
0 53m 4.6m 0 53m 4.6m 0 53m 4.6m 0 53m 0 0 53m 0
0 53m 5.0m 0 53m 5.0m 0 53m 5.0m 0 53m 0 0 53m 0
0 53m 4.8m 0 53m 4.8m 0 53m 4.8m 0 53m 0 0 53m 0
0 53m 4.5m 0 53m 4.5m 0 53m 4.5m 0 53m 0 0 53m 0
0 52m 4.5m 0 52m 4.5m 0 52m 4.5m 0 52m 0 0 52m 0
0 52m 5.0m 0 52m 5.0m 0 52m 5.0m 0 52m 0 0 52m 0
0 52m 4.5m 0 52m 4.5m 0 52m 4.5m 0 52m 0 0 52m 0
0 52m 4.6m 0 52m 4.6m 0 52m 4.6m 0 52m 0 0 52m 0
```

To display EE monitors on port 4:

```
switch:admin> perfShowEEMonitor 4

There are 7 end-to-end monitor(s) defined on port 4.
KEY SID DID OWNER_APP OWNER_IP_ADDR TX_COUNT RX_COUNT
RC_COUNT
-----
0 0x21300 0x21dda TELNET N/A 0x00000004d0ba9915 0x00000000067229e65
x0000000000000000
1 0x21300 0x21ddc TELNET N/A 0x00000004d0baa754 0x00000000067229e65
```

NOTE: If you do not specify an interval the EE based monitor traffic count is displayed in 64-bit format and is cumulative.

See Also

perfAddEEMonitor

perfShowFilterMonitor

Display filter-based monitor information and frame traffic for a port.

Synopsis

```
perfShowFilterMonitor port[, interval]
```

Availability

admin

Description

Use this command to display all the filter-based monitors defined on the specified port and the traffic count values. This command can display (if no interval operand is specified):

- Key - the monitor number
- Alias - the monitor alias name
- Owner_app - TELNET or WEB_TOOLS
- Owner_ip_addr - the IP address of the owner of the filter monitor
- Frame_count - cumulative 64 bit frame count

If you do not specify a value for the interval operand this command displays a cumulative count of the traffic detected by the monitor. If you specify a value for the interval operand this command displays a snapshot of the traffic at the specified interval.

Operands

This command has the following operands:

port	Specify the port number where you want to display the filter monitors. This operand is required.
interval	Specify an interval in seconds. This operand is optional.

Example

To display filter monitor traffic on port 5 at an interval of once a second:

```
switch:admin> perfshowfiltermonitor 5, 1
perfShowFilterMonitor 5 1
```

0	1	2	3	4	5	6
#Frames	#CMDs	#CMDs	#Frames	#Frames	#CMDs	#CMDs
0	0	0	0	0	0	0
26k	187	681	682	682	494	187
26k	177	711	710	710	534	176
26k	184	734	734	734	550	184
26k	182	649	649	649	467	182
26k	188	754	755	755	567	184
26k	183	716	716	717	534	183
26k	167	657	656	655	488	167
26k	179	749	749	749	570	179
26k	164	752	752	752	588	164
26k	190	700	700	700	510	190
26k	181	701	701	701	520	181
26k	200	750	750	751	550	201
26k	180	692	692	691	512	179
26k	179	696	696	696	517	179
26k	187	720	720	720	533	187
26k	200	722	722	722	522	200
26k	204	717	717	717	513	204

To display filter monitor information on port 5:

```
switch:admin> perfshowfiltermonitor 5
There are 7 filter-based monitors defined on port 5.
```

KEY	ALIAS	OWNER_APP	OWNER_IP_ADDR	FRAME_COUNT
0	SCSI_Frame	TELNET	N/A	0x000000000002c2229
1	SCSI_WR	TELNET	N/A	0x000000000000464a
2	SCSI_RW	TELNET	N/A	0x000000000000fd8c
3	SCSI_RW	WEB_TOOLS	192.168.169.40	0x0000000000007ba3
4	SCSI_RW	WEB_TOOLS	192.168.169.190	0x0000000000004f0e
5	SCSI_RD	WEB_TOOLS	192.168.169.40	0x0000000000002208
6	SCSI_WR	WEB_TOOLS	192.168.169.40	0x000000000000033a

```
switch:admin>
```

NOTE: If you do not specify an interval the filter based monitor frame count is displayed in 64 bit format and is cumulative.

See Also

perfAddUserMonitor

perfShowPortEEMask

Displays the current end-to-end mask of a port.

Synopsis

```
perfShowPortEEMask port
```

Availability

admin

Description

Use this command to display the current end-to-end mask of a port. There are only two commands that can modify the value of the EE mask, **perfSetPortEEMask** and **perfCfgRestore**.

The end-to-end mask has 12 fields:

TxSID Domain: on
TxSID Area: on
TxSID ALPA: on
TxDID Domain: on
TxDID Area: on
TxDID ALPA: on
RxSID Domain: on
RxSID Area: on
RxSID ALPA: on
RxDID Domain: on
RxDID Area: on
RxDID ALPA: on

The fields that are marked on are used to trigger end-to-end monitors. The default value of the EE mask is all fields set on.

Operands

This command has the following operand:

port	Specify the port number where you want to display the end-to-end mask. This operand is required.
------	--

Example

To display the port end-to-end mask on port 2:

```
switch:admin> perfShowPortEEMask 2
TxSID Domain:  on
TxSID Area:    on
TxSID ALPA:    off
TxDID Domain:  on
TxDID Area:    on
TxDID ALPA:    off
RxSID Domain:  on
RxSID Area:    on
RxSID ALPA:    off
RxDID Domain:  on
RxDID Area:    on
RxDID ALPA:    off
switch:admin>
```

See Also

```
perfAddEEMonitor
perfDeleEEMonitor
perfShowEEMonitor
perfSetPortEEMask
perfShowPortEEMask
```

portCfgEport

Enable or disable a port from becoming an E_Port.

Synopsis

```
portCfgEport [port, 0|1]
```

Availability

admin

Description

This command allows a user to enable/disable a port from becoming an E_Port. The E_Port capability is enabled by default unless this command is used to disable it.

When a port is configured as a non-E_Port through this command, an ISL connected to this port will be segmented. No data traffic between two switches will be routed through this port. Fabric management data, such as zoning information will not be exchanged through this port either.

The configuration is saved in the non-volatile memory and is persistent across switch reboot or power cycle.

Operands

This command has the following operands:

port	Specify the port number to be configured. Valid values for port number vary depending on the switch type. This operand is optional.
0 or 1	Specify 1 to enable the port to become an E_Port (default port state). Specify 0 to disable the port from becoming an E_Port. When the <code>port_number</code> operand is present, this operand must also be present. This operand is optional.

NOTE: When no operands are specified, the command reports a list of ports that are disabled from becoming E_Ports.

Example

To disable port 3 from becoming an E_Port:

```
switch:admin> portCfgEport 3, 0
Committing configuration...done.
switch:admin> portCfgEport
Ports:   0   1   2   3   4   5   6   7
-----
-   -   -   NO  -   -   -   -
```

See Also

portShow
switchShow

portCfgGport

Designates a port as a locked G_Port.

Synopsis

```
portCfgGport port, 0|1
```

Availability

admin

Description

This command enables a user to designate a port as a locked G_Port. Once this is done, the switch attempts to initialize that port as an F_Port only, and does not attempt loop initialization (FL_Port) on the port. However, if the device attached to the port initiates loop communication, then the switch responds accordingly and the port can then become an FL_Port. Similarly, a port designated as a G_Port can become an E_Port.

Locking a port as a G_Port only changes the actions initiated by the switch; it does not change how the switch responds to initialization requests.

The configuration is saved in the non-volatile memory and is persistent across switch reboot or power cycle.

Operands

This command has the following operands:

port	Specify the port number to be configured. Valid values for port number vary depending on the switch type. This operand is required.
0 or 1	Specify a value of 1 to designate the port as a G_Port. Specify a value of 0 to remove the G_Port designation from the port (default port state). This operand is required.

Example

The following example configures switch port 3 as a locked G_Port:

```
switch:admin> portCfgGport 3, 1  
Committing configuration...done.
```

See Also

```
portShow  
switchShow  
configure  
portCfgShow
```

portCfgLport

Lock a port as an L_PORT.

Synopsis

```
portCfgLport port, lockmode, [,privatemode]
```

Availability

admin

Description

Use this command to designate a port as an L_PORT. The switch will then only attempt to initialize that port as an FL_PORT. The switch never attempts point-to-point (F_PORT) initialization on the port. However, if the device attached to the port initiates point-to-point communication, then the switch will respond accordingly, and the port may then become an F_PORT.

Similarly, being locked as an L_PORT will not prevent the port from becoming an E_PORT. Locking a port as an L_PORT only affects what actions the switch initiates. It does not change how the switch responds to initialization requests.

Operands

This command has the following operands:

port	The port number to be configured. Valid values for port number vary depending on the switch type. This operand is required.
lockmode	Specify 1 to configure the specified port as a locked L_PORT. Specify 0 to de-configure the specified port from its previous role as a locked L_PORT. This operand is required.
privatemode	Specify 1 to configure the L_PORT as a private L_PORT (then FLOGI will be rejected). Specify 0 to configure the L_PORT as a normal public L_PORT (default). This operand is optional.

Example

To configure switch port 3 as a locked L_PORT:

```
switch:admin> portCfgLport 3, 1  
Committing configuration...done.
```

See Also

```
portShow  
switchShow  
configure
```

portCfgLongDistance

Configure a port to support long distance links.

Synopsis

```
portCfgLongDistance portnumber [0|1|2]
```

Availability

admin

Description

Use this command to specify the allocation of enough full size frame buffers on a particular port to support a long distance link of up to 100 km. The port can be used as either an Fx_Port or an E_Port. The configuration is saved in the non-volatile memory and is persistent across switch reboot or power cycle.

When this command is invoked without the optional operand, you are prompted to enter the long distance level number. The level value must be one of the following:

- 0—Reconfigures port as a regular switch port. The number of buffers reserved for the port supports links up to 10 km.
- 1—Level one long distance, up to 50 km. A total of 27 full size frame buffers at 1Gbps or 54 full size frame buffers at 2 Gbps are reserved for the port.
- 2—Level two long distance, up to 100 km. A total of 60 full size frame buffers at 1Gbps or 108 full size frame buffers at 2 Gbps are reserved for the port.

You can cancel the configuration update by entering CTRL + D.

When a port is configured to be a long distance port, the output of **portShow** and **switchShow** displays the long distance level. In the **portShow** output, the long distance level is indicated as "medium" for level 1 long distance, and "long" for level 2 long distance. In the **switchShow** output, the format is Lx, where x is the long distance level number, except for level 0, which is not displayed in **switchShow**.

NOTE: The Extended Fabrics license key is required to use this command. Refer to the *Distributed Fabric User Guide* for more information.

Operands

This command has the following operands:

portnumber	The port number to be configured: 0-7 or 0-15. This operand is required.
0,1, or 2	This operand indicates the distance to the connected port. The valid values for this operand are: 0 —reconfigure port to be regular switch port 1 —level one long distance (up to 50 km) 2 —level two long distance (up to 100 km) This operand is optional.

Limitations

When the edge switches are Compaq StorageWorks Fibre Channel SAN switches, then all switches on both ends need the long distance fabric mode to be configured to 1.

A group of four adjacent ports that share a common pool of frame buffers (for example, ports 0 – 3 or 4 – 7) is called a “quad”. Since the total number of frame buffers in a quad is limited, if a port is configured as a long distance port in a quad, the other ports in the quad have limitations on possible configurations. Refer to the *Distributed Fabric User Guide* for more information on limitations in port configurations.

Example

To configure switch port 3 to support a 100 km link:

```
switch:admin> portCfgLongDistance 3
Please enter the long distance level -- : (0..2) [0] 2
Committing configuration...done.
```

See Also

```
configure
portShow
switchShow
```

portcfgMcastLoopback

Configure a port to receive multicast frames.

Synopsis

```
portCfgMcastLoopback port, 0|1
```

Availability

admin

Description

Use this command to configure a port to receive multicast frames. This command allows a user to dedicate an unused port in a leaf (edge) switch, with no F_Port belonging to a multicast group, to receive multicast frames.

When multicast frames are received at an edge switch with no member port, traffic will throttle down in the KBytes/Second range as embedded processor intervention is required to process it.

However when a port is assigned as the multicast loopback port, frames destined for any multicast group will be routed to that multicast loopback port where it is loopbacked to the port's receiver which is turned off. This effectively sends the frames to a black hole. Since embedded processor is not involved, traffic moves at normal (and full) speed.

Executing this command on a branch (middle) switch will not affect traffic. It can be configured for future use as an edge switch. The disadvantage is that the port cannot be used to connect to other devices.

The configuration is saved in the non-volatile memory and is persistent across switch reboot or power cycle.

The user will be prompted if:

- The selected port is already in use as an E_Port, or Fx_Port,
- The switch is a branch (middle) switch.

A warning message is printed if another port is already configured as the multicast loopback.

When a port is configured as multicast loopback port:

- Its port LED will blink a slow green indicating a loopback state. Its laser, if optical GBIC'ed, will be disabled. It will not respond to any attempt to connect it to any device.
- The comment field of switchShow will show that it is looped back to itself like so:
"port 3: sw No_Light Loopback->3"
- The portFlags line of portShow will display the "F_PORT" and "INT_LB" flags like so:
"portFlags: 0x20249 PRESENT F_PORT U_PORT INT_LB LED"
- mcastShow will show the port as a member in its "Member Ports" column.

Operands

This command has the following operands:

port	Specify the port number to be configured. Valid values for port number vary depending on the switch type. This operand is required.
0 or 1	Specify the value 1 and the "portnumber" is dedicated as a multicast loopback port. Specify the value 0 and the "portnumber" is de-configured from its previous role as a multicast loopback port. This operand is required.

Example

To configure switch port 3 as a multicast loopback port

```
switch:admin> portCfgMcastLoopback 3, 1
Committing configuration...done.
```

See Also

```
portShow
switchShow
mcastShow
configure
```

portCfgShow

Display port configuration settings.

Synopsis

```
portCfgShow
```

Availability

all users

Description

Use this command to display the current configuration of all ports.

The following configuration information is displayed:

- Port Speed is displayed as 1G, 2G, or AN (when in Auto speed Negotiation mode). This value is set by the `portCfgSpeed` command.
- Trunk Port is displayed as ON when port is set for trunking or blank (..) when trunking is disabled on the port. This value is set by the `portCfgTrunkport` command.
- The Long Distance setting of the port is shown as blank (..) when long distance mode is off, L1 when the link is up to 50Km, or L2 when the link is up to 100Km. This value is set by the `portCfgLongDistance` command.
- Locked L_Port is displayed as ON when port is locked to L_Port only or blank (..) when L_Port lock mode is disabled (and it behaves as a U_Port). This value is set by the `portCfgLport` command.
- Locked G_Port is displayed as ON when port is locked to G_Port only or blank (--) when G_Port lock mode is disabled (and it behaves as a U_Port). This command is set by the `portCfgGport` command.
- Disabled E_Port is displayed as ON when port is not allowed to be an E_Port or blank (--) when the port is allowed to function as an E_Port. This command is set by the `portCfgEport` command.

Operands

None.

Example

To display the configuration settings of ports on a switch:

```
switch:admin> portCfgShow
Ports          0  1  2  3      4  5  6  7      8  9 10 11      12 13 14 15
-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+
Speed          2G 2G AN AN    AN AN 2G 2G    AN AN AN AN    1G AN 1G AN
Trunk Port     ON ON ON ON    ON ON ON ON    ON ON ON ON    ON ON ON ON
Long Distance  L1 L1 .. ..    L2 .. .. ..    .. .. .. ..    .. .. .. ..
Locked L_Port  .. .. .. ..    .. .. .. ..    .. .. .. ..    ON .. .. ..
Locked G_Port  .. .. .. ..    .. ON .. ..    .. .. .. ..    .. ON .. ..
Disabled E_Port .. .. .. ..    .. .. .. ..    .. .. .. ..    .. .. ON ..
where AN:AutoNegotiate, ..:OFF, ??:INVALID.
switch:admin>
```

See Also

```
portCfgEport
portCfgGport
portCfgLport
portCfgLongDistance
portCfgTrunkport
portCfgSpeed
```

portCfgSpeed

Configure the port speed level.

Synopsis

```
portCfgSpeed port[, speed_level]
```

Availability

admin

Description

Use this command to configure the speed of a port to a particular level. After this command is issued, the port is disabled and enabled so that the port comes up with the new speed setting. The configuration is saved in the non-volatile memory and is persistent across switch reboot or power cycle.

If the command is specified without an operand, you are prompted to enter the speed value.

The output of the `portShow` command displays the current achieved speed of a port and the `portCfgShow` command displays the user desired speed setting for a port.

Operands

This command has the following operands:

port	Specify the port number where you want to set the speed. This operand is required.
speed_level	Specify the speed of a port. Valid values are one of the following: <ul style="list-style-type: none">• 0—Auto-sensing mode. The port automatically configures for the highest speed.• 11 Gbps mode. The port will be at fixed speed of 1 Gbps.• 22 Gbps mode. The port will be at fixed speed of 2 Gbps. This operand is optional.

Example

To configure the speed of port 3 to 2 Gbps:

```
switch:admin> portCfgSpeed 3
```

```
Please enter the TX & RX speed level -- : (0..2) [0] 2  
Committing configuration...done.
```

See Also

```
switchCfgSpeed  
portShow
```

portCfgTrunkport

Configure a port to be enabled or disabled for trunking.

Synopsis

```
portCfgTrunkport port, 1|0
```

Availability

admin

Description

Use this command to configure a port to be enabled or disabled for trunking.

NOTE: This command requires a Trunking license.

Operands

This command has the following operand:

port	Specify the port number where you want to enable or disable trunking. This operand is required.
0 or 1	Specify 1 to enable this port for trunking. Specify 0 to disable this port for trunking. This operand is required.

Example

To enable port 5 for trunking:

```
switch:admin> portCfgTrunkport 5, 1
```

See Also

```
switchCfgTrunk  
portShow  
portCfgShow  
switchShow
```

portDisable

Disable a switch port.

Synopsis

```
portDisable port
```

Availability

admin

Description

Use this command to disable a switch port. If the port is connected to another switch, the fabric may reconfigure. If the port is connected to one or more devices, the devices can no longer communicate with the fabric.

If the port was online before being disabled, the following indicate a state transition: RSCN, SNMP trap, Web pop-up window.

The front panel LED of a disabled port flashes yellow with a two second cycle.

Operands

This command has the following operand:

port	Specify the port number to be disabled. Valid values for port number vary depending on the switch type. This operand is required.
------	--

Example

To disable port 4:

```
switch:admin> portDisable 4
```

See Also

```
portEnable  
portShow  
switchShow
```

portEnable

Enable a switch port.

Synopsis

```
portEnable port
```

Availability

admin

Description

Use this command to enable a switch port. If the port is connected to another switch, the fabric may reconfigure. If the port is connected to one or more devices, the devices can communicate with the fabric.

For ports that come online after being enabled, the following indications may be sent to indicate a state transition: RSCN, SNMP trap, Web pop-up window.

The front panel LED of an enabled and online port is green.

Operands

This command has the following operand:

port	Specify the port number to be enabled. Valid values for port number vary depending on the switch type. This operand is required.
------	---

Example

To enable port 4:

```
switch:admin> portEnable 4
```

See Also

```
portDisable  
portShow  
switchShow
```


portErrShow

Display port error summary.

Synopsis

```
portErrShow
```

Availability

All users

Description

Use this command to display an error summary for all ports. The display contains one output line per port and shows error counters in ones, thousands (K), or millions (M).

The following fields are displayed:

- frames tx—Frames transmitted.
- frames rx—Frames received.
- enc in—Encoding errors inside frames.
- crc err—Frames with CRC errors.
- too shrt—Frames shorter than minimum.
- too long—Frames longer than maximum.
- bad eof—Frames with bad end-of-frame delimiters.
- enc out—Encoding error outside of frames.
- disc c3—Class 3 frames discarded.
- link fail—Link failures (LF1 or LF2 states).
- loss syncq—Loss of synchronization.
- loss sig—Loss of signal.
- frjt—Frames rejected with F_RJT.
- fbsy—Frames busied with F_BSY.

Operands

None.

Example

The following example shows an eight port switch. Notice in the example below that port six has a high number of errors and should be examined:

```
switch:admin> portErrShow

frames enc crc too too bad enc disc link loss loss frjt fbsytx
rx in err shrt long eof out c3 fail sync sig
-----
0: 0 0 0 0 0 0 0 0 0 0 0 0 1 0 0
1: 0 0 0 0 0 0 0 0 0 0 0 0 1 0 0
2: 0 0 0 0 0 0 0 0 0 0 0 0 1 0 0
3: 0 0 0 0 0 0 0 0 0 0 0 0 1 0 0
4: 0 0 0 0 0 0 0 0 0 0 0 0 1 0 0
5: 0 0 0 0 0 0 0 0 0 0 0 0 1 0 0
6: 61k 48 2 15 0 0 0 3k 0 0 2 0 0 0 0
7: 0 0 0 0 0 0 0 0 0 0 0 0 1 0 0
8: 0 0 0 0 0 0 0 0 0 0 0 0 1 0 0
9: 0 0 0 0 0 0 0 0 0 0 0 0 1 0 0
10: 0 0 0 0 0 0 0 0 0 0 0 0 1 0 0
11: 0 0 0 0 0 0 0 0 0 0 0 0 1 0 0
12: 0 0 0 0 0 0 0 0 0 0 0 0 1 0 0
13: 0 0 0 0 0 0 0 0 0 0 0 0 1 0 0
14: 0 0 0 0 0 0 0 0 0 0 0 0 1 0 0
15: 0 0 0 0 0 0 0 0 0 0 0 0 1 0 0
```

See Also

portShow
portStatsShow

portLogClear

Clear the port log.

Synopsis

```
portLogClear
```

Availability

admin

Description

Use this command to clear the port log. You may want to clear the port log before triggering an activity so that the log displays only the activity related to that activity. See `portLogShow` for a description of the port log.

If the port log is disabled, `portLogClear` enables it. Certain errors automatically disable the port log to preserve information needed to understand the error (new events are not collected so that existing information is not over-written).

Operands

None.

Example

To clear the port log:

```
switch:admin> portLogClear  
switch:admin> portLogShow
```

Errors

The following errors disable the port log:

FCIU, IUBA
FCIU, IUCOUNT
FCPH, EXCHBAD
FCPH, EXCHFEE
NBFSM, DUPEPORTSCN
UCAST, RELICPDB

See Also

```
portLogDump  
portLogShow
```

portLogDump

Display the port log without page breaks.

Synopsis

```
portLogDump [count[, saved]]
```

Availability

All users

Description

Use this command to display the port log, listing all entries in the log without page breaks. This command displays the same information as `portLogShow`, but `portLogShow` prompts the user to enter ‘returns’ between each page.

See `portLogShow` for a description of the port log.

If the port log is disabled, the following message appears as the first line (see `portLogClear` for details):

```
WARNING: port log is disabled
```

Operands

This command has the following operands:

count	Specify the maximum number of lines to be displayed. Only the most recent <code>count</code> entries are displayed. This operand is optional.
saved	Specify a nonzero value to display the saved port log from the last switch fault. See <code>uptime</code> for conditions that cause a fault. <code>count</code> is ignored when displaying the saved log. This operand is optional.

Example

To display the port log:

```
switch:admin> portlogdump 10
May 1      task      event port  cmd  args
-----
```

```
16:51:15.499 tShell      ioctl      7    de  10f9bb90,0
16:51:15.499 tShell      ioctl      8    de  10f9bb90,0
16:51:15.499 tShell      ioctl      9    de  10f9bb90,0
16:51:15.499 tShell      ioctl     10    de  10f9bb90,0
16:51:15.499 tShell      ioctl     11    de  10f9bb90,0
16:51:15.499 tShell      ioctl     12    de  10f9bb90,0
16:51:15.499 tShell      ioctl     13    de  10f9bb90,0
16:51:15.499 tShell      ioctl     14    de  10f9bb90,0
16:51:15.499 tShell      ioctl     15    de  10f9bb90,0
16:58:28.383 tShell      create                    tSyslog
switch:admin>
```

See Also

portLogClear
portLogShow
uptime

portLogShow

Display the port log.

Synopsis

```
portLogShow [count[, saved]]
```

Availability

All users

Description

Use this command to display the port log; 22 entries are displayed at a time.

The `portLogShow` command displays the same information as `portLogDump`, but it allows you to enter a “return” after each page of output.

If the port log is disabled, the following message appears as the first line. Refer to `portLogClear` command for more information.

```
The port log is disabled
```

The `portLogShow` fields are described in Table 1–25.

Table 1–25: portLogShow Fields Descriptions

Field	Description
Date Time	Date and time of event. Clock resolution is 16 milliseconds.
task	Name of task that logged the event, or “interrupt” if the event was logged in interrupt context, or “unknown” if the task no longer exists.
event	Possible events are: <ul style="list-style-type: none">• start—switch start or re-start event• disable—port is disabled• enable—port is enabled• ioctl—port I/O control is executed

Table 1–25: portLogShow Fields Descriptions (Continued)

Field	Description
event (continued)	<ul style="list-style-type: none"> • Tx—frame is transmitted (class is indicated) • Rx—frame is received (class is indicated) • scn—state change notification is posted • pstate—port changes physical state • rejec—received frame is rejected • busy—received frame is busied • ctin—CT based request is received • ctout —CT based response is transmitted • errlog—message is added to the error log • loopscn—loop state change notification is posted • create—task is created
port	Port number of the affected port.
cmd	<p>Command value description depends on event type:</p> <ul style="list-style-type: none"> • ioctl—I/O control command code • Tx & Rx—frame payload size • scn—new state. • pstate—new physical state. Refer to Table 1–26 for a list of pstate code values. • ctin—CT-subtype: fc = Simple Name Server, f8 = Alias Server. • ctout—same as ctin above. • errlog—error level (see errShow) • loopscn—Current loop state during loop initialization. Possible values are: <ul style="list-style-type: none"> • OLP—offline (disconnected or nonparticipating) • LIP—FL_Port entered INITIALIZING or OPEN_INIT state • LIM—LISM completed, FL_Port became the loop master • BMP—loop initialization completed, FL_Port in MONITORING state • OLD—port transited to the OLD_PORT state • TMO—loop initialization times out

Table 1–25: portLogShow Fields Descriptions (Continued)

Field	Description
args	<p>The command arguments description depends on event type:</p> <p>star—start type can be one of the following:</p> <ul style="list-style-type: none"> 0 = enable ports 100 = disable ports <p>disable—disable state can be one of the following:</p> <ul style="list-style-type: none"> 1—Online 2—Offline 3—Testing 4—Faulty 5—E_Port 7—F_Port 7—Segmented <p>enable—enable state can be one of the following:</p> <ul style="list-style-type: none"> 0—normal non-zero—loopback <p>ioctl—I/O control arguments. Refer to Table 1–27 for a list of ioctl code values.</p> <p>Tx & Rx—first two header words and first payload word</p> <p>reject—FC-PH reject reason</p> <p>busy—FC-PH busy reason</p> <p>ctin—Argument 0 is divided into two 16-bit fields:</p> <ul style="list-style-type: none"> [A]—bit map indicating validity of subsequent args (0001 = argument 1 is valid, 0003 = arguments 1 and 2 are valid). [B]—ct-based service command code. <p>Argument 1 = first word of the CT payload, if applicable (as specified in [A]).</p>

Table 1–25: portLogShow Fields Descriptions (Continued)

Field	Description
args (continued)	<p>Argument 2 = second word of the CT payload, if applicable (as specified in [A]).</p> <p>ctout—Argument 0 is divided into two 16-bit fields: [A]bit map indicating validity of subsequent args (0001 = argument 1 is valid, 0003 = arguments 1 and 2 are valid). [B]CT command code indicating an accept (8002) or a reject (8001).</p> <p>If [B] is an accept, argument 1 and 2 represents the first and second words of the CT payload, if applicable (as specified in [A]). If [B] is a reject, argument 1 contains the CT reject reason and explanation code.</p> <p>errlog—Error type (see errShow) create - name of the task being created</p> <p>loopscn—description depends on loop state:</p> <p>OLP—offline reason code, usually zero</p> <p>LIP—Reason code for LIPs initiated by FL_Port, if the code value is 800x (x = [1,0xc], see below), or the lower two bytes of the LIP received, if the code value is other than 800x. Refer to Table 1–28 for a list of LIP code values.</p> <p>LIM—usually zero BMP: memory address for the loop bitmap</p> <p>OLD—usually zero</p> <p>TMO—Encoded value of state when loop initialization timed out. This value is usually equal to the first word of a loop initialization frame payload. Refer to Table 1–29 for a list of TMO code values.</p>

Table 1–26: Pstate Codes

Pstate Code	Description
AC	Active State
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
OL1	Offline: OLS Transmit State
OL2	Offline: OLS Receive State
OL3	Offline: Wait for OLS State

Table 1–27: ioctl Codes

ioctl Code	Description
90	get virtual channel credits
91	Set virtual channel credits
a1	Port is an E_Port
a2	Port is an F_Port
a3	Port is segmented
a4	Domain name is known
a5	Port enable
a6	Port disable
a7	Link reset
a8	Add unicast route
a9	Delete unicast route
aa	Add multicast route
ab	Delete multicast route
ac	Unicast path selection done
ad	Multicast path selection done

Table 1–28: LIP Reason Codes

LIP Code	Description
8001	Retry loop init
8002	Start loop after gaining sync
8003	Restart loop after port reset
8004	LIP when a loop hangs
8005	Restart loop if LIP received when sending out ARB(F0)
8006	LIP when an OPN returns
8007	Restart loop when LIPs received in OLD_PORT AC state
8008	Restart loop if loop not empty but E_Port loopback
8009	LIP as requested by the LINIT ELS received
800a	LIP as requested by the LPC ELS received
800b	Restart loop for QuickLoop looplet setup
800c	Restart loop for QuickLoop looplet re-initialization

Table 1–29: TMO Codes

TMO Code	Description
2	LPSM_INITIALIZING
10	LPSM_OPEN_INIT_MASTER
BC94F0F0	ARBF0
11010000	LISM
11020000	LIFA
11030000	LIPA
11040000	LIHA
11050100	LISA
11050000	OLD_LISA
11060000	LIRP
11070000	LILP
40	LPSM_MONITORING

Operands

This command has the following operands:

count	Specify the maximum number of lines to display. Only the most recent <code>count</code> entries are displayed. This operand is optional.
saved	Specify a non-zero value to display the saved port log from the last switch fault. See <code>uptime</code> for a list of conditions that cause a fault. <code>count</code> is ignored when displaying the saved log. This operand is optional.

Example

The following example shows a section of the port log with an E_Port coming online. The ELP and EFP exchanges are shown; a name service request was processed.

```
switch:admin> portLogShow 5
May 1          task          event port  cmd  args
-----
06:48:01.623  interrupt  scn    13    2
06:48:02.359  tFspf     ioctl  13    ab  fffffff,10
06:48:04.699  tReceive  Rx     13    0  c0ffffffd,00ffffffd,00bb0045
06:48:07.616  tReceive  Rx     13    40
02ffffffd,00ffffffd,0046ffff,14000000
06:48:07.616  tTransmit Tx     13    0  c0ffffffd,00ffffffd,004600bc
```

See Also

portLogClear
portLogDump
uptime

portLoopbackTest

Functional test of port N->N path.

Synopsis

```
portLoopbackTest [passCount]
```

Availability

admin

Description

Use this command to verify the functional operation of the switch by sending frames from the port N transmitter, and looping the frames back into the same port N receiver. The loopback is done at the parallel loopback path. The path exercised in this test does not include the GBIC nor the fiber cable.

Only one frame is transmitted and received at any one time. No external cable is required to run this test. The port LEDs flicker green rapidly while the test is running.

To run the test, perform the following procedure:

1. Set all ports for parallel loopback.
2. Create a frame F of maximum data size (2112 bytes).
3. Transmit frame F through port N.
4. Pick up the frame from the same port N.
5. Check the 8 statistic error counters for nonzero values:
6. ENC_in, CRC_err, TruncFrm, FrmTooLong, BadEOF, Enc_out, BadOrdSet, DiscC3
7. Check if the transmit, receive or class 3 receiver counters are stuck at some value.
8. Check if the number of frames transmitted is not equal to the number of frames received.
9. Repeat steps 2 through 7 for all ports present until:
 - The number of frames (or `passCount`) requested is reached.
 - All ports are marked bad.

At each pass, the frame is created from a different data type. If seven passes are requested, seven different data types are used in the test. If eight passes are requested, the first seven frames use unique data types, and the eighth is the same as the first. The seven data types are:

CSPAT: 0x7e, 0x7e, 0x7e, 0x7e, ...
BYTE_LFSR: 0x69, 0x01, 0x02, 0x05, ...
CHALF_SQ: 0x4a, 0x4a, 0x4a, 0x4a, ...
QUAD_NOT: 0x00, 0xff, 0x00, 0xff, ...
CQTR_SQ: 0x78, 0x78, 0x78, 0x78, ...
CRPAT: 0xbc, 0xbc, 0x23, 0x47, ...
RANDOM: 0x25, 0x7f, 0x6e, 0x9a, ...

Because this test does not include the GBIC and the fiber cable in its test path, use the results from this test in conjunction with the results from **crossPortTest** and **spinSilk** test to determine those switch components that are not functioning properly.

Operands

This command has the following operand:

passCount	Specify the number of times (or number of frames per port) to execute this test. The default value is 0xffffffffe. This operand is optional.
-----------	---

Example

To run the portLoopbackTest 100 times:

```
switch:admin> portLoopbackTest 100  
Running Port Loopback Test .... passed.
```

Errors

Below are possible error messages if failures are detected:

DIAG-INIT

DIAG-PORTDIED

DIAG-XMIT

DIAG-TIMEOUT

DIAG-ERRSTAT

DIAG-STATS

DIAG-DATA

See Also

ramTest

portRegTest

centralMemoryTest

cmiTest

sramRetentionTest

turboRamTest

camTest

statsTest

filterTest

spinSilk

portPerfShow

Display port throughput performance in bytes, kilobytes, or megabytes.

Synopsis

```
portPerfShow [interval]
```

Availability

All users

Description

Use this command to display throughput information for all ports on the switch (8 or 16 columns depending on the switch model). One output line is displayed per interval (or second if no interval is specified) until `return`, `control-C`, or `control-D` is entered.

Shown are the number of bytes received plus the number of bytes transmitted per interval. Throughput numbers are shown as either bytes, kilobytes (k), or megabytes (m).

Operands

This command has the following operand:

interval	Specify the interval, in seconds, between each sample. This operand is optional.
----------	---

Example

To display port throughput for an 8- port switch:

```
switch:admin> portPerfShow
0   1   2   3   4   5   6   7
-----
0   0   0   0   0   0   0   76m
96  0   96  0   0   96  0   76m
0   0   0   0   0   0   0   76m
```

See Also

```
portStatsShow
```


portRegTest

Bit write/read test of the ASIC SRAMs and registers.

Synopsis

```
portRegTest
```

Availability

admin

Description

Use this command to verify that SRAM and register data bits in each ASIC can be independently written and read.

To verify the data bits, write a walking 1 pattern to each location - write a pattern of 0x00000001 to register N, read, and compare to be sure that the pattern is the same. Shift the pattern one bit to the left (to 0x00000002), repeat the write, read, and compare cycle. Shift again and repeat until the last writable bit in register N is reached (0x80000000 for a 32-bit register).

For example, use the following pattern to test a 6-bit register:

1. 0x0001
2. 0x0002
3. 0x0004
4. 0x0008
5. 0x0010
6. 0x0020
7. 0x0040
8. 0x0080
9. 0x0100
10. 0x0200
11. 0x0400
12. 0x0800

13. 0x1000
14. 0x2000
15. 0x4000
16. 0x8000

Repeat the above steps until all ASIC SRAMs and registers have been tested.

Operands

None.

Example

To run bit write/read test of the ASIC SRAMs and registers:

```
switch:admin> portRegTest
Running Port Register Test .... passed.
```

Errors

Below are possible error messages if failures are detected:

DIAG-REGERR
DIAG-REGERR_UNRST
DIAG-BUS_TIMEOUT

See Also

ramTest
centralMemoryTest
cmiTest
sramRetentionTest
turboRamTest
camTest
statsTest
filterTest
portLoopbackTest
spinSilk

portRouteShow

Display routing tables for a port.

Synopsis

```
portRouteShow port
```

Availability

All users

Description

Use this command to display the port address ID and the contents of the port routing tables as described in Table 1–30:

Table 1–30: Port Routing Tables Description

Table Name	Description
External unicast routing	<p>Shows unicast frame routing to another switch element in the fabric. Output format is</p> <pre>domain_number: ports_bitmap</pre> <p>where:</p> <p><code>domain_number</code> is the switch element number that a unicast frame can reach from the <code>portnumber</code> port.</p> <p><code>ports_bitmap</code> contains all output ports, in bitmap hex format, that can forward unicast frames from port number to domain number.</p> <p>This table contains at least one entry for each active port:</p> <pre>local_switch_domain_number: 0x10000</pre> <p>This is for routing unicast frames designated to the embedded port of the local switch element.</p>

Table 1–30: Port Routing Tables Description (Continued)

Table Name	Description
Internal unicast routing	Lists all ports in the local switch that a unicast frame can reach from portnumber. Format is destination_port: output_ports_bitmap Because the destination_port is in the local switch, output_ports_bitmap usually contains one bit with a bit position number representing the destination_port number.
Multicast routing	Shows multicast frame routing to the destination multicast group. Output format is: mcast_group_number: (mcast_group_id) ports_bitmap where mcast_group_number is the multicast group number mcast_group_id is the multicast frame destination ID ports_bitmap is a hex bitmap of all output port numbers that can forward a multicast frame from the portnumber to mcast_group_id
Broadcast routing	A bitmap, containing all ports reachable by a received broadcast frame. Bit 16 of the bitmap is always set to allow the switch element to receive broadcast frames.

Operands

This command has the following operand:

port	Specify the port number to be displayed. Valid values for port number vary depending on the switch type. This operand is required.
------	---

Example

To display the port routing tables for switch port 3:

```
switch:admin> portRouteShow 3
port address ID: 0x604300
external unicast routing table:
  0: 0x10000
  1: 0x2
internal unicast routing table:
  0: 0x1
```

```
3: 0x4  
6: 0x40  
multicast routing table:  
broadcast routing table:  
0x10045
```

See Also

bcastShow
fabricShow
mcastShow
switchShow
topologyShow
uRouteShow

portShow

Display port status.

Synopsis

```
portShow port
```

Availability

All users.

Description

Use this command to display status information for a port. Information varies with the switch model and port type. The display shows

Table 1–31: portShow Fields Description

Field	Description	
portFlags	Bit map of port status flags	
portType	Port type and revision numbers	
portState	Port SNMP state:	
	Online	up and running
	Offline not online	portPhys gives details
	Testing	running diagnostics
portPhys	Faulty	
	failed diagnostic	
	Port physical state:	
	No_Card	no interface card present
	No_Module	no module (GBIC or other) present
	No_Light	module not receiving light
	No_Sync	receiving light but out of sync
	In_Sync	receiving light and in sync
	Laser_Flt	module is signaling a laser fault
Port_Flt	port marked faulty	
Diag_Flt	port failed diagnostics	
Lock_Ref	locking to the reference signal	

Table 1–31: portShow Fields Description (Continued)

Field	Description	
portScn	Last state change notification for port.	
portRegs	Address of the port hardware registers.	
portData	Address of the port driver private data.	
portId	24-bit D_ID for port.	
portWwn	Port worldwide name.	
Distance	The port's long distance level.	
Speed	The port's fixed speed level or negotiated speed level:	
	1Gbps	fixed speed of 1Gb per second
	N1Gbps	negotiated speed of 1Gb per second.
	2Gbps	fixed speed of 2Gb per second.
	N2Gbps	negotiated speed of 2Gb per second.
	Negotiating	the speed of the port is being determined.
Interrupts	Total number of interrupts.	
Unknown	Interrupts that are not counted elsewhere.	
Lli	Low-level interface (physical state, primitive seqs).	
Proc_rqrd	Frames delivered for embedded N_Port processing	
Timed_out	Frames that have timed out.	
Rx_flushed	Frames requiring translation.	
Tx_unavail	Frames returned from an unavailable transmitter.	
Free_buffer	Free buffer available interrupts.	
Overrun	Buffer overrun interrupts.	
Suspended	Transmission suspended interrupts.	
Parity_errq	Real Tx data parity error.	
2ndary_parity_err	Secondary Tx data parity error. These are not real Tx data parity errors but rather forced by the ASIC due to certain central memory errors so that the transmitter will abort the frame. This field will only be displayed when there are errors.	

Operands

This command has the following operand:

port	Specify the port number to be displayed. Valid values for port number vary depending on the switch type. This operand is required.
------	---

Example

To display the status for a specified E_Port:

```
switch:admin> portShow 1
portFlags: 0x20041      PRESENT U_PORT LED
portType:  3.1
portState: 2      Offline
portPhys:  4      No_Light
portScn:    0
portRegs:  0x80020000
portData:  0x10fa70a0
portId:    011100
portWwn:   20:01:00:60:69:00:73:71
Distance:  normal
Speed:     2Gbps

Interrupts:      0      Link_failure: 0      Frjt:      0
Unknown:         0      Loss_of_sync: 0      Fbsy:     0
Lli:             0      Loss_of_sig:  1
Proc_rqrd:      0      Protocol_err: 0
Timed_out:      0      Invalid_word: 0
Rx_flushed:     0      Invalid_crc:  0
Tx_unavail:     0      Delim_err:    0
Free_buffer:    0      Address_err:  0
Overrun:        0      Lr_in:        0
Suspended:     0      Lr_out:       0
Parity_err:     0      Ols_in:       0
                0      Ols_out:      0

2ndary_parity_err: 1
switch:admin>
```

See Also

switchShow

portStatsClear

Clear port hardware statistics

Synopsis

```
portStatsClear port_number
```

Availability

Admin

Description

This command clears port hardware statistics counters for 4-port groupings:

- 0, 1, 2, 3
- 4, 5, 6, 7
- 8, 9, 10, 11
- 12, 13, 14, 15

The first groupings shown in the list that follows, is common for all hardware. The next two sections lists statistics are dependent on the switch type.

stat_wtx	4-byte words transmitted
stat_wrx	4-byte words received
stat_ftx	Frames transmitted
stat_frx	Frames received
stat_c2_frx	Class 2 frames received
stat_c3_frx	Class 3 frames received
stat_lc_rx	Link control frames received
stat_mc_rx	Multicast frames received
stat_mc_to	Multicast timeouts
stat_mc_tx	Multicast frames transmitted
tim_rdy_pri	Time R_RDY high priority
tim_txcrd_z	Time BB_credit zero

er_enc-in	Encoding errors inside of frames
er_crc	Frames with crc errors
er_trunc	Frames shorter than minimum
er_toolong	Frames longer than maximum
er_bad_eof	Frames with bad end-of-frame
er_enc_out	Encoding error outside of frames
er_disc_c3	Class 3 frames discarded
fl_open	Number of OPNyx sent
fl_opened	Number of OPNyx received
fl_openfr	Number of OPNfr sent
fl_cls_idle	CLS sent due to loop idle
fl_cls_rx	CLS received when open
fl_bb_stall	OPN/CLS BB_Credit stalls
fl_cs_alloc	Number of CFIFOs allocated
fl_cs_opn	CFIFOs delivered when opened
fl_cs_full	Number of CFIFOs full stalls
fl_cs_na	CFIFO not available stalls
fl_trig_age	Number of age count triggers
fl_trig_lp	Number of loop not busy triggers
open	Number of ti mes the FL_Port entered OPEN state
transfer	Number of ti mes the FL_Port entered TRANSFER state
opened	Number of ti mes the FL_Port entered OPENED state
starve_stop	Loop tenancies stopped due to starvation
fl_tenancy	Number of times any FL_Port had the loop tenancy
nl_tenancy	Number of times any NL_Port had the loop tenancy
frame_nozone	Frames rejected due to zone protection

Operands

The following operand is required:

port_number	The port number to be displayed: 0—7 or 0—15.
-------------	---

Example

The following example clears stats on Port 0, 1, 2, and 3:

```
sw5:admin> portStatsClear 0
```

See Also

`portStatsShow`

portStatsShow

Display port hardware statistics.

Synopsis

```
portStatsShow port
```

Availability

All users

Description

Use this command to display port hardware statistics counters. Table 1–32 lists the counters common to all hardware.

Table 1–32: Port Statistics Counters

Counter	Description
stat_wtx	4-byte words transmitted.
stat_wrx	4-byte words received.
stat_ftx	Frames transmitted.
stat_frx	Frames received.
stat_c2_frx	Class 2 frames received.
stat_c3_frx	Class 3 frames received.
stat_lc_rx	Link control frames received.
stat_mc_rx	Multicast frames received.
stat_mc_to	Multicast timeouts.
stat_mc_tx	Multicast frames transmitted.
tim_rdy_pri	Time R_RDY high priority.
tim_txcrd_z	Time BB_credit zero.
er_enc_in	Encoding errors inside frames.
er_crc	Frames with CRC errors.
er_trunc	Frames shorter than minimum.
er_toolong	Frames longer than maximum.
er_bad_eof	Frames with bad end-of-frame.

Table 1–32: Port Statistics Counters (Continued)

Counter	Description
er_enc_out	Encoding error outside frames.
er_disc_c3	Class 3 frames discarded.
fl_open	Number of OPNyx sent.
fl_opened	Number of OPNyx received.
fl_openfr	Number of OPNfr sent.
fl_cls_idle	CLS sent due to loop idle.
fl_cls_rx	CLS received when OPEN.
fl_bb_stall	OPN/CLS BB_Credit stalls.
fl_cf_alloc	Number of CFIFOs allocated.
fl_cf_opn	CFIFOs delivered when OPENED.
fl_cf_full	Number of CFIFOs full stalls.
fl_cf_na	CFIFO not available stalls.
fl_trig_age	Number of age count triggers.
fl_trig_lp	Number of loop not busy triggers.
open	Number of times the FL_Port entered OPEN state.
transfer	Number of times the FL_Port entered TRANSFER state.
opened	Number of times the FL_Port entered OPENED state.
starve_stop	Loop tenancies stopped due to starvation.
fl_tenancy	Number of times FL_Port had loop tenancy.
nl_tenancy	Number of times NL_Port had loop tenancy.
frame_nozone	Frames rejected due to zone protection.

Operands

This command has the following operand:

port	Specify the port number to be displayed. Valid values for port number vary depending on the switch type. This operand is required.
------	---

Example

To display a port with only the basic set of statistics:

```
switch:admin> portStatsShow 3
stat_wtx      1181994      4-byte words transmitted
stat_wrx      1188458      4-byte words received
stat_ftx      95830       Frames transmitted
stat_frx      15564       Frames received
stat_c2_frx   0           Class 2 frames received
stat_c3_frx   93          Class 3 frames received
stat_lc_rx    7735        Link control frames received
stat_mc_rx    0           Multicast frames received
stat_mc_to    0           Multicast timeouts
stat_mc_tx    0           Multicast frames transmitted
tim_rdy_pri   477         Time R_RDY high priority
tim_txcrd_z   0           Time BB_credit zero
er_enc_in     0           Encoding errors inside of frames
er_crc        0           Frames with CRC errors
er_trunc      0           Frames shorter than minimum
er_toolong    0           Frames longer than maximum
er_bad_eof    0           Frames with bad end-of-frame
er_enc_out    3           Encoding error outside of frames
er_disc_c3    0           Class 3 frames discarded
```

See Also

```
portErrShow
portShow
```

psShow

Display power supply status.

Synopsis

```
psShow
```

Availability

All users

Description

Use this command to display the switch power supply status.

The display format varies with switch model and number of power supplies present.

The status of each supply is shown as:

- OK—Power supply present and functioning correctly
- absent—Power supply not present.
- faulty—Power supply present but faulty (no power cable, power switch turned off, fuse blown, or other internal error).

After the status line, a power supply identification line may be shown. If present, this line contains manufacture date, part numbers, serial numbers, and other identification information.

Operands

None.

Example

To view the status of the power supply for the current switch:

```
switch:admin> psShow
Power Supply 1 is OK
9835,DH000000208,60-0000734-01, A,00001, E108302A,01, 803350
Power Supply 2 is OK
9839,DH000000253,60-0000734-01, A,00001, E108302A,01, 803522
```

See Also

```
fanShow
tempShow
```

qloopAdd

Add a member to a QuickLoop

Synopsis

```
qloopAdd "qloopname", "member;member"
```

Description

Use this command to add one or more members to an existing QuickLoop.

When a configuration is enabled, all QuickLoops defined in the configuration must resolve to one or two switch worldwide names.

Zone alias names entered as members of this QuickLoop must be defined with WWNs. Zone alias names that are defined by domain and port number, or AL_PA are not accepted as members of the QuickLoop.

Operands

the following operands are required:

"qloopname"	Specify the name of QuickLoop, in quotation marks.
"member"	Specify a list of QuickLoop members, in quotation marks, separated by semicolons (;). Include one or more of the following: <ul style="list-style-type: none">• Worldwide names• Zone alias names

Example

To add an alias for a second worldwide name to "qlp1:"

```
switch:admin> qloopAdd "qlp1", "wnw2"
```

See Also

```
qloopCreate  
qloopDelete  
qloopRemove  
qloopShow
```


qloopCreate

Create a QuickLoop

Synopsis

```
qloopCreate "qloopname", "member;member"
```

Availability

admin

Description

A QuickLoop name must begin with a letter and be followed by any number of letters, digits, and underscore characters. Names are case sensitive, for example “Qloop_1” indicates a different QuickLoop than “qloop_1”. Blank spaces are ignored.

The QuickLoop member list must have one or two members; an empty list is not allowed.

When a configuration is enabled, all QuickLoops defined in the configuration must resolve to a maximum of two switch worldwide names.

Zone alias names entered as members of this QuickLoop must be defined with WWNs. Zone alias names that are defined by domain and port number, or AL_PA are not accepted as members of the QuickLoop.

Operands

The following operands are required:

“qloopname”	Specify the name of QuickLoop to be created, in quotation marks. The qloopname cannot be used for another zone object
“member”	Specify a list of members to be added to QuickLoop, in quotation marks, separated by semicolons (;). Include one or more of the following: <ul style="list-style-type: none"> Worldwide names Zone alias names

Example

To create two Quickloops, one single switch and one dual switch, enter the following command string:

```
switch:admin> qloopCreate "qlp1", "10:00:00:60:69:00:60:11"  
switch:admin> qloopCreate "qlp2", "wwn2; wwn3"
```

See Also

qloopAdd
qloopDelete
qloopRemove
qloopShow

qloopDelete

Delete a QuickLoop.

Synopsis

```
qloopDelete "qloopName"
```

Availability

admin

Description

Use this command to delete a QuickLoop.

When a configuration is enabled, all QuickLoops defined in the configuration must resolve to a maximum of two switch worldwide names.

Operands

The following operands is required:

"qloop name"	Specify the name of QuickLoop, in quotation marks.
--------------	--

Example

To delete QuickLoop "qloop2:"

```
switch:admin> qloopDelete "qloop2"
```

See Also

```
qloopAdd  
qloopCreate  
qloopRemove  
qloopShow
```

qloopRemove

Remove a member from a QuickLoop.

Synopsis

```
qloopRemove "qloopName", "member;member"
```

Availability

admin

Description

Use this command to remove one or more members from a QuickLoop.

The member list is identified through an exact string match; therefore, when removing multiple members, order is important.

For example, if a QuickLoop contains “wwn2; wwn3; wwn4”, removing “wwn3; wwn4” succeeds, but removing “wwn4; wwn3” fails.

If all members are removed, the QuickLoop is deleted.

When a configuration is enabled, all QuickLoops defined in the configuration must resolve to one or two switch worldwide names.

Operands

The following operands are required:

“qloopname”	Specify the name of QuickLoop, in quotation marks
“member”	Specify the list of QuickLoop members to be removed, in quotation marks, separated by semi-colons. Include one or more of the following: <ul style="list-style-type: none">Worldwide NamesZone alias names

Example

```
switch:admin> qloopRemove "qlp1", "wwn2"
```

See Also

qloopAdd, qloopCreate, qloopDelete, qloopShow

qloopShow

Display QuickLoop information.

Synopsis

```
qloopShow [pattern]
```

Availability

All Users

Description

Use this command to display QuickLoop configuration information.

If no parameters are specified, all zone configuration information (defined and enabled) is displayed. See `cfgShow` for a description of this display.

If a parameter is specified, it is used as a pattern to match QuickLoop names; those that match in the defined configuration are displayed.

Operands

The following operand is optional:

pattern	<p>Specify a POSIX style expression used to match QuickLoop names. Patterns may contain the following special characters:</p> <ul style="list-style-type: none"> • Question mark “?” that matches any single character • Asterisk “*” that matches any string of characters • Ranges “[0-9a-f]” that match any character within the range
---------	--

Example

To display all QuickLoops beginning with the letter “q”:

```
switch:admin> qloopShow "q*"
qloop: qlp1          10:00:00:60:69:00:60:11
                   10:00:00:60:69:00:30:02
qloop: qlp2          10:00:00:60:69:00:60:13
```

See Also

`qloopAdd`, `qloopCreate`, `qloopDelete`, `qloopRemove`

qlDisable

Disables QuickLoop mode.

Synopsis

```
qldisable
```

Availability

admin

Description

Use this command to disable QuickLoop mode on a switch. All QuickLoop ports are re-initialized to fabric mode, allowing public devices to perform fabric login.

If QuickLoop is being run on dual switches, this command disables the local switch and causes the partner switch to re-initialize to a single-switch QuickLoop, containing only the devices connected to the partner switch.

NOTE: If Zoning is in use, the `qlDisable`, `qlEnable`, and `qlPartner` commands are not in effect. In this case, the `qlPortDisable` command can be used to disable individual ports.

Operands

None.

Example

The following entry disables QuickLoop mode:

```
switch:admin> qlDisable
```

See Also

```
qlEnable  
qlPortDisable  
qlShow
```

qlEnable

Enables QuickLoop mode.

Synopsis

```
qlenable
```

Availability

admin

Description

Use this command to enable QuickLoop mode on a switch. All devices connected to QuickLoop ports are re-initialized to form a single loop.

If a partner switch is configured, qlEnable causes re-initialization of the partner if it is in QuickLoop mode. The devices on the two switches are then combined to form a single loop (using a single AL_PA space).

QuickLoop combines arbitrated loop and fabric topologies. It consists of multiple private arbitrated loops (looplets) interconnected by a fabric, with the existence of the fabric and the physical locations of the devices transparent. All NL_ports share a single AL_PA space, and operate in accordance with FC-AL.

QuickLoop initialization includes the following two steps:

Pass 1: Sequential looplelet initialization. Allows each device in a looplelet to obtain a unique AL_PA.

Pass 2: Full QuickLoop initialization. Brings the QuickLoop up to operation.

NOTE: If the qlPortDisable command has been entered for a specific port, the qlEnable command cannot re-enable that port, because it has been removed from QuickLoop management. The port must be specifically re-enabled using the qlPortEnable command.

If Zoning is in use, the qlDisable, qlEnable, and qlPartner commands are not in effect. In this case, the qlPortEnable command can be used to enable individual ports.

Operands

None.

Example

The following entry enables QuickLoop mode:

```
switch:admin> qlEnable
```

See Also

```
qlDisable  
qlPortEnable  
qlShow
```


qlpartner

Sets QuickLoop partner or displays information about partner.

Synopsis

```
qlPartner [0|wwn]
```

Availability

admin

Description

Use this command to set the QuickLoop to single/dual switch mode or to display the QuickLoop scope setting.

If no argument is specified, this command displays the current QuickLoop mode, which can be single or dual switch. If in dual switch mode, the partner's WWN also displays.

If 0 is used as argument, this command sets the QuickLoop to run in single switch mode, and restarts the switch if this causes a change in mode.

If a non-zero and valid WWN (a WWN that is part of the fabric) for a switch is specified, that switch becomes the QuickLoop partner. The switch is then restarted to run in dual switch mode.

The partner setting is updated in flash memory.

NOTE: If Zoning is in use, the `qlDisable`, `qlEnable`, and `qlPartner` commands are not in effect. In this case, dual-switch QuickLoops can be managed using the telnet commands available through Zoning.

Operand

This command has the following operand:

[0 wwn]	Specify 0 to set the QuickLoop to run on single switch. Specify a WWN to set the QuickLoop to run on dual switches. This operand is optional.
-----------	---

NOTE: If no operand is specified, the current value is displayed.

Example

The following entry sets another switch as a QuickLoop partner switch:

```
switch:admin> qlPartner "10:00:00:60:69:10:10:ec"
```

See Also

```
configShow  
qlShow
```

qlPortDisable

Disables a QuickLoop port.

Synopsis

```
qlPortDisable port
```

Availability

admin

Description

Use this command to change the specified port from QuickLoop mode to fabric mode. This excludes any devices connected to the port from the QuickLoop, and causes the switch to re-initialize the QuickLoop. If the switch that the port belongs to has a partner that is running in QuickLoop mode, both switches re-initialize the QuickLoop to form a loop that excludes any devices connected to the specified port.

If the qlPortDisable command is entered for a port, the qlEnable command has no effect on that port, because it has been removed from QuickLoop management. The port must be re-enabled using the qlPortEnable command.

The specified port must be in QuickLoop mode for this command to have effect.

Operands

This command has the following operand:

port	Specify the port number to be modified from QuickLoop mode to fabric mode. Valid values for port number vary depending on the switch type. This operand is required.
------	--

Example

The following entry changes port 4 from QuickLoop mode to fabric mode:

```
switch:admin> qlPortEnable 4
```

See Also

```
qlDisable
qlPortEnable
qlShow
```

qlPortEnable

Enables a QuickLoop port.

Synopsis

```
qlPortEnable port
```

Availability

admin

Description

Use this command to change the specified port from fabric mode to QuickLoop mode. This includes any devices connected to this port in the QuickLoop, and causes the switch to re-initialize the QuickLoop.

If the switch that the port belongs to has a partner, and the partner is running in QuickLoop mode, both switches re-initialize their QuickLoops to form a new loop that includes the devices connected to this port.

The specified port must be in fabric mode for this command to have effect.

Operands

This command has the following operand:

port	Specify the port number to be modified from fabric mode to QuickLoop mode. Valid values for port number vary depending on the switch type. This operand is required.
------	--

Example

The following entry changes port 4 from fabric mode to QuickLoop mode:

```
switch:admin> qlPortEnable 4
```

See Also

```
qlEnable  
qlPortDisable  
qlShow
```

qlPortShowAll

Displays QuickLoop port information.

Synopsis

```
qlPortShowAll
```

Availability

All users.

Description

Use this command to display the QuickLoop port information described in Table 1–33.

Table 1–33: Quickloop Port Information

Mode	Port Information	Description
QuickLoop	Enabled	QuickLoop mode enabled
	Disabled	QuickLoop mode disabled
Looplet State	Online	Completed loop initialization
	Lipped	NL_port lipped
	Lipping	FL_port lipped
	Initializing	Looplet initialization in progress
	Bypassed	Looplet being bypassed
	Error	Error found in this looplet
	Offline	Looplet offline
	Fabric	OLD_PORT state
	Not in QuickLoop mode	Port is not in QuickLoop mode

Operands

None.

Example

The following entry displays QuickLoop port information:

```
switch:admin> qlPortShowAll
PortNum QuickLoop Mode Port State
0 Disabled -----
1 Disabled ----- E PORT
2 Disabled ----- E PORT
3 Disabled -----
4 Disabled -----
5 Disabled -----
6 Disabled -----
7 Disabled -----
switch:admin>
```

See Also

portStatShow
qlShow

qlShow

Displays QuickLoop information

Synopsis

```
qlshow
```

Availability

All users.

Description

Use this command to display the QuickLoop information as described in Table 1–34.

Table 1–34: qlShow QuickLoop Information

Port Information	Description
Self:	Worldwide name and domain ID of this switch.
Peer:	Worldwide name and domain ID of partner switch. Peer is displayed only if the switch has a partner configured.
State:	The state of the QuickLoop <ul style="list-style-type: none"> • Master—Master switch in dual switch QuickLoop • Non-master—Non-master in dual switch QuickLoop • Local Lip—Looplet on local switch lipped • Remote Lip—Looplet on partner switch lipped • Online—Switch is online • Offline—Switch is offline
Scope:	Dual or single (indicating dual or single switch QuickLoop)
AL_PA bitmap:	The AL_PA bitmaps of devices on the QuickLoop
Remote AL_PAs	AL_PAs of devices on partner switch. AL_PAs are listed per port base.
Local AL_PAs	AL_PAs of devices connected to this switch. AL_PAs are listed per port base.
Local looplet state	Indicates state of local looplet
Member:	Current QuickLoop member ports
Online:	Current online ports in the QuickLoop

Table 1–34: qlShow QuickLoop Information

Port Information	Description
Looplet:	<p>The state of each looplet. The possible states are:</p> <ul style="list-style-type: none"> • Online—Loop initialization completed. • Lipped—NL_Port initiated LIPs. • Lipping—FL_Port initiated LIPs. • Initializing—Looplet initialization in progress. • Bypassed—Looplet being bypassed. Error: Error found in this looplet. • Offline—Looplet offline.

Operands

None.

Example

The following entry displays QuickLoop information:

```

switch:admin> qlShow
Self:    10:00:00:60:69:20:26:2a domain 1
State:   Online
Scope:   single
AL_PA bitmap:  00000000 00000000 00000000 00000000
Local AL_PAs
                (not available)

Local looplet states
Member:    0 1 2 3 4 5 6 7
Online:    - - - - - - - -

Looplet 0:  offline
Looplet 1:  offline
Looplet 2:  offline
Looplet 3:  offline
Looplet 4:  offline
Looplet 5:  offline
Looplet 6:  offline
Looplet 7:  offline
switch:admin>

```

See Also

qlStatsShow

qlStatsShow

Displays QuickLoop statistics.

Synopsis

qlStatShow

Availability

All users.

Description

Use this command to display the following QuickLoop switch statistics:

- Last QL init time: (Time of last QuickLoop initialization)
- QL init attempted: (Number of QuickLoop initialization attempts)
- QL init succeeded: (Number of times QuickLoop is initialized)
- Single switch QL: (Number of times as single switch QuickLoop. These numbers are only valid when two switches are configured to run as peers in QuickLoop.)
- Dual switch QL: (Number of times as dual switch QuickLoop. These numbers are only valid when two switches are configured to run as peers in QuickLoop.)
- QL enabled: (Number of times QuickLoop is enabled)
- QL disabled: (Number of times QuickLoop is disabled)
- Port caused QL init: (Port that caused last QuickLoop initialization)

Operands

none.

Example

The following entry displays QuickLoop switch statistics:

```
switch:admin> qlStatsShow
Quick loop statistics for switch 1
Last QL init time           : Jan  1 00:00:00.000
QL init attempted          : 0
QL init succeeded           : 0
Single switch QL           : 0
Dual switch QL             : 0
QL enabled                  : 0
```

```
QL disabled                : 0
Port started last init    : 0 on switch 0
switch:admin>
```

See Also

```
portStatShow
qlShow
```

quietMode

Toggles shell quiet mode on and off.

Synopsis

```
quietMode [0|1]
```

Availability

All users (display)

admin (set/clear)

Description

Use this command to change the output displayed on the switch console (serial port or telnet session).

By default, quiet mode is off and all switch tasks can send output to the console, including output caused by asynchronous events, such as the fabric reconfiguring, or devices logging in.

When quiet mode is on, only output produced by shell commands is shown; asynchronous output produced by other tasks is suppressed.

Turn quiet mode on when driving a telnet session using a script that does not expect asynchronous output.

Operands

This command has the following operand:

0 or 1	Specify 0 to disable quiet mode where all tasks are printed in the console. Specify 1 to set quiet mode where only shell commands are displayed in the console. This operand is optional.
--------	---

NOTE: If no operand is specified the current value is displayed.

Example

To display the current mode, then reset to ON:

```
switch:admin> quietMode
Quiet Mode is OFF
switch:admin> quietMode 1
Committing configuration...done.
Quiet Mode is now ON
```

See Also

ramTest

ramTest

Bit write and read test of SDRAMs in the switch.

Synopsis

```
ramTest [patternSize]
```

Availability

admin

Description

Use this command to verify the address and data bus of the SDRAMs that serve as CPU memory in the switch.

The test consists of two subtests:

1. The **address subtest** verifies that SDRAM locations can be uniquely accessed.

The method used is to write a unique pattern to each location in the SDRAMs. When all are written, the data is read back from each location and compared against the data previously written. A failure in the test implies that the address path between the CPU and the SDRAMs are faulty resulting in failures to program unique values.

Following is the ramp pattern used in the test:

```
0x57626f42, 0x57626f43, 0x57626f44, 0x57626f45, ...
```

2. The data subtest verifies that each cell in the SDRAMs can be independently written and read, and that there is no short, stuck-at-1, or stuck-at-0 faults between data cells.

The method used is to write pattern D to location N, write the complementary pattern D to location N+1, and then read and compare location N to location N+1. Bump the location to test: N=N+1. Repeat the double write and read until all locations are tested with the following 9 patterns:

- 0x55555555
- 0x69696969
- 0x3c3c3c3c
- 0x1e1e1e1e

- 0x87878787
- 0x14284281
- 0x137ffec8
- 0x0f0f0f0f
- 0x00000000

Since the test requires the operating system to operate which is loaded in the same memory, it does not and cannot test all 16 MB of the memory. Instead it tests the largest portion as given by the OS, which is typically about 13 MB.

Operands

This command has the following operand:

patternSize	Specify a number from 0 to 9 to determine the number of patterns used for the data subtest. The default value is 0 which runs all nine patterns. A value from 1 to 9 will execute the specified number of patterns. Any value over 9 is truncated to 9. Only the data subtest is configurable. The address subtest is always executed. This operand is optional.
-------------	---

Example

```
To run the RAM test on a switch:  
switch:admin> ramTest  
Running System DRAM Test ..... passed.
```

Errors

Listed below are possible error messages if failures are detected:

DIAG-MEMORY

DIAG-MEMSZ

DIAG-MEMNULL

See Also

```
portRegTest, centralMemoryTest, cmiTest,  
sramRetentionTest, turboRamTest, camTest, statsTest,  
filterTest, portLoopbackTest, spinSilk
```

reboot

Reboot the switch.

Synopsis

```
reboot
```

Availability

admin

Description

Use this command to reboot the switch. The reboot takes effect immediately as the switch resets, then executes the normal power-on booting sequence.

While the switch is rebooting, the telnet session is closed and all Fibre Channel ports are inactive. If the switch was part of a fabric, the remaining switches reconfigure.

Operands

None.

Example

To reboot the switch:

```
switch:admin> reboot
Rebooting...
```

See Also

fastboot

routeHelp

Display routing help commands.

Synopsis

```
routeHelp
```

Availability

admin

Description

Use this command to display routing help commands.

Operands

None.

Example

To view a list of routing related commands:

```
switch:admin> routeHelp
bcastShow          Print broadcast tree information
dlsReset           Turn off Dynamic Load Sharing
dlsSet             Turn on Dynamic Load Sharing
dlsShow            Print state of Dynamic Load Sharing
fspfShow           Print FSPF global information
interfaceShow      Print FSPF interface information
iodReset           Turn off In-Order Delivery
iodSet            Turn on In-Order Delivery
iodShow            Print state of In-Order Delivery
linkCost           Set or print the FSPF cost of a link
LSDbShow           Print Link State Database entry
mcastShow          Print multicast tree information
nbrStateShow       Print neighbor's summary information
nbrStatsClear      Reset FSPF neighbor's counters
topologyShow       Print paths to domain(s)
uRouteConfig       Configure static unicast route
uRouteRemove       Remove static unicast route
uRouteShow         Print port's unicast routing info
```

See Also

```
bcastShow
interfaceShow
uRouteShow
```


setGbicMode

Enable or disable GBIC mode.

Synopsis

```
setGbicMode [0|1]
```

Availability

admin

Description

Use this command to enable or disable the GBIC mode. If the mode operand is 1, GBIC mode is enabled; if the mode operand is 0, GBIC mode is disabled. The mode is saved in flash memory and stays in the GBIC remains in that mode until the next execution of **setGbicMode**.

The mode becomes active as soon as this command is executed. It does not require a reboot to take effect.

The GBIC mode, when enabled, forces **crossPortTest** and **spinSilk** to limit testing to ports with GBICs present. Consequently, testing is limited to those ports with a suspected problem.

Operands

This command has the following operand:

0 or 1	Specify 1 to enable GBIC mode or 0 to disable GBIC mode. The default value (if no operand specified) is 0. This operand is optional.
--------	---

Example

To enable or disable GBIC mode:

```
switch:admin> setGbicMode 1
Committing configuration...done.
GBIC mode is now ON.

switch:admin> setGbicMode
Committing configuration...done.
GBIC mode is now OFF.
```

See Also

crossPortTest
spinSilk

setSplbMode

Enable or disable 2 port loop-back.

Synopsis

```
setSplbMode [0|1]
```

Availability

admin

Description

Use this command to enable or disable SPLB mode. The mode is saved in flash memory and stays in that mode until the next execution of setSplbMode. The mode becomes active as soon as this command is executed. It does not require a reboot to take effect.

The SPLB mode, when enabled, forces the `spinSilk` command to disable two port loopback for

M->M connected ports. This may be useful to isolate internal switch problems from GBIC problems since the internal paths are used much less with SPLB mode enabled.

The SPLB mode, when disabled, forces the `spinSilk` command to circulate frames between pairs of M->M connected ports as follows:

```
P1 TX >>> P1 RX -> P2 TX >>> P2 RX -> P1 TX
```

where:

>>> is a cable or internal loop-back

-> is a routing table entry

The connections between pairs of M->M ports will be chosen to exercise the connections between as many chips (or bloom quadrants) as possible subject to the setting of `allow_intra_chip` and the availability of pairs of M->M ports.

Any ports that are cross-cabled will be routed to each other in the normal manner regardless of the setting of SPLB mode:

```
P1 TX >>> P2 RX -> P1 TX
P2 TX >>> P1 RX -> P2 TX
```

Operands

This command has the following operand:

0 or 1	Specify 1 to enable SPLB mode or 0 to disable SPLB mode. The default (if no operand specified) is SPLB disabled. This operand is optional.
--------	---

Example

To enable or disable a 2 port loop-back:

```
switch:admin> setSplbMode 1  
Committing configuration...done.  
SPLB mode is now ON.
```

```
switch:admin> setSplbMode  
Committing configuration...done.  
SPLB mode is now OFF.
```

See Also

setGbicMode
spinSilk

sgroupDelete

Delete a switch group.

Synopsis

```
sgroupDelete sgName[, force]
```

Availability

admin

Description

This command deletes a switch group. If the parameter is not specified, the command will become an interactive session and the necessary parameters will be prompted. This command makes the same change to all switches in the specified group. It executes on every switch in the group if and only if each switch in the group can perform the action.

NOTE: This command is for the Compaq StorageWorks Fibre Channel IS/32 or IS/64 Switches only.

Operands

This command has the following operands:

"sgName"	Specify a character string in quotation marks containing the switch group name to be deleted (for example "MyGroup"). Entering a wrong name will cause this command to terminate without modifying any switch groups. The sgroup name is case sensitive. This operand is required.
"force"	Specify the force parameter to delete the group even if one or more members of the group failed to execute the command. The entered string must be " force ". This operand is optional.

Example

To interactively delete switch group called "MyGroup":

```
switch:admin> sgroupDelete
Please Enter Group Name: [ ] MyGroup
About to DELETE the group with Group name "MyGroup"
ARE YOU SURE (yes, y, no, n): [no] y
Committing configuration...done.
```

This example shows what happens when an invalid group is entered:

```
switch:admin> sgroupDelete "MyPrevGroup"
Group Name "MyPrevGroup" does not exist.
```

See Also

- sgroupRename
- sgroupSet
- sgroupShow
- sgroupSupportShow
- sgroupSwReplace

sgroupRename

Rename a switch group.

Synopsis

```
sgroupRename ["oldsgName", "newsgName"]
```

Availability

admin

Description

This command renames a specified sgroup name to the given new name. The member list for the renamed group is not modified. If any parameter is not specified, the session will become an interactive session for which all the parameters will be prompted.

NOTE: This command is for the Compaq StorageWorks Fibre Channel IS/32 or IS/64 Switches only.

Operands

This command has the following operands:

"oldsgName"	Specify a character string in quotation marks containing the sgroup name to be replaced, for example "MyGroup". This operand is optional.
"newsgName"	Specify a character string in quotation marks containing the new sgroup name, for example "MyNewGroup". This operand is optional.

Example

To rename a switch group:

```
switch:admin> sgroupShow
Group Type      Group Name      Member WWN
=====
S32_6_1         MyGroup         10:00:00:60:69:00:00:20
                10:00:00:60:69:20:15:81
                10:00:00:60:69:10:02:18
                10:00:00:60:69:20:15:71
                10:00:00:60:69:00:30:05
                10:00:00:60:69:00:60:11

switch:admin> sgroupRename "MyGroup", "MyNewGroup"
Committing configuration...done.
switch:admin> sgroupShow
Group Type      Group Name      Member WWN
=====
S32_6_1         MyNewGroup     10:00:00:60:69:00:00:20
                10:00:00:60:69:20:15:81
                10:00:00:60:69:10:02:18
                10:00:00:60:69:20:15:71
                10:00:00:60:69:00:30:05
                10:00:00:60:69:00:60:11
```

See Also

```
sgroupDelete
sgroupSet
sgroupShow
sgroupSupportShow
sgroupSwReplace
```


sgroupSet

Create a switch group.

Synopsis

```
sgroupSet ["sgType", "sgName", "sgMemberList"]
```

Availability

admin

Description

This command creates a switch group. If any parameter is not specified, the session will become an interactive session for which all the parameters will be prompted.

NOTE: This command is for the Compaq StorageWorks Fibre Channel IS/32 or IS/64 Switches only.

Operands

This command has the following operands:

"sgType"	Specify a character string in quotation marks containing the sgroup type, for example "S32_6_1". The given type MUST be a valid type. If the type is not valid, this command will be rejected. Valid types are displayed when this command is run interactively. This operand is optional.
"sgName"	Specify a character string in quotation marks containing the sgroup name, for example "FirstGroup". The given name must have from 1 to 32 characters, comprised of letters, digits or underscores. Spaces are not allowed. This operand is optional.
"sgMemberList"	Specify a character string in quotation marks containing the sgroup members, for example "1,2,3,4,5,6". This list can be either the WWN format or Domain ID format.

sgMemberList (continued)	<p>If given in Domain ID format, the list will be validated first to ensure that all the specified switch Domains are valid. If given in WWN format, a Warning message may appear if any WWN given is not in the current fabric.</p> <p>WWN format: "aa:bb:cc:dd:ee:ff:xx:yy,aa:bb:cc:dd:ee:ff:xx:zz, aa:bb:cc:dd:ee:ff:xx:ww,....,aa:bb:cc:dd:ee:ff:xx:qq"</p> <p>Domain ID format: "domain_ID1, domain_ID2, domain_IDx"</p> <p>This operand is optional.</p>
-----------------------------	---

Example

To set a group called "My Group" of type "S32_6_1" using Domain IDs 1 through 6:

```
switch:admin> sgroupSet "S32_6_1", "MyGroup", "1,2,3,4,5,6"
Committing configuration...done.
```

To create an sgroup using the interactive form of the sgroupSet command:

```
switch:admin> sgroupSet
Here are the valid sgroup types:
  S32_6_1
Please Enter Group Type: [S32_6_1] S32_6_1
Please Enter Group Name: [ ] MyGroup
Enter member list by domain#? (yes, y, no, n): [yes] n
For Group Member #1
enter its WWN (in hex): [00:00:00:00:00:00:00:00]
10:00:00:60:69:00:00:20
For Group Member #2
enter its WWN (in hex): [00:00:00:00:00:00:00:00]
10:00:00:60:69:20:15:81
For Group Member #3
enter its WWN (in hex): [00:00:00:00:00:00:00:00]
10:00:00:60:69:10:02:18
For Group Member #4
enter its WWN (in hex): [00:00:00:00:00:00:00:00]
10:00:00:60:69:20:15:71
For Group Member #5
enter its WWN (in hex): [00:00:00:00:00:00:00:00]
10:00:00:60:69:00:30:05
For Group Member #6
enter its WWN (in hex): [00:00:00:00:00:00:00:00]
10:00:00:60:69:00:60:11
Committing configuration...done.
```

See Also

sgroupDelete
sgroupRename
sgroupShow
sgroupSupportShow
sgroupSwReplace

sgroupShow

Display switch group configuration information.

Synopsis

```
sgroupShow ["sgType" | "sgName"]
```

Availability

all users

Description

This command displays switch group information. If no parameter is specified, ALL sgroup definitions will be displayed. If a parameter is specified, ALL sgroups with *sgType* or *sgName* that contain the given parameter string will be displayed.

NOTE: This command is for the Compaq StorageWorks Fibre Channel IS/32 or IS/64 Switches only.

Operands

This command has the following operands:

"sgType"	Specify a character string in quotation marks containing the sgroup type to be displayed, for example "S32_6_1". This operand is optional.
"sgName"	Specify a character string in quotation marks containing the sgroup name to be displayed, for example "Group". If no parameter is specified, ALL defined sgroups will be displayed. This operand is optional.

Example

To display all switch group configurations:

```
switch:admin> sgroupShow
Group Type      Group Name      Member WWN
=====
S32_6_1         MyNewGroupName  10:00:00:60:69:00:00:20
                10:00:00:60:69:10:62:ee
                10:00:00:60:69:10:61:0e
                10:00:00:60:69:10:60:f9
```

```
10:00:00:60:69:10:62:44
10:00:00:60:69:10:60:a0
```

To display ALL switch groups that contain the key word “Group”:

```
switch:admin> sgroupShow "Group"
Group Type      Group Name      Member WWN
=====
S32_6_1         MyNewGroupName  10:00:00:60:69:00:00:20
                10:00:00:60:69:20:15:81
                10:00:00:60:69:10:02:18
                10:00:00:60:69:20:15:71
                10:00:00:60:69:00:30:05
                10:00:00:60:69:00:60:11
```

NOTE: Since *MyNewGroupName* contains the key word “Group”, it is displayed.

See Also

```
sgroupDelete
sgroupRename
sgroupSet
sgroupSupportShow
sgroupSwReplace
```

sgroupSupportShow

Displays switch information for all switches within the specified group.

Synopsis

```
sgroupSupportShow "sgroupName" [, "commandName"]
```

Availability

All users

Description

This command can display a range of debugging information for all the switches in a switch group. If no *commandName* is specified or **all** is specified in place of a command name, all the supported commands are displayed for the all the switches within a switch group. If a single command is specified, only the information for that command is displayed.

NOTE: This command is for the Compaq StorageWorks Fibre Channel IS/32 or IS/64 Switches only.

Operands

This command has the following operands:

"sgroupName"	Specify the name of the switch group enclosed in quotation marks. This operand is required.
commandName	Specify the name of the command to be displayed for the specified switch group. If no command is specified, or all is specified, all the supported commands are executed against all the switches within a switch group. Table 1–35 contains the names of commands that are supported in the order they are executed. These command names are not case sensitive. The command must be enclosed in quotation marks. This operand is optional.

Table 1–35: Supported Commands Using the commandName Operand

Oder of Execution	Command Name
1	version
2	uptime
3	tempShow
4	psShow
5	licenseShow
6	diagShow
7	errDump
8	switchShow
9	portFlagsShow
10	portErrShow
11	mqShow
12	portSemShow
13	portShow
14	portRegShow
15	portRouteShow
16	fabricShow
17	topologyShow
18	qlShow
19	nsShow
20	nsAllShow
21	cfgShow
22	configShow
23	faultShow
24	traceShow
25	portLogDump

Example

To display the temperature in all the switch components of a Compaq StorageWorks Fibre Channel IS/32 or/64 Switch:

```
switch:admin>sgroupsupportshow "starbase", "tempshow"
Group Type          Group Name          Member WWN
=====
S32_6_1             starbase            10:00:00:60:69:10:57:91
                   10:00:00:60:69:10:56:79
                   10:00:00:60:69:10:58:89
                   10:00:00:60:69:10:57:dd
                   10:00:00:60:69:10:58:63
                   10:00:00:60:69:10:58:3f
```

Please wait for remote data!

```
sw5:admin>
=====
Information from Local Domain 7
=====
 27  30  31  33  32 Centigrade
 80  86  87  91  89 Fahrenheit
=====
Information from Domain 8
=====
 28  29  32  33  33 Centigrade
 82  84  89  91  91 Fahrenheit
=====
Information from Domain 9
=====
 27  29  33  34  32 Centigrade
 80  84  91  93  89 Fahrenheit
=====
Information from Domain 10
=====
 26  30  31  34  31 Centigrade
 78  86  87  93  87 Fahrenheit
=====
Information from Domain 11
=====
 28  29  31  33  32 Centigrade
 82  84  87  91  89 Fahrenheit
=====
Information from Domain 12
=====
 28  31  34  35  33 Centigrade
 82  87  93  95  91 Fahrenheit
=====DONE=====
```

See Also

sgroupDelete, sgroupRename, sgroupSet, sgroupShow, sgroupSwReplace

sgroupSwReplace

Replace a member of a switch group.

Synopsis

```
sgroupSwReplace ["sgName", "oldWwn", "newWwn"]
```

Availability

admin

Description

This command replaces the member with the WWN of `oldWwn` in group `sgName` with the member with `newWwn`. The order of members within the member list will not be changed by this operation.

If any parameter is not specified, the session will become an interactive session and all the parameters will be prompted.

This command makes the same change to all switches in the specified group. It will execute on every switch in the group if and only if each switch in the group can perform the action.

NOTE: This command is for the Compaq StorageWorks Fibre Channel IS/32 or IS/64 Switches only.

Operands

This command has the following operands:

<code>"sgName"</code>	Specify the switch group name (for example, "NewGroup") that contains the member you want to replace. This operand is optional.
<code>oldWwn</code>	Specify the WWN of a switch group member (for example, "10:00:00:60:69:20:22:22") that you want to replace. This operand is optional.
<code>newWwn</code>	Specify the WWN of the new member (for example, "10:00:00:60:69:20:55:55"). This operand is optional.

NOTE: The WWN and switch group name must be enclosed in quotation marks.

Example

The example shows the non-interactive form of `sgroupSwReplace`. The `sgroupShow` command is used to illustrate the changes made with the `sgroupSwReplace` command. To replace a member of an sgroup:

```
switch:admin> sgroupShow
Group Type      Group Name      Member WWN
=====
S32_6_1         NewGroup        10:00:00:60:69:20:15:71
                10:00:00:60:69:20:15:93
                10:00:00:60:69:20:15:2a
                10:00:00:60:69:20:18:32
                10:00:00:60:69:20:22:22
                10:00:00:60:69:20:64:31
```

```
switch:admin>sgroupSwReplace "NewGroup", "10:00:00:60:69:20:22:22",
"10:00:00:60:69:20:55:55"
Committing configuration...done.
```

```
switch:admin> sgroupShow
Group Type      Group Name      Member WWN
=====
S32_6_1         NewGroup        10:00:00:60:69:20:15:71
                10:00:00:60:69:20:15:93
                10:00:00:60:69:20:15:2a
                10:00:00:60:69:20:18:32
                10:00:00:60:69:20:55:55
                10:00:00:60:69:20:64:31
```

See Also

- `sgroupDelete`
- `sgroupRename`
- `sgroupSet`
- `sgroupShow`
- `sgroupSupportShow`

snmpMibCapSet

View and modify options for configuring SNMP MIB/Trap Capability.

Synopsis

```
snmpMibCapSet
```

Availability

admin

Description

This command enables a user to turn on or off certain MIBS and TRAPS. This command also enables a user to turn on or off group information and SSN in SW trap messages. It first displays current settings and then prompts the user to change the values for each parameter.

- FA-MIB—Specifying **yes** means the user can access FA MIB variables with an SNMP manager. The default value is **yes**.
- SW-TRAP—Specifying **yes** means the SNMP management application can receive SW traps from the switch. The default value is **yes**.
- FA-TRAP—Specifying **yes** means the SNMP management application can receive FA traps from the switch. The default value is **yes**.
- SW-EXTTRAP—Specifying **yes** means the user can receive group information such as Group Name, Group Type, and Member Position, and SSN in the SW traps. The default value is **no**.

Operands

None.

Example

To view or modify the options for configuring SNMP MIB traps:

```
switch:admin> snmpmibcapset
The SNMP Mib/Trap Capability has been set to support
FE-MIB SW-MIB FA-MIB SW-TRAP FA-TRAP
FA-MIB (yes, y, no, n): [yes]
SW-TRAP (yes, y, no, n): [yes]
FA-TRAP (yes, y, no, n): [yes]
SW-EXTTRAP (yes, y, no, n): [no]
no change
```

See Also

agtcfgShow
agtcfgSet
agtcfgDefault

spinFab

Test for Cascaded switch ISL links.

Synopsis

```
spinFab [ nMillionFrames [, ePortBeg [, ePortEnd [, setFail]]]]
```

Availability

admin

Description

Used to verify the intended functional operation of the ISL links between switches at the maximum speed of 2Gbps by setting up the routing hardware such that test frames received by each E_port retransmitted on the same E_port. Several frames are then sent to the neighbor port attached to each active E_port specified. Since the default action for such frames (which never occur for normal traffic) is to route them back to the sender, the frames that are sent in this manner will circulate until the test stops them.

The frames are continuously transmitted and received in all ports in parallel. The port LEDs flicker green rapidly while the test is running. While the frames are circulating the RX frame count and port CRC and encoder error statistics will be monitored and errors will be generated if a port stops or a low level error occurs. Every one million frames the circulating frames will be captured to verify that they are still circulating and that they are still in-order. In this manner the entire path to the remote switch may be verified.

The switch will remain in normal operation while this test is running, however some performance degradation will occur due to the ISL links being saturated with test frames. Because of this you should use caution when running this test on live fabrics, consider only testing one ISL link at a time, and do not run the tests for extended periods of time.

This test is best combined with the online `crossPorttest` for ISL link failure isolation. If this test fails, replace the cable with a loop-back plug and run `crossport test` to verify the local switch and GBIC. If these pass then the fault lies in the cable or remote switch/GBIC.

The frames are continuously transmitted and received in all ports in parallel. The port LEDs flicker green rapidly while the test is running.

When this command detects failure(s), the test may report one or more of the following error messages:

1. DIAG-INIT
2. DIAG-PORTDIED
3. DIAG-XMIT
4. DIAG-PORTSTOPPED
5. DIAG-ERRSTATS
6. DIAG-ERRSTAT

Operands

This command has the following operands:

nMillionFrames	The number of million frames per port to execute this test. If omitted, the default value used is 100. This operand is optional.
ePortBeg	First port to test, if omitted 0 will be used. This operand is optional.
ePortEnd	The last port to test. The test will be performed on ePortBeg to ePortEnd inclusive. If ePortEnd is omitted then the default will be to test all ports if ePortBeg is also omitted or to test only ePortBeg if it is specified. This operand is optional.
setFail	Specify 1 to mark failing ports as BAD, or specify 0 to not mark failed ports as bad. To minimize the impact on live fabrics this test normally logs errors but does not set the port status to FAILED. This parameter is provided to force the failing ports to be marked as BAD in the same manner as other diagnostics. In test or qualification environments without live traffic this may be useful with large values of nMillionFrames. This operand is optional.

DEBUG MODES

The debug modes shown in Table 1–36 may be enabled with setdbg "DIAG", <level>

Table 1–36: Debug Modes

Level	Messages Displayed
0	Test start, results summary only.
2	Adds test loop count (every 1 million frames).
5	Adds subtest RX messages.
9	Adds lots of little details.

Example

In the following examples ports 0-3 are active ISL links. Port 4 is an F_port so the test skips it.

```
switch:admin> spinfab 3,0,4
spinFab running...
spinFab: Completed 3 megs, status: passed.
port 0 test status: 0x00000000 -- passed.
port 1 test status: 0x00000000 -- passed.
port 2 test status: 0x00000000 -- passed.
port 3 test status: 0x00000000 -- passed.
port 4 test status: 0x02000000 -- SKIPPED!

switch:admin> setdbg "DIAG", 2
switch:admin> spinfab 3,0,3
spinFab running...
port 1 Rx 1 million frames.
port 0 Rx 1 million frames.
port 2 Rx 1 million frames.
port 3 Rx 1 million frames.
port 1 Rx 2 million frames.
port 0 Rx 2 million frames.
port 2 Rx 2 million frames.
port 3 Rx 2 million frames.
port 1 Rx 3 million frames.
port 0 Rx 3 million frames.
port 2 Rx 3 million frames.
port 3 Rx 3 million frames.
spinFab: Completed 3 megs, status: passed.
port 0 test status: 0x00000000 -- passed.
port 1 test status: 0x00000000 -- passed.
port 2 test status: 0x00000000 -- passed.
port 3 test status: 0x00000000 -- passed.
```

See Also

crossPortTest
portLoopbackTest
spinSilk
setDbg

spinSilk

Functional test of port to port path at maximum switch speed.

Synopsis

```
spinSilk [nmeigs, gbic_mode, lb_mode, spd_mode]
```

Availability

admin

Description

Use this command to verify the functional operation of the switch components.

NOTE: The spinsilk command may not be executed on an operational switch. You must first disable the switch using the `switchDisable` command.

This command verifies the functional operation of the switch by setting up the routing hardware such that frames received by port M are retransmitted through port N. Likewise frames received by port N are retransmitted through port M. Each port M sends 4 frames to its partner port N through an external fiber cable; thus exercising all the switch components from the main board, to the GBIC, to the fiber cable, to the GBIC, and back to the main board.

The cables can be connected to any port combination with the condition that the cables and GBICs connected are of the same technology. For example, a short wavelength GBIC port must be connected to another short wavelength GBIC port through a short wavelength cable; or a long wavelength port must be connected to another long wavelength port.

Optimum test coverage occurs with `lb_mode 1`, M->M loopback plugs and `sp1bMode` disabled. In this case every port will exchange frames with every other port and all of the ASIC to ASIC connections are tested.

The frames are continuously transmitted and received in all ports in parallel. The port LEDs flicker green rapidly while the test is running.

At each pass, the frame is created from a different data type. There are seven data types:

1. CSPAT: 0x7e, 0x7e, 0x7e, 0x7e, ...
2. BYTE_LFSR: 0x69, 0x01, 0x02, 0x05, ...
3. CHALF_SQ: 0x4a, 0x4a, 0x4a, 0x4a, ...

4. QUAD_NOT: 0x00, 0xff, 0x00, 0xff, ...
5. CQTR_SQ: 0x78, 0x78, 0x78, 0x78, ...
6. CRPAT: 0xbc, 0xbc, 0x23, 0x47, ...
7. RANDOM: 0x25, 0x7f, 0x6e, 0x9a, ...

If seven passes are requested, the seven different data types are used in the test. If eight passes are requested, the first seven frames use unique data types, and the eighth is the same as the first.

spinSilk Modes

There are two test modes. These modes can be used together to test specific ports.

- Loopback mode
- GBIC mode

LoopBack Mode

There are four loopback modes that can be used when executing the `spinSilk` command. The modes are specified by entering a:

- **0** for cable mode. This loopback mode is the default mode and tests only M->N connections. It requires that the user connect a cable from one port to a different port.
- **1** for singleportalso loopback mode. This `lb_mode` tests M->N and M->M connections.

If M->N cable connections are used the `spinsilk` command operates identically in `lb_mode 0` and `lb_mode 1`.

If M->M loopback plugs are used with SPLB mode disabled the `spinsilk` command will circulate frames between pairs of M->M connected ports as follows:

```
P1 TX >>> P1 RX -> P2 TX >>> P2 RX -> P1 TX
```

where:

>>> is a cable or internal loop-back

-> is a routing table entry

The connections between pairs of M->M ports are chosen to exercise the connections between as many ASICs as possible subject to the availability of pairs of M->M ports.

In mode **1** with SPLB mode disabled the `spinSilk` command only circulates frames within each single port and none of the ASIC to ASIC connections are tested. This mode should only be used for fault isolation.

- **2** for external loopback mode. The external loopback test creates a test loop between two ports on different ASICs and also tests the Serializer Deserializer functionality.
- **5** for internal loopback mode. The internal loopback test creates a test loop between two ports on a single ASIC.

Refer to the `setSplbmode` command for more information on how the loopback mode setting changes the execution of this command.

GBIC Mode

If the `spinSilk` command is executed with GBIC mode activated, only ports containing GBICs are tested. To activate GBIC mode, execute the following command prior to executing the `spinSilk` command:

```
switch:admin> setGbicMode 1
```

The state of the GBIC mode is saved in flash and remains active over a reboot until it is disabled as follows:

```
switch:admin> setGbicMode 0
```

Prior to running this command make sure you disable the switch, set the GBIC mode to 1, and install loopback cables on all GBIC ports you want to test.

Because this test includes the GBIC and the fiber cable in its test path, use the results from this test in conjunction with the results from `crossPortTest` and `portLoopbackTest` to determine those switch components are not functioning properly.

Operands

This command has the following operands:

nmegs	Specify the number of million frames per port to execute this test. If omitted, the default value is 0xffffffffe. This operand is optional.
-------	---

gbic_mode	<p>Specify 1 to activate GBICmode, where only ports containing GBICs are tested.</p> <p>Specify 0 to deactivate GBICmode.</p> <p>If this operand is not specified, the test will run with the GBICmode set for the switch. You can set GBICmode as an operand or by using the <code>setgbicmode</code> command.</p> <p>This operand is optional.</p>
lb_mode	<p>Specify the loopback mode. The default value is 0. Valid values are 0 through 5:</p> <ul style="list-style-type: none"> 0—cable mode, tests M->N connections only 1—for singleportalso mode, tests M->N and M->M connections 2—for external loopback mode 5—for internal loopback mode
spd_mode	<p>Specify the speed of the connection to test. This operand is optional. Valid values are 0 through 6:</p> <ul style="list-style-type: none"> 0—Auto negotiate. This results in 1G for SAN Switch-8 and -16 series products and 2G for Compaq StorageWorks Fibre Channel SAN Switch products. This option initiates a negotiation cycle that will exercise more of the software and SFP operation than specifying mode 1 or 2. <p>If this mode fails and the fixed modes pass, then it is likely that the automatic speed selection and filtering circuitry in the SFP is bad.</p> <ul style="list-style-type: none"> 1—1GB. Force speed to 1G with no negotiation. 2—2GB. Force speed to 2G with no speed negotiation. This option is valid only for switches that support 2G connections. 3—odd ports 1g, even ports 1G. 4—odd ports 2g, even ports 1G. This option is valid only for switches that support 2G connections. This test mode requires lb_mode 1 and M->M loopback plugs, or lb_mode 0 and cable connections with even to even and odd to odd connected cables. <p>When run with lb_mode1 and M->M plugs, it will test the speed translation circuitry in the ASIC (fifo underrun avoidance).</p> <ul style="list-style-type: none"> 5—even ports 1G, odd ports Auto negotiate.

gbic_mode	<p>Specify 1 to activate GBICmode, where only ports containing GBICs are tested.</p> <p>Specify 0 to deactivate GBICmode.</p> <p>If this operand is not specified, the test will run with the GBICmode set for the switch. You can set GBICmode as an operand or by using the <code>setgbicmode</code> command.</p> <p>This operand is optional.</p>
lb_mode	<p>Specify the loopback mode. The default value is 0. Valid values are 0 through 5:</p> <p>0—cable mode, tests $M \rightarrow N$ connections only</p> <p>1—for singleportalso mode, tests $M \rightarrow N$ and $M \rightarrow M$ connections</p> <p>2—for external loopback mode</p> <p>5—for internal loopback mode</p>
spd_mode	<p>Specify the speed of the connection to test. This operand is optional. Valid values are 0 through 6:</p> <p>0—Auto negotiate. This results in 1G for SAN Switch-8 and -16 series products and 2G for Compaq StorageWorks Fibre Channel SAN Switch products. This option initiates a negotiation cycle that will exercise more of the software and SFP operation than specifying mode 1 or 2.</p> <p>If this mode fails and the fixed modes pass, then it is likely that the automatic speed selection and filtering circuitry in the SFP is bad.</p> <p>1—1GB. Force speed to 1G with no negotiation.</p> <p>2—2GB. Force speed to 2G with no speed negotiation. This option is valid only for switches that support 2G connections.</p> <p>3—odd ports 1g, even ports 1G.</p> <p>4—odd ports 2g, even ports 1G. This option is valid only for switches that support 2G connections. This test mode requires <code>lb_mode 1</code> and $M \rightarrow M$ loopback plugs, or <code>lb_mode 0</code> and cable connections with even to even and odd to odd connected cables.</p> <p>When run with <code>lb_mode 1</code> and $M \rightarrow M$ plugs, it will test the speed translation circuitry in the ASIC (fifo underrun avoidance).</p> <p>5—even ports 1G, odd ports Auto negotiate.</p>

gbic_mode	<p>Specify 1 to activate GBICmode, where only ports containing GBICs are tested.</p> <p>Specify 0 to deactivate GBICmode.</p> <p>If this operand is not specified, the test will run with the GBICmode set for the switch. You can set GBICmode as an operand or by using the <code>setgbicmode</code> command.</p> <p>This operand is optional.</p>
lb_mode	<p>Specify the loopback mode. The default value is 0. Valid values are 0 through 5:</p> <ul style="list-style-type: none"> 0—cable mode, tests M->N connections only 1—for singleportalso mode, tests M->N and M->M connections 2—for external loopback mode 5—for internal loopback mode
spd_mode	<p>Specify the speed of the connection to test. This operand is optional. Valid values are 0 through 6:</p> <ul style="list-style-type: none"> 0—Auto negotiate. This results in 1G for SAN Switch-8 and -16 series products and 2G for Compaq StorageWorks Fibre Channel SAN Switch products. This option initiates a negotiation cycle that will exercise more of the software and SFP operation than specifying mode 1 or 2. <p>If this mode fails and the fixed modes pass, then it is likely that the automatic speed selection and filtering circuitry in the SFP is bad.</p> <ul style="list-style-type: none"> 1—1GB. Force speed to 1G with no negotiation. 2—2GB. Force speed to 2G with no speed negotiation. This option is valid only for switches that support 2G connections. 3—odd ports 1g, even ports 1G. 4—odd ports 2g, even ports 1G. This option is valid only for switches that support 2G connections. This test mode requires lb_mode 1 and M->M loopback plugs, or lb_mode 0 and cable connections with even to even and odd to odd connected cables. <p>When run with lb_mode1 and M->M plugs, it will test the speed translation circuitry in the ASIC (fifo underrun avoidance).</p> <ul style="list-style-type: none"> 5—even ports 1G, odd ports Auto negotiate.

gbic_mode	<p>Specify 1 to activate GBICmode, where only ports containing GBICs are tested.</p> <p>Specify 0 to deactivate GBICmode.</p> <p>If this operand is not specified, the test will run with the GBICmode set for the switch. You can set GBICmode as an operand or by using the <code>setgbicmode</code> command.</p> <p>This operand is optional.</p>
lb_mode	<p>Specify the loopback mode. The default value is 0. Valid values are 0 through 5:</p> <ul style="list-style-type: none"> 0—cable mode, tests M->N connections only 1—for singleportalso mode, tests M->N and M->M connections 2—for external loopback mode 5—for internal loopback mode
spd_mode	<p>Specify the speed of the connection to test. This operand is optional. Valid values are 0 through 6:</p> <ul style="list-style-type: none"> 0—Auto negotiate. This results in 1G for SAN Switch-8 and -16 series products and 2G for Compaq StorageWorks Fibre Channel SAN Switch products. This option initiates a negotiation cycle that will exercise more of the software and SFP operation than specifying mode 1 or 2. <p>If this mode fails and the fixed modes pass, then it is likely that the automatic speed selection and filtering circuitry in the SFP is bad.</p> <ul style="list-style-type: none"> 1—1GB. Force speed to 1G with no negotiation. 2—2GB. Force speed to 2G with no speed negotiation. This option is valid only for switches that support 2G connections. 3—odd ports 1g, even ports 1G. 4—odd ports 2g, even ports 1G. This option is valid only for switches that support 2G connections. This test mode requires lb_mode 1 and M->M loopback plugs, or lb_mode 0 and cable connections with even to even and odd to odd connected cables. <p>When run with lb_mode1 and M->M plugs, it will test the speed translation circuitry in the ASIC (fifo underrun avoidance).</p> <ul style="list-style-type: none"> 5—even ports 1G, odd ports Auto negotiate.

gbic_mode	<p>Specify 1 to activate GBICmode, where only ports containing GBICs are tested.</p> <p>Specify 0 to deactivate GBICmode.</p> <p>If this operand is not specified, the test will run with the GBICmode set for the switch. You can set GBICmode as an operand or by using the <code>setgbicmode</code> command.</p> <p>This operand is optional.</p>
lb_mode	<p>Specify the loopback mode. The default value is 0. Valid values are 0 through 5:</p> <ul style="list-style-type: none"> 0—cable mode, tests M->N connections only 1—for singleportalso mode, tests M->N and M->M connections 2—for external loopback mode 5—for internal loopback mode
spd_mode	<p>Specify the speed of the connection to test. This operand is optional. Valid values are 0 through 6:</p> <ul style="list-style-type: none"> 0—Auto negotiate. This results in 1G for SAN Switch-8 and -16 series products and 2G for Compaq StorageWorks Fibre Channel SAN Switch products. This option initiates a negotiation cycle that will exercise more of the software and SFP operation than specifying mode 1 or 2. <p>If this mode fails and the fixed modes pass, then it is likely that the automatic speed selection and filtering circuitry in the SFP is bad.</p> <ul style="list-style-type: none"> 1—1GB. Force speed to 1G with no negotiation. 2—2GB. Force speed to 2G with no speed negotiation. This option is valid only for switches that support 2G connections. 3—odd ports 1g, even ports 1G. 4—odd ports 2g, even ports 1G. This option is valid only for switches that support 2G connections. This test mode requires lb_mode 1 and M->M loopback plugs, or lb_mode 0 and cable connections with even to even and odd to odd connected cables. <p>When run with lb_mode1 and M->M plugs, it will test the speed translation circuitry in the ASIC (fifo underrun avoidance).</p> <ul style="list-style-type: none"> 5—even ports 1G, odd ports Auto negotiate.

spd_mode (Continued)	6 —even ports 2G, odd ports Auto negotiate. This option is valid only for switches that support 2G connections. For useful results this test must be run with lb_mode 0 and cables connected from even to odd ports.
-------------------------	--

NOTE: If you wish to specify a single operand, the others may become required, because operands are identified by position. For example, if you want to specify a `gbic_mode` value, you must also specify an **nmeigs** value as well.

Example

To verify the functionality of a switch:

```
switch:admin> spinSilk 2
Running Spin Silk .....
One moment please ...
switchName:      switch
switchType:      2.2
switchState:     Testing
switchRole:      Disabled
switchDomain:    1 (unconfirmed)
switchId:        fffc01
switchWwn:       10:00:00:60:69:00:73:71
port 0: cu Testing Loopback->15
port 1: sw Testing Loopback->11
port 2: sw Testing Loopback->6
port 3: lw Testing Loopback->4
port 4: lw Testing Loopback->3
port 5: sw Testing Loopback->8
port 6: sw Testing Loopback->2
port 7: sw Testing Loopback->12
port 8: sw Testing Loopback->5
port 9: sw Testing Loopback->14
port 10: sw Testing Loopback->13
port 11: sw Testing Loopback->1
port 12: sw Testing Loopback->7
port 13: sw Testing Loopback->10
port 14: sw Testing Loopback->9
port 15: cu Testing Loopback->0

Transmitting ... done.
Spinning ...
port 0 Rx/Tx 1 of 1 million frames.
port 1 Rx/Tx 1 of 1 million frames.
port 2 Rx/Tx 1 of 1 million frames.
port 3 Rx/Tx 1 of 1 million frames.
port 4 Rx/Tx 1 of 1 million frames.
port 5 Rx/Tx 1 of 1 million frames.
port 6 Rx/Tx 1 of 1 million frames.
port 7 Rx/Tx 1 of 1 million frames.
port 8 Rx/Tx 1 of 1 million frames.
port 9 Rx/Tx 1 of 1 million frames.
port 10 Rx/Tx 1 of 1 million frames.
```

```
port 11 Rx/Tx 1 of 1 million frames.
port 12 Rx/Tx 1 of 1 million frames.
port 13 Rx/Tx 1 of 1 million frames.
port 14 Rx/Tx 1 of 1 million frames.
port 15 Rx/Tx 1 of 1 million frames.

Diagnostics Status: Tue Apr 6 04:10:12 1999
port#: 0 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15
diags: OK OK OK OK OK OK OK OK OK OK OK OK OK OK OK OK
state: UP UP UP UP UP UP UP UP UP UP UP UP UP UP UP UP

  lm0: 2059619 frTx 2052666 frRx 0 LLI_errs.
<looped-15>
  lm1: 2054565 frTx 2052620 frRx 0 LLI_errs.
<looped-11>
  lm2: 2050424 frTx 2048321 frRx 0 LLI_errs. <looped-6>
  lm3: 2053094 frTx 2042762 frRx 0 LLI_errs. <looped-4>
  lm4: 2042957 frTx 2053290 frRx 0 LLI_errs. <looped-3>
  lm5: 2056586 frTx 2053910 frRx 0 LLI_errs. <looped-8>
  lm6: 2048992 frTx 2048569 frRx 0 LLI_errs.
<looped-12>
  lm9: 2039595 frTx 2051975 frRx 0 LLI_errs.
<looped-14>
  lm10: 2050130 frTx 2052565 frRx 0 LLI_errs.
<looped-13>
  lm11: 2054678 frTx 2056622 frRx 0 LLI_errs. <looped-1>
  lm12: 2049707 frTx 2050131 frRx 0 LLI_errs. <looped-7>
  lm13: 2053410 frTx 2050976 frRx 0 LLI_errs.
<looped-10>
  lm14: 2053358 frTx 2040971 frRx 0 LLI_errs. <looped-9>
  lm15: 2056132 frTx 2063094 frRx 0 LLI_errs. <looped-0>

Central Memory OK
Total Diag Frames Tx: 31712
Total Diag Frames Rx: 32816
```

Errors

Below are the possible error messages if failures are detected:

```
DIAG-INIT
DIAG-PORTDIED
DIAG-XMIT
DIAG-PORTSTOPPED
DIAG-ERRSTAT
DIAG-ERRSTATS
```

See Also

```
ramTest, portRegTest, centralMemoryTest, cmiTest,
sramRetentionTest, turboRamTest, camTest, statsTest,
filterTest, portLoopbackTest
```

sramRetentionTest

Data retention test of the miscellaneous SRAMs in ASIC.

Synopsis

```
sramRetentionTest [passCount]
```

Availability

admin

Description

Use this command to verify that data written into the miscellaneous SRAMs in the ASIC are retained after a 10 second wait.

The test method is to write a fill pattern to all SRAMs, wait 10 seconds, and then read all SRAMs checking that data read matches data previously written. Then the test is repeated using the complementary version of the pattern. The following patterns are used:

```
0xffffffff (and 0x00000000)
0x55555555 (and 0xaaaaaaaa)
0x33333333 (and 0xcccccccc)
0x0f0f0f0f (and 0xf0f0f0f0)
QUAD_RAMP with a random seed value (and its invert)
```

Operands

This command has the following operand:

passCount	Specify the number of times to execute the test. The default value is 1. This command is optional.
-----------	--

Example

To run a data retention test:

```
switch:admin> sramRetentionTest
Running SRAM Retention Test ... passed.
```

Errors

Below are the possible error messages if failures are detected:

DIAG-REGERR
DIAG-REGERR_UNRST
DIAG-BUS_TIMEOUT

See Also

ramTest
portRegTest
centralMemoryTest
cmiTest
turboRamTest
camTest
statsTest
filterTest
portLoopbackTest
spinSilk

ssn

Display and set soft serial number.

Synopsis

```
ssn ["softserialnumber"]
```

Availability

All users

Description

Use this command to display and set soft serial number.

If no operand is specified, this command displays the current soft serial number. If an operand is specified, this command sets the soft serial number. The soft serial number can be an alphanumeric value between 1 and 127 bytes in length.

Operands

This command has the following operand:

softserialnumber	Specify a character string between 1 and 127 bytes in length. This operand must be enclosed in quotation marks. This operand is optional.
------------------	---

Example

To view and then set soft serial number, insert the following command string:

```
switch:admin> ssn
10:00:00:60:69:50:02:7b
switch:admin> ssn "BRCD_101"
Committing configuration...done.
switch:admin> ssn
BRCD_101
```

See Also

bsn

statsTest

Run a statistics counter diagnostic test.

Synopsis

```
statsTest
```

Availability

admin

Description

Use this command to run a statistics counter diagnostic test on a switch.

This command may not be executed on an operational switch. You must first disable the switch using the `switchDisable` command.

Operands

None.

Example

To run a statistics counter test on a switch:

```
switch:admin> statsTest
Running Statistics Cnt Test ... passed.
switch:admin>
```

See Also

```
ramTest
portRegTest
centralMemoryTest
cmiTest
sramRetentionTest
turboRamTest
camTest
filterTest
portLoopbackTest
spinSilk
```

supportShow

Print switch information for debugging purposes.

Synopsis

```
supportShow [firstPort, lastPort, nLog]
```

Availability

All users

Description

Use this command to print the switch information for debugging purposes. This command executes the listed commands in the following order:

1. version
2. uptime
3. tempShow
4. psShow
5. licenseShow
6. diagShow
7. errDump
8. switchShow
9. portFlagsShow
10. portErrShow
11. mqShow
12. portSemShow
13. portShow
14. portRegShow
15. portRouteShow
16. fabricShow
17. topologyShow

18. qlShow
19. nsShow
20. nsAllShow
21. cfgShow
22. configShow
23. faultShow
24. traceShow
25. portLogDump

Operands

This command has the following operands:

firstPort	Specify the first port of a range of ports to dump information. The default (if no operand specified) is to print state of port 0. If only firstPort is specified, only information for firstPort is printed. This operand is optional.
lastPort	Specify the last port of range of ports to dump information. If firstPort is specified but lastPort is not specified, only firstPort information is printed for the port based commands (portShow, portRegShow, portRouteShow). If no operand is supplied, firstPort is set to 0 and lastPort is set to maximum port of switch. This operand is optional.
nLog	Specify the number of lines of portLogDump to print: <ul style="list-style-type: none">• 0—dump all lines (default)• N—dump the last N lines• <0—skip portLogDump This operand is optional.

Example

To display switch information for debugging:

```
switch:admin> supportShow
Kernel:      5.3.1
Fabric OS:   v2.1
Made on:     Tue Apr 6 16:57:22 PDT 1999
Flash:      Thu Apr 1 10:23:43 PST 1999
```


BootProm: Thu Oct 1 13:34:29 PDT 1998

Up for: 12 secs
Powered for: 472 days, 19:15
Last up at: Tue May 2 10:48:21 2000
Reason: Reboot

37	34	37	45	49	Centigrade
98	93	98	113	120	Fahrenheit

Power Supply #1 is absent
Power Supply #2 is absent
byRdzdSRxyzSe0D:

Web license

Diagnostics Status: Tue Apr 6 16:22:34 1999

< ... sample output truncated ... >

See Also

switchShow

switchBeacon

Set switch beaconing mode on or off.

Synopsis

```
switchBeacon 0|1
```

Availability

admin

Description

Use this command to set the switch beaconing mode on (if the operand is 1) or off (if the operand is 0).

When beaconing mode is turned on, the port LEDs flash amber in a running pattern from port 0 to port 15, and then back again. The user sees a running pattern in amber LEDs, from left to right and right to left. The pattern continues until turned off by the user.

Beaconing mode affects only the port LEDs. Other commands are still executable and functional. The normal flashing LED pattern (associated with an active, faulty or disabled port) is suppressed and the beaconing pattern is shown. However, if diagnostic frame based tests (`portLoopbackTest`, `crossPortTest`, and `spinSilk`) are executed, two patterns are interleaved. The diagnostic test flickers the LEDs green and simultaneously the beaconing mode runs the LEDs amber.

Use the `switchShow` command to display the status of beaconing.

Operands

This command has the following operand:

0 or 1	Specify 1 to enable beaconmode. Specify 0 to disable beaconmode. This operand is required.
--------	--

Example

To turn beaconing mode ON:

```
switch:admin> switchBeacon 1
```

To turn beaconing mode OFF:

```
switch:admin> switchBeacon 0
```

See Also

`switchShow`

switchCfgSpeed

Configure all ports of the switch to a particular speed level.

Synopsis

```
switchCfgSpeed speed_level
```

Availability

admin

Description

Use this command to configure the speed of all the ports on a switch to a particular level. The configuration is saved in the non-volatile memory and persists across switch reboot or power cycle.

If the command is specified without an operand, you are prompted to enter the speed value. An input of CTRL-D cancels the configuration update.

The output of `portShow` and `portCfgShow` displays the speed level. In the `portShow` output, the speed level is indicated as the current port speed of "1Gbs" or "2Gbs". In the `portCfgShow` output, the speed level is indicated as "1G", "2G", or "AN"(Auto-Negotiate).

Operands

This command has the following operand:

speed_level	<p>Specify the speed of a port. This operand is optional. Valid values are one of the following:</p> <ul style="list-style-type: none">0—Auto-sensing mode. The port automatically configures for the highest speed.1—1 Gbps mode. The port will be at fixed speed of 1 Gbps.2—2 Gbps mode. The port will be at fixed speed of 2 Gbps. <p>If the command is specified without an operand, you are prompted to enter a value</p>
-------------	--

Example

To set the speed level for all ports on a switch:

```
switch:admin> switchCfgSpeed 2  
Committing configuration...done.  
switch:admin>
```

See Also

portCfgSpeed
switchShow

switchCfgTrunk

Enable or disable trunking on all the ports of a switch.

Synopsis

```
switchCfgTrunk 0|1
```

Availability

admin

Description

Use this command to enable or disable trunking on all the ports of a switch.

NOTE: This command requires the Trunking license.

Operands

This command has the following operand:

0 or 1	Specify 1 to enable trunking on all the ports on this switch. Specify 0 to disable trunking on all the ports on this switch. This operand is required.
--------	--

Example

To enable trunking on a switch:

```
switch:admin> switchCfgTrunk 1  
Committing configuration...done.
```

See Also

```
portCfgTrunkPort  
portShow  
portCfgShow  
switchShow
```

switchDisable

Disable the switch.

Synopsis

```
switchDisable
```

Availability

```
admin
```

Description

Use this command to disable the switch. All Fibre Channel ports are taken offline; if the switch was part of a fabric, the remaining switches reconfigure.

The switch must be disabled before making configuration changes (using `configure` or `configDefault`) or before running many of the diagnostic tests. All commands that require the switch to be disabled send an error if invoked while the switch is enabled.

The switch does not need to be disabled before rebooting or powering off.

As each port is disabled, the front panel LED changes to a slow flashing yellow.

Operands

None.

Example

To disable the switch:

```
switch:admin> switchDisable
```

See Also

```
switchEnable  
switchShow
```

switchEnable

Enable the switch.

Synopsis

```
switchEnable
```

Availability

```
admin
```

Description

Use this command to enable the switch. All Fibre Channel ports that passed POST are enabled. They can come online if connected to a device, or remain offline if disconnected. A switch may need to be enabled if it was previously disabled to make configuration changes or to run diagnostics.

If the switch is connected to a fabric, it rejoins the fabric. When this command is issued, the 10 second fabric stability count down is displayed. If this switch remains the principal switch at the end of the count down, then it assigns itself a domain ID. If another switch assumes the principal role, then this switch becomes a subordinate switch, and accepts a domain ID from the principal. See FC-SW for a complete description of this process.

As each port is enabled, the front panel LED changes to green for online ports, black for disconnected ports, or yellow for un-initialized ports.

Operands

None.

Example

To enable a switch:

```
switch:admin> switchEnable
10 9 8 7 6 5 4 3 2 1
fabric: Principal switch
fabric: Domain 1
```

See Also

```
switchDisable
switchShow
```


switchName

Display or set switch name.

Synopsis

```
switchName ["newName"]
```

Availability

All users (display)

admin (set)

Description

Use this command without a operand to display the current switch name. This name is also shown in the telnet prompt, under each switch icon on the WEB TOOLS Fabric View, and in the output of many telnet commands.

Use this command with the `newName` operand to assign a new switch name. Switch names can be up to 19 characters long, must begin with an alpha character, and can consist of a combination of alpha, numeric, and underscore characters.

Changing the switch name causes a domain address format RSCN to be issued (see FC-FLA for a description of RSCNs).

Operands

This command has the following operand:

"newName"	Specify a new name for the switch, in quotation marks. This operand is optional.
-----------	---

Example

To change a switch name to sw10:

```
switch:admin> switchName "sw10"
Updating flash ...
sw10:admin>
```

See Also

```
switchShow
fabricShow
```

switchReboot

Reboot a logical switch in the Silkworm 12000, without disrupting the other logical switch in the chassis.

Synopsis

```
switchReboot
```

Availability

Admin

Description

Use this command to reboot the operational switch without disrupting the other switch in the chassis. This command is used to reboot an operational switch with out disturbing the software state of the system in general.

This command is equal to a sequential calling of **switchShutdown** and **switchStart**.

This command brings down all the daemons associated with the switch; free the resources and object states associated with the switch to a clear state and disables all the ports and blades associated with the switch and then start all the daemons associated with the switch; initialize the object states associated with the switch to a clear state and will enable all the ports/blades associated with the switch.

Operands

None

Example

To reboot down the operational switch, insert the following command string:

```
switch:admin> switchReboot
Stopping Switch 1 daemons:done.
```

See Also

```
switchShutdown
switchHalt
switchStart
```

switchShow

Display switch and port status.

Synopsis

```
switchShow375
```

Availability

All users

Description

Use this command to display switch and port status information. Information may vary by switch model. The two tables that follow contain the information provided. Table 1–37 provides switch summary information; it is followed by Table 1–38 containing the summary information by port.

Table 1–37: Switch Summary Information

Switch	Description
switchName	Switch symbolic name.
switchType	Switch firmware revision number.
switchState	Switch state: online, offline, testing, faulty.
switchRole	Switch role: principal, subordinate, disabled.
switchDomain	Switch domain ID: 0-31 or 1-239.
switchId	Switch embedded port D_ID.
switchWwn	Switch worldwide name.
switchBeacon	The switch's beaconing state (either ON or OFF).

Table 1-38: Summary Information by Port

Switch	Description
port number	Port number. Valid values vary depending on the switch type
module type	Port module type (GBIC or other): <ul style="list-style-type: none"> • (blank)—no module present • sw—shortwave laser • lw—longwave laser • cu—copper • id—serial ID
port speed	The speed of the port: <ul style="list-style-type: none"> • 1G—1G per second fixed transfer speed • 2G—2G per second fixed transfer speed • N1—1G per second negotiated transfer speed • N2—2G per second negotiated transfer speed • AN—Auto negotiating
port state	Port state information: <ul style="list-style-type: none"> • No_Card—no interface card present • No_Module—no module (GBIC or other) present • No_Ligh—module not receiving light • No_Sync—module receiving light but out of sync • In_Sync—module receiving light and in sync • Laser_Flt—module signaling a laser fault • Port_Fl—port marked faulty • Diag_Flt—port failed diagnostics • Lock_Re—locking to the reference signal • Testing—running diagnostics • Online —port is up and running

Table 1–38: Summary Information by Port

Switch	Description
port number	Port number. Valid values vary depending on the switch type
module type	Port module type (GBIC or other): <ul style="list-style-type: none"> • (blank)—no module present • sw—shortwave laser • lw—longwave laser • cu—copper • id—serial ID
port speed	The speed of the port: <ul style="list-style-type: none"> • 1G—1G per second fixed transfer speed • 2G—2G per second fixed transfer speed • N1—1G per second negotiated transfer speed • N2—2G per second negotiated transfer speed • AN—Auto negotiating
port state	Port state information: <ul style="list-style-type: none"> • No_Card—no interface card present • No_Module—no module (GBIC or other) present • No_Ligh—module not receiving light • No_Sync—module receiving light but out of sync • In_Sync—module receiving light and in sync • Laser_Flt—module signaling a laser fault • Port_FI—port marked faulty • Diag_Flt—port failed diagnostics • Lock_Re—locking to the reference signal • Testing—running diagnostics • Online —port is up and running

Table 1–38: Summary Information by Port (Continued)

Switch	Description
comment	<p>The comment field may be blank, or it may display:</p> <ul style="list-style-type: none"> • Disabled—port is disabled • Bypassed—port is bypassed (loop only) • Loopback—port is in loopback mode • E_port—fabric port, shows WWN and name of attached switch • F_port—point-to-point port, shows WWN of attached N_port • G_port—point-to-point but not yet E_port or F_port • L_port—loop port, shows number of NL_ports <p>(upstream) - This E_port is an upstream path towards the principal switch of the fabric.</p> <p>(downstream) - This E_port is a downstream path away from the principal switch of the fabric.</p> <p>WWN - This is the WWN of the switch connected to the E-port.</p> <p>"switch_name" - This is the switch name of the connected switch.</p> <p>Trunk master) - This port is the master port in a group of trunking ports</p> <p>(Trunk port, master is port #x) - This port is configured as a trunking port, the master port is port number x.</p>

:

Operands

None.

Example

The following example shows a 16 port switch:

```
sw14:admin> switchshow
switchName:    sw14
switchType:    9.1
switchState:   Online
switchRole:    Subordinate
switchDomain:  2
switchId:      fffc02
switchWwn:     10:00:00:60:69:50:02:8f
```

```
switchBeacon: OFF
port 0: id 2G No_Light
port 1: id 2G No_Light
port 2: id 2G No_Light
port 3: id 2G No_Light
port 4: id 2G No_Sync
port 5: id 2G No_Sync
port 6: id 2G No_Sync
port 7: id 2G No_Light
port 8: id 2G Online E-Port 10:00:00:60:69:50:02:84 "sw15"
      (downstream) (Trunk master)
port 9: id 2G Online E-Port (Trunk port, master is port #8)
port 10: id 2G Online E-Port (Trunk port, master is port #8)
port 11: id 2G Online E-Port (Trunk port, master is port #8)
port 12: id 2G Online E-Port 10:00:00:60:69:50:02:7b "swd3"
      (upstream)
port 13: id 2G Online E-Port 10:00:00:60:69:50:02:7b "swd3"
port 14: id 2G Online E-Port 10:00:00:60:69:50:02:7b "swd3"
port 15: id 2G Online E-Port 10:00:00:60:69:50:02:7b "swd3"
```

See Also

switchDisable
switchEnable
switchName

switchShutdown

Performs a shutdown of the operational switch.

Synopsis

```
switchShutdown
```

Availability

Admin

Description

This command halts the switch operation without disrupting the other switch in the chassis. This command will be used by the administrator when he can not determine the problem with the switch and want to bring it back to an operational state with out disturbing the software state of the system in general.

This command has to be used in combination with **switchStart**.

This command performs the following:

- Brings down all the daemons associated with the switch
- Frees the resources and object states associated with the switch to a clear state
- Disables all the ports and blades associated with the switch

Operands

None.

Example

To bring down the operational switch, insert the following command string

```
switch:admin> switchShutdown
Stopping Switch 1 daemons:done.
```

See Also

```
switchStart
switchReboot
```


switchStart

Initialize the switch to operational.

Synopsis

```
switchStart
```

Availability

Admin

Description

This command initializes the switch without disrupting the other switch in the chassis. This command will be used by the administrator when he can not determine the problem with the switch and want to bring it back to an operational state with out disturbing the software state of the system in general.

This command is used in combination with **switchShutdown**.

This command will perform the following:

- Start all the daemons associated with the switch
- Initialize the object states associated with the switch to a clear state
- Enable all the ports/blades associated with the switch

Operands

None

Example

To bring the switch to an operational status, insert the following command string:

```
switch:admin> switchStart
Starting Switch 1 daemons
```

See Also

```
switchShutdown
```

```
switchReboot
```

switchStatusPolicySet

Set the policy parameters that determine the overall switch status.

Synopsis

```
switchStatusPolicySet
```

Availability

admin

Description

Use this command to set the policy parameters for calculating the overall status of the switch enclosure. The policy parameter values determine how many failed or faulty units of each contributor are allowed before triggering a status change in the switch from HEALTHY to MARGINAL or DOWN.

The command will print the current parameters in a three column table format. The first column specifies the contributor; the second column specifies the minimum number that contributes to the DOWN/FAILED status; the third column specifies the minimum number that contributes to the MARGINAL/WARNING status. This command then prompts the user to change the values for each policy parameter. The default values for the policy parameters are shown in Table 1–39:

Table 1–39: Contributor Value and Status

Contributor	Default Value for DOWN	Default Value for MARGINAL
FaultyPorts	2	1
MissingGBICs	0	0
PowerSupplies	2	1
Temperatures	2	1
Fans	2	1
PortStatus	0	0
sgroup ISLStatus	2	1

Any single contributor can force the overall status of the switch to MARGINAL or DOWN. For example, assuming that the switch contributor values are set to the default values, if there is 1 faulty port in a switch, then this contributor would set the overall switch status to MARGINAL. If 2 ports were faulty, then this contributor would set the overall switch status to DOWN.

This command enables you to set a threshold for each contributor, so that a certain number of failures are required to change the overall status of the switch.

If the value of a policy parameter is set to 0, it means that this factor is not used to determine the status of the switch. If the range of values for a particular contributor are set to 0 for both MARGINAL and DOWN, that contributor is not used in the calculation of the overall switch status.

ISLStatus monitors ISLs that are part of a defined switch group. The status of other ISLs on the same switch but outside of the group definition will not be considered when calculating switch status. If no switch groups are defined on this switch, then these ISLStatus settings will have no effect on switch status.

The sgroup ISLStatus does not affect the status of the switch as quickly as the other contributors. It may take a few minutes for a switch group ISL status change to affect the state of the switch.

When PortStatus monitoring is set to values of (0,0), port status changes are not logged to the event log and console. Similarly, GBIC removal does not generate a message to the event log and console if MissingGBICs is set to (0,0). By configuring these options, the user can more closely monitor for port status and/or removal of GBICs.

Operands

None.

NOTE: A switch that has down status may continue to run.

Example

Notice that in the following example, the only parameters modified are the number of FaultyPorts allowed before the status of the switch changes to MARGINAL and DOWN.

```
switch:admin> switchStatusPolicySet
To change the overall switch status policy parameters
The current overall switch status policy parameters:
                Down      Marginal
-----
    FaultyPorts  1         0
    MissingGBICs 0         1
    PowerSupplies 2         1
```

```
Temperatures 2 1
Fans 2 1
PortStatus 0 0
sgroup ISLStatus 2 1
```

Note that the value, 0, for a parameter, means that it is NOT used in the calculation.

** In addition, if the range of settable values in the prompt is (0..0),

** the policy parameter is NOT applicable to the switch.

** Simply hit the Return key.

The minimum number of

```
FaultyPorts contributing to DOWN status: (0..8) [2]
FaultyPorts contributing to MARGINAL status: (0..8) [1]
MissingGBICs contributing to DOWN status: (0..8) [0]
MissingGBICs contributing to MARGINAL status: (0..8) [0] 1
Bad PowerSupplies contributing to DOWN status: (0..2) [2]
Bad PowerSupplies contributing to MARGINAL status: (0..2) [1]
Bad Temperatures contributing to DOWN status: (0..5) [2]
Bad Temperatures contributing to MARGINAL status: (0..5) [1]
Bad Fans contributing to DOWN status: (0..6) [2]
Bad Fans contributing to MARGINAL status: (0..6) [1]
Down PortStatus contributing to DOWN status: (0..8) [0]
Down PortStatus contributing to MARGINAL status: (0..8) [0]
Down ISLStatus contributing to DOWN status: (0..16) [2]
Down ISLStatus contributing to MARGINAL status: (0..16) [1]
```

Policy parameter set has been changed
... Committing configuration...done.

See Also

```
switchStatusPolicyShow
switchStatusShow
```

switchStatusPolicyShow

Displays the policy parameters that determine the overall switch status.

Synopsis

```
switchStatusPolicyShow
```

Availability

all users

Description

Use this command to view the current policy parameters set for the switch. These policy parameters determine the number of failed or non-operational units allowed for each contributor before triggering a status change in the switch.

The command will print the current parameters in a three column table format. The first column specifies the contributor; the second column specifies the minimum number that contributes to the DOWN/FAILED status; the third column specifies the minimum number that contributes to the MARGINAL/WARNING status. The default values for the policy parameters are described in Table 1–40:

Table 1–40: Contributor Value and Status

Contributor	Default Value for DOWN	Default Value for MARGINAL
FaultyPorts	2	1
MissingGBICs	0	0
PowerSupplies	2	1
Temperatures	2	1
Fans	2	1
PortStatus	0	0
sgroup ISLStatus	2	1

The policy parameters determine the number of failed or non-operational units for each contributor that trigger a status change in the switch. For example, if the FaultyPorts DOWN parameter is set to 3, and 3 ports fail in the switch, then the status of the switch changes to DOWN.

Operands

None.

Example

To display the switch status policy:

```
switch:admin> switchStatusPolicyShow
The current overall switch status policy parameters:
                Down      Marginal
-----
    FaultyPorts  1         0
    MissingGBICs 0         1
    PowerSupplies 2         1
    Temperatures 3         1
        Fans     3         1
    PortStatus   0         0
sgroup ISLStatus 2         1
```

See Also

switchStatusShow
switchStatusPolicySet

switchStatusShow

Displays the overall status of the switch.

Synopsis

```
switchStatusShow
```

Availability

All Users

Description

Use this command to display the overall status of the switch. The overall status is calculated based on the most severe status of all contributors:

- Internal Switch Status
- Faulty Ports
- Missing GBICs
- Power Supplies
- Fans
- Temperatures
- Port Status

The overall status can be one of the following:

- Healthy/OK (every contributor is healthy)
- Marginal/Warning (one or more components are causing a warning status)
- Down/Failed (one or more contributors have failed)

If the overall status is not HEALTHY/OK, the contributing factors are listed.

Operands

None.

Example

There are two examples below. The first shows a switch with a status of MARGINAL, the second shows the same switch after all the errors have been fixed.

```
switch:admin> switchStatusShow
The overall switch status is Marginal/Warning
Contributing factors:
* 1 missing power supply triggered the Marginal/Warning status
* 2 bad fans, 4 good fans triggered the Marginal/Warning status
* 1 missing GBIC triggered the Marginal/Warning status

switch:admin> switchStatusShow
The overall switch status is HEALTHY/OK
```

See Also

```
switchStatusPolicyShow
switchStatusPolicySet
```


syslogdIpAdd

Add the IP address of a syslog daemon.

Synopsis

```
syslogdIpAdd IPaddress
```

Availability

admin

Description

Use this command to add the IP address of a syslog daemon, that is the IP address of the server which is running the syslogd process. Syslog daemon (syslogd) is a process available on most UNIX systems that reads and forwards system messages to the appropriate log files and/or users, depending on the system configuration.

When one or more IP addresses are configured, the switch forwards all error log entries to the `syslogd` on the specified server(s). Up to six servers are supported.

Operands

This command has the following operand:

IPaddress	Specify the IP address of the server running <code>syslogd</code> . This operand is required.
-----------	--

Example

To add the address 192.168.1.60 to the list of machines to which system messages are sent:

```
switch:admin> syslogdIpAdd "192.168.1.60"
Committing configuration...done.
```

See Also

```
errShow
syslogdIpRemove
syslogdIpShow
```

syslogdIpRemove

Remove the IP address of a syslog daemon.

Synopsis

```
syslogdIpRemove IPaddress
```

Availability

admin

Description

Use this command to remove the IP address of a syslog daemon, that is the IP address of the server which is running the `syslogd` process.

Operands

This command has the following operand:

IPaddress	Specify the IP address of the server running <code>syslogd</code> . This operand is required.
-----------	--

Example

To remove the address 192.168.1.60 from the list of machines to which system messages are sent:

```
switch:admin> syslogdIpRemove "192.168.1.60"  
Committing configuration...done.
```

See Also

```
errShow  
syslogdIpAdd  
syslogdIpShow
```

syslogdIpShow

Display all syslog daemon IP addresses.

Synopsis

```
syslogdIpShow
```

Availability

All users.

Description

Use this command to display all syslog daemon IP addresses in the configuration database.

Operands

None.

Example

To display all syslog daemon IP addresses:

```
switch:admin> syslogdIpShow
syslog.IP.address.1: 191.168.1.60
syslog.IP.address.2: 191.168.1.88
syslog.IP.address.3: 191.168.2.77
```

See Also

```
errShow
syslogdIpAdd
syslogdIpRemove
```

tempShow

Display temperature readings.

Synopsis

```
tempShow
```

Availability

All users

Description

Use this command to display the current temperature readings from each of the five temperature sensors located on the main printed circuit board of the switch. The sensors are located, approximately, one in each corner and one at the center of the PCB.

Operands

None.

Example

To display the temperature readings for a switch:

```
switch:admin> tempShow
26  26  27  27  26  Centigrade
78  78  80  80  78  Fahrenheit
```

See Also

```
fanShow
psShow
```

timeOut

Used to set or clear idle telnet connection timeout value.

Synopsis

```
timeOut [0 | minutes]
```

Availability

all users (display)

admin (set/clear)

Description

This command changes the telnet timeout value used by the shell. The default value of zero means that telnet timeouts are disabled. A non-zero value specifies the number of minutes to wait before an idle telnet session is timed out. The minimum value is 1 minute, the maximum is 512640 minutes (1 year).

Operands

This command has the following operands:

0	Specify a 0 to disable telnet timeouts. This operand is optional.
minutes	Specify a number of minutes before an idle telnet session is timed out. This operand is optional.

Example

To display the current telnet timeout value, then change it to 10 minutes:

```
switch:admin> timeOut
TimeOut is Disabled
switch:admin> timeOut 10
Committing configuration...done.
TimeOut is now 10 minutes
```

See Also

```
help
version
```

topologyShow

Display the unicast fabric topology.

Synopsis

```
topologyShow [domainnumber]
```

Availability

All users

Description

Use this command to display the fabric topology, as it appears to the local switch.

This includes:

- A list of all domains that are part of the fabric, and to each of those domains, all possible paths from the local switch.
- For each path - cost, the number of hops from the local switch to the destination switch, name of the destination switch, and a summary of all ports are routed through that path.

A path is described by the output port that a frame addressed to a certain domain will be forwarded to by the switches' routing hardware, in order to reach the domain.

With the domain number specified, this command displays the topology information for the specified destination domain.

The display contains the fields shown in Table 1–41.

Table 1–41: topologyShow Fields Description

Field	Description
Local Domain ID	Domain number of local switch.
Domain	Domain number of destination switch.
Metric	Cost of reaching destination domain.
Hops	The maximum number of hops to reach destination domain.

Table 1–41: topologyShow Fields Description (Continued)

Field	Description
Out Port	Port that incoming frame will be forwarded to, in order to reach the destination domain.
Name	Name of destination switch.
Flags	Always 'D', indicating a dynamic path. A dynamic path is discovered automatically by the FSPF path selection protocol.
In Ports	Bit map of input ports to use the corresponding Out Port to reach the destination domain. A bit set to 1 indicates port is being routed through the corresponding Out Port. The least significant bit represents port 0. This is the same information provided in a different format by portRouteShow and uRouteShow.

Operands

This command has the following operand:

domainnumber	Specify the destination domain for which topology information is to be displayed. This operand is optional.
--------------	--

Examples

To display the unicast fabric topology:

```
switch:admin> topologyShow
Local Domain ID: 1
Domain  Metric  Hops  Out Port  In Ports  Flags  Name
-----
0         1000    1     2         0x00002000  D     "sw25"
          1     6         0x00000000  D
          1     7         0x00000000  D
3         1000    1     13        0x000000c4  D     "sw4"
4         2000    2     2         0x00002000  D     "sw10"
          2     6         0x00000000  D
          2     7         0x00000000  D
8         2000    0     2         0x00002000  D     "sw16"
          0     6         0x00000000  D
          0     7         0x00000000  D

switch:admin> topologyShow 4
Local Domain ID: 1
```

Domain	Metric	Hops	Out Port	In Ports	Flags	Name
4	2000	2	2	0x00002000	D	"sw10"
		2	6	0x00000000	D	
		2	7	0x00000000	D	

See Also

portRouteShow
uRouteShow

trackChangesSet

Enables configuring of track-changes feature.

Synopsis

```
trackChangesSet [ 0|1 ], [ snmptrapmode ]
```

Availability

admin

Description

This command enables or disables the track-changes feature. An SNMP-TRAP mode can also be enabled. Trackable changes are:

- Successful login
- Unsuccessful login
- Logout
- Config file change from task
- Track-changes on
- Track-changes off

The output from the Track Changes feature is dumped to the error log for the switch. Use the `errDump` command or `errShow` command to view the error log.

Operands

This command has the following operands:

0 or 1	Specify 1 to enable the track-changes feature or specify 0 to disable the feature. The default (if no operand is specified) is to disable the track-changes feature. This operand is optional.
snmptrapmode	Specify 1 to enable errors to be sent to the SNMP-TRAP in addition to the errlog or specify 0 to disable the SNMP-TRAP messages. The default (if no operand is specified) is to disable SNMP-TRAP messages. This operand is optional.

Example

Below are two examples. The first sets the track-changes feature and disables SNMP TRAP messages. The second disables both the track-changes feature and SNMP TRAP messages.

```
switch:admin> trackChangesSet 1, 0
0x10f9bcd0 (tShell): Feb 10 15:04:38
Error TRACK-TRACK_ON, 4, Track-changes on
Committing configuration...done.
0x10f9bcd0 (tShell): Feb 10 15:04:42
Error TRACK-CONFIG_CHANGE, 4, Config file change from task:tShell

switch:admin> trackChangesSet 0, 0
0x10f9bcd0 (tShell): Feb 10 15:04:50
Error TRACK-TRACK_OFF, 4, Track-changes off
Committing configuration...done.
```

See Also

agtcfgSet
agtcfgShow

trackChangesShow

Displays status of track-changes

Synopsis

```
trackChangesShow
```

Availability

All users

Description

Use this command to display status of the track changes feature. It shows if the feature is turned on or off and if SNMP trap are generated.

The output from the Track Changes feature is dumped to the error log for the switch. Use the `errDump` command or `errShow` command to view the error log.

Example

To display the status of the track-changes feature:

```
switch:admin> trackChangesShow
Track changes status: ON
Track changes generate SNMP-TRAP: YES
```

See Also

```
trackChangesSet
```

trunkDebug

Debug a trunk link failure.

Synopsis

```
trunkDebug port1, port2
```

Availability

admin

Description

Use this command to debug a trunk link failure. This command reports one of the following messages based on the trunking properties of the two specified ports:

- Switch does not support trunking
- Trunking license required
- port<port_id> is not E_port
- port<port_id> trunking disabled
- port<port_id> speed is not 2G
- port<port_id> and port<port_id> are not on same quad
- port<port_id> and port<port_id> connect to different switches
- port<port_id> is not Trunking port due to: E_port being disabled, or trunking may be disabled at remote port
- port<port_id> and port<port_id> can't trunk, please check link length to make sure difference is less than 400 m

Operands

This command has the following operands:

port1	Specify the first port number where you want to debug a trunking link error. This operand is required.
port2	Specify the second port number where you want to debug a trunking link error. This operand is required.

Example

To debug a trunk connection:

```
switch:admin> trunkDebug 1, 2  
port 1 is not E port
```

See Also

```
trunkShow  
portCfgTrunkport  
switchCfgTrunk
```

trunkShow

Display trunking information.

Synopsis

```
trunkShow
```

Availability

all users

Description

Use this command to display trunking information. The fields displayed are shown in Table 1–42.

Table 1–42: trunkShow Fields Description

Field	Description
Trunking Group Number	Displays each trunking group on a switch. All the ports that are part of this trunking group are displayed.
Port to port connections	Displays the port to port trunking connections.
WWN	Displays the WWN of the connected port.
deskew	Displays the single trip time difference between trunked links. Each number corresponds to 10 ns.
Master	Displays whether this trunking port connection is the master port connection for the trunking group.

Operands

None.

Example

To display trunking information for a switch:

```
switch:admin> trunkShow
1: 1 -> 1 10:00:00:60:69:04:10:83  deskew 16  MASTER
0 -> 0 10:00:00:60:69:04:10:83  deskew 55
```

```
2: 4 -> 4    10:00:00:60:69:04:01:94    deskew 45    MASTER
   5 -> 5    10:00:00:60:69:04:01:94    deskew 34
   7 -> 7    10:00:00:60:69:04:01:94    deskew 22
   6 -> 6    10:00:00:60:69:04:01:94    deskew 65
3:14 -> 14   10:00:00:60:69:04:10:83    deskew 46    MASTER
   15 -> 15  10:00:00:60:69:04:10:83    deskew 33
```

See Also

portCfgTrunkport
switchCfgTrunk

turboRamTest

Turbo SRAM logic test for 2Gb ASICs.

Synopsis

```
turboRamTest [passcount]
```

Availability

admin

Description

This command verifies the on chip SRAM located in the 2Gb ASIC using the Turbo-Ram BIST circuitry. These same SRAMS are tested by `portRegTest` and `sramRetentionTest` using PCI operations, but for this test the BIST controller is able to perform the SRAM write and read operations at a much faster rate. It is also able to test one SRAM in each quadrant of every chip in parallel.

The following RAMs and CAMs will be tested using `TurboRAMtest` logic:

1. TX Buffer List Descriptor RAM
2. TX Q Arb Loop FIFO RAM
3. Statistics RAM
4. ALPA Match RAM
5. External Unicast Routing Table RAM
6. Internal Unicast Routing Table RAM
7. Multicast Routing Table RAM
8. TX Buffer Link RAM
9. RX Buffer Frame Tail RAM
10. RX Buffer Frame Link RAM
11. TX Buffer Descriptor RAM (Output/Input Frame Tracking, Buffer State)
12. Private RAM
13. Phantom CAM
14. Phantom DID RAM

15. Phantom ALPA RAM
16. Frame Filtering Destination Group Table RAM
17. Frame Filtering Source Group Table RAM
18. Field Definition Block RAM
19. Frame Filtering Destination CAM
20. Frame Filtering Source CAM
21. Special Memory RAM

The test flow for each SRAM is as follows:

1. Fill RAM with alternating FFFF 0000 pattern. (Subtest 1: turboram memory fill)
2. For each incrementing address read FFFF 0000 pattern and write 0000 FFFF. (Subtest 2: turbo-ram r-m-w inc 1)
3. For each incrementing address read 0000 FFFF pattern and write FFFF 0000. (Subtest 3: turbo-ram r-m-w inc 2)
4. For each decrementing address read FFFF 0000 pattern and write 0000 FFFF. (Subtest 4: turbo-ram r-m-w dec 1)
5. For each decrementing address read 0000 FFFF pattern and write FFFF 0000. (Subtest 5: turbo-ram r-m-w dec 2)
6. Repeat steps 1-5 with AAAA 5555 pattern.

Operands

This command has the following operand:

passcount	Specify the number of turboRamTest passes to execute this test.
-----------	---

Example

To execute this test three times:

```
switch:admin> turboRamTest 3
Running Turbo RAM Test ..... passed.
```

See Also

portRegTest
ramTest
centralMemoryTest
cmiTest
camTest
sramRetentionTest

uptime

Display length of time the system has been operational.

Synopsis

```
uptime
```

Availability

All users

Description

Use this command to display the length of time the system has been in operation (also known as “up time”), the total cumulative amount of “up time” since the system was first powered-on, the date and time of the last reboot, and the reason for the last reboot.

For up and powered-on times less than 60 seconds, the time is displayed in seconds. For times greater than or equal to 60 seconds, the time is displayed in minutes. The output format adjusts accordingly.

The reason for the last switch reboot is also recorded in the error log. Reasons are listed below. Not all the below responses are applicable to all switch models

Table 1–43: Reason for Last Reboot

Reason Type	Description
Unknown	Reason is unknown.
Bus time-out*	Port ASIC was accessed and no response was received.
Bus error*	Non-existent system address was accessed.
Panic*	Firmware detected a critical hardware error or an internal inconsistency.
Fault*	CPU signaled a fault condition (critical firmware error).
Power-on	Last reboot was caused by a power-on.
Watchdog*	Watchdog timer caused a reset.

Table 1–43: Reason for Last Reboot (Continued)

Reason Type	Description
PushButtons	Push buttons 1 and 3 were depressed for two seconds, causing a system reset.
Reboot	Last reboot was caused by a user (from any management interface).
Powerfail NMI*	Power supply caused a nonmaskable interrupt.
Watchdog NMI*	Watchdog timer caused a nonmaskable interrupt.
PushButton NMI*	Push buttons 2 and 4 were depressed for two seconds, causing a nonmaskable interrupt.
Software NMI*	Firmware caused a nonmaskable interrupt.

NOTE: The items marked with an asterisk (*) are usually caused by hardware or firmware failures. Information on the failure is stored in the switch. Follow the procedures in the switch manual.

Operands

None.

Example

To display the uptime for a switch:

```
switch:admin> uptime
Up for:      3 days, 18:35
Powered for: 30 days, 16:05
Last up at:  Mon Mar 22 12:00:00 1999
Reason:      Power-on
```

See Also

```
date
errShow
fastboot
reboot
```

uRouteConfig

Configure a static route.

Synopsis

uRouteConfig port, domain, outputport

Availability

admin

Description

Use this command to configure static routes. A static route is assigned a specific path; the path does not change with a topology change unless the path becomes unavailable.

After this command is issued, and if `outputport` is a usable port, all frames coming in from a specified `port` addressed to the specified `domain` are routed through the specified `outputport`.

If `outputport` is not usable, the routing assignment is not affected. When `outputport` becomes usable the static route assignment for the `port` is enforced.

`outputport` is usable if the associated neighbor associated is in `NB_ST_FULL` state. See `interfaceShow` for more information.

Using static routes can affect load sharing. If a large number of routes are statically configured to the same output port, the ability of the switch to achieve optimum load sharing may be impaired.

To prevent routing loops, static route configuration using a non-minimum cost path is not allowed. If you attempt to configure such a route, you are asked if the entry should be saved in the database.

Operands

This command has the following operands:

port	Specify the port to be statically routed; can be either an <code>F_port</code> or an <code>E_port</code> . Valid values for port number vary depending on the switch type. This operand is required.
------	---

domain	Specify the destination domain. This operand is required.
outputport	Specify the output port where traffic is to be forwarded. This operand is required.

Examples

To configure a static route for all traffic coming in from port 1 and addressed to domain 2 to go through port 5:

```
switch:admin> uRouteConfig 1,2,5
The configuration will now contain the static route:
switch:admin> configShow "route"
route.ucastRoute.1.2:5
route.ucastRouteCount: 1
```

See Also

```
configShow
interfaceShow
uRouteRemove
uRouteShow
```

uRouteRemove

Remove a static route.

Synopsis

```
uRouteRemove port, domainnumber
```

Availability

admin

Description

Use this command to remove a configured static route.

When this command is issued, the route to the specified port and domain may not change. It does not change if the previous static route was along a minimum cost path.

After this command is issued, the load sharing to the specified domain is reevaluated.

Operands

This command has the following operands:

port	Specify the port to be statically routed; can be either an F_port or an E_port. Valid values for port number vary depending on the switch type. This operand is required.
domainnumber	Specify the destination domain. This operand is required.

Examples

To remove a static route for all traffic coming in from port 1 and addressed to domain 2:

```
switch:admin> uRouteRemove 1, 2
```

See Also

```
configShow
uRouteConfig
uRouteShow
```

uRouteShow

Display unicast routing information.

Synopsis

```
uRouteShow [port],[domainnumber]
```

Availability

All users

Description

Use this command to display the unicast routing information for a port, as it is known by the FSPF path selection and routing task. The routing information describes how a frame, that is received from a port on the local switch, is to be routed to reach a destination switch.

The information displayed is described in Table 1–44.

Table 1–44: uRouteShow Information

Information Type	Description
Local Domain ID:	Domain number of local switch.
In Port:	Port from which a frame is received.
Domain:	Destination domain of incoming frame.
Out Port:	Port to which incoming frame is to be forwarded.
Metric:	Cost of reaching the destination domain.
Hops:	Maximum number of hops required to reach the destination domain.
Flags:	Indicates if route is dynamic (D) or static (S). A dynamic route is discovered automatically by the FSPF path selection protocol. A static route is assigned using the command uRouteConfig.

Table 1–44: uRouteShow Information (Continued)

Information Type	Description
Next (Dom, Port):	Domain and port number of the next hop. These are the domain number and the port number of the switch to which Out Port is connected.

Operands

This command has the following operands:

port	Specify the port number you want to view the unicast routing information for. Valid values for port number vary depending on the switch type. This operand is optional.
domainnumber	Displays routing information for the specified port and domain. This operand is optional.

NOTE: If no operand is specified, this command displays routing information for all active ports on the local switch, to all the domains in the fabric.

Examples

To display the unicast routing information:

```
switch:admin> uRouteShow
Local Domain ID: 1
In Port  Domain   Out Port  Metric   Hops   Flags   Next (Dom,Port)
-----
2         3             13       1000    1     D       3,7
Type <CR> to continue, Q<CR> to stop:
6         3             13       1000    1     D       3,7
Type <CR> to continue, Q<CR> to stop:
7         3             13       1000    1     D       3,7
Type <CR> to continue, Q<CR> to stop:
13        0             7        1000    1     D       0,8
         4             2        2000    2     D       0,13

switch:admin> uRouteShow 13
Local Domain ID: 1
In Port  Domain   Out Port  Metric   Hops   Flags   Next (Dom,Port)
-----
13        0             7        1000    1     D       0,8
         4             2        2000    2     D       0,13
```

See Also

portRouteShow, topologyShow, uRouteConfig

version

Display firmware version information.

Synopsis

```
version
```

Availability

All users

Description

Use this command to display firmware version information and build dates.

The information displayed is described in Table 1–45.

Table 1–45: version Display Information

Information Type	Description
Kernel:	Version of switch kernel operating system
Fabric OS:	Version of switch Fabric OS
Made on:	Build date of firmware running in switch
Flash:	Build date of firmware stored in flash proms
BootProm:	Build date of firmware stored in boot prom

Usually the `Made on` and `Flash` dates are the same, since the switch starts running flash firmware at power-on. However, in the time period between `firmwareDownload` and the next reboot, the dates can differ.

Operands

None.

Example

To display firmware version information:

```
switch:admin> version
Kernel:      5.3.1
```

```
Fabric OS: v2.1  
Made on:   Fri Jan 22 15:21:20 PST 1999  
Flash:    Fri Jan 22 15:21:20 PST 1999  
BootProm: Tue Dec 29 17:32:00 PST 1998  
switch:admin>
```

See Also

firmwareDownload
reboot

zoneAdd

Add a member to the zone.

Synopsis

```
zoneAdd "zoneName", "member;member"
```

Availability

admin

Description

Use this command to add one or more members to an existing zone.

Operands

The following operands are required:

"zoneName"	Name for the existing zone, in quotation marks.
"member"	List of members to be added, in quotation marks, separated by semicolons (;). Can be one or more, of the following: <ul style="list-style-type: none">• Physical fabric port number• WWN port or node• QuickLoop AL_PA• Zone alias name

Example

To add aliases for three disk arrays to "Blue_zone":

```
switch:admin> zoneAdd "Blue_Zone", "array3; array4; array5"
```

See Also

```
zoneCreate  
zoneDelete  
zoneRemove  
zoneShow
```

zoneCreate

Create a zone.

Synopsis

```
zoneCreate "zoneName", "member;member"
```

Availability

admin

Description

Use this command to create a new zone.

A zone name is a C-style name beginning with a letter and followed by any number of letters, digits, and underscore characters. Names are case sensitive, for example "Zone_1" indicates a different zone than "zone_1". Blank spaces are ignored.

The zone member list must have at least one member (empty lists are not allowed). The members are described by a list of member definitions separated by semicolons.

Specify a physical fabric port number as a pair of decimal numbers "s,p" where "s" is the switch number (domain ID) and "p" is the port number on that switch. For example, "2,12" specifies port 12 on switch number 2. When a zone member is specified by physical fabric port number, then all devices connected to that port are in the zone. If this port is an arbitrated loop, then all devices on the loop are in the zone.

Specify a Worldwide name as eight hex numbers separated by colons, for example "10:00:00:60:69:00:00:8a". BROCADE ZONING has no knowledge of the fields within a Worldwide Name; the eight bytes are simply compared with the Node and Port Names presented by a device in a login frame (FLOGI or PLOGI). When a zone member is specified by Node Name, then all ports on that device are in the zone. When a zone member is specified by Port Name, then only that single device port is in the zone.

Specify a QuickLoop AL_PA as a QuickLoop name followed by a list of AL_PAs, for example "qloop1[01,02]". QuickLoop names have the same format as zone names, and are created with the qloopCreate command to define a switch or pair of switches that form the QuickLoop.

Specify a zone alias name using the same format as a zone name; it is created with the aliCreate command. The alias must resolve to a list of one or more of the following:

- Physical fabric port numbers

- Worldwide Names
- QuickLoop AL_PAs

The types of zone members used to define a zone may be mixed. For example, a zone defined with the following members: “2,12; 2,14; 10:00:00:60:69:00:00:8a” would contain all devices connected to switch 2, ports 12 and 14, and to the device with the worldwide name “10:00:00:60:69:00:00:8a” (either node name or port name), at the port in the fabric to which it is connected.

Use this command to create a "broadcast" zone. This is a special zone used to specify those nodes that can receive broadcast traffic. Broadcast traffic is usually meant for servers and not storage devices. This zone must be named "broadcast". Only one "broadcast" zone can exist within a fabric. This type of zone is hardware enforced; the switch controls data transfer to a port.

Operands

The following operands are required:

"zoneName"	Name for a zone to be created, in quotation marks. This name cannot be used for any other zone object. memberList of members to be included in zone, in quotation marks, separated by semi-colons. Can be one or more of the following: <ul style="list-style-type: none">• Physical fabric port numbers• Worldwide names• QuickLoop AL_PAs• Zone alias names
------------	---

Example

To create three zones using a combination of port numbers and zone aliases:

```
switch:admin> zoneCreate "Red_zone", "1,0; loop1"  
switch:admin> zoneCreate "Blue_zone", "1,1; array1; 1,2; array2"  
switch:admin> zoneCreate "Green_zone", "1,0; loop1; 1,2; array2"
```

See Also

zoneAdd
zoneDelete
zoneRemove
zoneShow

zoneDelete

Delete a zone.

Synopsis

```
zoneDelete "zoneName"
```

Availability

admin

Description

Use this command to delete a zone.

Operands

This command has the following operands:

"zoneName"	Name of the zone to be deleted, in quotation marks. This operand is required.
------------	---

Example

To delete the zone "Blue_zone":

```
switch:admin> zoneDelete "Blue_zone"
```

See Also

zoneAdd
zoneCreate
zoneRemove
zoneShow

zoneRemove

Remove a member from a zone.

Synopsis

```
zoneRemove "zoneName", "member;member"
```

Availability

admin

Description

Use this command to remove one or more members from an existing zone.

The member list is located by an exact string match, therefore, it is important to maintain the order when removing multiple members. For example, if a zone contains "array2; array3; array4", removing "array3; array4" succeeds. but removing "array4; array3" fails.

If all members are removed, the zone is deleted.

Operands

The following operands are required:

"zoneName"	Name of the zone, in quotation marks.
"member"	List of members to be removed from zone, in quotation marks, separated by semi-colons. Can be one or more of the following: <ul style="list-style-type: none">• Physical fabric port numbers• Worldwide names• QuickLoop AL_PAs• Zone alias names

Example

To remove "array2" from "Blue_zone":

```
switch:admin> zoneRemove "Blue_zone", "array2"
```


See Also

zoneAdd
zoneCreate
zoneDelete
zoneShow

zoneShow

Display zone information.

Synopsis

```
zoneShow [pattern]
```

Availability

All users

Description

Use this command to display zone configuration information.

If no parameters are specified, all zone configuration information (both defined and enabled) is displayed. See `cfgShow` for a description of this display.

If a parameter is specified, it is used as a pattern to match zone configuration names, and those that match in the defined configuration are displayed.

Operands

The following operand is optional:

pattern	<p>A POSIX style regular expression used to match zone configuration names. Patterns may contain:</p> <ul style="list-style-type: none">• Question mark “?” that matches any single character• Asterisk “*” that matches any string of characters• Ranges “[0-9a-f]” that match any character within the range
---------	--

Example

To show all zones beginning with the letters “A” through “C”:

```
switch:admin> zoneShow "[A-C]*"  
zone: Blue_zone 1,1; array1; 1,2; array2
```

See Also

`zoneAdd`, `zoneCreate`, `zoneDelete`, `zoneRemove`

Error Messages

This chapter explains the Fabric OS error message format and possible errors, including:

- System Error Message Formats on page 2-1
- Displaying Error Messages Using Telnet on page 2-3
- Resetting Bad Ports on page 2-3
- Post Test Commands on page 2-3
- Diagnostic Test Failure and Recovery Actions on page 2-4
- Error Message Numbers on page 2-5
- Diagnostic Error Messages on page 2-9
- System Error Messages on page 2-16
- Fabric Watch Error Messages on page 2-24

System Error Message Formats

Error message formats for the switch are the same whether you are accessing the information from the local RS-232 serial port or using a remote telnet session.

Errors are listed in reverse chronological order. Up to 64 messages can be held in the buffer. Once the buffer limit is exceeded, the oldest message is deleted.

The `errShow` command displays all detected errors. The following information is displayed:

- Task ID
- Task name
- Date and time of the error
- Number of occurrences

- Error type
- Error level
- A description of the error
- The error number is displayed for diagnostic errors

NOTE: The error counter goes to a maximum of 999.

The display halts after each error is displayed, prompting you to either press **Enter** to continue or type a **Q** to quit. Continue pressing **Enter** until the prompt (**=>**) is displayed. In the following error message example, Error 02 represents a system error and Error 01 represents a diagnostic error (error number #004). Only diagnostic errors are assigned error numbers.

```
switch:admin> errshow
Error 11
-----
0x101f8fa0 (tShell): Jul 23 15:16:57 (4)
      Error DIAG-TBRAM_DEC_RWTEST, 1, TurboRam, pass 1,
Pt8 (Bm1.0) Failed Turbo RAM dec r/w test:
phy=0x811088a0 wrd cnt=448 dec size=8 bytes
rpt=0xaaaaaaaa wpt=0x55555555 msk=0x000001ff
Err# 0FA2
Type <CR> to continue, Q<CR> to stop:
```

Duplicate error messages may be displayed in the shell if too many error messages are received consecutively, but the data in errShow/errDump, syslog, and SNMP are correct.

In the above sample error message:

- 0x101f8fa0 is the Task ID.
- tShell is the Task Name.
- Jul 23 15:16:57 (4) is the date, time, and number of occurrences of the error.
- DIAG-TBRAM_DEC_RWTEST is the error type.
- Failed Turbo RAM dec r/w test is the error description.
- Err# 0FA2 is the error number.

Displaying Error Messages Using Telnet

To display the error messages compiled by your system, perform the following procedure.

1. Login as an **admin** user to the switch, using a telnet connection.
2. From the prompt, enter the **errShow** command.
3. To scroll through the error list, type CR.
4. Scroll through error log to view the error messages. If no errors are encountered, this command displays “No Error”.

Resetting Bad Ports

If any port fails during a diagnostic test, it is marked BAD in the status display.

To retest a port which has been marked BAD, clear the port and set to OK using the **diagClearError** command. This command clears the port status only and does not clear the logs or change the port’s condition. The **diagClearError** command should only be used during diagnostic procedures to reset a bad port for retest.

Post Test Commands

When the switch is booted a series of commands are executed to test the hardware of the switch. This procedure is called the POST (power on self test).

The Fabric OS POST includes the tests shown in Table 2–1:

Table 2–1: POST Tests

Command	Description
ramTest	Bit write and read test of SDRAMs in the switch.
portRegTest	Bit write and read test of the ASIC SRAMs and registers.
centralMemoryTest	Bit write and read test of the ASIC central memory.
cmiTest	ASIC to ASIC connection test of the CMI bus.
sramRetentionTest	Data retention test of the SRAMs in ASIC.
turboRAMTest	Functional test of RAM.

Table 2–1: POST Tests (Continued)

Command	Description
camTest	Functional test of the CAM memory.
statsTest	Runs a statistics counter diagnostic test.
filterTest	Functional test of filter configuration.
portLoopbackTest	Functional test of switch by sending and receiving frames from the same port.
spinsilk	Functional test of port to port path at maximum switch speed.

For more information about these tests, refer to the individual command descriptions in Chapter 1.

NOTE: The cold boot (power reset) runs the long ramTest while the warm boot (software reset) runs the short ramTest.

Diagnostic Test Failure and Recovery Actions

The actions to perform if the switch fails any of the diagnostic tests are shown in Table 2–2.

NOTE: If you run the portStatsShow or the diagShow command prior to running an individual test, errors may appear as a result of the normal synchronization process. These errors should be addressed if the number of errors found increases after running the portStatsShow command again.

Table 2–2: Diagnostic Test Recovery Action

Failed test	Recovery Action
ramTest *	replace DRAM module or mainboard assembly
portRegTest *	replace mainboard assembly
centralMemoryTest *	replace mainboard assembly
cmiTest *	replace mainboard assembly
cmemRetentionTest	replace mainboard assembly
sramRetentionTest *	replace mainboard assembly
camTest *	replace mainboard assembly
portLoopbackTest *	replace mainboard assembly

Table 2–2: Diagnostic Test Recovery Action (Continued)

Failed test	Recovery Action
crossPortTest	replace mainboard assembly, GBIC, or fiber cable
spinSilk *	replace mainboard assembly, GBIC, or fiber cable

NOTE: * These tests are run during the POST (power on self test).

Error Message Numbers

An error number ERR#xxxx appears at the end of a diagnostic error message. The following table matches each error number with the test that caused the error and the name of the error.

Table 2–3: Error Message Numbers (Sheet 1 of 5)

Test Name	Error Number	Error Name
(N/A)	0001	DIAG-CLEAR_ERR
(N/A)	0004	DIAG-POST_SKIPPED
sramRetentionTest	0B15	DIAG-REGERR
	0B16	DIAG-REGERR_UNRST
	0B0F	DIAG-BUS_TIMEOUT
cmemRetentionTest	1F25	DIAG-LCMRS
	1F26	DIAG-LCMTO
	1F27	DIAG-LCMEM
ramTest *	0110	DIAG-MEMORY
	0111	DIAG-MEMSZ
	0112	DIAG-MEMNULL
portRegTest *	0415	DIAG-REGERR
	0416	DIAG-REGERR_UNRST
	040F	DIAG-BUS_TIMEOUT

Table 2-3: Error Message Numbers (Sheet 2 of 5)

Test Name	Error Number	Error Name
centralMemoryTest *	1020	DIAG-CMBISRTO
	1021	DIAG-CMBISRF
	1025	DIAG-LCMRS
	1026	DIAG-LCMTO
	1027	DIAG-LCMEM
	1028	DIAG-LCMEMTX
	1029	DIAG-CMNOBUF
	102A	DIAG-CMERRTYPE
	102B	DIAG-CMERRPTN
	102C	DIAG-INTNOTCLR
	1030	DIAG-BADINT
	106F	DIAG-TIMEOUT
cmiTest *	2030	DIAG-BADINT
	2031	DIAG-INTNIL
	2032	DIAG-CMISA1
	2033	DIAG-CMINOCAP
	2034	DIAG-CMIINVCAP
	2035	DIAG-CMIDATA
	2036	DIAG-CMICKSUM
camTest *	223B	DIAG-CAMINIT
	223C	DIAG-CAMSID

Table 2-3: Error Message Numbers (Sheet 3 of 5)

Test Name	Error Number	Error Name
portLoopbackTest *	2640	DIAG-ERRSTAT (ENCIN)
	2641	DIAG-ERRSTAT (CRC)
	2642	DIAG-ERRSTAT (TRUNC)
	2643	DIAG-ERRSTAT (2LONG)
	2644	DIAG-ERRSTAT (BADEOF)
	2645	DIAG-ERRSTAT (ENCOUT)
	2646	DIAG-ERRSTAT (BADORD)
	2647	DIAG-ERRSTAT (DISCC3)
	264F	DIAG-INIT
	265F	DIAG-PORT_DIED
	266E	DIAG-DATA
	266F	DIAG-TIMEOUT
	2660	DIAG-STATS(FTX)
	2661	DIAG-STATS(FRX)
	2662	DIAG-STATS(C3FRX)
	2670	DIAG-PORTABSENT
2671	DIAG-XMIT	

Table 2-3: Error Message Numbers (Sheet 4 of 5)

Test Name	Error Number	Error Name
crossPortTest	3040	DIAG-ERRSTAT(ENCIN)
	3041	DIAG-ERRSTAT(CRL)
	3042	DIAG-ERRSTAT(TRUNC)
	3043	DIAG-ERRSTAT(2LONG)
	3044	DIAG-ERRSTAT(BADEOF)
	3045	DIAG-ERRSTAT(ENCOU)
	3046	DIAG-ERRSTAT(BADORD)
	3047	DIAG-ERRSTAT(DISC3)
	304F	DIAG-INIT
	305F	DIAG-PORTDIED
	3060	DIAG-STATS (FTX)
	3061	DIAG-STATS (FRX)
	3062	DIAG-STATS (C3FRX)
	306E	DIAG-DATA
	306F	DIAG-TIMEOUT
	3070	DIAG-PORTABSENT
	3071	DIAG-XMIT
3078	DIAG-PORTWRONG	

Table 2-3: Error Message Numbers (Sheet 5 of 5)

Test Name	Error Number	Error Name
spinSilk	3080	DIAG-PORTM2M
	3081	DIAG-NOSEGMENT
	384F	DIAG-INIT
	385F	DIAG-PORTDIED
	3840	DIAG-ERRSTAT (ENCIN)
	3841	DIAG-ERRSTAT (CRC)
	3842	DIAG-ERRSTAT (TRUNC)
	3843	DIAG-ERRSTAT (2LONG)
	3844	DIAG-ERRSTAT (BADEOF)
	3845	DIAG-ERRSTAT (ENCOUT)
	3846	DIAG-ERRSTAT (BADORD)
	3847	DIAG-ERRSTAT (DISCC3)
	3870	DIAG-PORTABSENT
	3871	DIAG-XMIT
	3874	DIAG-PORTSTOPPED
	3880	DIAG-PORTM2M
3881	DIAG-NOSEGMENT	

NOTE: * These tests are run during the POST (power on self test). For more information about these tests, refer to the individual command description in Chapter 3.

Diagnostic Error Messages

This section provides information on the probable cause of a diagnostic error and what actions to take.

Table 2–4: Diagnostic Error Messages (Sheet 1 of 6)

Message	Description	Probable Cause	Action
DIAG-BADINT Err#1030, 2030 [centralMemoryTest, cmiTest]	Port received an unexpected interrupt	ASIC failure	Replace mainboard assembly
DIAG-BUS_TIMEOUT Err#0BoF, 4040F [portRegTest, sramRetentionTest]	ASIC register or ASIC SRAM did not respond to an ASIC data access	ASIC failure	Replace mainboard assembly
DIAG-CAMINIT Err#223B [camTest]	Port failed to initialize due to one of the following reasons: Switch not disabled Diagnostic queue absent Malloc failed Chip is not present Port is not in loopback mode Port is not active	Software operational setup error or main board failure	Retry, reboot or replace mainboard assembly
DIAG-CAMSID Err#223C [camTest]	ASIC failed SID NO translation test	ASIC failure	Replace mainboard assembly
DIAG-CLEAR_ERR Err#0001	Port's diag error flag (OK or BAD) is cleared	Informational Only	None required
DIAG-CMBISRF Err#1021 [centralMemoryTest]	ASIC's Central Memory SRAMs did not complete the BISR within the timeout period	ASIC failure	Replace mainboard assembly
DIAG-CMBISRTO Err#1020 [centralMemoryTest]	ASIC's Central Memory SRAMs did not complete the BISR within the timeout period	ASIC failure	Replace mainboard assembly

Table 2-4: Diagnostic Error Messages (Sheet 2 of 6)

Message	Description	Probable Cause	Action
DIAG-CMERRPTN Err#102B [centralMemoryTest]	Error detected at the wrong port	ASIC failure	Replace mainboard assembly
DIAG-CMERRTYPE Err#102A [centralMemoryTest]	Port got the wrong CMEM error type	ASIC failure	Replace mainboard assembly
DIAG-CMICKSUM Err#2036 [cmiTest]	CMI message received failed bad checksum test	ASIC or mainboard failure	Replace mainboard assembly
DIAG-CMIDATA Err#2035 [cmiTest]	CMI data received did not match data transmitted	ASIC or mainboard failure	Replace mainboard assembly
DIAG-CMIINVCAP Err#2034 [cmiTest]	Unintended ASIC erroneously got CMI capture flag	ASIC or mainboard failure	Replace mainboard assembly
DIAG-CMINOCAP Err#2033 [cmiTest]	CMI intended receiver ASIC failed to get CMI capture flag	ASIC or mainboard failure	Replace mainboard assembly
DIAG-CMISA1 Err#2032 [cmiTest]	An attempt to send a CMI message from ASIC to ASIC failed	ASIC failure	Replace mainboard assembly
DIAG-CMNOBUF Err#1029 [centralMemoryTest]	Port could not get any buffer	ASIC failure	Replace mainboard assembly
DIAG-DATA Err#266E, 306E [portLoopbackTest, crossPortTest]	Payload received by port did not match payload transmitted	mainboard, GBIC module or fiber cable failure	Replace mainboard assembly, GBIC module or fiber cable

Table 2–4: Diagnostic Error Messages (Sheet 3 of 6)

Message	Description	Probable Cause	Action
DIAG-ERRSTAT Err#2640-2647, 3040-3047, 3840-3847 [portLoopbackTest, crossPortTest, spinSilk]	Port Error Statistics counter is non-zero, meaning an error was detected when receiving frames. One of the following status errors occurred. Enc_in – Encoding error, inside frame CRC_err – Cyclic redundancy check on frame failed TruncFrm – Truncated frame FrmTooLong – Frame too long BadEOF – Bad end of file Enc_out – Encoding error, outside frame BadOrdSet – Bad symbol on fiber-optic cable DiscC3 – Discarded Class 3 frames	ASIC, mainboard, GBIC module or fiber cable failure	Replace mainboard assembly, GBIC module or fiber cable
DIAG-INIT Err#264F, 304F, 384F [portLoopbackTest, crossPortTest, spinSilk]	Port failed to go active in the loopback mode requested	ASIC, main board, GBIC module or fiber cable failure	Replace mainboard assembly, GBIC module or fiber cable
DIAG-INTNIL Err#2031 [cmiTest]	ASIC failed to get a CMI error (interrupt)	ASIC failure	Replace mainboard assembly

Table 2–4: Diagnostic Error Messages (Sheet 4 of 6)

Message	Description	Probable Cause	Action
DIAG-INTNOTCLR Err#102C [centralMemoryTest]	The interrupt bit could not be cleared	ASIC failure	Replace mainboard assembly
DIAG-LCMEM Err#1027 [centralMemoryTest, cmemRetentionTest]	Data read from the Central Memory location did not match data previously written into the same location	ASIC failure	Replace mainboard assembly
DIAG-LCMEMTX Err#1F27, 1028 [centralMemoryTest]	Central Memory transmit path failure: ASIC 1 failed to read ASIC 2 using the transmit path	mainboard failure	Replace mainboard assembly
DIAG-LCMRS Err#1F25, 1025 [centralMemoryTest, cmemRetentionTest]	Central Memory Read Short: M bytes requested but not received	ASIC failure	Replace mainboard assembly
DIAG-LCMTO Err#1F26, 1026 [centralMemoryTest, cmemRetentionTest]	Central Memory Timeout: Data transfer initiated did not complete within the timeout period	ASIC failure	Replace mainboard assembly
DIAG-MEMNULL Err#0112 [ramTest]	Test failed to malloc	mainboard failure	Replace mainboard assembly
DIAG-MEMSZ Err#0111 [ramTest]	Memory size to be tested is less than or equal to zero	mainboard failure	Replace mainboard assembly
DIAG-MEMORY Err#0110 [ramTest]	Data read from RAM location did not match previously written data into same location	CPU RAM failure	Replace mainboard assembly or DRAM module

Table 2–4: Diagnostic Error Messages (Sheet 5 of 6)

Message	Description	Probable Cause	Action
DIAG-NOSEGMENT Err#3081,3881 [crossPortTest, spinSilk]	Port failed to go into loopback mode	Improper GGIC or cable connection	Reseat GBICs and cables and re-execute test
DIAG-PORTABSENT Err#2670, 3070, 3870 [portLoopbackTest, crossPortTest, spinSilk]	Port is not present	ASIC or mainboard failure	Replace mainboard assembly
DIAG-PORTDIED Err#265F, 305F, 385F [portLoopbackTest, crossPortTest, spinSilk]	Port was in loopback mode and then went inactive	ASIC, GBIC module or fiber cable failure	Replace mainboard assembly, GBIC module or fiber cable
DIAG-PORTM2M Err#3080, 3880 [crossPortTest, spinSilk]	Port is found to be connected to itself (self loopback). This Port M to Port M connection is not allowed by the test	Improper cable connection	Reconnect port (M) to another port (N) and re-execute the test
DIAG-PORTSTOPPED Err#3874 [spinSilk]	Port is no longer transmitting, as indicated by the Number Of Frames Transmitted counter being stuck at N frames	ASIC, GBIC module or fiber cable failure	Replace mainboard assembly, GBIC module or fiber cable
DIAG-PORTWRONG Err#3078 [crossPortTest]	Frame erroneously received by port M instead of the intended port N	ASIC failure	Replace mainboard assembly
DIAG-POST_SKIPPED Err# 0004 [switch initialization]	POST is skipped	Informational Only	None required

Table 2-4: Diagnostic Error Messages (Sheet 6 of 6)

Message	Description	Probable Cause	Action
DIAG-REGERR Err#0B15, 0415 [portRegTest, sramRetentionTest]	Data read from ASIC register or ASIC SRAM did not match data previously written into same location	ASIC failure	Replace mainboard assembly
DIAG-REGERR_UNRST Err#0B16, 0416 [portRegTest, sramRetentionTest]	Port failed to unreset	ASIC failure	Replace mainboard assembly
DIAG-STATS Err#2660-2662, 3060 - 3062 [portLoopback Test, crossPortTest]	Port counter value did not match the number of frames actually transmitted. Possible counters reporting: FramesTx - number of frames transmitted FramesRx - number of frames received Cl3FrmRx - number of Class 3 frames received	ASIC, GBIC module or fiber cable failure	Replace mainboard assembly, GBIC module or fiber cable
DIAG-TIMEOUT Err#266F, 306F, 386F [portLoopbackTest, crossPortTest, centralMemoryTest]	For portLoopbackTest and crossPortTest: Port failed to receive frame within timeout period For centralMemoryTest Port failed to detect an interrupt within the timeout period	ASIC, GBIC module or fiber cable failure	Replace mainboard assembly, GBIC module or fiber cable
DIAG-XMIT Err#2271, 2671, 3071, 3871 [portLoopbackTest, crossPortTest, spinSilk, camTest]	Port failed to transmit frame	ASIC failure	Replace mainboard assembly

System Error Messages

This section provides information on the probable cause of a system error and what actions to take.

Table 2–5: System Error Messages (Sheet 1 of 9)

Message	Description	Probable Cause	Action
ASIC, MINI_BUFFER, LOG_WARNING	ASIC Failure	Bad main board	Contact customer support
CONFIG CORRUPT	The switch configuration information has become irrevocably corrupted.	OS error	The system automatically resorts to the default configuration settings.
CONFIG OVERFLOW	The switch configuration information has grown too large to be saved or has an invalid size.	OS error	Contact customer support
CONFIG VERSION	The switch has encountered an unrecognized version of the switch configuration.	OS error	The system automatically reverts to the default configuration settings.
FABRIC, SEGMENTED, LOG_WARNING	Fabric segmented.	Incompatible fabric parameters/switches Conflict zones	Reconfigure fabric or zones. See “configure” on page 21.
FABRIC, BADILS, LOG_WARNING	Bad ISL-ELS size	The ISL-ELS payload is wrong.	Contact customer support

Table 2–5: System Error Messages (Sheet 2 of 9)

Message	Description	Probable Cause	Action
FABRIC, NO_ALIASID, LOG_WARNING	No free multicast alias	Too many multicast groups in use	Remove some of the groups
FANS, 1_FAILED, LOG_WARNING	Switch overheated	Fan Failure	Contact customer support
FANS, 2_FAILED, LOG_ERROR	Switch overheated	Fan Failure	Contact customer support
FANS, 3_FAILED, LOG_CRITICAL	Switch overheated	Fan Failure	Contact customer support
FANS, 4_FAILED, LOG_CRITICAL	Switch overheated	Fan Failure	Contact customer support
FANS, 5_FAILED, LOG_CRITICAL	Switch overheated	Fan Failure	Contact customer support
FANS, 6_FAILED, LOG_CRITICAL	Switch overheated	Fan Failure	Contact customer support
FCIU, IUBAD, L, S	Invalid IU	OS error	Contact customer support
FCIU, IUCOUNT, L, S	Total number of IUs Count < 0	OS error	Contact customer support
FCPH, EXCHBAD, L, S	Bad exchange	OS error	Contact customer support
FCPH, EXCHFEE, L, S	Unable to free an exchange	OS error	Contact customer support

Table 2–5: System Error Messages (Sheet 3 of 9)

Message	Description	Probable Cause	Action
FLANNEL, PHANTOM, LOG_WARNING	Port's PLT limit exceeded	OS error	Contact customer support
FLASH, BAD_MIRROR, LOG_WARNING	The system's flash memory has encountered an error.	OS error	The system attempts to recover from its mirrored backup. Contact customer support.
FLOOD, INVLSU, LOG_WARNING	Discard received LSU	OS error	Contact customer support
FLOOD, INVLSR, LOG_WARNING	Unknown LSR type	OS error	Contact customer support
FLOOD, LSRLen, LOG_ERROR	Excessive LSU length	OS error	Contact customer support
FSPF, INPORT, LOG_ERROR	Input port out of range	OS error	Contact customer support
FSPF, NBRCHANGE, LOG_WARNING	Wrong neighbor ID in Hello message from port	OS error	Contact customer support
FSPF, REMDOMAIN, LOG_ERROR	Remote Domain ID out of range	OS error	Contact customer support
FSPF, SCN, LOG_WARNING	Illegal SCN	OS error	Contact customer support
FSPF, SECTION, LOG_ERROR	Wrong Section Id	OS error	Contact customer support

Table 2–5: System Error Messages (Sheet 4 of 9)

Message	Description	Probable Cause	Action
FSPF, VERSION, LOG_ERROR	FSPF version not supported	OS error	Contact customer support
HLO, DEADTIMEOUT, LOG_ERROR	Incompatible Inactivity timeout from port	OS error	Contact customer support
HLO, HLOTIMEOUT, LOG_ERROR	Incompatible Hello timeout from port	OS error	Contact customer support
HLO, INVHLO, LOG_ERROR	Invalid Hello received from port	OS error	Contact customer support
LSDB, LSID, LOG_ERROR	Link State ID 'd out of range	OS error	Contact customer support
LSDB, MAXINCARN, LOG_WARNING	Local Link State Record reached max incarnation	OS error	Contact customer support
LSDB, NOLOCALENTRY, LOG_CRITICAL	No database entry for local Link State Record	OS error	Contact customer support
LSDB, NOLSR, LOG_WARNING	No Link State Record for domain	OS error	Contact customer support
MCAST, ADDBRANCH, LOG_ERROR	Add Branch failed	OS error	Contact customer support
MCAST, ADDPORT, LOG_WARNING	Add Port failed	OS error	Contact customer support
MCAST, REMBRANCH, LOG_ERROR	Remove branch failed	OS error	Contact customer support

Table 2–5: System Error Messages (Sheet 5 of 9)

Message	Description	Probable Cause	Action
MCAST, REMPORT, LOG_WARNING	Remove port failed	OS error	Contact customer support
MCAST, NOPARENT, LOG_ERROR	Null parent	OS error	Contact customer support
MCAST, NOPARENTLSR, LOG_ERROR	Null lsrP	OS error	Contact customer support
MQ, QWRITE, L, M	Message queue overflow	Task blocked	Contact customer support
MQ, QREAD, L, M	Message queue unread	OS error	Contact customer support
MQ, MSGTYPE, E, M	Unknown message type	OS error	Contact customer support
NBFSM, NGBRSTATE, LOG_ERROR	Wrong input to neighbor FSM	OS error	Contact customer support
PANIC, TASKSPAWN, LOG_PANIC	Task creation failed	OS error	Contact customer support
PANIC, SEMCREATE, LOG_PANIC	Semaphore creation failed	OS error	Contact customer support
PANIC, SEMDELETE, LOG_PANIC	Semaphore deletion failed	OS error	Contact customer support
PANIC, QCREATE, LOG_PANIC	Message queuer failed	OS error	Contact customer support

Table 2–5: System Error Messages (Sheet 6 of 9)

Message	Description	Probable Cause	Action
PANIC, QDELETE, LOG_PANIC	Message queuer deletion failed	OS error	Contact customer support
PANIC, MALLOC, LOG_PANIC	Memory allocation failed	OS error	Contact customer support
PANIC, FREE, LOG_PANIC	Memory free failed	OS error	Contact customer support
PANIC, INCONSISTENT, LOG_PANIC	Data out of sync	OS error	Contact customer support
PANIC, INTCONTEXT, LOG_PANIC	Data out of sync	OS error	Contact customer support
PANIC, ZOMTIMSET, LOG_PANIC	Attempt to set a zombie timer	OS error	Contact customer support
PANIC, ZOMTIMKILL, LOG_PANIC	Zombie timer destroyed	OS error	Contact customer support
PANIC, FREETIMRLSD, LOG_PANIC	Free timer released	OS error	Contact customer support
PANIC, TIMEUSECNT, LOG_PANIC	Timer use count exceeded	OS error	Contact customer support
PANIC, LSDB_CKSUM, LOG_PANIC	Link State Database checksum failed	OS error	Contact customer support
POWER, 1_FAILED, LOG_CRITICAL	Switch Power Failure	Power Supply Failure	Contact customer support

Table 2–5: System Error Messages (Sheet 7 of 9)

Message	Description	Probable Cause	Action
POWER, 2_FAILED, LOG_CRITICAL	Switch Power Failure	Power Supply Failure	Contact customer support
QL, QUICKLOOP PARTNER INCOMPATIBLE	The Quick loop partner switch is running a lower (than v2.1.3) version of the software.	OS error	Upgrade to a higher version of the Fabric OS.
RPC, SVC_EXIT	An RPC service daemon has terminated prematurely or unexpectedly.	OS error	Contact customer support
RPC, SVC_REG	An RPC service daemon could not establish service for a particular protocol handler.	OS error	Contact customer support
SEMA, SEMGIVE, L, M	Unable to give a semaphore	OS error	Contact customer support
SEMA, SEMTAKE, L, M	Unable to take a semaphore	OS error	Contact customer support
SEMA, SEMFLUSH, L, M	Unable to flush a semaphore	OS error	Contact customer support
SYS, NOMEM, LOG_CRITICAL	No memory	OS error	Contact customer support
SYS, SYSCALL, LOG_ERROR	System call failed	OS error	Contact customer support
SYS, BADPTR, LOG_ERROR	Bad system pointer	OS error	Contact customer support

Table 2–5: System Error Messages (Sheet 8 of 9)

Message	Description	Probable Cause	Action
SYS, INTRPT, LOG_CRITICAL	Bad system interrupt	OS error	Contact customer support
SYS, FLASHRD, LOG_ERROR	FLASH memory read error	OS error	Contact customer support
SYS, FLASHWR, LOG_ERROR	FLASH memory write error	OS error	Contact customer support
TEMP, 1_FAILED, LOG_WARNING	Switch overheated	Fan Failure	Contact customer support
TEMP, 2_FAILED, LOG_ERROR	Switch overheated	Fan Failure	Contact customer support
TEMP, 3_FAILED, LOG_CRITICAL	Switch overheated	Fan Failure	Contact customer support
TEMP, 4_FAILED, LOG_CRITICAL	Switch overheated	Fan Failure	Contact customer support
TEMP, 5_FAILED, LOG_CRITICAL	Switch overheated	Fan Failure	Contact customer support
TIMERS, ENQFAIL, LOG_CRITICAL	Invalid timeout value	OS error	Contact customer support
TIMERS, MSG, LOG_WARNING	Invalid message	OS error	Contact customer support
UCAST, ADDPATH, LOG_CRITICAL	Add path failed	OS error	Contact customer support

Table 2–5: System Error Messages (Sheet 9 of 9)

Message	Description	Probable Cause	Action
UCAST, ADDPORT, LOG_WARNING	Add port failed	OS error	Contact customer support
UCAST, REMPORT, LOG_WARNING	Remove port failed	OS error	Contact customer support
UCAST, RRTIM, LOG_CRITICAL	Invalid reroute timer ID	OS error	Contact customer support
UCAST, SPFCOST, LOG_WARNING	No minimum cost path in candidate	OS error	Contact customer support
UCAST, RELICPDB, LOG_WARNING	Relic PDB to Domain	OS error	Contact customer support

Fabric Watch Error Messages

Below are six sample Fabric Watch error messages. The threshold name in the first error message is **fopportState003**. The threshold label in the first error message is **(FOP Port State Changes 3)**.

```
0x1003f2d0 (tThad): May 22 19:20:23
  Error FW-BELOW, 3, fopportState003 (FOP Port State Changes 3) is
  below low boundary. current value : 0 Change(s)/minute. (normal)

0x1003f2d0 (tThad): May 22 19:13:57
  Error FW-ABOVE, 3, fopportCRCs007 (FOP Port Invalid CRCs 7) is
  above high boundary. current value : 5 Error(s)/minute. (faulty)

0x1003f2d0 (tThad): May 22 17:31:33
  Error FW-ABOVE, 3, fopportSync003 (FOP Port Loss of Sync 3) is
  above high boundary. current value : 3 Error(s)/minute. (faulty)

0x1003f2d0 (tThad): May 22 17:31:33
  Error FW-ABOVE, 3, fopportLink003 (FOP Port Link Failures 3) is
  above high boundary. current value : 1 Error(s)/minute. (faulty)

0x1003f2d0 (tThad): May 22 17:31:33
  Error FW-CHANGED, 4, fabricFL000 (Fabric Fabric login) value
```

has changed. current value : 23 Login(s). (info)

0x1003f2d0 (tThad): May 22 17:17:33

Error FW-ABOVE, 3, alpaPerfCRC004 (ALPA Invalid CRCs 4) is above high boundary. current value : 10 Error(s)/minute. (faulty)

The Threshold name of the error message is equal to the class name, area name, and element index added together to form a single character string.

For example:

class name = **env**,

area name = **Fan**,

element index = **000-002**,

then the threshold name is **envFan000 - envFan002**

Another example is as follows:

class name = **gbic**,

area name = **Temp**,

element index = **001-00x**,

then the threshold name is **gbicTemp001-gbicTemp00x**

The threshold and area abbreviations used in Fabric Watch error messages are described in Table 2–6.

Table 2–6: Fabric Watch Threshold Class and Area Abbreviations

Class Name: Class Abbreviation	Area Name: Area Abbreviation
Environment: env	Power supply: Ps
	Temperature (sensor): Temp
	Fan speed sensor: Fan
Gigabit Interface Converter: gbic	Temperature (sensor): Temp
	Receive power: RXP
	Transition power: TXP
	Current: Crnt

Table 2–6: Fabric Watch Threshold Class and Area Abbreviations (Continued)

Class Name: Class Abbreviation	Area Name: Area Abbreviation
Expansion port: eport Port: port Fabric copper port: fcuport Fabric optical port: foppport	Invalid CRCs: CRC
	Link Failures: link
	Protocol Errors: protoErr
	RX Performance: RXPerf
	Loss of Signal: Signal
	State Changes: State
	Loss of Sync: Sync
	TX Performance: TxPerf
	Invalid Words: Words
Fabric: fabric	Domain ID: DI
	E-port down: ED
	Fabric login: FL
	Fabric<->QL: FQ
	Reconfigure: FR
	GBIC change: GS
	Segmentation change: SC
Zoning change: ZC	
Performance ALPA monitor: perfALPA	Crc error: CRC
Performance end to end monitor: perfEE	Crc error: CRC
	Transmission counter: TX
	Receiving counter: RX
Performance filter monitor: perfFilt	Filter frame counter: frame

Licensed Telnet Commands

This chapter summarizes the commands that are only available with a license key.

- Zoning Commands on page 3-1
- QuickLoop Commands on page 3-2
- QuickLoop Fabric Assist Mode Commands on page 3-3
- Extended Fabric Command on page 3-4
- Fabric Watch Commands on page 3-4
- Fibre Channel IS/32 and IS/64 Commands on page 3-4
- Trunking Commands on page 3-5
- Performance Monitoring Commands on page 3-5

NOTE: For more information about Zoning, QuickLoop, Extended Fabrics, Fabric Watch, Trunking, or Advanced Performance Monitoring, refer to the specific user guide for that feature.

Zoning Commands

The following commands are available with the purchase of a Zoning license key. For detailed information about zoning refer to the *Zoning User Guide*.

Table 3–1: Zoning Commands

Command	Description
Zone Alias	
aliAdd	Add a member to a zone alias.
aliCreate	Create a zone alias.
aliDelete	Delete a zone alias.
aliRemove	Remove a member from a zone alias.
aliShow	Show zone alias definition.

Table 3–1: Zoning Commands (Continued)

Command	Description
Zoning	
zoneAdd	Add a member to a zone.
zoneCreate	Create a zone.
zoneDelete	Delete a zone.
zoneRemove	Remove a member from a zone.
zoneShow	Show zone information.
QuickLoop Zoning	
qloopAdd	Add a member to a QuickLoop.
qloopCreate	Create a QuickLoop.
qloopDelete	Delete a QuickLoop.
qloopRemove	Remove a member from a QuickLoop.
qloopShow	Show QuickLoop information.
Zone Configuration	
cfgAdd	Add a zone to a zone configuration.
cfgCreate	Create a zone configuration.
cfgDelete	Delete a zone configuration.
cfgRemove	Remove a zone from a zone configuration.
cfgShow	Show zone configuration definition.
Zone Management	
cfgClear	Clear all zone configurations.
cfgDisable	Disable a zone configuration.
cfgEnable	Enable a zone configuration.
cfgSave	Save zone configurations in flash memory.
cfgTransAbort	Aborts the current zoning transaction.

QuickLoop Commands

The following commands are available with the purchase of a QuickLoop license key. For detailed information about QuickLoop refer to the *QuickLoop User Guide*.

Table 3–2: QuickLoop Commands

Command	Description
qlDisable	Disables QuickLoop mode on the switch.
qlEnable	Enables QuickLoop mode on the switch.
qlPartner	Specifies a partner for a QuickLoop or displays information about the existing partner.
qlPortDisable	Disables a port from QuickLoop mode.
qlPortEnable	Enables a QuickLoop port to QuickLoop mode
qlShow	Displays QuickLoop information.
qlStatsShow	Displays QuickLoop statistics.
qlPortShowAll	Displays QuickLoop port information

QuickLoop Fabric Assist Mode Commands

The following commands are for QuickLoop Fabric Assist Mode. For detailed information about QuickLoop Fabric Assist refer to the *QuickLoop User Guide*.

Table 3–3: QuickLoop Fabric Assist Mode Commands

Command	Description
fazoneAdd	Add member(s) to an existing QuickLoop Fabric Assist zone.
fazoneCreate	Creates a QLFA zone.
fazoneDelete	Delete an existing QuickLoop Fabric Assist zone.
fazoneRemove	Remove member or members from an existing QuickLoop Fabric Assist zone.
fazoneShow	Display QuickLoop Fabric Assist zone information.
faShow	Displays the port number and PID for each Fabric Assist host port located on this switch. It will also display a listing of each Target that has a Fabric Assist phantom on the host's port. The target's PID, assigned phantom ALPA and current online or offline status will all be displayed.
faStatsShow	Displays a set of statistics for each QLFA host on the switch.

Extended Fabric Command

The following commands are available with the purchase of a Extended Fabrics license key. For detailed information about Extended Fabrics refer to the *Distributed Fabrics User Guide*.

Table 3–4: Extended Fabric Commands

Command	Description
portCfgLongDistance	Configure a port to support long distance links.

Fabric Watch Commands

The following commands are available with the purchase of a Fabric Watch license key. For detailed information about Fabric Watch refer to the *Fabric Watch User Guide*.

Table 3–5: Fabric Watch Commands

Command	Description
fwClassInit	Initializes all classes under Fabric Watch.
fwConfigReload	Reloads the Fabric Watch configuration.
fwConfigure	Displays and allows modification of the Fabric Watch configuration and status.
fwShow	Displays the thresholds monitored by Fabric Watch.

Fibre Channel IS/32 and IS/64 Commands

The following commands are specific to the administration of the Compaq StorageWorks Fibre Channel IS/32 and IS/64 Switches.

Table 3–6: IS/32 and IS/64 Switch Commands

Command	Description
islTopoCheck	Display ISL switch group connections for a switch.
islTopoShow	Displays ISL switch group topology and status.
sgroupDelete	Delete a switch group.
sgroupRename	Rename a switch group.

Table 3–6: IS/32 and IS/64 Switch Commands (Continued)

Command	Description
<code>sgroupSet</code>	Create a switch group.
<code>sgroupShow</code>	Display switch group configuration information.
<code>sgroupSupportShow</code>	Display information about the 6400 switch for support purposes.
<code>sgroupSwReplace</code>	Replace a member of a switch group.

Trunking Commands

The following commands are available with the purchase of a Trunking license key. For more detailed information about trunking refer to the *ISL Trunking User Guide*.

Table 3–7: Trunking Commands

Command	Description
<code>portCfgTrunkport</code>	Configure a port for trunking.
<code>switchCfgTrunk</code>	Configure a switch for trunking.
<code>trunkDebug</code>	Debug a trunking connection.
<code>trunkShow</code>	Display information about trunking on a switch.

Performance Monitoring Commands

The following commands are available with the purchase of a Performance Monitoring license key. For more detailed information about Performance Monitoring refer to the *Performance Monitoring User Guide*.

Table 3–8: Performance Monitoring Commands

Command	Description
<code>perfAddEEMonitor</code>	Add an end-to-end monitor to a port.
<code>perfAddIPMonitor</code>	Add an IP monitor to a port.
<code>perfAddReadMonitor</code>	Add a SCSI Read monitor to a port.
<code>perfAddRWMonitor</code>	Add a SCSI Read and Write monitor to a port.

Table 3–8: Performance Monitoring Commands (Continued)

Command	Description
perfAddSCSIMonitor	Add a SCSI traffic frame monitor to a port.
perfAddUserMonitor	Add a user-defined monitor to a port.
perfAddWriteMonitor	Add a SCSI Write monitor to a port.
perfCfgClear	Clear the performance monitoring settings from flash memory.
perfCfgRestore	Restore performance monitoring settings from flash memory.
perfCfgSave	Save the current performance monitoring settings to flash memory.
perfClrAlpaCrc	Clear an ALPA device CRC count by the port and ALPA.
perfDeleEMonitor	Delete an end-to-end monitor on port.
perfDelFilterMonitor	Delete a filter-based monitor.
perfHelp	Display performance monitoring help information.
perfSetPortEEMask	Set overall mask for end-to-end (EE) monitors.
perfShowAlpaCrc	Display the ALPA CRC count by port or by ALPA.
perfShowEEMonitor	Display user-defined end-to-end monitors on a port.
perfShowFilterMonitor	Display filter-based monitors for a port.
perfShowPortEEMask	Display the current end-to-end mask of a port.

Glossary

This glossary defines terms used in this guide or related to this product and is not a comprehensive glossary of computer terms.

8b/10b Encoding

An encoding scheme that converts each 8-bit byte into 10 bits. Used to balance ones and zeros in high-speed transports.

Address Identifier

A 24-bit or 8-bit value used to identify the source or destination of a frame.

AL_PA

Arbitrated Loop Physical Address; a unique 8-bit value assigned during loop initialization to a port in an arbitrated loop.

Alias Address Identifier

An address identifier recognized by a port in addition to its standard identifier. An alias address identifier may be shared by multiple ports.

Alias AL_PA

An AL_PA value recognized by an L_Port in addition to the AL_PA assigned to the port. See also *AL_PA*.

Alias Server

A fabric software facility that supports multicast group management.

API

Application Programming Interface; defined protocol that allows applications to interface with a set of services.

Arbitrated Loop

A shared 100 MBps Fibre Channel transport structured as a loop. Can support up to 126 devices and one fabric attachment. See also *Topology*.

ASIC

Application Specific Integrated Circuit.

ATM

Asynchronous Transfer Mode; a transport used for transmitting data over LANs or WANs that transmit fixed-length units of data. Provides any-to-any connectivity, and allows nodes to transmit simultaneously.

AW_TOV

Arbitration Wait Time-out Value; the minimum time an arbitrating L_Port waits for a response before beginning loop initialization.

Bandwidth

The total transmission capacity of a cable, link, or system. Usually measured in bps (bits per second). May also refer to the range of transmission frequencies available to a network. See also *Throughput*.

BB_Credit

Buffer-to-buffer credit; the number of frames that can be transmitted to a directly connected recipient or within an arbitrated loop. Determined by the number of receive buffers available. See also *Buffer-to-buffer Flow Control*, *EE_Credit*.

Beginning Run Disparity

The disparity at the transmitter or receiver when the special character associated with an ordered set is encoded or decoded. See also *Disparity*.

BER

Bit Error Rate; the rate at which bits are expected to be received in error. Expressed as the ratio of error bits to total bits transmitted. See also *Error*.

Block

As applies to Fibre Channel, upper-level application data that is transferred in a single sequence.

Bridge

Hardware that connects incompatible networks by providing translation for both hardware and software. For example, an ATM gateway can connect a Fibre Channel link to an ATM connection.

Broadcast

The transmission of data from a single source to all devices in the fabric, regardless of zoning. See also *Multicast*, *Unicast*.

Buffer-to-buffer Flow Control

Management of the frame transmission rate in either a point-to-point topology or in an arbitrated loop. See also *BB_Credit*.

Cascade

Two or more interconnected Fibre Channel switches. The recommended number of interswitch links is seven. See also *Fabric*, *ISL*.

Chassis

The metal frame in which the switch and switch components are mounted.

Circuit

An established communication path between two ports. Consists of two virtual circuits capable of transmitting in opposite directions. See also *Link*.

Class 1

Service that provides a dedicated connection between two ports (also called connection-oriented service), with notification of delivery or nondelivery.

Class 2

Service that provides multiplex and connection-less frame switching service between two ports, with notification of delivery or nondelivery.

Class 3

Service that provides a connection-less frame switching service between two ports, without notification of delivery or nondelivery of data. Can also be used to provide a multicast connection between the originator and recipients, with notification of delivery or nondelivery.

Class 4

Connection-oriented service that provides a virtual circuit between two ports, with notification of delivery or nondelivery. Allows fractional parts of the bandwidth to be used in a virtual circuit.

Class 6

Connection-oriented service that provides a multicast connection between the multicast originator and recipients, with notification of delivery or nondelivery.

Class F

Connection-less service for control traffic between switches, with notification of delivery or nondelivery of data between the E_Ports.

Class of Service

A specified set of delivery characteristics and attributes for frame delivery.

CLS

Close Primitive Signal. The protocol used by a port in an arbitrated loop to close a circuit.

Code Balance

The ratio of one bit to the total number of transmitted bits.

Comma

A unique pattern (either 1100000 or 0011111) used in 8B/10B encoding to specify character alignment within a data stream. See also *K28.5*.

Command Line

Interface that depends entirely on the use of commands, such as through telnet or SNMP, and does not involve a GUI.

Community (SNMP)

A relationship between a group of SNMP managers and an SNMP agent, in which authentication, access control, and proxy characteristics are defined. See also *SNMP*.

Connection Initiator

A port that has originated a Class 1 dedicated connection and received a response from the recipient.

Connection Recipient

A port that has received a Class 1 dedicated connection request and transmitted a response to the originator.

CRC

Cyclic Redundancy Check; a check for transmission errors included in every data frame.

Credit

As applies to Fibre Channel, the number of receive buffers available for transmission of frames between ports. See also *BB_Credit*, *EE_Credit*.

CT_HDR

Common Transport Header. A header that conforms to the Fibre Channel Common Transport (FC_CT) protocol.

CT_IU

Common Transport Information Unit. An information unit that conforms to the Fibre Channel Common Transport (FC_CT) protocol.

Current Fill Word

The fill word currently selected by the LPSM (loop port state machine). See also *Fill Word*.

Cut-through

A switching technique that allows the route for a frame to be selected as soon as the destination address is received. See also *Route*.

Data Word

Type of transmission word that occurs within frames. The frame header, data field, and CRC all consist of data words. See also *Frame*, *Ordered set*, *Transmission Word*.

Defined Zone Configuration

The set of all zone objects defined in the fabric. May include multiple zone configurations. See also *Enabled Configuration*, *Zone Configuration*.

Disparity

The relationship of ones and zeros in an encoded character. “Neutral disparity” means an equal number of each, “positive disparity” means a majority of ones, and “negative disparity” means a majority of zeros.

DLS

Dynamic Load Sharing; dynamic distribution of traffic over available paths. Allows for recomputing of routes when an Fx_Port or E_Port changes status.

Domain ID

As applies to SAN switches, a unique number between 1 and 239 that identifies the switch to the fabric and is used in routing frames. Usually automatically assigned by the switch, but can be manually assigned.

E_D_TOV

Error Detect Time-out Value; the minimum amount of time a target waits for a sequence to complete before initiating recovery. Can also be defined as the maximum time allowed for a round-trip transmission before an error condition is declared. See also *R_A_TOV*, *RR_TOV*.

E_Port

Expansion Port; a type of switch port that can be connected to an E_Port on another switch to create an ISL. See also *ISL*.

EE_Credit

End-to-end Credit; the number of receive buffers allocated by a recipient port to an originating port. Used by Class 1 and 2 services to manage the exchange of frames across the fabric between source and destination. See also *End-to-end Flow Control*, *BB_Credit*.

EIA Rack

A storage rack that meets the standards set by the Electronics Industry Association.

Enabled Zone Configuration

The currently enabled configuration of zones. Only one configuration can be enabled at a time. See also *Defined Configuration*, *Zone Configuration*.

End-to-end Flow Control

Governs flow of class 1 and 2 frames between N_Ports. See also *EE_Credit*.

Error

As applies to Fibre Channel, a missing or corrupted frame, time-out, loss of synchronization, or loss of signal (link errors). See also *Loop Failure*.

Exchange

The highest level Fibre Channel mechanism used for communication between N_Ports. Composed of one or more related sequences, and can work in either one or both directions.

F_Port

Fabric Port; a port that is able to transmit under fabric protocol and interface over links. Can be used to connect an N_Port to a switch. See also *FL_Port*, *Fx_Port*.

Fabric Name

The unique identifier assigned to a fabric and communicated during login and port discovery.

Fabric

A Fibre Channel network containing two or more switches in addition to hosts and devices. May also be referred to as a switched fabric. See also *Topology*, *SAN*, *Cascade*.

FC-AL-3

The Fibre Channel Arbitrated Loop standard defined by ANSI. Defined on top of the FC-PH standards.

FC-FLA

The Fibre Channel Fabric Loop Attach standard defined by ANSI.

FCIA

Fibre Channel Industry Association. An international organization of Fibre Channel industry professionals. Among other things, provides oversight of ANSI and industry developed standards

FCP

Fibre Channel Protocol; mapping of protocols onto the Fibre Channel standard protocols. For example, SCSI FCP maps SCSI-3 onto Fibre Channel.

FC-PH-1, 2, 3

The Fibre Channel Physical and Signalling Interface standards defined by ANSI.

FC-PI

The Fibre Channel Physical Interface standard defined by ANSI.

FC-PLDA

The Fibre Channel Private Loop Direct Attach standard defined by ANSI. Applies to the operation of peripheral devices on a private loop.

FC-SW-2

The second generation of the Fibre Channel Switch Fabric standard defined by ANSI. Specifies tools and algorithms for the interconnection and initialization of Fibre Channel switches in order to create a multi-switch Fibre Channel fabric.

Fibre Channel Transport

A protocol service that supports communication between Fibre Channel service providers. See also *FSP*.

Fill Word

An IDLE or ARB ordered set that is transmitted during breaks between data frames to keep the Fibre Channel link active.

FL_Port

Fabric Loop Port; a port that is able to transmit under fabric protocol and also has arbitrated loop capabilities. Can be used to connect an NL_Port to a switch. See also *F_Port*, *Fx_Port*.

FLOGI

Fabric Login; the process by which an N_Port determines whether a fabric is present, and if so, exchanges service parameters with it. See also *PLOGI*.

Frame

The Fibre Channel structure used to transmit data between ports. Consists of a start-of-frame delimiter, header, any optional headers, the data payload, a cyclic redundancy check (CRC), and an end-of-frame delimiter. There are two types of frames: Link control frames (transmission acknowledgements, etc.) and data frames.

FS_ACC

Fibre Channel Services Accept. The information unit used to indicate acceptance of a request for a Fibre Channel service.

FS_IU

Fibre Channel Services Information Unit. An information unit that has been defined by a specific Fibre Channel service.

FS_REQ

Fibre Channel Services Request. A request for a Fibre Channel services function, or notification of a fabric condition or event.

FS_RJT

Fibre Channel Services Reject. An indication that a request for Fibre Channel services could not be processed.

FS

Fibre Channel Service; a service that is defined by Fibre Channel standards and exists at a well-known address. For example, the Simple Name Server is a Fibre Channel service. See also *FSP*.

FSP

Fibre Channel Service Protocol; the common protocol for all fabric services, transparent to the fabric type or topology. See also *FS*.

FSPF

Fabric Shortest Path First; the routing protocol for Fibre Channel switches.

Full Fabric

The licensing that allows multiple E_Ports on a switch, making it possible to create multiple ISL links.

Full-duplex

A mode of communication that allows the same port to simultaneously transmit and receive frames. See also *Half-duplex*.

Fx_Port

A fabric port that can operate as either an F_Port or FL_Port. See also *F_Port*, *FL_Port*.

G_Port

Generic Port; a port that can operate as either an E_Port or F_Port. A port is defined as a G_Port when it is not yet connected or has not yet assumed a specific function in the fabric.

Gateway

A device such as a switch that connects different subnets together. A switch can be used as a gateway from the Ethernet to the Fibre Channel. Set the gateway address on one switch to the Fibre Channel IP address of another switch to enable the other switch to forward IP traffic to the ethernet port on the second switch.

GBIC

Gigabit Interface Converter; a removable serial transceiver module that allows gigabaud physical-level transport for Fibre Channel and gigabit ethernet. Also known as Optical Transceiver.

Gbps

Gigabits per second (1,062,500,000 bits/second).

GBps

GigaBytes per second (1,062,500,000 bytes/second).

Half-duplex

A mode of communication that allows a port to either transmit or receive frames at any time, but not simultaneously (with the exception of link control frames, which can be transmitted at any time). See also *Full-duplex*.

Hard Address

The AL_PA that an NL_Port attempts to acquire during loop initialization.

Hardware Translative Mode

A method for achieving address translation. The following two hardware translative modes are available to a QuickLoop enabled switch:

- Standard Translative Mode: Allows public devices to communicate with private devices that are directly connected to the fabric.
- QuickLoop Mode: Allows initiator devices to communicate with private or public devices that are not in the same loop.

HBA

Host Bus Adapter; the interface card between a server or workstation bus and the Fibre Channel network.

Hub

A Fibre Channel wiring concentrator that collapses a loop topology into a physical star topology. Nodes are automatically added to the loop when active and removed when inactive.

Idle

Continuous transmission of an ordered set over a Fibre Channel link when no data is being transmitted, to keep the link active and maintain bit, byte, and word synchronization.

IN_ID

Initial Identifier. The field in the CT_HDR where the port ID of the client originator of a Fibre Channel Services request.

Initiator

A server or workstation on a Fibre Channel network that initiates communications with storage devices. See also *Target*.

Integrated Fabric

The fabric created by a Compaq StorageWorks Fibre Channel SAN Switch IS/32 or IS/64, or SAN Switches 16-EL/8-EL switches cabled together and configured to handle traffic as a seamless group.

IOD

In-order Delivery; a parameter that, when set, guarantees that frames are either delivered in order or dropped.

IPA

Initial Process Associator. An identifier associated with a process at an N_Port.

ISL

Interswitch Link; a Fibre Channel link from the E_Port of one switch to the E_Port of another. See also *E_Port*, *Cascade*.

Isolated E_Port

An E_Port that is online but not operational due to overlapping domain IDs or nonidentical parameters (such as E_D_TOVs). See also *E_Port*.

IU

Information Unit; a set of information as defined by either upper-level process protocol definition or upper-level protocol mapping.

K28.5

A special 10-bit character used to indicate the beginning of a transmission word that performs Fibre Channel control and signaling functions. The first seven bits of the character are the comma pattern. See also *Comma*.

L_Port

Loop Port; a node port (NL_Port) or fabric port (FL_Port) that has arbitrated loop capabilities. An L_Port can be in one of two modes:

- *Fabric mode* Connected to a port that is not loop capable, and using fabric protocol.
- *Loop mode* In an arbitrated loop and using loop protocol. An L_Port in loop mode can also be in participating mode or non-participating mode.

See also *Non-participating Mode*, *Participating Mode*.

Latency

The period of time required to transmit a frame, from the time it is sent until it arrives.

Link Services

A protocol for link-related actions.

Link

As applies to Fibre Channel, a physical connection between two ports, consisting of both transmit and receive fibres. See also *Circuit*.

LIP

Loop Initialization Primitive; the signal used to begin initialization in a loop. Indicates either loop failure or resetting of a node.

LIS_HOLD_TIME

Loop Initialization Sequence Hold Time. The maximum period of time for a node to forward a loop initialization sequence.

LM_TOV

Loop Master Time-out Value; the minimum time that the loop master waits for a loop initialization sequence to return.

Login BB_Credit

The number of receive buffers a receiving L_Port has available when a circuit is first established. Communicated through PLOGI, PDISC link services, or FLOGI.

Loop Circuit

A temporary bidirectional communication path established between L_Ports.

Loop Failure

Loss of signal within a loop for any period of time, or loss of synchronization for longer than the time-out value.

Loop Initialization

The logical procedure used by an L_Port to discover its environment. Can be used to assign AL_PA addresses, detect loop failure, or reset a node.

Loop_ID

A hex value representing one of the 127 possible AL_PA values in an arbitrated loop.

Looplet

A set of devices connected in a loop to a port that is a member of another loop.

LPSM

Loop Port State Machine; the logical entity that performs arbitrated loop protocols and defines the behavior of L_Ports when they require access to an arbitrated loop.

LWL

Long Wavelength; a type of fiber optic cabling that is based on 1300-nm lasers and supports link speeds of 1.0625 Gbps. May also refer to the type of GBIC or SFP. See also *SWL*.

Master Port

As relates to trunking, the port that determines the routing paths for all traffic flowing through the trunking group. One of the ports in the first ISL in the trunking group is designated as the master port for that group. See also *ISL Trunking*.

MIB

Management Information Base; an SNMP structure to help with device management, providing configuration and device information.

Monitoring State

The state in which a port is monitoring the flow of information for data relevant to the port.

Multicast

The transmission of data from a single source to multiple specified N_Ports (as opposed to all the ports on the network). See also *Broadcast*, *Unicast*.

Multimode

A fiber optic cabling specification that allows up to 500 meters between devices.

N_Port

Node Port; a port on a node that can connect to a Fibre Channel port or to another N_Port in a point-to-point connection. See also *NL_Port*, *Nx_Port*.

NAA

Network Address Authority. An identifier that indicates the format of a network address.

Name Server

Frequently used to indicate Simple Name Server. See also *SNS*.

NL_Port

Node Loop Port; a node port that has arbitrated loop capabilities. Used to connect an equipment port to the fabric in a loop configuration through an FL_Port. See also *N_Port*, *Nx_Port*.

Node Name

The unique identifier for a node, communicated during login and port discovery.

Node

A Fibre Channel device that contains an N_Port or NL_Port.

Non-participating Mode

A mode in which an L_Port in a loop is inactive and cannot arbitrate or send frames, but can retransmit any received transmissions. This mode is entered if there are more than 127 devices in a loop and an AL_PA cannot be acquired. See also *L_Port*, *Participating Mode*.

Nx_Port

A node port that can operate as either an N_Port or NL_Port.

Open Originator

The L_Port that wins arbitration in an arbitrated loop and sends an OPN ordered set to the destination port, then enters the Open state.

Open Recipient

The L_Port that receives the OPN ordered set from the open originator, and then enters the Open state.

Open State

The state in which a port can establish a circuit with another port. A port must be in the Open state before it can arbitrate.

OPN

Open Primitive Signal. The protocol used by a port that has won arbitration in an arbitrated loop to establish a circuit.

Ordered Set

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

- *Frame delimiters* Mark frame boundaries and describe frame contents.
- *Primitive signals* Indicate events.
- *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.

Packet

A set of information transmitted across a network. See also *Frame*.

Participating Mode

A mode in which an L_Port in a loop has a valid AL_PA and can arbitrate, send frames, and retransmit received transmissions. See also *L_Port, Non-participating Mode*.

Path Selection

The selection of a transmission path through the fabric. The Compaq switches use the FSPF protocol.

Phantom Address

An AL_PA value that is assigned to an device that is not physically in the loop. Also known as phantom AL_PA.

A twenty-bit public address created for an 8-bit loop device to allow public devices to access it.

Phantom Device

A device that is not physically in an arbitrated loop, but is logically included through the use of a phantom address.

PLOGI

Port Login; the port-to-port login process by which initiators establish sessions with targets. See also *FLOGI*.

Point-to-point

A Fibre Channel topology that employs direct links between each pair of communicating entities. See also *Topology*.

Port Cage

The metal casing extending out of the optical port on the switch, and in which the SFP can be inserted.

Port_Name

The unique identifier assigned to a Fibre Channel port. Communicated during login and port discovery.

POST

Power On Self-Test; a series of tests run by a switch after it is turned on.

Private Device

A device that supports arbitrated loop protocol and can interpret 8-bit addresses, but cannot log into the fabric.

Private Loop

An arbitrated loop that does not include a participating FL_Port.

Private NL_Port

An NL_Port that communicates only with other private NL_Ports in the same loop and does not log into the fabric.

Protocol

A defined method and a set of standards for communication.

Public NL_Port

An NL_Port that logs into the fabric, can function within either a public or a private loop, and can communicate with either private or public NL_Ports.

Public Device

A device that can log into the fabric and support 20-bit addresses (or has 20-bit phantom addresses created for it by the switch). See also *Phantom Addresses*

Public Loop

An arbitrated loop that includes a participating FL_Port, and may contain both public and private NL_Ports.

QuickLoop

A feature that makes it possible to allow private devices within loops to communicate with public and private devices across the fabric through the creation of a larger loop.

May also refer to the arbitrated loop created using this software. A QuickLoop can contain a number of devices or looplets; all devices in the same QuickLoop share a single AL_PA space.

R_A_TOV

Resource Allocation Time-out Value; the maximum time a frame can be delayed in the fabric and still be delivered. See also *E_D_TOV*, *RR_TOV*.

Route

As applies to a fabric, the communication path between two switches. May also apply to the specific path taken by an individual frame, from source to destination. See also *FSPF*.

Routing

The assignment of frames to specific switch ports, according to frame destination.

RR_TOV

Resource Recovery Time-out Value; the minimum time a target device in a loop waits after a LIP before logging out a SCSI initiator. See also *E_D_TOV*, *R_A_TOV*.

RSCN

Registered State Change Notification; a switch function that allows notification of fabric changes to be sent from the switch to specified nodes.

RX_ID

Responder Exchange Identifier. A 2-byte field in the frame header used by the responder of the Exchange to identify frames as being part of a particular exchange.

SAN

Storage Area Network; a network of systems and storage devices that communicate using Fibre Channel protocols. See also *Fabric*.

Sequence

A group of related frames transmitted in the same direction between two N_Ports.

Service Rate

The rate at which an entity can service requests. See also *Request Rate*.

Single Mode

The fiber optic cabling standard that corresponds to distances of up to 10 km between devices.

SI

Sequence Initiative.

SNMP

Simple Network Management Protocol. An internet management protocol that uses either IP for network-level functions and UDP for transport-level functions, or TCP/IP for both. Can be made available over other protocols, such as UDP/IP, because it does not rely on the underlying communication protocols. See also *Community (SNMP)*.

SNMPv1

The original SNMP protocol, now labeled v1.

SNS

Simple Name Server; a switch service that stores names, addresses, and attributes for up to 15 minutes, and provides them as required to other devices in the fabric. SNS is defined by Fibre Channel standards and exists at a well-known address. May also be referred to as directory service. See also *FS*.

Switch Name

The arbitrary name assigned to a switch.

Switch Port

A port on a switch. Switch ports can be E_Ports, F_Ports, or FL_Ports.

Switch

Hardware that routes frames according to Fibre Channel protocol and is controlled by software.

SWL

Short Wavelength; a type of fiber optic cabling that is based on 850-nm lasers and supports 1.0625-Gbps link speeds. May also refer to the type of GBIC or SFP. See also *LWL*.

Target

A storage device on a Fibre Channel network. See also *Initiator*.

Tenancy

The time from when a port wins arbitration in a loop until the same port returns to the monitoring state. Also referred to as loop tenancy.

Throughput

The rate of data flow achieved within a cable, link, or system. Usually measured in bps (bits per second). See also *Bandwidth*.

Topology

As applies to Fibre Channel, the configuration of the Fibre Channel network and the resulting communication paths allowed. There are three possible topologies:

- Point to point - A direct link between two communication ports.
- Switched fabric - Multiple N_Ports linked to a switch by F_Ports.
- Arbitrated loop - Multiple NL_Ports connected in a loop.

Transfer State

The state in which a port can establish circuits with multiple ports without reentering the arbitration cycle for each circuit. This state can only be accessed by an L_Port in the Open state.

Translative Mode

A mode in which private devices can communicate with public devices across the fabric.

Transmission Character

A 10-bit character encoded according to the rules of the 8B/10B algorithm.

Transmission Word

A group of four transmission characters.

Trap (SNMP)

The message sent by an SNMP agent to inform the SNMP management station of a critical error. See also *SNMP*.

Tunneling

A technique for enabling two networks to communicate when the source and destination hosts are both on the same type of network, but are connected by a different type of network.

U_Port

Universal Port; a switch port that can operate as a G_Port, E_Port, F_Port, or FL_Port. A port is defined as a U_Port when it is not connected or has not yet assumed a specific function in the fabric.

UDP

User Datagram Protocol; a protocol that runs on top of IP and provides port multiplexing for upper-level protocols.

ULP_TOV

Upper-level Time-out Value; the minimum time that a SCSI ULP process waits for SCSI status before initiating ULP recovery.

ULP

Upper-level Protocol; the protocol that runs on top of Fibre Channel. Typical upper-level protocols are SCSI, IP, HIPPI, and IPI.

Unicast

The transmission of data from a single source to a single destination. See also *Broadcast*, *Multicast*.

Well-known Address

As pertaining to Fibre Channel, a logical address defined by the Fibre Channel standards as assigned to a specific function, and stored on the switch.

Workstation

A computer used to access and manage the fabric. May also be referred to as a management station or host.

WWN

Worldwide Name; an identifier that is unique worldwide. Each entity in a fabric has a separate WWN.

Xmitted Close State

The state in which an L_Port cannot send messages, but can retransmit messages within the loop. A port in the XMITTED CLOSE state cannot attempt to arbitrate.

Zone Configuration

A specified set of zones. Enabling a configuration enables all zones in that configuration. See also *Defined Configuration*, *Enabled Configuration*.

Zone

A set of devices and hosts attached to the same fabric and configured as being in the same zone. Devices and hosts within the same zone have access permission to others in the zone, but are not visible to any outside the zone. See also *Zoning*.

Zoning

A feature that runs on Fabric OS and allows partitioning of the fabric into logical groupings of devices. Devices in a zone can only access and be accessed by devices in the same zone. See also *Zone*.

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