reference manual
version 2.4

Fabric OS

www.hp.com

Notice

Edition: E0801

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Safety notices

Any servicing, adjustment, maintenance, or repair must be performed only by authorized service-trained personnel.

Format conventions

variable	Indicates that you must supply a value.
`output`	Denotes text displayed on the screen.
[ ]	Indicates that the enclosed element is optional and may be left out.
{ }	Indicates that you must specify one of the listed options.
|	Separates alternatives.
. . .	Indicates a repetition of the preceding parameter.

Tip Denotes ideas for enhanced product usage.

Note Denotes significant concepts or operating instructions.

CAUTION Denotes a hazard that can cause hardware or software damage.

WARNING Denotes a hazard that can cause personal injury or death.

CONTENTS

Revision History

July 2001	First release.

PREFACE

Fabric OS Reference Manual contains descriptions for the telnet commands used to administer and configure switches.

About This Guide

This guide provides the following information about Fabric OS:

Chapter 1 Telnet Commands	Provides a detailed description of the telnet commands in the Fabric OS.
Chapter 2 Error Messages	Provides error message formats as well as a list of error messages with descriptions.
Chapter 3 Feature Telnet Commands	Provides a summary of telnet commands that are available with licensed products such as Zoning, QuickLoop, or Fabric Watch.

Related Publications

Related product information can be found in the following publications. Those publications with part numbers are provided as printed copies with your product. The HP Surestore FC Switch 6164 Documentation CD contains all publications listed in the table below and is also provided with your product.

Title	Part Number
HP Surestore FC Switch 6164 Documentation CD	A7326-11011
HP Surestore FC Switch 6164 Installation and Reference Guide	A7326-90902
HP Surestore FC Switch 6164 Quick Start Guide	A7326-90901
Distributed Fabrics User's Guide, version 2.2	Available only on CD
Fabric Watch User's Guide, version 2.2	Available only on CD
MIB Reference Manual, version 2.3	Available only on CD
QuickLoop User's Guide, version 2.3	Available only on CD
Web Tools User's Guide, version 2.3	Available only on CD
Zoning User's Guide, version 2.2	Available only on CD

Information about fibre channel standards and the fibre channel industry in general can be found on the Fibre Channel Industry Association web site, located at:

http://www.fibrechannel.com

Getting Help

For support information, visit the HP web site located at:

http://www.hp.com

Getting Software Updates

Firmware and software updates are found on the HP web site located at:

http://www.hp.com

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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 default to 0.0.0.0 or no trap recipient. There are six communities:

  Community 1: Secret C0de

  Community 2: OrigEquipMfr

  Community 3: private

  Community 4: public

  Community 5: common

  Community 6: FibreChannel

Note For more information about these SNMP configuration parameters, see agtcfgset command.

Operands

None.

Example In the following example, the agtcfgDefault command is run to set the SNMP agent configuration parameters to the default value; then the agtcfgShow command is run to verify that the default values are set.

```
switch:admin> agtcfgDefault
Committing configuration...done.
agent configuration reset to factory default
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

  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 (see page 17). 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 The current value for each item is displayed in brackets. To modify the SNMP configuration values:

```
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]

value = 1 = 0x1
switch:admin>
```

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. There are six possible values:

  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 (see page 20). 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, see agtcfgset command.

Operands

None.

Example To display SNMP agent configuration information:

```
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, a message is displayed. If there are multiple entries in the local alias group, they are displayed.

Note This command is not related to the Zoning feature.

The following fields are displayed:

`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, enter the following command:

```
switch:admin> aliasShow
The Local Alias Server has 1 entry
Alias ID Creator Token [rb, type, grptype, qlfr] Member List
fffb01 fffffd [40, 05, 10, 60000010 12000069] {021200 0208e2}
```

See Also `fabricShow`
`switchShow`

backSpace

Set or clear alternate backspace character.

Synopsis `backSpace [0 | 1]`

Availability all users (display)
admin (set/clear)

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 | 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:

```
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 (known to the FSPF path selection/routing task). 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 broadcast routing information displays as a set of bit maps. Each bit in a bit map represents a port, with the least significant bit representing port 0. If a bit is set to 1, that port is part of the broadcast distribution tree.

The following fields are displayed:

`Group`	Displays the multicast group ID of the broadcast group.
`Member Ports`	Displays a map of all ports in broadcast tree.
`Member ISL Ports`	Displays a map of all E_Ports in broadcast tree.
`Static ISL Ports`	Reserved.

Operands None.

Example To display the broadcast routing information for all ports in the switch:

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

See Also `mcastShow`
`portRouteShow`

camTest

Functional test of the CAM memory.

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 cannot be executed on an operational 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 functionally correct:

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

Errors There are three possible error messages if failures are detected:

DIAG-CAMINIT
DIAG-XMIT
DIAG-CAMSID

See Also
`centralMemoryTest`
`cmemRetentionTest`
`cmiTest`
`crossPortTest`
`portLoopbackTest`
`portRegTest`
`ramTest`
`spinSilk`
`sramRetentionTest`

centralMemoryTest

Bit write/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 the central memory.

Note This command cannot be executed on an operational 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.
`dataType`	Specify the data type to use when writing the central memory. The `dataTypeShow` command lists data types allowed.
`dataSeed`	Specify the initial seed value used in generating the data pattern. For example, a `QUAD_RAMP` pattern with a seed value of `0xdead` is as follows: `0xdead, 0xdeae, 0xdeaf, 0xdeb0,` ... Some data types, such as `BYTE_LFSR`, do not require a seed value.

If all operands are omitted, the default values are 1 for `passCount`, `QUAD_RAMP` for `dataType`, and a random value for `dataSeed`.

Example To test the ASIC central memory:

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

Errors There are four possible error messages if failures are detected:

```
DIAG-TIMEOUT
DIAG-BADINT
DIAG-CMERRTYPE
DIAG-CMERRPTN
```

See Also

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

cmemRetentionTest

Data retention test of the central memory SRAMs.

Synopsis `cmemRetentionTest [passCount]`

Availability admin

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

Note This command cannot be executed on an operational 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:

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

Errors There are three possible error messages if failures are detected:

```
DIAG-LCMRS
DIAG-LCMTO
DIAG-LCMEM
```

See Also

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

cmiTest

ASIC to ASIC connection test of the CMI bus.

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 two ASICs is functioning properly. Also use it to verify that a message with a bad checksum sets the error and interrupt status bits of the destination ASIC and that a message with a good checksum does not set an error or interrupt bit in any ASIC.

Note This command cannot be executed on an operational switch. You must first disable the switch using the switchDisable command.

The Test method is presented here. Complete the steps for each source ASIC X and each destination ASIC Y in the switch. Do not complete this test if ASIC X = ASIC Y.

1. Generate the CMI data D.
2. Send data from source X to destination Y.
3. Check destination Y for the following conditions:
   - 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 ASICs (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 the ASIC to ASIC connection test of the CMI bus:

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

Errors There are seven possible error messages if failures are detected:

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

See Also
`camTest`
`centralMemoryTest`
`cmemRetentionTest`
`crossPortTest`
`portLoopbackTest`
`portRegTest`
`ramTest`
`spinSilk`
`sramRetentionTest`

configDefault

Restore system configuration to default settings.

Synopsis `configDefault`

Availability admin

Description Use this command to reset system configuration to 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
- worldwide name
- Zoning configuration

Note See the Configure command for more information on default values for configuration parameters.

Note Do not run this command on an operational switch. 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:

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

See Also
```
agtcfgDefault
configure
switchDisable
switchEnable
```

configDownload

Download the switch configuration from a host file.

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

Availability admin

Description Use this command to download 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).

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, 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 download can be initiated.

The command may be invoked without any operands, in which case the user is 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.

Note that the switch's identity cannot be changed by configDownload. These parameters (such as the switch's name and IP address) are ignored. They are the lines in the configuration file that begin with "boot".

Also note that 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 cases `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. 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 download switch configuration from the server `citadel`, username `jdoe`, and host file name `config.txt`:

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

Errors There are several 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 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 these two 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:

```
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

Back up the switch configuration to an ASCII file 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 utilities supplied for `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 upload a configuration file using FTP from host `citadel`, using account `jdoe`, and a configuration file `config.txt`:

```
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 The upload can fail for several reasons:

- 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

Change system configuration settings.

Synopsis `configure`

Availability admin

Description Use this command to change the system configuration settings:

- arbitrated loop settings
- switch fabric settings
- system services settings
- virtual channel settings

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 these options 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 can be different on your system.

The tables in the next section define those settings that may be changed.

Arbitrated Loop Settings

This section provides information on arbitrated loop settings.

Field	Type	Default	Range
Send FAN frames?	Boolean	1	0 or 1
Always send RSCN?	Boolean	0	0 or 1

Send FAN frames? — 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? — Following the completion of loop initialization, a remote state change notification (RSCN) is issued when `FL_Ports` detects the presence of new devices or the absence of preexisting devices. When set, an RSCN is issued upon completion of loop initialization, regardless of the presence or absence of new or preexisting devices.

Switch Fabric Settings

There are a number of settings 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 buffer-to-buffer credit or the time-out values, can be changed for specific applications or operating environments, but must be in agreement among all switches to allow formation of the fabric.

The table in the next section defines settings that can be changed.

Switch Fabric Settings

This section provides information on switch fabric settings.

Field	Type	Default	Range
Domain	Number	1	Varies
BB Credit	Number	16	1 to 16
R_A_TOV	Number	10000	E_D_TOV * 2 to 120000
E_D_TOV	Number	2000	1000 to R_A_TOV / 2
Data Field Size	Number	2112	256 to 2112
Non-SCSI Tachyon Mode	Boolean	0	0 or 1
Disable Device Probing	Boolean	0	0 or 1
Unicast-only Operation	Boolean	0	0 or 1
VC Encoded Address Mode	Boolean	0	0 or 1
Disable Translative Mode	Boolean	0	0 or 1
Per-frame Route Priority	Boolean	0	0 or 1

Domain	The domain number uniquely identifies the switch in a fabric. This value is automatically assigned by the fabric. The range of allowed values varies depending on the switch model and other system settings (see VC Encoded Address Mode).
BB Credit	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).
R_A_TOV	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. 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.
E_D_TOV	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. If the time for an expected response exceeds the set value, then an error condition occurs.
Data Field Size	This 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.

Sequence Level Switching	When this feature 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. 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.
Disable Device Probing	When this is set, 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.
VC Encoded Address Mode	When this mode is set, frame source and destination address utilize an address format compatible with some first-generation switches. Set this mode only if the fabric includes this type of switch.
Disable Translative Mode	The setting applies only if VC Encoded Address Mode is also set. This feature, when set, disables translative addressing to achieve explicit address compatibility with some first-generation switches. Set this feature only if hardware or software systems are attached to the fabric that explicitly rely on a specific frame address format.
Per-frame Route Priority	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 set, the virtual channel ID is used in conjunction with a frame header to form the final virtual channel ID.

System Services Settings

There are two fields that are used to specify the system service settings.

Table 1. System Service Settings

Field	Type	Default	Range
`rstatd`	Boolean	Off	On/Off
`rusersd`	Boolean	Off	On/Off

This section provides a description of the system service setting fields:

rstatd — 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.

The retrieval of this information is supported by a number of operating systems that support RPC. On most UNIX-based systems (HP-UX, Irix, Linux, etc.), the commands to retrieve the information are `rup` and `rsysinfo`. See your local system documentation for the appropriate usage of these or equivalent commands.

rusersd — 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).

The retrieval of this information is supported by a number of operating systems support RPC. On most UNIX-based systems (HP-UX, Irix, Linux, etc.), the command to retrieve the information is `rusers`. See your local system documentation for the appropriate usage of this or an equivalent command.

Virtual Channel Settings

The switch provides the ability to tune it in a specific application, by configuring the parameters for its eight virtual channels. Note that the first two virtual channels are reserved for switch internal functions and are not user-configurable.

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

Table 2. Virtual Channel Settings

Field	Type	Default	Range
VC Link Control	Number	0	0 to 1
VC Class 2	Number	2	2 to 5
VC Class 3	Number	3	2 to 5
VC Multicast	Number	7	6 to 7
VC Priority 2	Number	2	2 to 3
VC Priority 3	Number	2	2 to 3
VC Priority 4	Number	2	2 to 3
VC Priority 5	Number	2	2 to 3
VC Priority 6	Number	3	2 to 3
VC Priority 7	Number	3	2 to 3

Here are descriptions of the Virtual Channel Setting fields:

VC Link Control — Specifies the virtual channel used for N_Port-generated, Class 2 link control frames (ACKs, P_BSYs, P_RJTs). Forces N_Port-generated link control frames to be sent using a Class 2 data Virtual Channel when set to 0. When set to 1, the control frames are sent using a Virtual Channel normally reserved for fabric-internal traffic. This setting is configurable only when VC Encoded Address Mode is set.

VC Class 2	Specifies the Virtual Channel used for class 2 frame traffic. This setting is configurable only when VC Encoded Address Mode is set.
VC Class 3	Specifies the Virtual Channel used for class 3 frame traffic. This setting is configurable only when VC Encoded Address Mode is set.
VC Multicast	Specifies the Virtual Channel used for multicast frame traffic. This setting is configurable only when VC Encoded Address Mode is set.
VC Priority	Specifies the class of frame traffic given priority for a Virtual Channel.

Operands None.

Example To set the system configuration variables for a switch:

```
switch:admin> configure
Configure...
Fabric parameters (yes, y, no, n): [no] yes
Domain: (1..239) [1]
BB credit: (1..16) [16]
R_A_TOV: (4000..120000) [10000]
E_D_TOV: (1000..5000) [2000] 5000
Data field size: (256..2112) [2112]
Non-SCSI Tachyon Mode: (0..1) [0] 1
Disable Device Probing: (0..1) [0]
VC Encoded Address Mode: (0..1) [0] 1
Disable Translative Mode: (0..1) [0]
Per-frame Route Priority: (0..1) [0]
Virtual Channel parameters (yes, y, no, n): [no] yes
VC Link Control: (0..1) [0]
VC Class 2: (2..5) [2]
VC Class 3: (2..5) [3]
VC Multicast: (6..7) [7]
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]
VC Priority 7: (2..3) [3]
Arbitrated Loop parameters (yes, y, no, n): [no] yes
Send FAN frames?: (0..1) [1]
Always send RSCN?: (0..1) [0]
System services (yes, y, no, n): [no] yes
rstatd (on, off): [off] on
rusersd (on, off): [off] on
Committing configuration...done.
```

See Also

- agtcfgDefault
- agtcfgSet
- agtcfgShow
- configDefault
- configShow
- ifShow
- ipAddrSet
- switchDisable
- switchEnable
- syslogdIp
- uptime

crossPortTest

Functional test of port M->N path.

Synopsis `crossPortTest [passCount, singlePortAlso]`

Availability admin

Description Use this command to verify the functional operation of the switch. This command verifies operation by sending frames from the port M transmitter and looping the frames back through an external fiber cable into another port N receiver. This exercises all 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 – a short wavelength GBIC port is connected to another short wavelength GBIC port using a short wavelength cable, a long wavelength port is connected to a long wavelength port, and a copper port is connected to a copper port.

For complete testing, connected ports should be from different ASICs. Ports 0-3 are assigned to ASIC 0, ports 4-7 are assigned to ASIC 1, etc. A connection from port 0 to port 15 exercises the transmit path between 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.

The test method consists of nine steps:

1. Determine port connections.
2. Enable ports for cabled loopback mode.
3. Create a frame F with a maximum data size (2112 bytes).
4. Transmit frame F through port M.
5. Pick up the frame from its cross-connected port N. Complain if a port other than N actually received the frame.

6. Check the eight statistic error counters for nonzero values:

   `ENC_in, CRC_err, TruncFrm, FrmTooLong, BadEOF, Enc_out, BadOrdSet, DiscC3`

7. Check the transmit, receive, or class 3 receiver counters to see if they are stuck at some value.
8. Check that the number of frames received is equal to the number of frames transmitted.
9. Repeat steps 3 through 8 for all ports present until the number of frames (or `passCount`) requested is reached or 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:

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, ...`

One of the three following modes can be activated; the test produces different results for each mode:

- switchEnable/switchDisable mode
- singlePortAlso mode
- GBIC mode

switchEnable switchDisable Mode

This mode can be run in one of two states, ONLINE or OFFLINE.

In the ONLINE state, the switch is enabled prior to executing the test. In this state, only ports that are cable loopbacked to ports from the same switch are tested. Ports connected outside of the switch are ignored.

To run, at least one port (if `singlePortAlso` is active) or two ports (if `singlePortAlso` is not active) must be cable loopbacked to each other. If this criterion is not met, the following message is sent to the telnet shell:

```
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)
```

The following message appears in the front panel display:

```
Need at least one port(s)
connected first
(singlePortAlso active)
```

or:

```
Need at least two port(s)
cross-connected first.
(singlePortAlso not active)
```

In the OFFLINE state, the switch is disabled prior to executing the test. In this state, it is assumed that all ports (see GBIC mode) are cable loopbacked to similar 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 of SWL to LWL, etc.), the following message is sent to the telnet shell:

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

The following message displays on the front panel:

```
One or more ports not cabled.
```

singlePortAlso Mode

Specify `singlePortAlso` mode by executing `crossPortTest` with a value of 1 for the second argument:

```
switch:admin> crossPortTest 0, 1
```

In this mode, a port can be cable loopbacked to itself (port M is connected to port M) in addition to being cross connected (port M is connected to port N). This mode can be used to isolate improperly functioning ports.

GBIC Mode

Activate GBIC mode by executing the following command prior to executing `crossPortTest`:

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

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

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

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

For example, disable the switch, set the GBIC mode to 1, and execute crossPortTest with `singlePortAlsoactivated` and the `crossPortTest` to limit testing to:

```
only ports containing GBICs
that _all_ GBIC ports that are cable loopbacked
ports connected to themselves (single port
connections)
```

Because this test includes the GBIC and the fiber cable in the test path, use the results from this test, in conjunction with the results from the `portLoopbackTest` and the `spinSilk` test to determine those switch components that are not functioning properly.

Operands

This command has the following operands:

`passCount`	Specify the number of times (or number of frames per port) to execute this test. If omitted, the default value is `0xfffffffe`.
`singlePortAlso`	Specify 1 to connect port N to itself (`port N->N`).

Example To execute a functional test of port M->N path 100 times:

```
switch:admin> crossPortTest 100
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 There are several 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 system 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 quoted 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 non-volatile 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, and then change it to Feb 27 12:30:00 2001:

```
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 `diag` 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 `DIAG-CLEAR_ERR` message for each port software flag cleared. For example:

```
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 `diag` software flag. The default (if no operand is specified) is to clear all bad port flags. This operand is optional.

Example To clear the diag software flag:

```
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 a 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 / read test of SDRAMS in the switch.
- portRegTest - Bit write / read test of the ASIC SRAMs and registers.
- centralMemoryTest - Bit write / read test of the ASIC central memory.
- cmiTest - ASIC to ASIC connection test of the CMI bus.
- camTest - Functional test of the CAM memory.
- portLoopbackTest - Functional test of switch by sending and receiving frames from the same port.

For more information about these tests, refer to the individual command descriptions.

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 ons:

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

See Also `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 / read test of SDRAMS in the switch.
- portRegTest - Bit write / read test of the ASIC SRAMs and registers.
- centralMemoryTest - Bit write / read test of the ASIC central memory.
- cmiTest - ASIC to ASIC connection test of the CMI bus.
- camTest - Functional test of the CAM memory.
- portLoopbackTest - Functional test of switch by sending and receiving frames from the same port.

For more information about these tests, refer to the individual command descriptions.

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 ons:

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

See Also

```
camTest
centralMemoryTest
cmiTest
diagDisablePost
portLoopbackTest
portRegTest
ramTest
```

diagHelp

Display available diagnostic help commands.

Synopsis

```
diagHelp
```

Availability

All users

Description

Use this command to display a list of the diagnostic help commands for troubleshooting switch problems.

Operands

None.

Example

To display diagnostic help commands:

```
switch:admin> diaghelp

ramTest                 System DRAM diagnostic
portRegTest             Port register diagnostic
centralMemoryTest       Central memory diagnostic
cmiTest                 CMI bus connection diagnostic
camTest                 Quickloop CAM diagnostic
portLoopbackTest        Port internal loopback diagnostic
sramRetentionTest       SRAM Data Retention diagnostic
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=Enabl

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.
- Frame counts for active ports – the number of frames transmitted is `frTx` and the number of frames received is `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`.)

  The transmitted and received values may not always be the same; for example, they may not be the same if an error occurred in one of the ports during one of the tests above.

This command can 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 `diagShow` every 4 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 `diagShow`. If a repeat interval is specified, the command continues to execute until interrupted. If this operand is not used, the default is to print 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:

```
switch:admin> diagShow

Diagnostics Status:  Wed Apr 5 03:09:20 2000

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:         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 frR        0 LLI_errs. <looped-13>
 lm11:        100 frTx      100 frRx       0 LLI_errs. <looped-1>
 lm12:        100 frTx      100 frR        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: 131696
Total Diag Frames Rx: 136112
```

See Also `diagClearError`

dlsReset

Turn off dynamic load sharing option.

Synopsis `dlsReset`

Availability admin

Description Use this command to disable dynamic load sharing when a fabric change occurs. See `dlsSet` for a full description of load sharing.

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

Operands None.

Example To disable the dynamic load sharing option:

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

See Also
`dlsSet`
`dlsShow`

dlsSet

Turn on dynamic load sharing option.

Synopsis `dlsSet`

Availability admin

Description Use this command to enable dynamic load sharing when a fabric change occurs.

Routing is done on a per source port basis. 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 utilization, when there are multiple equivalent paths to a remote switch, traffic is shared among all the paths. Load sharing takes place when a switch reboots. In addition, if dynamic load sharing is enabled, the optimal load sharing is recomputed 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 dynamic load sharing is turned off, load sharing is performed only at boot time or when an Nx_Port comes up. Optimal load sharing is rarely achieved with this setting.

Dynamic load sharing is on by default.

When dynamic load sharing is set, 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 affect the application, especially if the ‘in-order delivery’ option is set. With the in-order delivery option (see `iodSet`), routes are not available for a few seconds after a fabric change. In addition, some frame loss may occur. No frame loss occurs if in-order delivery 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 in-order delivery is on, and is usually less than 1 second.

Operands None.

Example To enable the dynamic load sharing option:

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

See Also `dlsReset`
`dlsShow`

dlsShow

Display the state of the Dynamic Load Sharing option.

Synopsis `dlsShow`

Availability All users

Description Use this command to display whether Dynamic Load Sharing is on or off.

Operands None.

Example To display the current dynamic load sharing option setting:

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

See Also `dlsSet`
`dlsReset`

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 this format:

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

where:

Error Number	Beginning at one. If the number of errors exceeds the size of the log, the most recent errors are shown.
Task ID (Task Name)	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	For errors that occur multiple times, the repeat count is shown in parentheses. The maximum count is 999.
Error Type	An uppercase string showing the firmware module and error type. The switch manual contains a detailed explanation of error types.

Error Level	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 number of the error. This is a hexadecimal 4-digit code representing the error type.

Diagnostic Error Codes

The following table lists the error numbers, the POST test that generates the error number, and the type of error.

Table 3. Diagnostic Error Codes

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
1020	centralMemoryTest	DIAG-CMBISRTO

Table 3. Diagnostic Error Codes (continued)

Error Number	Test	Error Type
1021	centralMemoryTest	DIAG-CMBISRF
1025	centralMemoryTest	DIAG-LCMRS
1026	centralMemoryTest	DIAG-LCMTO
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)

Table 3. Diagnostic Error Codes (continued)

Error Number	Test	Error Type
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)
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

Table 3. Diagnostic Error Codes (continued)

Error Number	Test	Error Type
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)
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 example illustrates a log with two entries. The first entry is the most recent; it is a diagnostic failure. The second entry is the oldest; it displays the switch restart reason.

```
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.

Table 4. fabricShow display fields

Field	Description
Switch ID	The switch `Domain_ID` and embedded port `D_ID`.
Worldwide Name	The switch worldwide name.
Enet IP Addr	The switch Ethernet IP address.
FC IP Addr	The switch FC IP address.
Name	The switch symbolic name (“>” indicates the principal switch).

If multicast alias groups exist, the fields in the following table are shown.

Table 5. fabricShow Multicast Alias display fields

Field	Description
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 ID   worldwide name           Enet IP Addr    FC IP Addr      Name
-------------------------------------------------------------------------
 0: fffc40 10:00:00:60:69:00:06:56  192.168.64.59   192.168.65.59   "sw5"
 1: fffc41 10:00:00:60:69:00:02:0b  192.168.64.180  192.168.65.180  "sw180"
 2: fffc42 10:00:00:60:69:00:05:91  192.168.64.60   192.168.65.60   "sw60"
 3: fffc43 10:00:00:60:69:10:60:1f  192.168.64.187  0.0.0.0         "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.

The current fan status is shown:

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:

```
switch:admin> fanShow
Fan #1 is OK, speed is 7860 RPM
Fan #2 is OK, speed is 7920 RPM
Fan #3 is OK, speed is 7890 RPM
Fan #4 is OK, speed is 7950 RPM
Fan #5 is OK, speed is 7800 RPM
Fan #6 is OK, speed is 8070 RPM
switch:admin>
```

See Also `psShow`
`tempShow`

fastboot

Reboot the switch, bypassing POST.

Synopsis `fastboot`

Availability admin

Description Use this command to reboot the switch, bypassing POST. The reboot takes effect immediately as the switch resets and executes normal power-on booting sequence. However, Power On Self Test (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 POST on the current reboot, while `diagDisablePost` skips POST on all future reboots until canceled 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:

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

See Also
`diagDisablePost`
`diagEnablePost`
`reboot`

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). 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 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 switch’s World Wide Web 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:

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

Errors There are many reasons why the download can 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`

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 in the following table.

Table 6. 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 6. fspfShow display fields (continued)

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

Operands

None.

Example To display FSPF protocol information:

```
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

switch:admin>
```

See Also

```
bcastShow
mcastShow
topologyShow
uRouteShow
```

gbicShow

Display serial ID GBIC information.

Synopsis `gbicShow [portnumber]`

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 GBIC 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:

`portnumber`	Specify the port number to be displayed. Valid values are 0-7 or 0-15 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:

```
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, and then use 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.

These are the basic vi commands:

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:

```
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 an operand to display an alphabetical list of commands that provide help information. At the end of the list are additional commands that display groups of commands; for example, "`diagHelp`" displays a list of diagnostic commands.

The lists show only commands that are available to the current user; based on three criteria:

- 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.

Examples 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 task ID is supplied. One line is displayed for each task; it contains the fields in the following table.

Table 7.

Field	Description
NAME	Task name
ENTRY	Symbol name or address where task began execution
TID	Task ID
PRI	Priority
STATUS	Task status (see Table 8)
PC	Program counter
SP	Stack pointer
ERRNO	Most recent error code for this task
DELAY	If task is delayed, number of clock ticks remaining

The fields in the following table indicate task status.

Table 8.

Field	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:

```
switch:admin> i tFcp

      NAME       ENTRY     TID     PRI  STATUS    PC       SP    ERRNO DELAY
    ---------- ---------- --------  --- -------- ------- -------- ----- ----
    tFcp       _fcpTask    103ad660 150 PEND+T 10191b78 103ad9e0  3d0004  32
    switch:admin> i

      NAME       ENTRY     TID     PRI  STATUS    PC       SP    ERRNO DELAY
   ---------- ---------- --------  --- -------- ------- -------- ----- ----
   tExcTask   _excTask    103f7eb0   0 PEND   10191b78 103f8200  3d0001    0
   tLogTask   _logTask    103f5f30   0 PEND   10191b78 103f6280       0    0
   tShell     _shellTask  103b8970   1 READY  10177460 103b8be0  1c0001    0
   tRlogind   _rlogind    103de0e0   2 PEND   10173e80 103de7d0       0    0
   tTelnetd   _telnetd    103dc150   2 PEND   10173e80 103dc5c0       0    0
   tTimers    _timerTask  103cf270  10 PEND   10191b78 103cf5f0       0    0
   tErrLog    _errLogTask 103d0810  20 PEND   10191b78 103d0b90       0    0
   tNetTask   _netTask    103f0370  50 READY  10174f20 103f0740       0    0
   tSwitch    _switchTask 103d1db0  80 PEND+T 10191b78 103d21b0  3d0004    9
   tPBmenu    _menuTask   103c8e30  90 PEND   10191b78 103c91f0       0    0
   tReceive   _portRxTask 103c5690 100 PEND   10191b78 103c5a10       0    0
   tTransmit  _portTxTask 103c40f0 100 PEND   10191b78 103c4470       0    0
   tFabric    _fabricTask 103aae20 100 PEND   10191b78 103ab1e0       0    0
   tFspf      _fspfTask   103a8c70 100 PEND   10191b78 103a8ff0       0    0
   tFcph      _fcphTask   103af890 120 PEND+T 10191b78 103afc10  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:

```
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:

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

See Also `ifModeSet`
`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 that interface is displayed. If `ifName` is omitted, all interfaces are displayed.

Each switch has three interfaces:

"ei" or "fei" is the 10BaseT or 100BaseT Ethernet interface.
"lo" is the loopback interface.
"fc" is 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 following information 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:

```
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 0xffffff00 Subnetmask 0xffffff00
     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 [portnumber]`

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 – the permanently allocated Interface Descriptor Block (IDB) and the neighbor data structure that 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 a local interface, also known as the adjacent switch. This command displays the content of both data structures, if they have been allocated.

Used without specifying the port number, this command displays the interface information for all ports on the switch (including non E_Ports).

The following fields are displayed:

`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. The value 1000 indicates a 1 Gb/s link.
`delay`	Conventional delay incurred by a frame transmitted on this ISL. A fixed value required by the FSPF protocol.
`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 E_Port is used to route traffic to other switches only if the state is 'NB_ST_FULL'.
nghbCap	Neighbor capabilities. Must be 0.
nghbId	Domain ID of the neighbor (adjacent) switch.
idbNo	IDB number. Must be equal to portnumber.
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.
`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 transmit topology information to the neighbor switch. If no acknowledgment 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.

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 E_Port is used to route traffic to other switches only if the state is 'NB_ST_FULL'.
nghbCap	Neighbor capabilities. Must be 0.
nghbId	Domain ID of the neighbor (adjacent) switch.
idbNo	IDB number. Must be equal to portnumber.
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.

`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 `E_Port` is used to route traffic to other switches only if the state is '`NB_ST_FULL`'.
`nghbCap`	Neighbor capabilities. Must be 0.
`nghbId`	Domain ID of the neighbor (adjacent) switch.
`idbNo`	IDB number. Must be equal to `portnumber.`
`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.
`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 transmit topology information to the neighbor switch. If no acknowledgment 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:

`portnumber`	Specify the port number for which you want to display the interface data structures. This operand is required.

Example To display FSPF interface information:

```
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`

iodReset

Turn off the in-order delivery option.

Synopsis `iodReset`

Availability admin

Description Use this command to allow 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.

Example To turn off the in-order delivery option:

```
switch:admin> iodReset
```

See Also
`iodSet`
`iodShow`

iodSet

Turn on the in-order delivery 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 ensures that frames are not delivered out-of-order, even during fabric topology changes.

The default behavior is for the in-order delivery option to be off.

This command must be used with care, because it can cause a delay in the establishment of a new path when a topology change occurs. Use this command only if there are devices connected to the fabric that do not tolerate occasional out-of-order delivery of frames.

Operands None.

Example To turn on the in-order delivery option:

```
switch:admin> iodSet
```

See Also
`iodReset`
`iodShow`

iodShow

Display the state of the in-order delivery option.

Synopsis `iodShow`

Availability All users

Description Use this command to display whether the In-Order Delivery option is on or off.

Operands None.

Example To display the current setting of the in-order delivery option:

```
switch:admin> iodShow
IOD is not set
```

See Also `iodSet`
`iodReset`

ipAddrSet

Set Ethernet and FC IP addresses.

Synopsis `ipAddrSet`

Availability admin

Description Use this command to set Ethernet and FC IP addresses. You are prompted for address end mask 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 can respond in several ways:

- 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.)

A change to these values issues a Domain Address format RSCN (see FC-FLA for a description of RSCNs).

Operands None.

Example To enable IP over fibre channel:

```
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 this command to display Ethernet and fibre channel IP addresses. Address and mask information is shown:

- 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

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:

```
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
Gateway Address: 192.168.1.1
```

See Also `ifShow`
`ipAddrSet`

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. Each port that is specified in the ISL definition corresponding to an ISL sgroup that this switch is a member of will be displayed. A switch with properly configured ISL connections will report a status of “OK” for each of these ports.

Operands None.

Example The following example shows the results of islTopoCheck on a mis-configured switch. In a proper configuration, all of the switches would have valid domains and names and the status of each port would be OK.

```
switch:admin> islTopoCheck

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-

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

Display 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.

Example The following example shows the results of islTopoShow on a mis-configured switch. In a proper configuration, all of the switches would have valid domains and names and the status of each port 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

isl port  expected switch  port    actual switch    port    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 (SilkWorm 2100) must be rebooted after adding a fabric license.

Operands This command has the following operand:

`license`	Specify the license key, in quotation marks. This operand is required.

Example To add a license key to the switch:

```
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:

```
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:

```
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
bQebzbRdScRfc0iK:
    Web license
    Zoning license
SybbzQQ9edTzcc0X:
    Fabric license
```

See Also `licenseAdd`
`licenseRemove`

linkCost

Set or print the FSPF cost of a link.

Synopsis `linkCost [portnumber], [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 1 Gb/s ISL, the default cost is 1000.

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:

`portnumber`	Specify the interface cost to be set or printed. This operand is optional.
`cost`	Specify the new cost of the link connected to interface `portnumber`. This operand is optional.

Example To display the FSPF cost of a link, and reset the cost:

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

See Also `interfaceShow`
`LSDbShow`
`topologyShow`
`uRouteShow`

login

Log in as a new user.

Synopsis `login`

Availability All users

Description Use this command to log in 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

Log out from a telnet, rlogin, or serial port session.

Synopsis `logout`

Availability All users

Description Use this command to log out from a telnet, rlogin, or serial port session. Telnet and rlogin connections are closed, and 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`

loopdiagClear

Clear information from management layers.

Synopsis `loopdiagClear port`

Availability admin

Description This command will clean up any residue information from a previous failed session in management layers. It releases all the resources created for the port specified.

Operands This command has the following operand:

`port`	The physical port number where loopdiag executes. This operand is required.

Example To complete loopdiag at port 5:

```
switch:admin> loopdiagClear 5
```

See Also
`loopdiagStart`
`loopdiagStop`

loopdiagDone

Completes loopdiag application.

Synopsis `loopdiagDone port`

Availability admin

Description This command completes loopdiag application at the port specified. It releases all the resources created for loopdiag and sets the port ONLINE before resetting the loop.

Operands The following operand is required:

`port`	The physical port number where loopdiag executes.

Example To complete loopdiag at port 5:

```
switch:admin> loopdiagDone 5
```

See Also
`loopdiagStart`
`loopdiagStop`

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 in the following table.

Table 9. 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.
lsrP	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.
lseFlags	Internal variable.
uOutIfs	Internal variable
uPathCost	Internal variable.
uHopsFromRoot	Internal variable.
mOutIfs	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.

Table 9. LSDbShow display fields (continued)

Field	Description
`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.
`type`	Always 1.

Operands

This command has the following operand:

`domain` Specify the domain number of LSR to be displayed.

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 7

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
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 following fields are displayed:

`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.
`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.

Example To display multicast routing information:

```
switch:admin> mcastShow 9
Group    Member 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 Management Server Access Control List (ACL) is empty (default), the Management Server is accessible to all systems connected in-band to the fabric. To restrict access, specify the worldwide 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 four choices:

0 Done (with the administration)
1 Display the access 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 the FLASH. 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`

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`

msPlClearDB

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 later. 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 okay 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 the ability of each switch's to handle the Platform database management is displayed.

Limitations Platform Database Management is available in firmware v2.3 and later. 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
=======================    ===============   ==========  =======
10:00:00:60:69:20:15:71          Yes         0X0000000B  "swd156"
10:00:00:60:69:00:30:05          Yes         0X0000000B  "swd158"
        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.
                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.

Limitations Platform Database Management is available in firmware v2.3 and later. 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.

Limitations Platform Database Management is available in firmware v2.3 and later. 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`

nbrStatsClear

Reset FSPF interface counters.

Synopsis `nbrStatsClear [portnumber]`

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:

`portnumber`	Specify the port number for the counters to be reset. This operand is optional.

Example 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 [portnumber]`

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 in the following table.

Table 10. nbrStateShow display fields

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:

`portnumber` Specify the port on the local switch that connects to the neighbor being displayed.

Example 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_FULL
6                 13          9         NB_ST_FULL
7                 13          8         NB_ST_FULL
13                 3          7         NB_ST_FULL
```

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.

Operands This command has the following operand:

`type`	Specify the FC-PH type code.

Example To display all devices in the Fabric, followed by all type 8 (SCSI-FCP) devices:

```
switch:admin> nsAllShow
     12 Nx_Ports in the Fabric {
     011000 011200 0118e2 0118e4 0118e8 0118ef 021200 021300
     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:

*	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 [ mode ]`

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 available only on specific switch models. If the current switch does not support parity checking, an error is displayed.

Operands This command has the following operand:

mode	Specify a 1 to enable DRAM parity checking or specify a 0 to disable it. The default (if no operand is specified) is to disable parity checking.

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.

Use the following options 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.
Control-C (interrupt)*	Aborts the command immediately and ignores all changes made.

Control-D (end of file)*	When entered at a prompt with no preceding input, terminates the command and saves changes made.

* On most computers; however, your settings could be different.

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:

"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.
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
```

portCfgEport

Enable or disable a port from becoming an E_Port.

Synopsis `portCfgEport [<port_number>, <mode>]`

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 The following operands are optional:

`port_number`	Specify the port number to be configured. Valid values are 0-7 or 0-15 depending on the switch type.
`mode`	Specify 1 or 0 to enable or disable a port as an E_Port. Specify 1 to enable the port to become an E_Port. This is the default port state. Specify 0 to disable the port from becoming an E_Port. When the `port_number` operand is present, the `mode` operand must also be present.

When no operand is 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 portnumber, mode`

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:

`portnumber`	Specify the port number to be configured. Valid values are 0-7 or 0-15, depending on the switch type. This operand is required.
`mode`	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. This is the 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`

portCfgLport

Lock a port as an L_PORT.

Synopsis `portCfgLport port_number mode`

Availability admin

Description This command enables a user to designate a port as an L_PORT. The switch will then only attempt to initialize that port as an FL_PORT. The switch will never attempt 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 The following operands are required:

`port_number`	The port number to be configured: 0-7 or 0-15.
`mode`	Specify a value of 1 if the “port_number” is designated as a locked L_PORT. Specify a value of 0 if the “port_number” is de-configured from its previous role as a locked L_PORT..

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 The Extended Fabric license key is required to use this command.

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 0, 1, or 2:

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 are reserved for the port.
2	Level two long distance, up to 100 km. A total of 60 full size frame buffers 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 For more information, see the *Extended Fabrics User's 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|2`	This operand indicates the distance to the connected port. This operand is optional. 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)

Limitations A group of four adjacent ports that share a common pool of frame buffers (for example, ports 0 - 3 or 4 - 7) are called a “quad”. Since the total number of frame buffers in a quad is limited, if one of the ports in the quad is configured as a long distance port, none of the remaining ports in the quad can be a long distance port; they must all be level 0 ports.

In order to have a long distance port take effect, all switches in the fabric must be configured to run in long distance fabric mode (in other words, the long distance fabric mode bit must be “on”, or set to 1). Otherwise, the fabric will be segmented. A long distance port cannot be configured in a switch unless the long distance fabric mode is on for that switch.

If all ports are reconfigured back to non-long distance ports, the long distance fabric mode must be set to “off” for that switch.

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 portnumber, 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 an 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 under two circumstances:

- 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.

There are several things that occur when a port is configured as a multicast loopback port:

- The green port LED will blink slowly, indicating a loopback state. If optical GBIC is applied, the laser will be disabled and will not respond to any attempt to connect to any device.
- The comment field of switchShow will show that it is looped back to itself:

  `"port  3: sw  No_Light   Loopback->3"`
- The portFlags line of portShow will display the “F_PORT” and “INT_LB” flags:

  `"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:

`portnumber`	Specify the port number to be configured. Valid values are 0-7 or 0-15 depending on the switch type. This operand is required.
`0|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`

portDisable

Disable a switch port.

Synopsis `portDisable portnumber`

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 2-second cycle.

Operands This command has the following operand:

`portnumber`	Specify the port number to be disabled. Valid values are 0-7 or 0-15 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 portnumber`

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 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:

`portnumber`	Specify the port number to be enabled. Valid values are 0-7 or 0-15 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 sync	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 that port 6 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 fbsy
tx   rx  in err shrt long eof out  c3  fail sync  sig
 ----------------------------------------------------------------
 0:    0   0   0   0   0   0   0   0    0    0    0    1    0    0
 1:  2.5m  38   0   0   0   0   0   2    0    0    1    1    0    0
 2:    0   0   0   0   0   0   0   0    0    0    0    1    0    0
 3:   95k  15k  0   0   0   0   0   3    0    0    1    0    0    0
 4:    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    1    0    0
 6:   61k  48   2  15   0   0   0   3k   0    0    2    0    0    0
 7:    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 overwritten).

Operands None.

Example To clear the port log:

```
switch:admin> portLogClear
switch:admin> portLogShow
port log is empty
```

Errors The following errors disable the port log:

```
FCIU, IUBAD
FCIU, IUCOUNT
FCPH, EXCHBAD
FCPH, EXCHFREE
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 `count` entries are displayed. This operand is optional.
`saved`	Specify a nonzero value to display the saved port log from the last switch fault. See `uptime` for conditions that cause a fault. `count` 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
Sr99: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.

`portLogShow` 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 (see `portLogClear` for details):

```
WARNING: port log is disabled
```

The fields in the following table are shown.

Table 11. PortLogShow fields

Field	Description
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: `start` switch start or re-start event `disable` port is disabled `enable` port is enabled `ioctl` port I/O control is executed `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

Table 11. PortLogShow fields (continued)

Field	Description	
	`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	Command value – description depends on event type:	
	`ioctl`	I/O control command code
	`Tx` & `Rx`	frame payload size
	`scn`	new state (see `state` codes)
	`pstate`	new physical state (see `pstate` codes)
	`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:
		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 11. PortLogShow fields (continued)

Field	Description	
	`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	Command value – description depends on event type:	
	`ioctl`	I/O control command code
	`Tx` & `Rx`	frame payload size
	`scn`	new state (see `state` codes)
	`pstate`	new physical state (see `pstate` codes)
	`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:
		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 11. PortLogShow fields (continued)

Field	Description	
	`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	Command value – description depends on event type:	
	`ioctl`	I/O control command code
	`Tx` & `Rx`	frame payload size
	`scn`	new state (see `state` codes)
	`pstate`	new physical state (see `pstate` codes)
	`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:
		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 11. PortLogShow fields (continued)

Field	Description
args	The command arguments – description depends on event type: `star` start type: `0` = enable ports, `100` = disable ports `disable` state (see `state` codes) `enable` mode: `0` = normal, non-zero = loopback `ioctl` I/O control arguments `Tx` & `Rx` first two header words and first payload word `reject` FC-PH reject reason `busy` FC-PH busy reason `ctin` 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-based service command code Argument 1 = first word of the CT payload, if applicable (as specified in [A]) Argument 2 = second word of the CT payload, if applicable (as specified in [A]) `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`) If [B] is an accept, arguments 1 and 2 represent 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. `errlog` error type (see `errShow`) create - name of the task being created

Table 11. PortLogShow fields (continued)

Field	Description	
	`loopscn`	description depends on loop state:
	OLP	offline reason code, usually zero
	LIP	reason code for LIPs initiated by `FL_Port`, if the code value is 800x (x = [1,0xc]; see "Codes:"), or the lower two bytes of the LIP received, if the code value is other than 800x
	LIM	usually zero BMP: memory address for the loop bitmap
	OLD	usually zero
	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. Other possible values include:
	`2`	LIP (req. INITIALIZING) timeout
	`94F0F0`	ARB(F0) timeout
	`40`	CLS timeout

Codes:

`state`	1	Online
	2	Offline
	3	Testing
	4	Faulty
	5	E_Port
	6	F_Port
	7	Segmented

`pstate`	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
`ioctl`	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

LIP	8001	Retry loop init
reason	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

Operands This command has the following operands:

`count`	Specify the maximum number of lines to display. Only the most recent `count` entries are displayed. This operand is optional.
`saved`	Specify a nonzero value to display the saved port log from the last switch fault. See `uptime` for a list of conditions that cause a fault. `count` is ignored when displaying the saved log. This operand is optional.

Example The following example illustrates 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  ffffff,10
06:48:04.699  tReceive   Rx      13    0  c0fffffd,00fffffd,00bb0045
06:48:07.616  tReceive   Rx      13   40  02fffffd,00fffffd,0046ffff,14000000
06:48:07.616  tTransmit  Tx      13    0  c0fffffd,00fffffd,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.

The test method consists of these steps:

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 eight statistic error counters for nonzero values:

   `ENC_in, CRC_err, TruncFrm, FrmTooLong, BadEOF, Enc_out, BadOrdSet, DiscC3`
6. Check if the transmit, receive, or class 3 receiver counters are stuck at some value.
7. Check if the number of frames transmitted is not equal to the number of frames received.
8. Repeat steps 2 through 7 for all ports present until these results occur:
   - 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. 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, ...`

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 `0xfffffffe`. This operand is optional.

Example To run the portLoopbackTest 100 times:

```
switch:admin> portLoopbackTest 100
Running Port Loopback Test .... passed.
```

Errors There are seven possible error messages if failures are detected:

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

See Also

```
camTest
centralMemoryTest
cmemRetentionTest
cmiTest
crossPortTest
portRegTest
ramTest
spinSilk
sramRetentionTest
```

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`), and 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 preceding steps until all ASIC SRAMs and registers have been tested.

Operands None.

Example To run a bit write/read test of the ASIC SRAMs and registers:

```
switch:admin> portRegTest
Running Port Register Test .... passed.
```

Errors There are three possible error messages if failures are detected:

```
DIAG-REGERR
DIAG-REGERR_UNRST
DIAG-BUS_TIMEOUT
```

See Also

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

portRouteShow

Display routing tables for a port.

Synopsis `portRouteShow portnumber`

Availability All users

Description Use this command to display the port address ID and the contents of the following port routing tables:

External unicast routing table	Shows unicast frame routing to another switch element in the fabric. Output format is
	`domainnumber: ports_bitmap`
	where:
	`domainnumber` is the switch element number that a unicast frame can reach from the `portnumber` port.
	`ports_bitmap` contains all output ports, in bitmap hex format, that can forward unicast frames from `portnumber` to `domainnumber`.
	This table contains at least one entry for each active port:
	`local_switch_domainnumber: 0x10000`
	This is for routing unicast frames designated to the embedded port of the local switch element.

Internal unicast routing table	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 table	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 table	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:

`portnumber`	Specify the port number to be displayed. Valid values are 0-7 or 0-15 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 portnumber`

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 the fields in the following table.

Table 12. PortShow display fields

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
	Faulty	failed diagnostics
portPhys	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 12. PortShow display fields (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	Ports long distance level.
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_err	Central memory parity errors.

Operands

This command has the following operand:

`portnumber` Specify the port number to be displayed. Valid values are 0-7 or 0-15 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

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
                         Ols_out:      0
switch:admin>
```

See Also `switchShow`

portStatsShow

Display port hardware statistics.

Synopsis `portStatsShow portnumber`

Availability All users

Description Use this command to display port hardware statistics counters.

`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.
`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:

`portnumber`	Specify the port number to be displayed. Valid values are 0-7 or 0-15 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:

`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`

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|1`	Specify to set or clear quiet mode. Valid values are: 0 to clear quiet mode (all tasks can print to the console) 1 to set quiet mode (only shell commands may print)

Example To display the current mode, and 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/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 the 16 MB 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 is 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 are 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 nine 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`	If `0` (default), `ramTest` executes all nine patterns in the data subtest. If `N`, `ramTest` executes `N` patterns in the data subtest. If `N` is greater than 9, it is truncated to 9. Only the data subtest is configurable. The address subtest is always executed. This operand is optional.

Example To run a RAM test:

```
switch:admin> ramTest
Running System DRAM Test ...... passed.
```

Errors There are three possible error messages if failures are detected:

```
DIAG-MEMORY
DIAG-MEMSZ
DIAG-MEMNULL
```

See Also

```
camTest
centralMemoryTest
cmemRetentionTest
cmiTest
crossPortTest
portLoopbackTest
portRegTest
spinSilk
sramRetentionTest
```

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, and 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`
`uRouteRemove`
`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 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:

`mode`	Specify whether to enable or disable GBIC mode. Specify 1 to enable GBIC mode or 0 to disable GBIC mode. The default value (if no operand specified) is `0`.

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 loopback.

Synopsis `setSplbMode [0|1]`

Availability admin

Description Use this command to enable SPLB mode if the operand is `1` and disable the SPLB mode if the operand is `0`. 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 `spinSilk` 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 `spinSilk` to circulate frames between pairs of M->M connected ports:

```
P1 TX >>> P1 RX -> P2 TX >>> P2 RX -> P1 TX
>>> cable or internal loop-back
->  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:

`mode`	Specify whether to enable or disable SPLB mode. Specify 1 to enable GBIC mode or 0 to disable SPLB mode. The default value (if no operand specified) is `0`.

Example To enable or disable a 2-port loopback:

```
switch:admin> setSplbMode 1
Committing configuration...done.
SPLB mode is now ON.

switch:admin> setSplbMode 0
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.

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.
`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”.

Example To interactively delete a 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 ["old_sgName", "new_sgName"]`

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.

Operands This command has the following operands:

`oldName`	Specify a character string in quotation marks containing the sgroup name to be replaced, for example, “MyPrevGroupName”.
`newName`	Specify a character string in quotation marks containing the new sgroup name, for example, “MyNewGroupName”.

Example To rename an sgroup:

```
switch:admin> sgroupShow
Group Type       Group Name                        Member WWN

========== ============================== ======================
S32_6_1          MyPrevGroupName          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 "MyPrevGroupName", "MyNewGroupName"
Committing configuration...done.
switch:admin> sgroupShow
Group Type       Group Name                        Member WWN
========== ============================== ======================
S32_6_1          MyNewGroupName           10:00:00:60:69:00:00:20
                                          10:00:00:60:69:20:15:81
                                          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.

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.
`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.
`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. 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. 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” Domain ID format: “domain_ID1,domain_ID2,...,domain_IDx”

Examples 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.

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 must be enclosed in quotation marks.
`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 must be enclosed in quotation marks.

Examples 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.

Operands This command has the following operands:

`sgroupName` Specify the name of the switch group. This operand must be 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. The following list shows command names 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.

`version`	`portRegShow`
`uptime`	`portRouteShow`
`tempShow`	`fabricShow`
`psShow`	`topologyShow`
`licenseShow`	`qlShow`
`diagShow`	`nsShow`
`errDump`	`nsAllShow`
`switchShow`	`cfgShow`
`portFlagsShow`	`configShow`

```
portErrShow          faultShow
mqShow               traceShow
portSemShow          portLogDump
portShow
```

Example To display the temperature in all the switch components of a SilkWorm 6400:

```
sw5: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!
value = 0
star7:root>
=======================================
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 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.

Operands This command has the following operands:

`sgName`	Specify the switch group name (for example, “NewGroup”) that contains the member you want to replace. The switch group name must be enclosed in quotation marks. This operand is optional.
`oldWwn`	Specify the WWN of a switch group member (for example, “10:00:00:60:69:20:22:22”) that you want to replace. The WWN must be enclosed in quotation marks. This operand is optional.
`newWwn`	Specify the WWN of the new member (for example, “10:00:00:60:69:20:55:55”). The WWN must be enclosed in quotation marks. This operand is optional.

Example The example shows the noninteractive 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
value = 0
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`

spinSilk

Functional test of port M->N path at maximum switch speed.

Synopsis `spinSilk [nMillionFrames]`

Availability admin

Description Use this command to verify the functional operation of the switch at the maximum speed of 1 Gbps.

To run `spinSilk`, set up the routing hardware so that frames received by port M are retransmitted through port N and frames received by port N are retransmitted through port M. Each port M sends 4 frames to its partner port N using an external fiber cable; this exercises all 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 as long as the cables and GBICs connected are of the same technology: A short wavelength GBIC port is connected to another short wavelength GBIC port using a short wavelength cable, a long wavelength port is connected to a long wavelength port, and a copper port is connected to a copper port.

For best coverage, connect ports from different ASICs. Ports 0-3 belong to ASIC 0, ports 4-7 belong to ASIC 1, etc. A connection from port 0 to port 15 exercises the transmit path between ASICs. A connection from port 0 to port 3 tests only the internal transmit path in ASIC 0.

The frames are continuously transmitted and received in all ports in parallel. The port LEDs flicker green rapidly while the test is running.

The test method consists of five steps

1. Determine port connections.
2. Enable ports for cabled loopback mode.
3. Configure the routing table to route frames received by port M to the partner port N and vice versa.

4. Transmit 4 frames of different lengths using port M:

   ```
   2112 bytes of BYTE_LFSR
   1000 bytes of CSPAT
   128 bytes of RANDOM
   512 bytes of RDRAM_PAT
   ```

   The partner port N eventually sends 4 similar frames:

   ```
   2112 bytes of BYTE_LFSR
   928 bytes of CSPAT
   200 bytes of RANDOM
   480 bytes of RDRAM_PAT
   ```

5. Periodically check each port:
   - each port has not died
   - frames transmitted counter is incrementing
   - statistic error counters are nonzero

   `ENC_in`, `CRC_err`, `TruncFrm`, `FrmTooLong`, `BadEOF, Enc_out, BadOrdSet, DiscC3` until one of the following is met:

   - the number of million frames requested per port are met
   - all ports are marked bad
   - the user sends a keyboard (or push button) interrupt to abort

In this test, data is not read and checked and the only CPU intervention is the periodic check of hardware counters.

Here is an example of the data used:

```
CSPAT:        0x7e, 0x7e, 0x7e, 0x7e, ...
BYTE_LFSR:    0x69, 0x01, 0x02, 0x05, ...
RANDOM:       0x25, 0x7f, 0x6e, 0x9a, ...
RDRAM_PAT:    0xff, 0x00, 0xff, 0x00, ...
```

GBIC Mode

If `spinSilk` is executed with GBIC mode activated, only ports containing GBICs are tested. To activate GBIC mode, execute the following command prior to executing `spinSilk`:

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

The state of the GBIC mode is saved in flash memory and remains active (even after reboots or power cycles) until it is disabled:

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

For example, disable the switch, set the GBIC mode to 1, and execute `spinSilk` to limit testing to two conditions:

```
only ports containing GBICs
that _all_ GBIC ports that are cable loopbacked
```

Because this test includes the GBIC and the fibre 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 that are not functioning properly.

Operands

This command has the following operand:

`nMillionFrames` Specify the number of million frames per port to execute this test. If omitted, the default `passCountvalue` is `0xfffffffe`. This operand is optional.

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
value = 0
```

Errors There are six possible error messages if failures are detected:

```
DIAG-INIT
DIAG-PORTDIED
DIAG-XMIT
DIAG-PORTSTOPPED
DIAG-ERRSTAT
DIAG-ERRSTATS
```

See Also

```
camTest
centralMemoryTest
cmemRetentionTest
cmiTest
crossPortTest
portLoopbackTest
portRegTest
ramTest
sramRetentionTest
```

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 method used 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. Repeat 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 There are three possible error messages if failures are detected:

```
DIAG-REGERR
DIAG-REGERR_UNRST
DIAG-BUS_TIMEOUT
```

See Also

```
camTest
centralMemoryTest
cmemRetentionTest
cmiTest
crossPortTest
portLoopbackTest
ramTest
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 is specified) is to print state of port 0. If only `firstPort` is specified, only information for `firstPort` is printed.
`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`, and `portRouteShow`). If no operand is supplied, `firstPort` is set to 0 and `lastPort` is set to maximum port of switch.
`nLog`	Specify the number of lines of `portLogDump` to print: • 0 = dump all lines (default) • N = dump the last N lines • <0 = skip `portLogDump`

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
     byRdzdSRxyczSe0D:

            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|1`	Specify the beaconmode for the switch. Valid values are 0 or 1. Specify 1 to enable beaconmode or 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`

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 countdown is displayed. If this switch remains the principal switch at the end of the countdown, 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.

As each port is enabled, the front panel LED changes to green for online ports, black for disconnected ports, or yellow for uninitialized 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 an 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`

switchShow

Display switch and port status.

Synopsis `switchShow`

Availability All users

Description Use this command to display switch and port status information. Information may vary by switch model (see list that follows). The first section provides switch summary information; it is followed by a section covering summary information by port.

switchName	Switch symbolic name.
switchType	Switch model and revision numbers.
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 beaconing state (either ON or OFF).

The switch summary is followed by one line per port:

`port number`	Port number. Valid values are 0-7 or 0-15 depending on the switch type.
`module type`	Port module type (GBIC or other):
	- no module present
	`sw` - shortwave laser
	`lw` - longwave laser
	`cu` - copper
	`id` - serial ID
`port state`	Port state:
	`No_Card` - no interface card present
	`No_Module` - no module (GBIC or other) present
	`No_Light` - 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_Flt` - port marked faulty
	`Diag_Flt` - port failed diagnostics
	`Lock_Ref` - locking to the reference signal
	`Testing` - running diagnostics
	`Online` - port is up and running

`comment`	The comment field may be blank, or it may display:
	`Disabled` - port is disabled
	`Bypassed` - port is bypassed (loop only)
	`Loopback` - port is in loopback mode
	`E-Port` - fabric port, shows WWN 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`

Operands None.

Example The following example illustrates a 16-port switch. Two ports are F_Ports (point-to-point connections to N_Ports), two ports are loop ports (one has 8 private loop devices), and two ports are connected to another switch “sw6”.

```
switch:admin> switchshow
switchName:     switch
switchType:     2.2
switchState:    Online
switchRole:     Principal
switchDomain:   1
switchId:       fffc01
switchWwn:      10:00:00:60:69:00:73:71
switchBeacon:   OFF
port  0: sw  No_Light
port  1: sw  No_Light
port  2: lw  No_Light
port  3: sw  No_Light
port  4: sw  No_Light
port  5: sw  No_Light
port  6: sw  No_Light
port  7: sw  No_Light
port  8: sw  No_Light
port  9: sw  No_Light
port 10: --  No_Module
port 11: sw  No_Light
port 12: lw  No_Light
port 13: sw  No_Light
port 14: --  No_Module
port 15: --  No_Module
switch:admin>
```

See Also `switchDisable`
`switchEnable`
`switchName`

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 the following table.

Table 13. 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.

This command enables you to set a threshold for each contributor, so that a certain number of failures are allowed before changing the 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.

Note 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.

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 nonoperational 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 shown in the following table.

Table 14. 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 nonoperational units for each contributor that trigger a status change in the switch. For example, if the FaultyPorts DOWN parameter is set to 3, and three 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.

Examples Two examples are shown: 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 IP_address`

Availability admin

Description Use this command to add the IP address of a syslog daemon, that is, the IP address of the server that 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 servers. Up to six servers are supported.

Operands This command has the following operand:

`IP_address`	Specify the IP address of the server running `syslogd`. 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 IP_address`

Availability admin

Description Use this command to remove the IP address of a syslog daemon, that is, the IP address of the server that is running the `syslogd` process.

Operands This command has the following operand:

`IP_address`	Specify the IP address of the server running `syslogd`.

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:  192.168.1.60
syslog.IP.address.2:  192.168.1.88
syslog.IP.address.3:  192.168.2.77
```

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 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
43   40   44   48   45  Centigrade
109  104  111  118  113  Fahrenheit
```

See Also
`fanShow`
`psShow`

timeOut

Used to set or clear idle telnet connection time-out value.

Synopsis `timeOut [0 | minutes]`

Availability All users (display)
admin (set/clear)

Description This command changes the telnet time-out value used by the shell. The default value of zero means that telnet time outs are disabled. A nonzero 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 The following operands are optional:

0	Specify a 0 to disable telnet time outs.
minutes	Specify a number of minutes before an idle telnet session is timed out.

Example To display the current telnet time-out value, and then change it to 10 minutes:

```
sw5:admin> timeOut
TimeOut is Disabled
sw5: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:

- 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, the 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 routing hardware of the switches, 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 following fields:

`Local Domain ID:`	Domain number of local switch.
`Domain:`	Domain number of destination switch.
`Metric:`	Cost of reaching destination domain.
`Hops:`	The number of hops to reach destination domain.
`Out Port:`	Port that incoming frame will be forwarded to, in order to reach the destination domain.

`In Ports:`	Bit map of input ports to use the corresponding Out Port to reach the destination domain. A bit set to 1 indicates the 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`.
`Flags:`	Always 'D', indicating a dynamic path. A dynamic path is discovered automatically by the FSPF path selection protocol.
`Name:`	Name of destination switch.

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 [ mode ], [ snmptrapmode ]`

Availability admin

Description This command enables or disables the track-changes feature. An SNMP-TRAP mode can also be enabled. There are several trackable changes:

- successful login
- unsuccessful login
- logout
- config file change from task
- track-changes on
- track-changes off

Operands This command has the following operands:

mode	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.
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.

Example Two examples are shown: 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`

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. Not all reasons are applicable to all switch models:

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.
PushButtons	Push buttons 1 and 3 were depressed for 2 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 2 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 up time 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 portnumber, domainnumber, outputportnumber`

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 `output_portnumber` is a usable port, all frames coming in from port `portnumber` addressed to `domainnumber` are forwarded through port `output_portnumber`. If `output_portnumber` is not usable, the routing assignment is not affected. When `output_portnumber` becomes usable, the static route assignment for `portnumber` is enforced.

`output_portnumber` is usable if the associated neighbor 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:

`portnumber`	Specify the port to be statically routed; it can be either an `F_Port` or an `E_Port`. This operand is required.
`domainnumber`	Specify the destination domain. This operand is required.

`outputportnumber` Specify the output port where traffic is to be forwarded. This operand is required.

Example 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 portnumber, domainnumber`

Availability admin

Description Use this command to remove a statically configured route.

When this command is issued, the route to `domainnumber` for `portnumber` 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 domain `domainnumber` is revaluated.

Operands This command has the following operands:

`portnumber`	Specify the port to be statically routed; it can be either an `F_Port` or an `E_Port`. This operand is required.
`domainnumber`	Specify the destination domain. This operand is required.

Example 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 [portnumber],[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/routing task. The routing information describes how a frame, which is received from a port on the local switch, is to be routed to reach a destination switch.

The following information is displayed:

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:	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.
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:

No Operand	Displays routing information for all active ports on the local switch, to all the domains in the fabric.
`portnumber`	Displays routing information for port `portnumber` to all the domains in the fabric.
`portnumber`, `domainnumber`	Displays routing information for port `portnumber` to domain `domainnumber`.

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 following information is displayed:

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`

2

ERROR MESSAGES

This chapter explains the Fabric OS error message format and possible errors:

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 `errShow` command output provides more information than the front panel display. 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 Figure 1, Error 02 represents a system error and Error 01 represents a diagnostic error (error number 004). Only diagnostic errors are assigned error numbers.

Note 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 is correct.

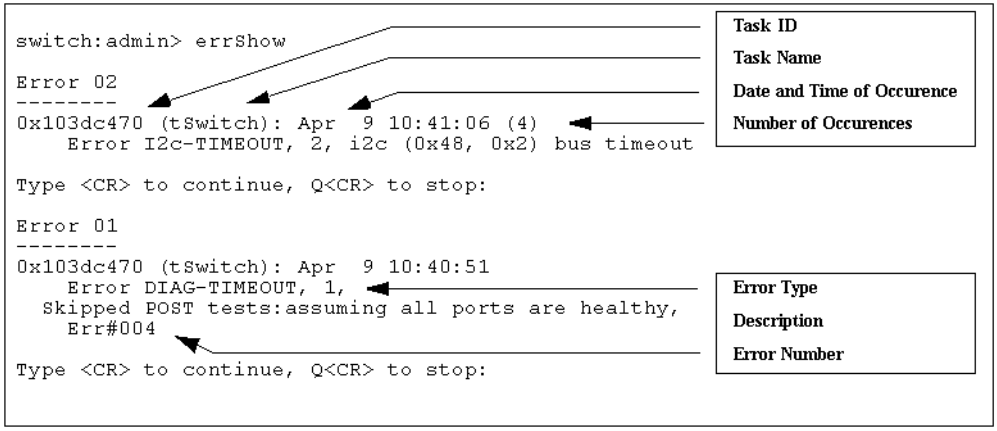

Figure 1. errShow Command Example

Displaying Error Messages Using Telnet

To display the error messages compiled by your system, perform the following procedure:

1. Log in 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 that has been marked `BAD`, clear the port and set to OK using the `diagClearError (port#)` command. This command clears the port status only and does not clear the logs or change the port's condition. The `diagClearError (port#)` 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 in the following table.

Table 15. Post Tests

Command	Description
ramTest	Bit write / read test of SDRAMS in the switch.
portRegTest	Bit write / read test of the ASIC SRAMs and registers.
centralMemoryTest	Bit write / read test of the ASIC central memory.
cmiTest	ASIC to ASIC connection test of the CMI bus.
camTest	Functional test of the CAM memory.
portLoopbackTest	Functional test of switch by sending and receiving frames from the same port.

For more information about these tests, see 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.

POST Test Failure and Recovery Actions

This section provides information on what actions to perform if the switch fails any of the POST tests.

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 16. Post 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
`crossPortTest`	replace mainboard assembly, GBIC, or fibre cable
`spinSilk`	replace mainboard assembly, GBIC, or fibre cable

* 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. Table 17 matches each error number with the test that caused the error and the name of the error. Look up the complete definition of the error name and the actions that will correct it in Table 18.

Table 17. Error Message Numbers

Error Number	Test Name	Error Name
0001	n/a	DIAG-CLEAR_ERR
0004	n/a	DIAG-POST_SKIPPED
0B15	sramRetentionTest	DIAG-REGERR
0B16		DIAG-REGERR_UNRST
0B0F		DIAG-BUS_TIMEOUT
1F25	cmemRetentionTest	DIAG-LCMRS
1F26		DIAG-LCMTO
1F27		DIAG-LCMEM
0110	ramTest*	DIAG-MEMORY
0111		DIAG-MEMSZ
0112		DIAG-MEMNULL
0415	portRegTest*	DIAG-REGERR
0416		DIAG-REGERR_UNRST
040F		DIAG-BUS_TIMEOUT

Table 17. Error Message Numbers (continued)

Error Number	Test Name	Error Name
1020	centralMemoryTest*	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
103O		DIAG-BADINT
106F		DIAG-TIMEOUT
2030	cmiTest*	DIAG-BADINT
2031		DIAG-INTNIL
2032		DIAG-CMISA1
2033		DIAG-CMINOCAP
2034		DIAG-CMIINVCAP
2035		DIAG-CMIDATA
2036		DIAG-CMICKSUM
223B	camTest*	DIAG-CAMINIT
223C		DIAG-CAMSID

Table 17. Error Message Numbers (continued)

Error Number	Test Name	Error Name
2640	portLoopbackTest*	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 17. Error Message Numbers (continued)

Error Number	Test Name	Error Name
3040	crossPortTest	DIAG-ERRSTAT(ENCIN)
3041		DIAG-ERRSTAT(CRL)
3042		DIAG-ERRSTAT(TRUNC)
3043		DIAG-ERRSTAT(2LONG)
3044		DIAG-ERRSTAT(BADEOF)
3045		DIAG-ERRSTATENCOUT)
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 17. Error Message Numbers (continued)

Error Number	Test Name	Error Name
3080	spinSilk	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

* These tests are run during the POST (power on self test). For more information about these tests, see 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 18. Diagnostic Error Messages

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 mainboard failure	Retry, reboot, or replace mainboard assembly
DIAG-CAMSID Err#223C [camTest]	ASIC failed SID NO translation test	ASIC failure	Replace mainboard assembly

Table 18. Diagnostic Error Messages (continued)

Message	Description	Probable Cause	Action
DIAG-CLEAR_ERR Err#0001	Port diag error flag (OK or BAD) is cleared	Informational only	None required
DIAG-CMBISRF Err#1021 [centralMemoryTest]	ASIC Central Memory SRAMs did not complete the BISR within the time-out period	ASIC failure	Replace mainboard assembly
DIAG-CMBISRTO Err#1020 [centralMemoryTest]	ASIC Central Memory SRAMs did not complete the BISR within the time-out period	ASIC failure	Replace mainboard assembly
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

Table 18. Diagnostic Error Messages (continued)

Message	Description	Probable Cause	Action
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 fibre cable failure	Replace mainboard assembly, GBIC module, or fibre cable

Table 18. Diagnostic Error Messages (continued)

Message	Description	Probable Cause	Action
DIAG-ERRSTAT Err#2640-2647, 3040-3047, 3840-3847 [portLoopbackTest, crossPortTest, spinSilk]	Port Error Statistics counter is nonzero, 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 fibre cable failure	Replace mainboard assembly, GBIC module, or fibre cable
DIAG-INIT Err#264F, 304F, 384F [portLoopbackTest, crossPortTest, spinSilk]	Port failed to go active in the loopback mode requested	ASIC, mainboard, GBIC module, or fibre cable failure	Replace mainboard assembly, GBIC module, or fibre cable
DIAG-INTNIL Err#2031 [cmiTest]	ASIC failed to get a CMI error (interrupt)	ASIC failure	Replace mainboard assembly

Table 18. Diagnostic Error Messages (continued)

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 time-out period	ASIC failure	Replace mainboard assembly
DIAG-MEMNULL Err#0112 [ramTest]	Test failed to malloc	mainboard failure	Replace mainboard assembly

Table 18. Diagnostic Error Messages (continued)

Message	Description	Probable Cause	Action
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
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 fibre cable failure	Replace mainboard assembly, GBIC module, or fibre 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 test

Table 18. Diagnostic Error Messages (continued)

Message	Description	Probable Cause	Action
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 fibre cable failure	Replace mainboard assembly, GBIC module, or fibre 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
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

Table 18. Diagnostic Error Messages (continued)

Message	Description	Probable Cause	Action
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 fibre cable failure	Replace mainboard assembly, GBIC module, or fibre cable
DIAG-TIMEOUT Err#266F, 306F, 386F [portLoopbackTest, crossPortTest, centralMemoryTest]	For portLoopbackTest and crossPortTest: • Port failed to receive frame within time-out period • For centralMemoryTest • Port failed to detect an interrupt within the time-out period	ASIC, GBIC module, or fibre cable failure	Replace mainboard assembly, GBIC module, or fibre 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 19. System Error Messages

Message	Description	Probable Cause	Action
ASIC, MINI_BUFFER, LOG_WARNING	ASIC Failure	Bad mainboard	Contact customer support
CONFIG CORRUPT	The switch configuration information has become irrevocably corrupted.	OS error	System automatically resorts to 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	System automatically reverts to default configuration settings
FABRIC, SEGMENTED, LOG_WARNING	Fabric segmented	Incompatible fabric parameters/ switches Conflict zones	Reconfigure fabric or zones. See “configure” on page 40.
FABRIC, BADILS, LOG_WARNING	Bad ISL-ELS size	ISL-ELS payload is wrong	Contact customer support
FABRIC, NO_ALIASID, LOG_WARNING	No free multicast alias	Too many multicast groups in use	Remove some of the groups

Table 19. System Error Messages (continued)

Message	Description	Probable Cause	Action
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, EXCHFREE, L, S	Unable to free an exchange	OS error	Contact customer support
FLANNEL, PHANTOM, LOG_WARNING	Port PLT limit exceeded	OS error	Contact customer support
FLASH, BAD_MIRROR, LOG_WARNING	System 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

Table 19. System Error Messages (continued)

Message	Description	Probable Cause	Action
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
FSPF, VERSION, LOG_ERROR	FSPF version not supported	OS error	Contact customer support
HLO, DEADTIMEOUT, LOG_ERROR	Incompatible Inactivity time-out from port	OS error	Contact customer support
HLO, HLOTIMEOUT, LOG_ERROR	Incompatible Hello time-out 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 out of range	OS error	Contact customer support
LSDB, MAXINCARN, LOG_WARNING	Local Link State Record reached maximum incarnation	OS error	Contact customer support
LSDB, NOLOCALENTRY, LOG_CRITICAL	No database entry for local Link State Record	OS error	Contact customer support

Table 19. System Error Messages (continued)

Message	Description	Probable Cause	Action
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
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

Table 19. System Error Messages (continued)

Message	Description	Probable Cause	Action
PANIC, QCREATE, LOG_PANIC	Message queuer failed	OS error	Contact customer support
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
POWER, 2_FAILED, LOG_CRITICAL	Switch power failure	Power supply failure	Contact customer support
QL, QUICKLOOP PARTNER INCOMPATIBLE	The QuickLoop partner switch is running a lower (than v2.1.3) version of the software.	OS error	Upgrade to higher version of the Fabric OS

Table 19. System Error Messages (continued)

Message	Description	Probable Cause	Action
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
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

Table 19. System Error Messages (continued)

Message	Description	Probable Cause	Action
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
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

3

FEATURE TELNET COMMANDS

This chapter summarizes commands for Zoning, Quicklook, Extended Fabrics, Fabric Watch, and FC 6164:

Note For detailed information about the telnet commands for Zoning, Quickloop, Extended Fabrics, or Fabric Watch, see the specific user's guide for that feature.

Zoning Commands

For detailed information about these commands, see the *Zoning User's Guide*.

Table 20. Zoning Commands

Command	Description
Zone Alias	
aliAdd	Adds a member to a zone alias.
aliCreate	Creates a zone alias.
aliDelete	Deletes a zone alias.
aliRemove	Removes a member from a zone alias.
aliShow	Shows zone alias definition.
Zoning	
zoneAdd	Adds a member to a zone.
zoneCreate	Creates a zone.
zoneDelete	Deletes a zone.
zoneRemove	Removes a member from a zone.
zoneShow	Shows zone information.
QuickLoop Zoning	
qloopAdd	Adds a member to a QuickLoop.
qloopCreate	Creates a QuickLoop.
qloopDelete	Deletes a QuickLoop.
qloopRemove	Removes a member from a QuickLoop.
qloopShow	Shows QuickLoop information.

Table 20. Zoning Commands (continued)

Command	Description
Zone Configuration and Management	
cfgAdd	Adds a zone to a zone configuration.
cfgClear	Clears all zone configurations.
cfgCreate	Creates a zone configuration.
cfgDelete	Deletes a zone configuration.
cfgDisable	Disables a zone configuration.
cfgEnable	Enables a zone configuration.
cfgRemove	Removes a zone from a zone configuration.
cfgSave	Saves zone configurations in flash memory.
cfgShow	Shows zone configuration definition.
cfgTransAbort	Aborts the current zoning transaction.

QuickLoop Commands

For detailed information about these commands, see the *QuickLoop User's Guide*.

Table 21. 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.

Table 21. QuickLoop Commands (continued)

Command	Description
qlPortEnable	Enables a QuickLoop port to QuickLoop mode.
qlShow	Displays QuickLoop information.
qlStatsShow	Displays QuickLoop statistics.
qlPortShowAll	Displays QuickLoop port information.

Extended Fabric Command

For detailed information about this command, see the *Distributed Fabrics User's Guide*.

Table 22. Extended Fabric Commands

Command	Description
portCfgLongDistance	Configures a port to support long distance links.

Fabric Watch Commands

For detailed information about these commands, see the *Fabric Watch User's Guide*.

Table 23. 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.

FC 6164 Commands

The following commands are specific to the administration of the FC 6164 switch. For more detailed information on these commands, see the *HP Surestore FC Switch 6164 Installation and Reference Guide*.

Table 24. FC 6164 Commands

Command	Description
islTopoCheck	Displays ISL switch group connections for a switch.
islTopoShow	Displays ISL switch group topology and status.
sgroupDelete	Deletes a switch group.
sgroupRename	Renames a switch group.
sgroupSet	Creates a switch group.
sgroupShow	Displays switch group configuration information.
sgroupSupportShow	Displays information about the FC 6164 switch for support purposes.
sgroupSwReplace	Replaces a member of a switch group.

GLOSSARY

8b/10b encoding	Encoding scheme that converts each 8-bit data byte into a 10-bit transmission character. Used to balance ones and zeros in high-speed transports.
Address identifier	Value used to identify source or destination of a frame.
AL_PA	Arbitrated Loop Physical Address. Unique 8-bit value assigned during loop initialization to each port in an arbitrated loop.
Alias server	Fabric software facility that supports multicast group management.
ANSI	American National Standards Institute. Governing body for fibre channel standards in the U.S.A.
API	Application Programming Interface. Defined protocol that allows applications to interface with a set of services.
Arbitrated loop	A fibre channel transport structured as a loop. Allows communication between ports without using a switch. Requires successful arbitration by a port before a circuit is established. Supports up to 126 devices and 1 fabric attachment. Similar to a “shared bandwidth ring” on a network.
ASIC	Application-Specific Integrated Circuit.
ATM	Asynchronous Transfer Mode. Transport 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.
Bandwidth	The total transmission capacity of a link, cable, or system.

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 number of available receive buffers. See also *Buffer-to-buffer flow control*, *EE_Credit*.
BER	Bit Error Rate. Rate at which bits are expected to be received in error. Expressed as ratio of error bits to total bits transmitted. See also *Error.*
Bit synchronization	The delivery of correctly clocked bits at the required Bit Error Rate. See also *BER.*
Broadcast	Transmission of data from a single source to all devices in fabric, regardless of zoning. See also *Multicast, Unicast*.
Buffer-to-buffer flow control	Management of frame transmission rate between directly connected ports or within an arbitrated loop. See also *BB_Credit*.
Cascade	Two or more interconnected fibre channel switches. For switches, a maximum of seven hops is recommended (no path longer than eight switches).
Circuit	Established communication path between ports. Consists of two virtual circuits that transmit in opposite directions. See also *Link.*
Class 1	A connection-oriented service that provides a dedicated connection between two ports, with notification of delivery or non-delivery.
Class 2	A multiplex and connectionless frame switching service between two ports, with notification of delivery or non-delivery.
Class 3	A connectionless frame switching service between two ports, without notification of delivery or non-delivery. Can also be used to provide a multicast connection between originator and recipients, with notification of delivery or non-delivery.
Class F	A connectionless service for control traffic between switches, with notification of delivery or non-delivery between the E_Ports.
Class of service	A set of specific delivery characteristics and attributes for frame delivery.
Comma	Unique pattern (either 1100000 or 0011111) used in 8b/10b encoding to specify character alignment within a data stream. See also *K28.5*.

Community (SNMP)	Relationship between a group of SNMP managers and an SNMP agent, in which authentication, access control, and proxy characteristics are defined.
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* and *EE_Credit*.
Cut-through	Switching technique that allows selection of a transmission route for a frame as soon as 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 configuration	The complete set of all zone objects defined in the fabric; can include multiple zone configurations. See also *Enabled configuration*, *Zone configuration*.
Disparity	The relationship of ones and zeros in an encoded character. Neutral disparity indicates an equal number of each, positive disparity a majority of ones, and negative disparity a majority of zeros.
Distributed Fabrics	The combined user's guides for Extended Fabrics and Remote Switch. Not a software product.
DLS	Dynamic Load Sharing. Dynamic distribution of traffic over available paths. Allows for redistribution when an Fx_Port or E_Port comes up or down.
Domain ID	Unique identifier for the switch in a fabric. Usually automatically assigned by the switch, but can also be assigned manually. Can be any value between 1 and 239.
E_D_TOV	Error Detect Time-out Value. Time allowed for round-trip transmission before recovery is initiated. Can also be defined as the minimum time an L_Port waits for sequence completion before initiating recovery. See also *R_A_TOV.*
E_Port	Expansion Port. A switch port that has the ability to connect to a similar port on another switch, allowing creation of an interswitch link. See also *ISL*.

EE_Credit	End-to-end credit. The number of receive buffers allocated by recipient port to originating port. Used by Class 1 and 2 services to manage exchange of frames across intervening ports in fabric. See also *End-to-end flow control*, *BB_Credit*.
Enabled configuration	The currently enabled zone configuration. 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 *Buffer-to-buffer flow control*, *EE_Credit.*
Error	As applies to fibre channel, a missing or corrupted frame, time-out, loss of synchronization, or loss of signal. See also *Loop failure*.
Exchange	As applies to fibre channel, a communication session between N_Ports involving the transmission of one or more related sequences, in one or both directions. See also *Sequence*.
Extended Fabrics	Product that allows interconnection of fibre channel fabric over distances of up to 100 kilometers.
F_Port	Fabric Port. A port that can transmit using fabric protocol and can interface over links. Can be used to connect N_Ports to a switch. See also *FL_Port*, *Fx_Port.*
Fabric	A fibre channel network of two or more switches. Also called a “switched fabric.” See also *SAN*, *Cascade*.
Fabric name	Unique 64-bit identifier assigned to each separate fabric. Communicated during login and port discovery.
Fabric OS	Proprietary operating system on switches.
Fabric Watch	Product that allows monitoring and configuration of fabric and switch elements.
FC-AL-3	The Fibre Channel Arbitrated Loop standard. Defined on top of FC-PH standards.
FC-FLA	The Fibre Channel Fabric Loop Attach standard.
FCP	Fibre Channel Protocol. Mapping of protocols onto fibre channel standard protocols. For example, SCSI FCP maps SCSI-3 onto fibre channel.

FC-PH-1, 2, 3	The Fibre Channel Physical and Signaling Interface standards.
FC-PI	The Fibre Channel Physical Interface standard.
FC-PLDA	The Fibre Channel Private Loop Direct Attach standard. Applies to operation of peripheral devices on private loops.
FC-SW-2	The Fibre Channel Switch Fabric standard, second generation. Specifies tools and algorithms for interconnection and initialization of fibre channel switches.
Fibre channel transport	Protocol service that supports communication between fibre channel service providers. See also *FSP.*
Fill word	A word transmitted to keep a fibre active. Either an idle or ARB ordered set.
FL_Port	Fabric Loop Port. A port that can transmit under both fabric protocol and loop protocol. Can be used to connect NL_Ports to a switch. See also *F_Port, Fx_Port*.
FLOGI	Fabric Login. Process by which a node makes a logical connection to fabric. Used by ports to determine if fabric is present, and if so to exchange service parameters with the fabric. See also *PLOGI*.
Frame	Fibre channel structure used to transmit data. Consists of start-of-frame delimiter, header, any optional headers, data payload, cyclic redundancy check (CRC), and end-of-frame delimiter. There are two types: data frames and link control frames. Similar to the networking concept "packet." See also *Sequence*, *Data word*.
FRU	Field Replaceable Unit. A component that can be replaced on site.
FS	Fibre Channel Service. A service that is defined by fibre channel standards and exists at a well-known address. For example, Name Server is a fibre channel service. See also *FSP.*
FSP	Fibre Channel Service Protocol. The common protocol used for all fabric services, transparent to fabric type or topology. See also *FS*.
FSPF	Fabric Shortest Path First. Routing protocol for fibre channel switches.
Full-duplex	Mode of communication that allows a port to simultaneously transmit and receive frames. See also *Half-duplex*.

Fx_Port	Fabric port that can operate either as F_Port or FL_Port. See also *F_Port*, *FL_Port.*
G_Port	Generic Port. Port that can operate either as E_Port or F_Port. Ports are defined as G_Ports when disconnected or have not assumed a specific function within fabric.
Gateway	IP address assignment that provides translation for incompatible networks. For example, ATM gateway can connect a fibre channel link to an ATM connection.
GBIC	Gigabit Interface Converter. Removable serial transceiver module that allows gigabit physical-layer transport for fibre channel.
Gbps	Gigabits (1,062,500,000 bits) per second.
GBps	Gigabytes (1,062,500,000 bytes) per second.
Half-duplex	Mode of communication that allows a port to either transmit or receive frames, but not both at once. The only exception is 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.
HBA	Host Bus Adapter. Interface card between a server or workstation bus and the fibre channel network. Similar to a network interface card.
Hub	Fibre channel wiring concentrator that collapses loop topology into physical star topology. Nodes are automatically added when active and removed when inactive.
Idle	Continuous transmission of an ordered set when no data is being transmitted to maintain an active fibre channel link and synchronization. See also *Fill word*.
Initiator	Server or workstation that initiates communications with storage devices over a fibre channel network. See also *Target*.
IOD	In Order Delivery. A parameter that, when set, guarantees that frames are delivered in-order if possible, and dropped if not.
ISL	Interswitch Link. Fibre channel link from the E_Port of one switch to the E_Port of another.

IU	Information Unit. An individual set of information as defined by higher-level process protocol definition, or upper-level protocol mapping.
JBOD	Just a Bunch Of Disks. A number of disks connected in a single chassis to one or more controllers. See also *RAID*.
K28.5	Special 10-bit character used to indicate beginning of transmission words that perform fibre channel control and signaling functions. First seven bits are comma pattern. See also *Comma*.
L_Port	Loop Port. Node or fabric port that can use loop protocol or fabric protocol. See also *Non-participating mode*, *Participating mode*.
Latency	Time required to transmit a frame, from the time sent until time of arrival.
Link	As applies to fibre channel, a physical connection between two ports, consisting of both transmit and receive fibres. See also *Circuit*.
Link services	Protocol for link-related actions.
LIP	Loop Initialization Primitive. The signal used to begin initialization in a loop. Indicates either loop failure or resetting of a node. See also *Loop initialization*.
Loop failure	Loss of signal within a loop for any period of time, or loss of synchronization for longer than the time-out value. See also *E_D_TOV.*
Loop initialization	Logical procedure used by L_Ports to discover environment. Can be used to assign AL_PA addresses, detect loop failure, or reset a node. See also *LIP.*
Loop_ID	Hex value representing one of 127 possible AL_PA values in a loop.
Looplet	Set of devices connected in a loop to a port that is part of another loop.
LPSM	Loop Port State Machine. Logical entity that performs arbitrated loop protocols and defines behavior of L_Ports when they require access to an arbitrated loop.
LWL	Long wavelength fibre-optic cable. Based on 1300 nm lasers supporting 1.0625 Gbps link speeds. Connectors are color-coded blue. See also *SWL*.
MIB	Management Information Base. SNMP structure that provides configuration and device information to assist with device management.

Multicast	Transmission of data from a single source to a number of specified N_Ports. See also *Broadcast, Unicast.*
Multimode	Fibre-optic cabling specification allowing up to 500 meters between devices.
N_Port	Node Port. Port that can attach to a fibre channel port. See also *NL_Port, Nx_Port.*
Name server	Service of storing names, addresses, and attributes for up to 15 minutes, provided by a switch to other entities in fabric. Defined by fibre channel standards, and existing at a well-known address. Also called Simple Name Server, SNS, or directory service. See also *FS.*
NL_Port	Node Loop Port. An N_Port that can use loop protocol. See also *N_Port, Nx_Port.*
Node	Fibre channel entity with one or more N_Ports or NL_Ports.
Node name	Unique identifier for a node, communicated during login and port discovery.
Non-participating mode	Mode in which L_Port is inactive in loop and cannot arbitrate or send frames, but can retransmit received transmissions. Port enters mode if there are more than 127 devices in loop, and an AL_PA cannot be acquired. See also *Participating mode*.
Nx_Port	Node port that can operate as either an N_Port or NL_Port.
Ordered set	A type of transmission word that occurs outside of frames, and is used to manage frame transport and differentiate fibre channel control information from data. See also *Data word, Transmission word.*
Participating mode	Mode in which an L_Port in a loop has valid AL_PA and can arbitrate, send frames, and retransmit received transmissions. See also *Non-participating mode*.
Phantom address	AL_PA value assigned to device not physically in loop. Also called phantom AL_PA.
Phantom device	Device not physically in a loop but logically included by phantom address.
PLOGI	Port Login. Port-to-port login process by which initiators establish sessions with targets. See also *FLOGI.*
Point-to-point	Two fibre channel devices connected by a direct link. See also *Topology.*

Port_Name	Unique FC identifier for port, communicated during login and port discovery.
POST	Power On Self Test. Series of self-tests run after a switch is rebooted or reset.
Private NL_Port	NL_Port that does not log into the fabric and communicates only with private NL_Ports in same loop.
Private device	Device that supports arbitrated loop protocol and understands 8-bit addresses, but cannot log into fabric.
Private loop	An arbitrated loop with no fibre channel attachment.
Protocol	A defined method and standards for communication.
Public NL_Port	NL_Port that logs into the fabric, can function within public or private loops, and can communicate with public or private NL_Ports.
Public device	Device that supports arbitrated loop protocol, understands 8-bit addresses, and can log into fabric.
Public loop	An arbitrated loop attached to a switch.
QuickLoop	Can indicate either the product that allows private devices within loops to communicate over the fabric with other devices, or the set of actual devices or looplets connected in a loop by QuickLoop technology.
R_A_TOV	Resource Allocation Time-out Value. Maximum time a frame can be delayed in the fabric and still be delivered. See also *E_D_TOV.*
RAID	Redundant Array of Independent Disks. Collection of disk drives that appear as a single volume to the server, and are fault-tolerant through mirroring or parity checking. See also *JBOD*.
Remote Switch	Product that enables two switches to connect over an ATM connection. Requires compatible fibre channel-to-ATM gateways. Can be up to 10 kilometers distance between each switch and respective gateway.
Route	As applies to fabric, a communication path between two switches. See also *FSPF.*
RSCN	Registered State Change Notification. Switch function that sends notification of fabric changes from the switch to specified nodes.

SAN	Storage Area Network. Network of systems and storage devices that usually communicate using fibre channel protocols. See also *Fabric*.
Sequence	A fibre channel structure containing one or more frames transmitted in a unidirectional manner between N_Ports. See also *Exchange*, *Frame*.
Single mode	Fibre-optic cabling standard that provides for distances of up to 10 kilometers between devices.
SNMP	Simple Network Management Protocol. Internet management protocol that does not rely on underlying communication protocols and can therefore be made available over other protocols, such as UDP/IP. See also *Community (SNMP)*.
SNS	Simple Name Server. See *Name server.*
Switch	A combination of hardware and firmware that routes frames according to fibre channel protocol. Switches can have G_Ports, E_Ports, F_Ports, and FL_Ports.
Switch Domain_ID	Unique identifier for a switch, used in routing frames. Usually automatically assigned by the switch, but can be manually assigned by administrator.
Switch name	Arbitrary name assigned to switch by administrator. See also *Switch Domain_ID*.
SWL	Short wavelength fiber-optic cable. Based on 850 nm lasers supporting 1.0625 Gbps link speeds. Connectors are color-coded black. See also *LWL*.
Target	Storage device that receives communications from a server or workstation over a fibre channel network. See also *Initiator.*
Topology	As applies to fibre channel, the structure of the fibre channel network and the resulting possible communication paths. There are three fibre channel topologies: point-to-point, fabric, and arbitrated loop.
Translative mode	Mode in which public devices can communicate with private devices across fabric.
Transmission character	A 10-bit character encoded according to the rules of the 8b/10b algorithm. See also *8b/10b encoding*, *Transmission word*.
Transmission word	Group of four transmission characters, totaling 40 bits. Two types: data words and ordered sets. See also *Data word*, *Ordered set*, *Transmission character.*

Trap (SNMP)	Message sent by SNMP agent to inform SNMP management station of critical error. See also *SNMP.*
Tunneling	Technique for enabling source and destination hosts to communicate when on same type of network but connected by a different type of network.
U_Port	Universal Port. Switch port that can operate as G_Port, E_Port, F_Port, or FL_Port. A port is defined as a U_Port if not connected or if it has not assumed a specific function in the fabric.
ULP	Upper Layer Protocol. Protocol that runs on top of fibre channel. Typical upper layer protocols: SCSI, IP, HIPPI, IPI.
Unicast	Transmission of data from a single source to single destination. See also *Broadcast, Multicast*.
Web Tools	Product that provides a graphical interface for monitoring and managing individual switches or entire fabrics from standard workstations.
Well-known address	As applies to fibre channel, a logical address stored on the switch and defined by fibre channel standards as being assigned to a specific function.
WWN	worldwide name. Identifier that is unique worldwide. Each entity in a fabric has a separate WWN.
Zone	Set of hosts and devices attached to same fabric and having access permission, including RSCNs and user data, to each other. Entities inside a zone are not visible to entities outside the same zone, even if the outside entities are in another zone.
Zone configuration	A specified set of zones. Enabling a zone configuration enables all zones in that configuration. See also *Defined configuration*, *Enabled configuration*.
Zoning	Product that allows partitioning of fabric into logical groupings of devices. See also *Zone*.

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