



# FortiSwitch-500

Version 4.0 MR2

## CLI Reference

## **FortiSwitch-500 CLI Reference**

Version 4.0 MR2

Revision 1

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FCC Class A Part 15 CSA/CUS

**CAUTION:** Risk of explosion if battery is replaced by incorrect type. Dispose of used batteries according to instructions.

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# 1 Introduction

---

## 1.1 Overview

### 1.1.1 Audience

This guide is intended for use by data center administrators, system administrators and customer support personnel responsible for monitoring or configuring the Fortinet FortiSwitch Ethernet Fabric Switch via the command line interface. It assumes a basic familiarity with the following:

- Network administration
- Establishing and using a telnet session
- Using a command line interface

### 1.1.2 Registering your Fortinet product

Before you begin, take a moment to register your Fortinet product at the Fortinet Technical Support web site, <https://support.fortinet.com>.

Many Fortinet customer services, such as firmware updates, technical support, and FortiGuard Antivirus and other FortiGuard services, require product registration.

For more information, see the Fortinet Knowledge Center article [Registration Frequently Asked Questions](#).

### 1.1.3 Customer Service and Technical Support

Fortinet Technical Support provides services designed to make sure that your Fortinet products install quickly, configure easily, and operate reliably in your network.

To learn about the technical support services that Fortinet provides, visit the Fortinet Technical Support web site at <https://support.fortinet.com>.

You can dramatically improve the time that it takes to resolve your technical support ticket by providing your configuration file, a network diagram, and other specific information. For a list of required information, see the Fortinet Knowledge Center article [What does Fortinet Technical Support require in order to best assist the customer?](#)

### 1.1.4 Training

Fortinet Training Services provides classes that orient you quickly to your new equipment, and certifications to verify your knowledge level. Fortinet provides a variety of training programs to serve the needs of our customers and partners world-wide.

To learn about the training services that Fortinet provides, visit the Fortinet Training Services web site at <http://campus.training.fortinet.com>, or email them at [training@fortinet.com](mailto:training@fortinet.com).

## 1.1.5 Fortinet Documentation

The Fortinet Technical Documentation web site, <http://docs.fortinet.com>, provides the most up-to-date versions of Fortinet publications, as well as additional technical documentation such as technical notes.

In addition to the Fortinet Technical Documentation web site, you can find Fortinet technical documentation on the Fortinet Tools and Documentation CD, and on the Fortinet Knowledge Center.

### 1.1.5.1 Fortinet Tools & Documentation CD

Many Fortinet publications are available on the Fortinet Tools and Documentation CD shipped with your Fortinet product. The documents on this CD are current at shipping time. For current versions of Fortinet technical documentation, visit the Fortinet Technical Documentation web site, <http://docs.fortinet.com>.

### 1.1.5.2 Fortinet Knowledge Base

The Fortinet Knowledge Base provides additional Fortinet technical documentation, such as troubleshooting and how-to-articles, examples, FAQs, technical notes, a glossary, and more. Visit the Fortinet Knowledge Base at <http://kb.fortinet.com>.

### 1.1.5.3 Comments on FortiMail technical documentation

Please send information about any errors or omissions in this document to [techdoc@fortinet.com](mailto:techdoc@fortinet.com).

## 1.1.6 Accessing the CLI

The CLI is accessed via:

- Serial interface connected directly from a PC to the serial console port of the switch.
- Telnet session or secure shell (SSH) session. Telnet or SSH session can be initiated in-band through the network or out-of-band via the management network port; either telnet or SSH access requires that an IP address be configured on the switch.

**Note:** The maximum number of concurrent telnet and SSH connections to the switch is 15.

The following are the default settings of these interfaces:

- **Serial:** initialized baud-rate 115200, 8 bit, no parity, and no flow control. By default the serial port is turned on.
- **Telnet:** initialized to port 23. By default the telnet service is turned on.
- **SSH:** initialized to port 22. By default the SSH service is turned off.

## 1.1.7 Document Conventions

The following typographical conventions are used in command descriptions:

**Table 1: Document Conventions**

Convention	Use
<b>bold type</b>	keywords, to be typed verbatim

<i>italic type</i>	arguments for which the user must supply a value (the argument gives the name, range, or format of the information to be supplied by the operator; see Arguments below)
{ }	logical groupings
[ ]	optional arguments or keywords
	separator for mutually exclusive options
<>	required arguments

## 1.2 CLI Command Structure

The CLI accepts two types of commands: asynchronous line-edit commands for navigating and editing input into the CLI, and mode-based commands for monitoring and configuring the FortiSwitch Ethernet Fabric Switch. This section describes both types of commands and how they are organized and accessed.

### 1.2.1 Line-Edit Commands

Common line-editing and navigation commands are available for the user's convenience. The list is shown below, and can also be accessed through the CLI by using the **help** command.

**Table 2: Line-Edit Commands**

Key Combination	Action
<DEL>, <BS>	delete previous character
Ctrl-A	go to beginning of line
Ctrl-E	go to end of line
Ctrl-F	go forward one character
Ctrl-B	go backward one character
Ctrl-D	delete current character
Ctrl-U, X	delete to beginning of line
Ctrl-K	delete to end of line
Ctrl-W	delete previous word
Ctrl-T	transpose previous character

Ctrl-P	go to previous line in history buffer
Ctrl-R	rewrites or pastes the line
Ctrl-N	go to next line in history buffer
Ctrl-Y	print last deleted character
Ctrl-Q	enables serial flow
Ctrl-S	disables serial flow
Ctrl-Z	return to root command prompt
Up Arrow	go to previous line in history buffer
Down Arrow	go to next line in history buffer
Right Arrow	go forward one character
Left Arrow	go backward one character
<TAB>, <SPACE>	command-line completion
Exit	go to next lower command prompt
?	list choices

## 1.2.2 Mode-Based Structure

The FortiSwitch Operating System (FSOS) v4.0 CLI command tree groups commands in modes according to their nature as shown below. Because the CLI is divided into modes, the commands in one mode are not available until the operator switches to that mode, with the exception of the Default Mode commands which are also available in Enable Mode.

The commands available to the operator at any point in time depend upon the mode. Entering a question mark (?) at the CLI prompt displays a list of the commands available at any point and provides brief descriptions of the commands.

**Table 3: Mode Summary**

Mode Name	Prompt	Description	Access	Exit
Default Mode	>	Basic show commands for viewing system information.	Log on to switch or use <b>exit</b> command from Enable Mode.	<b>logout</b> : ends session
Enable Mode	#	Full set of show commands, plus access to Config Mode and File Mode.	Use <b>enable</b> command in Default Mode (requires password), <b>exit</b> from Config Mode or File	<b>exit</b> : returns to Default Mode

			Mode, or <b>end</b> from the other configuration modes.	
Debug Mode	(Debug)#	Advanced command set for debugging, to be used only in cooperation with Fortinet technical support	Use <b>debug</b> command in Enable Mode.	<b>exit/end</b> : returns to Enable Mode
File Mode	(File)#	Commands for image updating and file transfer.	Use <b>file</b> command in Enable Mode.	<b>exit/end</b> : returns to Enable Mode
Config Mode	(Config)#	Configuration commands for the switch as a whole, plus access to additional configuration modes.	Use <b>config</b> command in Enable Mode or <b>exit</b> command in the other configuration modes.	<b>exit/end</b> : returns to Enable Mode
Config-LAG Mode	(Config-LAG <i>n</i> )# where <b>n</b> is the LAG ID	Configuration commands for LAGs.	Use <b>lag</b> command (and specify a LAG ID) in Config Mode.	<b>exit</b> : returns to Config Mode <b>end</b> : returns to Enable Mode.
Config-Port Mode	(Config-Port <i>x/y</i> )# where <b>x/y</b> identifies the port in slot/port format	Configuration commands for individual ports.	Use <b>port</b> command (and specify a port to be configured) in Config Mode.	Use <b>exit</b> command to return to Config Mode or <b>end</b> command to return to Enable Mode.
Config-VLAN Mode	(Config-VLAN)#	Configuration commands for VLANs.	Use <b>vlan</b> command in Config Mode.	Use <b>exit</b> command to return to Config Mode or <b>end</b> command to return to Enable Mode.

## 1.2.3 Command Syntax

### 1.2.3.1 Order

Option tokens, arguments and other elements within a typed command must be entered in a specific order. The order is shown in the syntax section of each command description in this guide, but is also revealed one element at a time by typing ? after entering a partial command in the CLI.

### 1.2.3.2 Arguments

Arguments for which the operator must supply a value are displayed in this document in italic type; they must be replaced with a name or number.

The information in brackets gives the name, range, or format of the information to be supplied by the operator (see Special Argument Types below)

To use spaces as part of a name argument, enclose it in double quotes. For example, the expression "System Name with Spaces" forces the system to accept the spaces. **Note:** an empty string ("") is not valid.

Parameters may be mandatory values, optional values, choices, or a combination. <parameter>.

**Angle brackets < >** indicate a mandatory parameter for which a value must be entered in place of the brackets and the text inside them.

**Square brackets [ ]** indicate an optional parameter for which a value may be entered in place of the brackets and the text inside them.

**Vertical bars |** separate alternative, mutually exclusive elements.

**Curly braces { }** indicate that an element must be chosen from the list of choices.

### 1.2.3.3 Special Argument Types

<1-4094>: takes an integer in the range specified.

<ip\_address>: takes a valid IP address in the following format: a.b.c.d (e.g., 172.16.0.114)

<mac\_address>: takes a valid MAC address represented as six hexadecimal numbers separated by colons (e.g., 00:1A:F6:00:03:61)

<slot/port>: is used to identify a physical port on the chassis; the operator must supply a slot number and a port number (e.g., 1/3). Ports are identified in this way for consistency with the FortiSwitch-1000, which has multiple line cards; **note that on the FortiSwitch-500, the slot value is always "1"**.

<hh:mm:ss>: takes a time value with two digits each for hours, minutes and seconds, separated by colons.

## 1.2.4 "No" Form of Commands

The token **no** can be used to reverse the action of many of the configuration commands in the CLI (the commands in the Config modes and in File Mode). The "no" form generally reverses the action of a command or resets a parameter to its default value; in the case of configuration commands that enable something by default, the "no" form disables (and vice versa).

Selected uses of the “no” form are called out under individual commands; the operator may also type **no ?** in the CLI for a full list of the commands available in a given mode that support the “no” form.

## 1.2.5 Command Completion

The CLI can parse a command when enough letters have been typed to uniquely identify the command keyword. The command may then be executed by typing <enter>, or the command word may be completed by pressing <tab> or <space bar>.

# 2 Default Mode

---

## 2.1 Overview

The Default Mode provides basic **show** commands for viewing system information and simple network commands (**ping**, **telnet**).

### 2.1.1 Access

This mode is accessed by logging on to the switch, or by using the **exit** command in Enable Mode.

### 2.1.2 Exit

To exit from this mode, use the **logout** command to end the CLI session.

## 2.2 Commands

## 2.2.1 *cls*

### **Syntax**

`cls`

### **Purpose**

To clear the screen.

### **Options & Parameters**

This command has no options or parameters.

## 2.2.2 *enable*

### **Syntax**

**enable**

### **Purpose**

To enter Enable Mode.

### **Options & Parameters**

This command has no options or parameters.

### **Notes**

Enable Mode increases the privilege level of the user and allows access to a wider set of commands. Enable Mode is required for the user to enter Configuration or File modes.

Users with read-only privileges do not have access to Enable Mode or the **enable** command.

## 2.2.3 *help*

### **Syntax**

help

### **Purpose**

To display the function of special editing keys.

### **Options & Parameters**

This command has no options or parameters.

### **Example**

```
(FS5CX420F1087012) > help
```

HELP:

Special keys:

- <DEL>, <BS>... delete previous character
- Ctrl-A ..... go to beginning of line
- Ctrl-E ..... go to end of line
- Ctrl-F ..... go forward one character
- Ctrl-B ..... go backward one character
- Ctrl-D ..... delete current character
- Ctrl-U, X .... delete to beginning of line
- Ctrl-K ..... delete to end of line
- Ctrl-W ..... delete previous word
- Ctrl-T ..... transpose previous character
- Ctrl-P ..... go to previous line in history buffer
- Ctrl-R ..... rewrites or pastes the line
- Ctrl-N ..... go to next line in history buffer
- Ctrl-Y ..... print last deleted character
- Ctrl-Q ..... enables serial flow
- Ctrl-S ..... disables serial flow
- Ctrl-Z ..... return to root command prompt
- Up Arrow ..... go to previous line in history buffer
- Down Arrow ... go to next line in history buffer
- Right Arrow... go forward one character
- Left Arrow ... go backward one character
- <TAB>, <SPACE> command-line completion
- Exit ..... go to next lower command prompt
- ? ..... list choices



## 2.2.4 *logout*

### **Syntax**

`logout`

### **Purpose**

To exit this session.

### **Options & Parameters**

This command has no options or parameters.

### **Notes**

User is prompted to save any unsaved changes to the switch configuration. In order to save running configuration changes, the user must cancel the logout procedure and use the **copy running-config** command. (See **copy** “

Notes & Examples” on page 254)

### **Example**

```
(FS5CX420F1087012) > logout
```

```
Warning: the system has unsaved configuration changes.
```

```
Would you like to logout now? (y/n) y
```

## 2.2.5 *ping*

### **Syntax**

**ping** <ip\_address>

### **Purpose**

To test the accessibility of a specified IP address by sending ICMP echo packets.

### **Options & Parameters**

<ip_address>	Specifies the host's IP address.
--------------	----------------------------------

### **Example**

(FS5CX420F1087012) >ping 10.10.10.30

Send count=3, Receive count=3 from 10.10.10.30

## 2.2.6 *show*

The **show** commands display information about the options and settings of the switch. A limited set is available in Default Mode; the complete set (including all Default Mode **show** commands) is available in Enable Mode. (See page 82)

**Table 4: Show Commands in Default Mode**

<b>Command</b>	<b>Purpose</b>
<b>show cos</b>	Display class-of-service (802.1p) priority mapping information. (See page 26)
<b>show garp</b>	Display Generic Attribute Registration Protocol (GARP) information. (See page 27)
<b>show gvrp</b>	Display GARP VLAN Registration Protocol (GVRP) parameters for one or all ports. (See page 28)
<b>show history</b>	Display the last commands entered in the CLI. (See page 30)
<b>show lag brief</b>	Display LAG static capability and summary information for the device. (See page 31)
<b>show mgmt-ip</b>	Display the management interface configuration. (See page 32)
<b>show serial</b>	Display EIA-232 parameters and serial port inactivity timeout. (See page 33)
<b>show spanning-tree</b>	Display spanning tree information. (See page 34)
<b>show system</b>	Display Chassis components and System information. (See page 49)
<b>show telnet</b>	Display outbound telnet configuration information. (See page 61)

## 2.2.7 *show cos dot1p-mapping*

### **Syntax**

**show cos dot1p-mapping** [*slot/port*]

### **Purpose**

To display class-of-service (802.1p) priority mapping information.

### **Defaults**

Shows mapping of 802.1p priority to FortiSwitch OS queues.

### **Options & Parameters**

[ <i>slot/port</i> ]	Specifies a port in slot/port format for which to display 802.1p priority mapping information. If mapping is not configurable by port, all ports will display identical information.
----------------------	--

### **Example**

(FS5CX420F1087012) >show cos dot1p-mapping 1/1

User Priority    Traffic Class

-----	-----
0	1
1	1
2	0
3	1
4	2
5	2
6	3
7	3

## 2.2.8 *show garp*

### **Syntax**

**show garp** [ **statistics** { **port** <slot/port> | **lag** <lag\_ID> } ]

### **Purpose**

To display Generic Attribute Registration Protocol (GARP) applications information.

### **Defaults**

Displays the status of GMRP and GVRP Admin Modes by default.

### **Options & Parameters**

<b>statistics</b>	Displays GARP applications PDU statistics.
<b>port</b>	Displays spanning tree values on a per-port basis.
<slot/port>	Specifies a port for which to display information.
<b>lag</b>	Displays spanning tree values on a per-LAG basis.
<lag_ID>	Specifies a LAG for which to display information.

### **Example**

#### **default:**

```
(FS5CX420F1087012) >show garp
GMRP Admin Mode..... Disable
GVRP Admin Mode..... Disable
```

#### **statistics port:**

```
(FS5CX420F1087012) >show garp statistics port 1/1
GVRP PDUs received..... 0
GVRP PDUs Transmitted..... 0
GVRP Failed Registratons..... 0
```

#### **statistics lag:**

```
(FS5CX420F1087012) >show garp statistics lag 1
GVRP PDUs received..... 536
GVRP PDUs Transmitted..... 518
GVRP Failed Registrations..... 0
```

## 2.2.9 *show gvrp configuration*

### **Syntax**

**show gvrp configuration** { <slot/port> | **all** | **lag** <lag\_ID> }

### **Purpose**

To display GARP VLAN Registration Protocol (GVRP) parameters for a specified port or LAG or for all ports.

### **Options & Parameters**

<slot/port>	Specifies a port in slot/port format for which to display information.
<b>all</b>	Displays GVRP information for all ports.
<b>lag</b>	Displays GVRP values on a per-LAG basis.
<lag_ID>	Specifies a LAG for which to display information.

### **Example**

```
(FS5CX420F1087012) > show gvrp configuration all
```

```
GVRP Admin Mode..... Disable
```

Port	Join Timer (centiseecs)	Leave Timer (centiseecs)	LeaveAll Timer (centiseecs)	Port GVRP Mode
1/1	20	60	1000	Disabled
1/2	20	60	1000	Disabled
1/3	20	60	1000	Disabled
1/4	20	60	1000	Disabled
1/5	20	60	1000	Disabled
1/6	20	60	1000	Disabled
1/7	20	60	1000	Disabled
1/8	20	60	1000	Disabled
1/9	20	60	1000	Disabled
1/10	20	60	1000	Disabled
1/11	20	60	1000	Disabled
1/12	20	60	1000	Disabled
1/13	20	60	1000	Disabled

1/14	20	60	1000	Disabled
1/15	20	60	1000	Disabled
1/16	20	60	1000	Disabled
1/17	20	60	1000	Disabled
1/18	20	60	1000	Disabled
1/19	20	60	1000	Disabled
1/20	20	60	1000	Disabled
1/21	20	60	1000	Disabled
1/22	20	60	1000	Disabled
1/23	20	60	1000	Disabled
1/24	20	60	1000	Disabled
LAG 1	20	60	1000	Disabled
LAG 2	20	60	1000	Disabled

## 2.2.10 *show history*

### **Syntax**

**show history** [*count*]

### **Purpose**

To display the last commands entered in the CLI.

### **Defaults**

Displays the last 10 commands.

### **Options & Parameters**

<i>&lt;count&gt;</i>	Specifies the number of commands to display.
----------------------	--

### **Example**

```
(FS5CX420F1087012) >show history
```

```
1 show vlan
```

```
2 show fdb-table
```

```
3 show mac-addr
```

```
4 configure
```

```
5 vlan
```

```
6 exit
```

```
7 telnet
```

```
8 enable
```

```
9 show cos
```

```
10 show spanning-tree
```

## 2.2.11 *show lag brief*

### **Syntax**

**show lag brief**

### **Purpose**

To display LAG capability and summary information for the switch.

### **Defaults**

The **show lag** command has no default behavior, and in Default Mode it requires the option **brief**.

### **Options & Parameters**

This command has no additional options or parameters.

### **Notes**

The **show lag** command in Enable Mode can also display LAG or LACP information for one or all ports. (See **show lag** on page 115)

### **Example**

(FS5CX420F1087012) > show lag brief

```
LAG ID   LAG Name   Link State Mbr Ports Active Ports
-----
1   S1-L2     Down      1/13,
                1/14,
                1/15,
                1/16,
                1/17,1/18
2   S2-L2     Up        1/19, 1/19,1/20,
                1/20, 1/21,1/22,
                1/21, 1/23,1/24
                1/22,
                1/23,1/24
```

## 2.2.12 *show mgmt-ip*

### **Syntax**

`show mgmt-ip { inband | service-port }`

### **Purpose**

To display the management interface configuration.

### **Options & Parameters**

<b>inband</b>	Displays configuration for in-band connectivity.
<b>service-port</b>	Displays service port configuration.

### **Notes**

The **sshd** and **telnetd** options are available in Enable Mode.

### **Examples**

#### **inband:**

```
(FS5CX420F1087012) > show mgmt-ip inband
```

```
IP Address..... 0.0.0.0
Subnet Mask..... 0.0.0.0
Default Gateway..... 0.0.0.0
Burned In MAC Address..... 00:1A:F6:00:03:61
Locally Administered MAC Address..... 00:00:00:00:00:00
MAC Address Type..... Burned In
Network Configuration Protocol Current..... None
Management VLAN ID..... 1
```

#### **service-port:**

```
(FS5CX420F1087012) > show mgmt-ip service-port
```

```
IP Address..... 172.16.0.116
Subnet Mask..... 255.255.255.0
Default Gateway..... 172.16.0.1
ServPort Configured Protocol Current..... DHCP
Burned In MAC Address..... 00:1A:F6:00:03:61
```

## 2.2.13 *show serial*

### **Syntax**

`show serial`

### **Purpose**

To display EIA-232 parameters and serial port inactivity timeout.

### **Options & Parameters**

This command has no options or parameters.

### **Example**

(FS5CX420F1087012) >show serial

```
Serial Port Login Timeout (minutes)..... 160
Baud Rate (bps)..... 115200
Character Size (bits)..... 8
Flow Control..... Disable
Stop Bits..... 1
Parity..... none
```

## 2.2.14 *show spanning-tree*

### **Syntax**

```
show spanning-tree [ brief | lag <lag_ID> | mst { summary | { <0-64> { detailed | lag { <lag_ID> { detailed | summary } | all summary } | port { all summary | <slot/port> { detailed | summary } } } } } | port <slot/port> | summary | vlan <vlan_ID> ]
```

### **Purpose**

To display spanning tree information.

### **Default**

Displays Spanning Tree Protocol (STP) settings for the chassis as a whole.

### **Options & Parameters**

<b>brief</b>	Displays settings for the common and internal spanning tree. (See page 36)
<b>lag</b>	Displays spanning tree information for a specified LAG. (See page 37)
<b>mst</b>	Displays overview information for a specified Multiple Spanning Tree (MST) instance. (See page 38)
<b>mst summary</b>	Displays settings for an MST instance. (See page 45)
<b>mst &lt;0-64&gt; detailed</b>	Displays detailed information for a specified multiple spanning tree (MST) instance. (See page 38)
<b>mst &lt;0-64&gt; port</b>	Displays spanning tree settings for an MST instance on a per-port basis. (See page 43)
<b>port</b>	Displays spanning tree values on a per-port basis. (See page 46)
<b>summary</b>	Displays spanning tree settings and lists MST instances. (See page 47)
<b>vlan</b>	Displays spanning tree settings for a specified VLAN. (See page 48)

### **Notes**

Because of the complexity of this command's options, it is broken up here into multiple sections.

### **Example**

**default:**

```
(FS5CX420F1087012) >show spanning-tree
```

Bridge Priority..... 32768  
Bridge Identifier..... 80:00:00:1A:F6:00:0D:7E  
Time Since Topology Change..... 0 day 0 hr 24 min 32 sec  
Topology Change Count..... 504  
Topology Change in progress..... FALSE  
Designated Root..... 80:00:00:1A:F6:00:09:46  
Root Path Cost..... 0  
Root Port Identifier..... 80:1B  
Bridge Max Age..... 20  
Bridge Max Hops..... 20  
Bridge Forwarding Delay..... 15  
Root Port Hello Time..... 2  
Bridge Hold Time..... 6  
CST Regional Root..... 80:00:00:1A:F6:00:09:46  
Regional Root Path Cost..... 1000

Associated FIDs	Associated VLANs
-----	-----
1	1

## 2.2.15 *show spanning-tree brief*

### **Syntax**

**show spanning-tree brief**

### **Purpose**

To display settings for the common and internal spanning tree.

### **Options & Parameters**

This command has no options or parameters.

### **Example**

```
(FS5CX420F1087012) >show spanning-tree brief
Bridge Priority..... 32768
Bridge Identifier..... 80:00:00:1A:F6:00:0D:7E
Bridge Max Age..... 20
Bridge Max Hops..... 20
Root Port Hello Time..... 2
Bridge Forward Delay..... 15
Bridge Hold Time..... 6
```

## 2.2.16 *show spanning-tree lag*

### **Syntax**

**show spanning-tree lag** <lag\_ID>

### **Purpose**

To display spanning tree settings for a LAG.

### **Options & Parameters**

<lag_ID>	Specifies a LAG for which to display information.
----------	---

### **Example**

(FS5CX420F1087012) > show spanning-tree lag 1

```
Configured Hello Time..... 2
Actual Hello Time..... 2
Port Mode..... Enabled
Port Admin Vscale Mode..... Auto
Port Vscale Mode..... Edge
Port Up Time Since Counters Last Cleared..... 3 day 21 hr 35 min 2 sec
STP BPDUs Transmitted..... 0
STP BPDUs Received..... 0
RSTP BPDUs Transmitted..... 0
RSTP BPDUs Received..... 0
MSTP BPDUs Transmitted..... 0
MSTP BPDUs Received..... 0
```

## 2.2.17 *show spanning-tree mst*

### Syntax

```
show spanning-tree mst { summary | { <0-64> [ detailed | lag { all summary | <lag_ID> {
detailed | summary } } } } | port { all summary | <slot/port> { detailed | summary } } } }
```

### Purpose

To display the settings for a multiple spanning tree (MST) instance, or for one or all of the switch ports within that instance.

### Default

Shows overview information for the specified MST instance.

### Options & Parameters

<b>summary</b>	When entered without specifying an MST instance, <b>summary</b> displays summary information for all MST IDs. (See page 45)
<0-64>	Specifies a multiple spanning tree (MST) instance. Enter an MST identifier to show information for a specific MST instance by selecting the detailed option, or for a switch port or LAG within that instance by specifying the port or LAG.
<0-64> <b>detailed</b>	Displays detailed information for the specified MST instance. (See page 38)
<0-64> <b>lag</b>	Displays LAG-specific information; requires additional options. (See page 41)
<0-64> <b>port</b>	Displays port-specific information; requires additional options. (See page 43)

### Example

See sections below for additional examples.

#### default:

```
(FS5CX420F1087012) # show spanning-tree mst 0
```

```
Designated Root..... 80:00:00:1A:F6:00:09:46
Root Path Cost..... 0
Designated Bridge..... 80:00:00:1A:F6:00:09:46
```

	STP		STP	Port
Port	Mode	Type	State	Role
1/1	Disabled		Manual forwarding	Disabled
1/2	Disabled		Manual forwarding	Disabled

1/3	Disabled	Manual forwarding	Disabled
1/4	Disabled	Manual forwarding	Disabled
1/19	Enabled	LAG Mb	Manual forwarding Disabled
1/20	Enabled	LAG Mb	Manual forwarding Disabled
1/21	Enabled	LAG Mb	Manual forwarding Disabled
1/22	Enabled	LAG Mb	Manual forwarding Disabled
1/23	Enabled	LAG Mb	Manual forwarding Disabled
1/24	Enabled	LAG Mb	Manual forwarding Disabled
LAG 2	Enabled	Forwarding	Root

## 2.2.18 *show spanning-tree mst detailed*

### **Syntax**

**show spanning-tree mst <0-64> detailed**

### **Purpose**

To display information for a specified multiple spanning tree (MST) instance.

### **Options & Parameters**

<0-64>	Specifies a multiple spanning tree (MST) instance.
--------	--

### **Example**

(FS5CX420F1087012) > show spanning-tree mst 1 detailed

```
MST Instance ID..... 1
MST Bridge Priority..... 32768
MST Bridge Identifier..... 80:01:00:1A:F6:00:0D:7E
Time Since Topology Change..... 0 day 0 hr 28 min 55 sec
Topology Change Count..... 504
Topology Change in progress..... FALSE
Designated Root..... 00:01:00:1A:F6:00:09:46
Root Path Cost..... 1000
Root Port Identifier..... 80:1B
No FIDs or VLANs associated with this instance.
```

## 2.2.19 *show spanning-tree mst lag*

### Syntax

**show spanning-tree mst <0-64> lag { all summary | <lag\_ID> { detailed | summary } }**

### Purpose

To display the settings for one or all of the LAGs within a specified multiple spanning tree (MST) instance.

### Options & Parameters

<0-64>	Specifies a multiple spanning tree (MST) instance.
<b>all summary</b>	Displays LAG settings for all LAGs in the specified MST instance.
<lag_ID> <b>detailed</b>	Displays detailed LAG settings for the specified LAG in the specified MST instance.
< lag_ID> <b>summary</b>	Displays summary LAG settings for the specified LAG in the specified MST instance.

### Examples

**all summary:**

```
(FS5CX420F1087012) > show spanning-tree mst 1 lag all summary
```

	STP	STP	Port	
Port	Mode	Type	State	Role
LAG 1	Enabled		Discarding	Designated
LAG 2	Enabled		Forwarding	Root
LAG 3	Enabled		Discarding	Designated

**detailed:**

```
(FS5CX420F1087012) > show spanning-tree mst 1 lag 1 detailed
```

```
MST Instance ID..... 1
Port Identifier..... 80:92
Port Priority..... 128
Port Forwarding State..... Discarding
Port Role..... Alternate
Auto-calculate Port Path Cost..... Enabled
```

Port Path Cost..... 10000  
Designated Root..... 00:01:00:1A:F6:00:03:D4  
Designated Port Cost..... 0  
Designated Bridge..... 00:01:00:1A:F6:00:03:D4  
Designated Port Identifier..... 00:92

**summary:**

(FS5CX420F1087012) > show spanning-tree mst 1 lag 1 summary

MST Instance ID..... 1

	STP	STP	Port	
Port	Mode	Type	State	Role
-----				
LAG 1	Enabled		Discarding	Alternate

## 2.2.20 *show spanning-tree mst port*

### **Syntax**

**show spanning-tree mst <0-64> port { all summary | <slot/port> { detailed | summary } }**

### **Purpose**

To display the settings for one or all of the switch ports within a specified multiple spanning tree (MST) instance.

### **Options & Parameters**

<b>&lt;0-64&gt;</b>	Specifies a multiple spanning tree (MST) instance.
<b>all summary</b>	Displays port settings for all ports in the specified MST instance.
<b>&lt;slot/port&gt; detailed</b>	Displays detailed port settings for the specified port in the specified MST instance.
<b>&lt;slot/port&gt; summary</b>	Displays summary port settings for the specified port in the specified MST instance.

### **Examples**

**all summary:**

```
(FS5CX420F1087012) > show spanning-tree mst 1 port all summary
```

```
      STP      STP      Port
Port  Mode  Type   State   Role
-----
1/1   Disabled  Manual forwarding Disabled
1/2   Disabled  Manual forwarding Disabled
1/3   Disabled  Manual forwarding Disabled
1/4   Disabled  Manual forwarding Disabled

[ ... ]

1/24  Enabled  LAG Mb  Manual forwarding Disabled
LAG 1  Enabled   Disabled Disabled
LAG 2  Enabled   Forwarding Root
```

**detailed:**

```
(FS5CX420F1087012) > show spanning-tree mst 1 port 1/2 detailed
```

```

MST Instance ID..... 1
Port Identifier..... 80:02
Port Priority..... 128
Port Forwarding State..... Manual forwarding
Port Role..... Disabled
Auto-calculate Port Path Cost..... Enabled
Port Path Cost..... 0
Designated Root..... 80:01:00:1A:F6:00:0D:7E
Designated Port Cost..... 0
Designated Bridge..... 80:01:00:1A:F6:00:0D:7E
Designated Port Identifier..... 00:00

```

**summary:**

(FS5CX420F1087012) > show spanning-tree mst 1 port 1/2 summary

```

MST Instance ID..... 1

      STP          STP          Port
Port  Mode  Type    State    Role
-----
1/2   Disabled  Manual forwarding Disabled

```

## 2.2.21 *show spanning-tree mst summary*

### **Syntax**

**show spanning-tree mst summary**

### **Purpose**

To display summary information for all multiple spanning tree (MST) instances.

### **Options & Parameters**

This command has no additional options or parameters.

### **Example**

(FS5CX420F1087012) > show spanning-tree mst summary

MST Instance ID..... 1  
No FIDs or VLANs associated with this instance.

MST Instance ID..... 2  
No FIDs or VLANs associated with this instance.

[ . . . ]

MST Instance ID..... 23  
No FIDs or VLANs associated with this instance.

MST Instance ID..... 24  
No FIDs or VLANs associated with this instance.

## 2.2.22 *show spanning-tree port*

### **Syntax**

**show spanning-tree port** <slot/port>

### **Purpose**

To display spanning tree values on a per port basis.

### **Options & Parameters**

<slot/port>	Specifies the port for which to show spanning tree values.
-------------	--

### **Example**

(FS5CX420F1087012) > show spanning-tree port 1/2

```
Configured Hello Time..... 2
Actual Hello Time..... 2
Port Mode..... Disabled
Port Admin Vscale Mode..... Auto
Port Vscale Mode..... Edge
Port Up Time Since Counters Last Cleared..... 3 day 21 hr 43 min 26 sec
STP BPDUs Transmitted..... 0
STP BPDUs Received..... 0
RSTP BPDUs Transmitted..... 0
RSTP BPDUs Received..... 0
MSTP BPDUs Transmitted..... 1
MSTP BPDUs Received..... 0
```

## 2.2.23 *show spanning-tree summary*

### **Syntax**

**show spanning-tree summary**

### **Purpose**

To display summary of spanning tree settings.

### **Options & Parameters**

This command has no additional options or parameters.

### **Example**

(FS5CX420F1087012) > show spanning-tree summary

```
Spanning Tree Adminmode..... Enabled
Spanning Tree Version..... IEEE 802.1s
Configuration Name..... ****
Configuration Revision Level..... ****
Configuration Digest Key..... ****
Configuration Format Selector..... 0
MST Instances..... 1,2,3,4,5,6,7,8
                    ,9,10,11,12,13,14,15,16
                    ,17,18,19,20,21,22,23,24
```

## 2.2.24 *show spanning-tree vlan*

### **Syntax**

**show spanning-tree vlan** <1-4094>

### **Purpose**

To display the type of spanning-tree associated with a specified VLAN.

### **Options & Parameters**

<1-4094>	Specifies a valid VLAN identifier.
----------	------------------------------------

### **Example**

(FS5CX420F1087012) > show spanning-tree vlan 1

VLAN Identifier..... 1

Associated Instance..... CST

## 2.2.25 *show system*

### **Syntax**

**show system** { **cardtypes-supported** | **io-card** [1-6] | **fan** [1-4] | **info** | | **mibs-supported** | **power-supply** [1-2] | **status** | **version** }

### **Purpose**

To display chassis components and system information.

### **Options & Parameters**

<b>cardtypes-supported</b>	Displays the card type(s) supported by the system. (See page 50)
<b>io-card</b> [1-6]	Displays the status and details of all IO cards or of a specified individual IO card. (See page 51)
<b>fan</b> [1-7]	Displays the status of all the fan units or a specified fan unit. (See page 53)
<b>info</b>	Displays overall chassis information. (See page 54)
<b>mibs-supported</b>	Displays the list of supported Management Information Bases (MIBs). (See page 55)
<b>power-supply</b> [1-2]	Displays the state and status of all power supply units or of a specified power supply unit. (See page 55)
<b>status</b>	Displays the status of the components in the chassis. (See page 58)
<b>version</b> [detailed]	Displays the version details of the chassis as a whole. (See page 59)

### **Examples**

See below for examples.

## 2.2.26 *show system cardtypes-supported*

### **Syntax**

**show system cardtypes-supported**

### **Purpose**

To display the card type(s) supported by the system.

### **Options & Parameters**

This command has no additional options or parameters.

### **Example**

(FS5CX420F1087012) > show system cardtypes-supported

```
CID      Card Description
-----
 8  10GE 24-Port Card
10  Power CX4 10GE 4-Port Card
11  SFP+ 10GE 4-Port Card
```

## 2.2.27 *show system io-card*

### **Syntax**

**show system io-card** [1-6]

### **Purpose**

To display the status and details of all IO cards or of a specified individual IO card.

### **Defaults**

Shows status and basic information for all IO cards.

### **Options & Parameters**

[1-6]	Specifies an individual IO card. If none is specified, command shows status and basic information for all IO cards.
-------	---

### **Example**

#### **Default:**

```
(FS5CX420F1087012) > show system io-card
```

Slot	Status	Power State	Order Number / Card Description	Powered Up
1	Operational	Enable	WV-10G4-SFP+ SFP+ 10GE 4-Port Card	Yes
2	Operational	Enable	WV-10G4-SFP+ SFP+ 10GE 4-Port Card	Yes
3	Operational	Enable	WV-10G4-SFP+ SFP+ 10GE 4-Port Card	Yes
4	Operational	Enable	WV-10G4-SFP+ SFP+ 10GE 4-Port Card	Yes
5	Operational	Enable	WV-10G4-SFP+ SFP+ 10GE 4-Port Card	Yes
6	Operational	Enable	WV-10G4-SFP+ SFP+ 10GE 4-Port Card	Yes

#### **For a specified io card:**

```
(FS5CX420F1087012) > show system io-card 3
```

```
Slot..... 3  
Slot Status..... Operational  
Power State..... Enable
```

Inserted Card:

Order Number..... WV-10G4-SFP+

Card Description..... SFP+ 10GE 4-Port Card

Manufacturer..... Fortinet

Slot Revision..... 2

Chassis Serial Number..... 0860001

## 2.2.28 *show system fan*

### **Syntax**

**show system fan** [1-7]

### **Purpose**

To display the status of all the fan units or a specified fan unit.

### **Defaults**

Shows status of all fan units.

### **Options & Parameters**

[1-7]	Specifies an individual fan unit. If none is specified, command shows status of all fan units.
-------	--

### **Notes**

To display fan speed, specify an individual fan unit.

### **Examples**

#### **default:**

```
(FS5CX420F1087012) > show system fan
```

```
Air Flow Direction
```

```
Ports to Fans
```

```
Fan Unit    State
```

```
Fan Unit 1 - Operational
```

```
Fan Unit 2 - Operational
```

```
Fan Unit 3 - Operational
```

```
Fan Unit 4 - Operational
```

```
Fan Unit 5 - Operational
```

```
Fan Unit 6 - Operational
```

```
Fan Unit 7 - Operational
```

#### **for a specific fan:**

```
(FS5CX420F1087012) > show system fan 1
```

```
Fan Unit 1:  Operational
```

```
Controller:  3
```

```
Speed:       11760 RPM 11040 RPM
```

## 2.2.29 *show system info*

### **Syntax**

**show system info**

### **Purpose**

To display overall chassis information.

### **Options & Parameters**

This command has no additional options or parameters.

### **Example**

(FS5CX420F1087012) > show system info

```
System Description..... FortiSwitch Ethernet Fabric Switch
System Name.....
System Location.....
System Contact.....
System Object ID..... 1.3.6.1.4.1.26390.5
System Up Time..... 1 days 8 hrs 48 mins 2 secs
System Time..... Fri Apr 10 23:04:03 2009
```

## 2.2.30 *show system mibs-supported*

### **Syntax**

**show system mibs-supported**

### **Purpose**

To display the list of supported MIBs.

### **Options & Parameters**

This command has no options or parameters.

### **Example**

(FS5CX420F1087012) > show system mibs-supported

MIBs Supported:

RFC 1907 - SNMPv2-MIB	The MIB module for SNMPv2 entities
RFC 2819 - RMON-MIB	Remote Network Monitoring Management Information Base
WOVEN-REF-MIB	Reference MIB
SNMP-COMMUNITY-MIB	This MIB module defines objects to help support coexistence between SNMPv1, SNMPv2, and SNMPv3.
SNMP-FRAMEWORK-MIB	The SNMP Management Architecture MIB
SNMP-MPD-MIB	The MIB for Message Processing and Dispatching
SNMP-NOTIFICATION-MIB	The Notification MIB Module
SNMP-TARGET-MIB	The Target MIB Module
SNMP-USER-BASED-SM-MIB	The management information definitions for the SNMP User-based Security Model.
SNMP-VIEW-BASED-ACM-MIB	The management information definitions for the View-based Access Control Model for SNMP.
USM-TARGET-TAG-MIB	SNMP Research, Inc.
WOVEN-POWER-ETHERNET-MIB	Power Ethernet Extensions MIB
POWER-ETHERNET-MIB	Power Ethernet MIB
LAG-MIB	The Link Aggregation module for managing IEEE 802.3ad
RFC 1213 - RFC1213-MIB	Management Information Base for Network Management of TCP/IP-based internets: MIB-II
RFC 1493 - BRIDGE-MIB	Definitions of Managed Objects for Bridges (dot1d)
RFC 2674 - P-BRIDGE-MIB	The Bridge MIB Extension module for managing

Priority and Multicast Filtering, defined by  
IEEE 802.1D-1998.

RFC 2674 - Q-BRIDGE-MIB      The VLAN Bridge MIB module for managing  
Virtual Bridged Local Area Networks

RFC 2737 - ENTITY-MIB      Entity MIB (Version 2)

RFC 2863 - IF-MIB      The Interfaces Group MIB using SMIv2

RFC 3635 - Etherlike-MIB      Definitions of Managed Objects for the  
Ethernet-like Interface Types

FASTPATH-SWITCHING-MIB      FASTPATH Switching - Layer 2  
FASTPATH-INVENTORY-MIB      Unit and Slot configuration.

FASTPATH-PORTSECURITY-PRIVATE-MIB      Port Security MIB.

IEEE8021-PAE-MIB      Port Access Entity module for managing IEEE  
802.1X.

FASTPATH-RADIUS-AUTH-CLIENT-MIB      FastPath Radius MIB

RADIUS-ACC-CLIENT-MIB      RADIUS Accounting Client MIB

RADIUS-AUTH-CLIENT-MIB      RADIUS Authentication Client MIB

TACACS-AUTH-CLIENT-MIB      TACACS+ Authentication Client MIB

FASTPATH-MGMT-SECURITY-MIB      The Private MIB for FastPath Mgmt  
Security

FASTPATH-QOS-MIB      FASTPATH Flex QOS Support

FASTPATH-QOS-ACL-MIB      FASTPATH Flex QOS ACL

## 2.2.31 *show system power-supply*

### **Syntax**

**show system power-supply** [1-2]

### **Purpose**

To display the state and status of all power supply units or of a specified power supply unit.

### **Defaults**

Shows information for all power supply units.

### **Options & Parameters**

[1-2]	Specifies an individual power supply unit. If none is specified, command shows status of all power supply units.
-------	--

### **Examples**

```
(FS5CX420F1087012) > show system power-supply
```

```
Power Supply Unit    State
Power Supply Unit 1 - Not Present
Power Supply Unit 2 - Operational
```

```
(FS5CX420F1087012) > show system power-supply 2
```

```
Power Supply Unit 2: Operational
Manufacturer: ASTEC
Module: G056
Revision: R03
Serial Number: 0000121
```

## 2.2.32 *show system status*

### **Syntax**

**show system status**

### **Purpose**

To display the status of the components in the chassis.

### **Options & Parameters**

This command has no additional options or parameters.

### **Example**

(FS5CX420F1087012) > show system status

Fan Unit 1: ..... Operational

Fan Unit 2: ..... Operational

Fan Unit 3: ..... Operational

Fan Unit 4: ..... Operational

Fan Unit 5: ..... Operational

Fan Unit 6: ..... Operational

Fan Unit 7: ..... Operational

Power Supply 1: ... Not Present

Power Supply 2: ... Operational

## 2.2.33 *show system version*

### **Syntax**

**show system version [ detailed ]**

### **Purpose**

To display the version details of the chassis as a whole.

### **Default**

Displays basic information for the chassis.

### **Options & Parameters**

<b>detailed</b>	Displays detailed version information for the chassis as a whole.
-----------------	---

### **Example**

#### **default:**

```
(FS5CX420F1087012) > show system version
```

```
Switch: 1
```

```
System Description..... FortiSwitch Ethernet Fabric Switch
Machine Model..... FortiSwitch-500
Chassis Serial Number..... 0855004
Model Part Number..... 800-90003-20
HW Version..... 20-F
Software Order Code..... WV-500-WFOS
Manufacturer..... Fortinet
Burned In MAC Address..... 00:1A:F6:00:0D:7E
Software Release Version..... 2.0.1
```

#### **detailed:**

```
(FS5CX420F1087012) > show system version detailed
```

```
Switch: 1
```

```
System Description..... Ethernet Fabric Switch
Machine Model..... FortiSwitch-500
Chassis Serial Number..... 0855004
FRU Number..... N/A
Model Part Number..... 800-90003-20
HW Version..... 20-F
```

Software Order Code..... WV-500-WFOS  
Manufacturer..... Fortinet  
Burned In MAC Address..... 00:1A:F6:00:0D:7E  
Additional Packages..... None  
Software Revision..... 5625  
Architecture..... powerpc  
Software Release Version..... v4.0,build0202,091015  
Bootloader (Default)..... DefaultBlock, v2.1, build #26M  
Bootloader (Latest)..... MainBlock v2.1, build #26M (Feb 9 2009 - 17:32:37) \*\*\*  
FortiSwitch-500 \*\*\*

## 2.2.34 *show telnet*

### **Syntax**

`show telnet`

### **Purpose**

To display outbound telnet configuration information.

### **Options & Parameters**

This command has no options or parameters.

### **Example**

(FS5CX420F1087012) > `show telnet`

Outbound Telnet Login Timeout (minutes)..... 5

Maximum Number of Outbound Telnet Sessions..... 5

Allow New Outbound Telnet Sessions..... Yes

## 2.2.35 *telnet*

### **Syntax**

**telnet** <ip\_address> [**port** <0-65535>][**debug**][**line**][**noecho**]

### **Purpose**

To telnet to a remote host.

### **Defaults**

Connects to the host IP address on TCP port 23 with debug and line modes disabled and local echo enabled by default.

### **Options & Parameters**

<b>&lt;ip_address&gt;</b>	Specifies the IP address of the host.
<b>port &lt;0-65535&gt;</b>	Connects to the specified TCP port of the host. If this option is not included, the command defaults to port 23.
<b>debug</b>	Enables telnet debugging mode.
<b>line</b>	Enables telnet linemode.
<b>noecho</b>	Disables local echo.

### **Notes**

If multiple options are entered (e.g., **port**, **debug**, **line** and **noecho**), they must be entered in order.

### **Example**

(FS5CX420F1087012) >telnet 10.10.10.10 port 2055 line

This establishes a telnet session with the host at IP address 10.10.10.10 on port 2055 with linemode enabled.

# 3 Enable Mode

---

## 3.1 Overview

The Enable Mode provides a full set of **show** commands, some controls for the switch as a whole, and access to Config Mode and File Mode.

### 3.1.1 Access

This mode is accessed by using the **enable** command in Default Mode (requires password), by using the **exit** command in Config Mode or File Mode, or by using the **end** command in the other configuration modes.

### 3.1.2 Exit

To exit from this mode, use the **exit** command to return to Default Mode.

## 3.2 Commands

## 3.2.1 *clear*

### **Syntax**

**clear** { **counters** { <slot/port> | **all** | **lag** } | **fdb-table learned** { <slot/port> | **all** } | **logging buffered** | **radius statistics** | **trap-log** }

### **Purpose**

To clear counters and logs.

### **Options & Parameters**

<b>counters</b>	Clears statistics counters. (See page 65)
<b>fdb-table learned</b>	Clear the learned MAC entries. (See page 66)
<b>logging buffered</b>	Clear the buffered log. (See page 67)
<b>radius statistics</b>	Clear the Remote Authentication Dial-In User Service (RADIUS) statistics. (See page 68)
<b>trap-log</b>	Clear the SNMP trap log. (See page 69)

### **Example**

See subsequent sections for specific examples.

## 3.2.2 *clear counters*

### **Syntax**

`clear counters { <slot/port> | all | inband | lag }`

### **Purpose**

To clear statistics counters from all ports or a specified port or LAG.

### **Options & Parameters**

<code>&lt;slot/port&gt;</code>	Specifies a port in slot/port format.
<code>all</code>	Clears statistics for all ports.
<code>Inband</code>	Clears all inband counters.
<code>lag</code>	Clears all LAG-specific counters.

### **Example**

```
(FS5CX420F1087012) # clear counters 1/2
```

```
Are you sure you want to clear the port stats? (y/n) y
```

```
Port Stats Cleared.
```

### 3.2.3 *clear fdb-table learned*

**Syntax**

`clear fdb-table learned { <slot/port> | all }`

**Purpose**

To clear the Forwarding Database (FDB) of learned MAC entries for all ports or for a specified port.

**Options & Parameters**

<code>&lt;slot/port&gt;</code>	Specifies a port in slot/port format.
<code>all</code>	Clears learned MAC entries from all ports.

**Notes**

This command clears learned addresses from the FDB table, and is used primarily for debugging. To clear static addresses, use the **no** form of the **fdb-table static** command in Config-LAG Mode or Config-Port Mode. (See page 284)

**Example**

```
(FS5CX420F1087012) # clear fdb-table learned 1/3
```

```
Are you sure you want to clear the specified / all learned MAC entries? (y/n) n
```

```
Fdbtable MAC Entries Not Cleared.
```

## 3.2.4 *clear logging buffered*

### **Syntax**

**clear logging buffered**

### **Purpose**

To clear the buffered log.

### **Options & Parameters**

This command has no options or parameters.

### **Example**

```
(FS5CX420F1087012) # clear logging buffered
```

```
Are you sure you want to clear the buffered log? (y/n) n
```

```
Buffered Log Not Cleared!
```

## 3.2.5 *clear radius statistics*

### **Syntax**

**clear radius statistics**

### **Purpose**

To clear the Remote Authentication Dial-In User Service (RADIUS) server statistics.

### **Options & Parameters**

This command has no options or parameters.

### **Example**

```
(FS5CX420F1087012) # clear radius statistics
```

```
Are you sure you want to clear all RADIUS statistics? (y/n) n
```

```
RADIUS statistics Not Cleared.
```

## 3.2.6 *clear trap-log*

### **Syntax**

`clear trap-log`

### **Purpose**

To clear the trap log.

### **Options & Parameters**

This command has no options or parameters.

### **Example**

```
(FS5CX420F1087012) # clear trap-log
```

```
Are you sure you want to clear the Trap Log? (y/n) n
```

```
Trap Log Not Cleared.
```

## 3.2.7 *clock*

### **Syntax**

**clock time** <hh:mm:ss> **month** <1-12> **day** <1-31> **year** <year>

### **Purpose**

To set the realtime clock.

### **Options & Parameters**

<b>time</b> <hh:mm:ss>	Specifies the current time.
<b>month</b> <1-12>	Specifies the current month.
<b>day</b> <1-31>	Specifies the current day.
<b>year</b> <year>	Specifies the current year (four-digits).

### **Notes**

All "options" are required, and must be entered in the specified order.

### **Example**

(FS5CX420F1087012) # clock time 18:35:50 month 6 day 4 year 2007

## 3.2.8 *cls*

### **Syntax**

`cls`

### **Purpose**

To clear the screen.

### **Options & Parameters**

This command has no options or parameters.

## 3.2.9 *configure*

### **Syntax**

`configure`

### **Purpose**

To enter Config Mode.

### **Options & Parameters**

This command has no options or parameters.

### **Notes**

Config Mode allows configuration of switch parameters and gives access to Config-LAG and Config-Port modes.

## 3.2.10 *disconnect*

### **Syntax**

**disconnect** { <0-15> | **all** }

### **Purpose**

To close all active remote sessions or a specified active remote session.

### **Options & Parameters**

<0-15>	Specifies a session ID to close.
<b>all</b>	Closes all active remote sessions.

### **Example**

(FS5CX420F1087012) # disconnect 3

## 3.2.11 *exit*

### **Syntax**

`exit`

### **Purpose**

To exit from the current mode to its parent mode. In Enable Mode, this command returns the user to Default Mode.

### **Options & Parameters**

This command has no options or parameters.

### **Example**

```
(FS5CX420F1087012) # exit
```

## 3.2.12 *fabric-control multicast*

### **Syntax**

**[no] fabric-control multicast** {<mac\_address>|<group\_ip\_address>} **vlan** <1-4094> **svlan** <1001-1096>

### **Purpose**

To specify the MAC address to which requests for multicast content can be directed.

By default, the FS forwards multicast traffic using the default sVLAN. The this command allows the operator to control the path streams through the fabric by specifying the MAC address to which requests for multicast content can be directed.

### **Defaults**

Multicast traffic is defaulted to the default sVLAN (i.e. 1001).

### **Options & Parameters**

<mac_address>	Specifies the MAC address.
<group_ip_address>	Specifies a group IP address.
<b>vlan</b> <1-4094>	Specifies a VLAN.
<b>svlan</b> <1001-1096>	Specifies an sVLAN.

### **Example**

```
fabric-control multicast 01:00:5e:22:33:44 vlan 100 svlan 1004
```

```
fabric-control multicast 239.22.33.44 vlan 100 svlan 1004
```

## 3.2.13 *file*

### **Syntax**

`file`

### **Purpose**

To enter File Mode. Gives access to File Mode commands.

### **Options & Parameters**

This command has no options or parameters.

### **Example**

```
(FS5CX420F1087012) # file
```

```
(FS5CX420F1087012) (File)#
```

## 3.2.14 *help*

### **Syntax**

help

### **Purpose**

To display the function of special editing keys.

### **Options & Parameters**

This command has no options or parameters.

### **Example**

```
(FS5CX420F1087012) > help
```

HELP:

Special keys:

```
<DEL>, <BS>... delete previous character
Ctrl-A ..... go to beginning of line
Ctrl-E ..... go to end of line
Ctrl-F ..... go forward one character
Ctrl-B ..... go backward one character
Ctrl-D ..... delete current character
Ctrl-U, X .... delete to beginning of line
Ctrl-K ..... delete to end of line
Ctrl-W ..... delete previous word
Ctrl-T ..... transpose previous character
Ctrl-P ..... go to previous line in history buffer
Ctrl-R ..... rewrites or pastes the line
Ctrl-N ..... go to next line in history buffer
Ctrl-Y ..... print last deleted character
Ctrl-Q ..... enables serial flow
Ctrl-S ..... disables serial flow
Ctrl-Z ..... return to root command prompt
Up Arrow ..... go to previous line in history buffer
Down Arrow ... go to next line in history buffer
Right Arrow... go forward one character
Left Arrow ... go backward one character
<TAB>, <SPACE> command-line completion
Exit ..... go to next lower command prompt
? ..... list choices
```

## 3.2.15 *logout*

### **Syntax**

`logout`

### **Purpose**

To exit this session.

### **Options & Parameters**

This command has no options or parameters.

### **Notes**

User is prompted to save any unsaved changes to the switch configuration. In order to save running configuration changes, the user must cancel the logout procedure and use the **copy running-config** command. (See **copy** “

Notes & Examples” on page 254)

### **Example**

```
(FS5CX420F1087012) > logout
```

```
Warning: the system has unsaved configuration changes.
```

```
Would you like to logout now? (y/n) y
```

## 3.2.16 *paging*

### **Syntax**

**paging**

### **Purpose**

To enable paging of the CLI display.

### **Defaults**

Paging is enabled by default.

### **Options & Parameters**

This command has no options or parameters.

### **Notes**

- When enabled, paging displays large CLI output one page (24 lines) at a time.
- When disabled (**no paging**), large volumes of CLI output scroll off the screen.

### **Example**

```
(FS5CX420F1087012) > paging
```

## 3.2.17 *ping*

### **Syntax**

**ping** <ip\_address>

### **Purpose**

To test the accessibility of a specified IP address by sending ICMP echo packets.

### **Options & Parameters**

<ip_address>	Specifies the host's IP address.
--------------	----------------------------------

### **Example**

(FS5CX420F1087012) >ping 10.10.10.30

Send count=3, Receive count=3 from 10.10.10.30

## 3.2.18 *reload*

### **Syntax**

`reload`

### **Purpose**

To reset the switch without power cycling.

### **Defaults**

Resets the switch to the settings in the startup-config file.

### **Options & Parameters**

This command has no options or parameters.

### **Notes**

The **reload** command terminates all network connections and loads the settings from the startup-config file.

User is prompted to confirm reload before the command is executed.

### **Examples**

```
(FS5CX420F1087012) # reload
```

```
Are you sure you would like to reset the system? (y/n) y
```

## 3.2.19 *show*

The **show** commands display information about the options and settings of the switch. A limited set is available in Default Mode (see Show Commands in Default Mode on page 25); the complete set (including all Default Mode **show** commands) is available here in Enable Mode.

**Table 5: Show Commands in Enable Mode**

Command	Behavior
<b>show arp</b>	Display the Address Resolution Protocol (ARP) cache. (See page 84)
<b>show authentication</b>	Display ordered methods for authentication lists or the users assigned to a specified authentication login list. (See page 89)
<b>show clock</b>	Display the UTC time and date. (See page 96)
<b>show cos dot1p-mapping</b>	Display class-of-service (802.1p) priority mapping information. (See page 97)
<b>show fabric-control</b>	Display the fabric bandwidth allocation. (See page 98)
<b>show fdb-table</b>	Display MAC address table information from the Forwarding Database (FDB). (See page 101)
<b>show garp</b>	Display Generic Attribute Registration Protocol (GARP) information. (See )
<b>show gvrp</b>	Display GARP VLAN Registration Protocol (GVRP) parameters for one or all ports. (See page 104)
<b>show history</b>	Display the last commands entered in the CLI. (See page 106)
<b>show ipfix</b>	Display the Internet Protocol Flow Information Export (IPFIX) configuration. (See page 114)
<b>show lag</b>	Display LAG static capability and summary information for the device. (See page 115)
<b>show logging</b>	Display logging parameters. (See page 121)
<b>show login-session</b>	Display information about the current login session. (See page 123)
<b>show mgmt-ip</b>	Display the in-band service configuration. (See page 124)
<b>show monitor</b>	Display port mirror settings. (See page 126)
<b>show port</b>	Display port mode, status and settings for all ports or for a

	specified port. (See page 129)
<b>show radius</b>	Display Remote Authentication Dial In User Service (RADIUS) configuration information for the switch or for configured RADIUS servers. (See page 136)
<b>show running-config</b>	Display elements of the running configuration that differ from the default settings. (See page 138)
<b>show serial</b>	Display EIA-232 parameters and serial port inactivity timeout. (See page 140)
<b>show snmpd</b>	Display Simple Network Management Protocol (SNMP) community and trap flag details. (See page 141)
<b>show snmp-trap</b>	Display Simple Network Management Protocol (SNMP) trap receiver entries. (See page 142)
<b>show sntp</b>	Display Simple Network Time Protocol (SNTP) settings. (See page 142)
<b>show spanning-tree</b>	Display spanning tree information. (See page 145)
<b>show startup-config</b>	Display the configuration details saved in the startup configuration file. (See page 161)
<b>show system</b>	Display Chassis components and System information. (See <b>Error! Bookmark not defined.</b> )
<b>show task</b>	Display sleep average information for a card. (See page 162)
<b>show telnet</b>	Display outbound telnet configuration information. (See page 162)
<b>show users</b>	Display account and authentication information for system users. (See page 178)
<b>show vlan</b>	Display information about a specific VLAN or a list of all configured VLANs. (See page 179)

## 3.2.20 *show aaa method-lists*

### **Syntax**

**show aaa method-lists {authentication | authorization | accounting | all }**

### **Purpose**

To display the method lists (tacacs+/radius/local, etc.) defined for authentication, authorization, accounting or all of them. Each item contains the name of the authentication list and its method lists. The default authentication list will always be shown. Use this command in privileged EXEC mode.

### **Options & Parameters**

<b>authentication</b>	Displays the method lists for authentication of all the authentication lists.
authorization	Displays the method lists for authorization.
<b>accounting</b>	Displays the method lists for accounting.
<b>all</b>	Displays all method lists.

### **Example**

```
# show aaa method-lists authentication
name=default valid=1 id=0 state=ALIVE : local
name=new-list valid=1 id=0 state=ALIVE : tacacs+ local
```

## 3.2.21 *show aaa user*

### Syntax

**show aaa user** {all | *user-id*}

### Purpose

To display attributes related to an authentication, authorization, and accounting (AAA) session. Use this command in privileged EXEC mode.

### Options & Parameters

<b>all</b>	Displays information about all users for which AAA currently has knowledge.
<i>user-id</i>	Displays information for only this user.

### Notes

The following information is collected about each user session (unique system-wide after login, and not the same as the TACCAS+ protocol session) and will be displayed:

Field	Description
General Information	
Load Average	5s, 1 minute, 5 minute average.
Time	Current data and time with time-zone.
Server Information	Type of Server, Revision Number.
TACACS Server IP	IP address of the server used.
Accounting Information The following information is displayed for the EXEC (console), NET (telnet/ssh) and CMD accounting sessions. Typically, only console or telnet/ssh will have information. The CMD accounting will have command logging with arguments if enabled.	
Connection Start-time	Time when the connection was established.
Connection Elapsed-time	Time in seconds since the connection was established.
Username	User's login id.
Update interval	Accounting update interval in s.
Pre Bytes In	Bytes that were received before the call was authenticated.
Pre Bytes Out	Bytes that were transmitted before the call was authenticated.
Pre Packets In	Packets that were received before the call was authenticated.
Pre Packets Out	Packets that were transmitted before the call was authenticated.

Bytes In	Bytes that were received after the call was authenticated.
Bytes Out	Bytes that were transmitted after the call was authenticated.
Packets In	Packets that were received after the call was authenticated.
Packets Out	Packets that were transmitted after the call was authenticated.
Authentication Information:	
Session Start Time	When the actual session started.
Authentication Time	When the authentication was approved.
TTY Number	Line number
Service	console logins, <i>enable</i> command, standard telnet/ssh
Method	Authentication method used (TACACS+, LOCAL etc.)

### Example

Accounting:

Username=admin

Update interval=1

Authentication:

Session Start Time=1238030676

Authentication Time=1238030676

TTY number=0

Authen: Service=LOGIN

Server Information: LOCAL

Server IP:0.0.0.0

Accounting:

Username=wxu

Update interval=1

Authentication:

Session Start Time=1238030669

Authentication Time=1238030690

TTY number=1

Authen: Service=LOGIN Method=TACACSPLUS LOCAL

Server Information: TACACSPLUS

Server IP:10.10.50.52

General:

Load Average=0.00 0.00 0.00

Time=Mar 26 01:24:54

## 3.2.22 *show arp*

### **Syntax**

`show arp`

### **Purpose**

To display Address Resolution Protocol (ARP) cache.

### **Options & Parameters**

This command has no options or parameters.

### **Example**

(FS5CX420F1087012) # show arp

MAC Address	IP Address	Port
00:04:96:27:C8:55	172.16.0.1	Management
00:A0:D1:E4:9B:20	172.16.0.88	Management

## 3.2.23 *show authentication*

### Syntax

**show authentication** [ **users** <list\_name> ]

### Purpose

To display ordered methods for authentication lists or the users assigned to a specified authentication login list.

### Defaults

Shows ordered methods for all lists.

### Options & Parameters

<b>users</b>	Displays users assigned to a specified authentication login list.
<list_name>	Specifies an existing authentication list.

### Notes

Authentication lists are created in Configuration Mode using the **authentication** command. (See *aaa accounting*)

### Syntax

[no] **aaa accounting** {**system** | **exec** | **command** <level>} {**default** | <list-name>} {**start-stop** | **stop-only**} m1 [m2]

### Purpose

To create records for any or all of the accounting functions that are monitored.

### Defaults

None.

### Options & Parameters

<b>system</b>	Performs accounting for all system-level events not associated with users, such as reloads.
<b>exec</b>	Specifies a list name. This is a character string used to name the list of authentication methods activated when a user logs in.
<b>command</b> <level>	Runs accounting for all commands at the specified privilege level. Valid privilege level entries are integers from 0 through 15.
<b>default</b>	Uses the listed authentication methods (m1-m2) that follow this keyword as the default list of methods when a users logs in
<list-name>	Uses the listed accounting methods that follow this keyword as the default list of methods when a users logs in.
<b>start-stop</b>	Sends a “start” accounting notice at the beginning of a process and a “stop” accounting notice at the end of a

	process. The “start” accounting record is sent in the background. The requested user process begins regardless of whether the “start” accounting notice was received by the accounting servers.
<b>stop-only</b>	Sends a “stop” accounting notice at the end of the requested user process.
m<n>	Keywords: <ul style="list-style-type: none"><li>• radius - Use RADIUS accounting</li><li>• tacacs+ - Use TACACS+ accounting</li></ul>

## 3.2.24 *aaa accounting update*

### **Syntax**

**aaa accounting update** {**newinfo** | **periodic** <*seconds*>}

### **Purpose**

To create records for any or all of the accounting functions that are monitored.

### **Defaults**

None.

### **Options & Parameters**

<b>newinfo</b>	Causes interim accounting records to be sent to the accounting server every time there is new accounting information to report.
<b>periodic</b> < <i>seconds</i> >	Causes interim accounting records to be sent periodically as defined by the argument number of seconds.

## 3.2.25 *aaa authentication login*

### **Syntax**

**aaa authentication login** {**default** | *list-name*} *m1* [*m2*][*m3*][*m4*][*m5*]

### **Purpose**

To enable AAA authentication for all the supported login authentication methods.

### **Defaults**

None.

### **Options & Parameters**

<b>default</b>	Specifies the listed authentication methods that follow this keyword as the default list of methods when a user logs in.
<i>list-name</i>	Specifies a list name. This is a character string used to name the list of authentication methods activated when a user logs in.
<i>m&lt;n&gt;</i>	Refers to the actual protocol used by the authentication algorithm. Keywords: <ul style="list-style-type: none"><li>• none - No authentication</li><li>• enable - Use enable password for authentication</li><li>• local - Use local username database for authentication</li><li>• radius - Use RADIUS authentication</li><li>• tacacs+ - Use TACACS+ authentication</li></ul>

## 3.2.26 *aaa authorization*

### Syntax

```
[no] aaa authorization {exec | <command> <level>} {default | <list-name>} m1  
[m2][m3][m4][m5]
```

### Purpose

To set parameters that restrict a user's network access.

### Defaults

Authorization is turned off on the switch by default.

### Options & Parameters

<b>exec</b>	Enables authorization to determine if a user is allowed to run an EXEC shell.
<command> <level>}	Enables authorization for specific, individual EXEC commands associated with a specific privilege level. This allows the operator to authorize all commands associated with a specific command level form 0 to 15.
<b>default</b>	Uses the listed authentication methods that follow this keyword as the default list of methods when a users logs in.
<list-name>}	Specifies a list name for the methods that follow this keyword as the default list of methods when a users logs in.
m<n>	Keywords: <ul style="list-style-type: none"><li>• none - No authorization</li><li>• if-authentication - If authentication is successful</li><li>• local - Use local username database for authorization</li><li>• radius - Use RADIUS authorization</li><li>• tacacs+ - Use TACACS+ authorization.</li></ul>

### Notes

- Authorization is either provided by the TACACS+ server (tacacs+ keyword), the user is allowed run everything if authentication is successful (if-authenticated keyword), or in the last case the user is allowed to run everything whether authentication passed or failed (none keyword).
- To disable authorization for all global configuration commands, use the no aaa authorization config-command.

## 3.2.27 *aaa new-model*

### **Syntax**

[no] `aaa new-model`

### **Purpose**

To enable or disable AAA.

### **Defaults**

AAA is turned off by default.

### **Options & Parameters**

None.

## 3.2.28 *accounting*

### **Syntax**

[no] **accounting** {**commands** *level* | **exec**} [**default** | *list-name*]

### **Purpose**

To enable authentication, authorization, and accounting (AAA) accounting services to a specific line or group of lines, use the **accounting** command in line configuration mode. To disable AAA accounting services, use the **no** form of this command.

### **Defaults**

Accounting is disabled.

### **Options & Parameters**

<b>commands</b> <i>level</i>	Enables accounting on the selected lines for all commands at the specified privilege level. Valid privilege level entries are 0 through 15.
<b>exec</b>	Enables accounting for all system-level events not associated with users, such as reloads on the selected lines.
<b>default</b>	The name of the default method list, created with the <b>aaa</b> accounting command. (Optional)
<i>list-name</i>	Specifies the name of a list of accounting methods to use. If no list name is specified, the system uses the default. The list is created with the <b>aaa</b> accounting command. (Optional)

authentication login on page 186)

### **Examples**

```
(FS5CX420F1087012) # show authentication
```

```
Authentication Login List Method 1 Method 2 Method 3
-----
defaultList      local  undefined undefined
```

```
(FS5CX420F1087012) # show authentication users location1
```

```
User Name Component
-----
default      System Login
```

## 3.2.29 *show clock*

### **Syntax**

**show clock**

### **Purpose**

To display ordered methods for authentication lists or the users assigned to a specified authentication login list.

### **Options & Parameters**

This command has no options or parameters.

### **Example**

```
(FS5CX420F1087012) # show clock
```

```
System Time : Mon Apr 13 12:23:46 2009
```

## 3.2.30 *show cos dot1p-mapping*

### **Syntax**

**show cos dot1p-mapping** [*slot/port*]

### **Purpose**

To display class-of-service (802.1p) priority mapping information.

### **Defaults**

Shows mapping of 802.1p priority to FortiSwitch OS queues.

### **Options & Parameters**

[*slot/port*]

Specifies a port in slot/port format for which to display 802.1p priority mapping information. If mapping is not configurable by port, all ports will display identical information.

### **Example**

```
(FS5CX420F1087012) # >show cos dot1p-mapping 1/1
```

```
User Priority   Traffic Class
```

```
-----
```

0	1
1	1
2	0
3	1
4	2
5	2
6	3
7	3

```
-----
```

### 3.2.31 *show fabric-control*

**Syntax**

**show fabric-control** { **mac-svlan** | **multicast** | **partition** [1-1000] | **policy** [slot/port] | **spine** | **valid-svlan** }

**Purpose**

To display the fabric bandwidth allocation.

**Options & Parameters**

<b>mac-svlan</b>	Displays the number of SVLANs associated with each MAC.
<b>multicast</b>	Displays all registered multicast addresses along with their associated VLANs and SVLANs.
<b>partition</b> [1-1000]	Displays the fabric partition configuration. Shows general information for all partitions by default; the optional partition number (1-1000) specifies a partition for which to show detailed information.
<b>policy</b> [slot/port]	Displays the fabric policy; by default, shows policy information for all ports. The optional port argument (in slot/port format) specifies a port for which to show detailed policy information.
<b>spine</b>	Tells whether the switch is a spine switch (default) or an edge switch, and provides SVLAN information about the switch. <b>Note:</b> if the switch is an edge switch (spine mode is disabled), then the rest of the fields are meaningless. Stand-alone FortiSwitch switches are always configured in spine mode; FortiSwitch switches are configured in edge mode only when they are connected and configured into a fabric.
<b>valid-svlan</b>	Displays IDs of all SVLANs present in the switch.

**Notes**

For further information about FortiSwitch fabric concepts, see **fabric-control** on page 197.

**Examples**

**mac-svlan:**

```
(FS5CX420F1087012) # show fabric-control mac-svlan
```

```
Number of SVLANs associated with each MAC..... 6
```

**multicast:**

```
(FS5CX420F1087012) # show fabric-control multicast
```

```

Multicast Address  VLAN  SVLAN

```

-----  
**partition:**

(FS5CX420F1087012) # show fabric-control partition 1

```
Partition Class SVLAN
-----
1 Default 1001, 1002, 1003, 1004
```

**policy:**

(FS5CX420F1087012) # show fabric-control policy 1/2

```
Port Policy Partition VLAN
-----
1/2 0 1 1-4094,
```

**spine:**

(FS5CX420F1087012) # show fabric-control spine

```
Spine Mode .....Disable
Spine ID .....1
Num Spine SVLANs Allocated.....6
Spine SVLANs .....0 - 0
Static SVLANs .....1001 - 1024
```

**valid-svlan:**

(FS5CX420F1087012) # show fabric-control valid-svlan

```
Spine SVLAN
-----
1 1001, 1002, 1003, 1004, 1005, 1006,
2 1013, 1014, 1015, 1016, 1017, 1018,
```

## 3.2.32 *show fabric-control flow-control*

### **Syntax**

**show fabric flow-control** { **port-mode** | **priority-mode priority <int> enable | disable** } [**priority <int> enable | disable**] | { **rx\_honor** | **tx\_send** | **both** }

### **Purpose**

To display the fabric control flow control.

### **Options & Parameters**

<b>port-mode</b>	Flow control mode.
<b>priority-mode priority &lt;int&gt; enable   disable</b>	Use priority mode, for the priority specified by <int>, and either enable or disable. You can specify up to 7 priorities.
<b>rx_honor</b>	Flow control style.
<b>tx_send</b>	Flow control style.
<b>both</b>	Flow control style.

### **Notes**

### **Examples**

## 3.2.33 *show fdb-table*

### Syntax

```
show fdb-table { aging-time | gmrp | learned { <mac_address> | all } | multicast  
[mac_address] | static { <mac_address> | all } | stats }
```

### Purpose

To display MAC address table information from the Forwarding Database (FDB).

### Options & Parameters

<b>aging-time</b>	Displays forwarding database address aging timeout values.
<b>gmrp</b>	Displays GMRP entries in the Multicast Forwarding Database (MFDB) table.
<b>igmp-snoop</b>	Displays IGMP snooping entries in the MFDB table.
<b>learned</b> { <mac_address>   all }	Displays learned MAC addresses: <mac_address> specifies a 6 byte MAC address (separated by colons) for which to display information; <b>all</b> displays information for all learned MAC addresses.
<b>multicast</b> [mac_address]	Displays multicast forwarding database table information. Shows information for all ports by default; the optional <i>mac_address</i> argument specifies a 6 byte MAC address (separated by colons) for which to display information.
<b>static</b> { <mac_address>   all }	Displays static MAC filter information: <mac_address> specifies a 6 byte MAC address (separated by colons) for which to display information; <b>all</b> displays information for all learned MAC addresses.
<b>stats</b>	Displays MFDB statistics.

### Examples

#### aging-time:

```
(FS5CX420F1087012) # show fdb-table aging-time
```

```
Address Aging Timeout:300
```

#### gmrp:

```
(FS5CX420F1087012) # show fdb-table gmrp
```

```
There are currently no GMRP entries in the table.
```

#### learned:

```
(FS5CX420F1087012) #show fdb-table learned all
```

Mac Address	Port	IfIndex	Status
00:1A:F6:00:0D:7C	cpu	25	Management
00:1E:68:37:EF:62	LAG 1	26	Learned
00:1E:68:37:EF:83	LAG 1	26	Learned
00:1E:68:37:EF:A7	LAG 1	26	Learned
00:1E:68:37:EF:BC	LAG 1	26	Learned
00:1E:68:37:EF:E3	LAG 1	26	Learned
00:1E:68:37:F0:94	LAG 1	26	Learned
00:30:48:8E:0E:79	LAG 1	26	Learned

**multicast:**

(FS5CX420F1087012) #show fdb-table multicast

There are currently no entries in the table.

**static:**

(FS5CX420F1087012) # show fdb-table static all

MAC Filter List is Empty

**stats:**

(FS5CX420F1087012) # show fdb-table stats

Most Address Entries Ever Used..... 47  
 Address Entries Currently in Use..... 41  
 Max MFDB Table Entries..... 256  
 Most MFDB Entries Since Last Reset..... 0  
 Current Entries..... 0

## 3.2.34 *show garp*

### **Syntax**

**show garp** [ **statistics** { **port** <slot/port> | **lag** <lag\_ID> } ]

### **Purpose**

To display Generic Attribute Registration Protocol (GARP) applications information.

### **Defaults**

Displays the status of GMRP and GVRP Admin Modes by default.

### **Options & Parameters**

<b>statistics</b>	Displays GARP applications PDU statistics.
<b>port</b>	Displays spanning tree values on a per-port basis.
<slot/port>	Specifies a port for which to display information.
<b>lag</b>	Displays spanning tree values on a per-LAG basis.
<lag_ID>	Specifies a LAG for which to display information.

### **Example**

#### **default:**

```
(FS5CX420F1087012) # show garp
GMRP Admin Mode..... Disable
GVRP Admin Mode..... Disable
```

#### **statistics port:**

```
(FS5CX420F1087012) # show garp statistics port 1/3
GVRP PDUs received..... 0
GVRP PDUs Transmitted..... 0
GVRP Failed Registratons..... 0
```

#### **statistics lag:**

```
(FS5CX420F1087012) # show garp statistics lag 1
GVRP PDUs received..... 536
GVRP PDUs Transmitted..... 518
GVRP Failed Registrations..... 0
```

## 3.2.35 *show gvrp*

### **Syntax**

**show gvrp configuration** { <slot/port> | **all** | **lag** <lag\_ID> }

### **Purpose**

To display GARP VLAN Registration Protocol (GVRP) parameters for a specified port or LAG or for all ports.

### **Options & Parameters**

<slot/port>	Specifies a port in slot/port format for which to display information.
<b>all</b>	Displays GVRP information for all ports.
<b>lag</b>	Displays GVRP values on a per-LAG basis.
<lag_ID>	Specifies a LAG for which to display information.

### **Example**

```
(FS5CX420F1087012) # show gvrp configuration all
GVRP Admin Mode..... Disable
      Join      Leave      LeaveAll      Port
Port      Timer      Timer      Timer      GVRP Mode
      (centiseecs) (centiseecs) (centiseecs)
-----
1/1      20      60      1000      Disabled
1/2      20      60      1000      Disabled
1/3      20      60      1000      Disabled
1/4      20      60      1000      Disabled
1/5      20      60      1000      Disabled
1/6      20      60      1000      Disabled
1/7      20      60      1000      Disabled
1/8      20      60      1000      Disabled
1/9      20      60      1000      Disabled
1/10     20      60      1000      Disabled
1/11     20      60      1000      Disabled
1/12     20      60      1000      Disabled
1/13     20      60      1000      Disabled
1/14     20      60      1000      Disabled
```

1/15	20	60	1000	Disabled
1/16	20	60	1000	Disabled
1/17	20	60	1000	Disabled
1/18	20	60	1000	Disabled
1/19	20	60	1000	Disabled
1/20	20	60	1000	Disabled
1/21	20	60	1000	Disabled
1/22	20	60	1000	Disabled
1/23	20	60	1000	Disabled
1/24	20	60	1000	Disabled
LAG 1	20	60	1000	Disabled
LAG 2	20	60	1000	Disabled

## 3.2.36 *show history*

### **Syntax**

**show history** [*count*]

### **Purpose**

To display the last commands entered in the CLI.

### **Defaults**

Displays the last 10 commands.

### **Options & Parameters**

<i>&lt;count&gt;</i>	Specifies the number of commands to display.
----------------------	--

### **Example**

```
(FS5CX420F1087012) #show history
```

```
 1 show vlan
 2 show fdb-table
 3 show mac-addr
 4 configure
 5 vlan
 6 exit
 7 telnet
 8 enable
 9 show cos
10 show spanning-tree
```

## 3.2.37 *show ip igmp snooping*

### **Syntax**

**show ip igmp snooping** {**port** <slot/port> | **lag** <1-72> | **vlan** <1-4094> | **svlan** <1001-1096>}

### **Purpose**

To display all the multicast group information, across VLAN or sVLAN that are known on a specified port/LAG, or on a particular VLAN or sVLAN.

### **Defaults**

None

### **Options & Parameters**

<b>port</b> <slot/port>	Specifies a port.
<b>lag</b> <1-72>	Specifies a LAG.
<b>vlan</b> <1-4094>	Specifies a particular VLAN.
<b>svlan</b> <1001-1096>	Specifies a particular sVLAN.

### **Example**

#### **Port:**

```
> show ip igmp snooping port 1/2
```

Port 1/2

IGMP query interval is 60 seconds

IGMP querier timeout is 120 seconds

Last member query response interval is 1000 ms

IGMP activity: 0 joins, 0 leaves

No multicast groups joined

IGMP snooping is globally enabled

IGMP snooping fast-leave is enabled on this interface

#### **VLAN:**

```
> show ip igmp snooping vlan 200
```

VLAN 200:

IGMP snooping is enabled on VLAN

IGMP query interval is 60 seconds

IGMP querier timeout is 120 seconds

IGMP activity: 5 joins, 2 leaves

3 multicast groups joined

Group: 01:00:5e:22:33:44

Group: 01:00:5e:55:66:77

Group: 01:00:5e:88:99:aa

IGMP snooping is globally enabled

**sVLAN:**

> show ip igmp snooping svlan 1001

sVLAN 1001:

IGMP snooping is enabled on VLAN

IGMP query interval is 60 seconds

IGMP querier timeout is 120 seconds

IGMP activity: 0 joins, 0 leaves

No multicast groups joined

IGMP snooping is globally enabled

## 3.2.38 *show ip igmp snooping group*

### **Syntax**

**show ip igmp snooping group** [*<ip\_address>* | *<mac\_address>*]

### **Purpose**

To display the location where a specified multicast group was joined.

This command can be useful for debugging multicast traffic delivery issues or to simply have a global view of who is interested in a particular multicast traffic flow. Specifying the multicast address (IP or MAC) is not required.

### **Defaults**

If no address is specified, the command shows all the multicast groups that were learned.

### **Options & Parameters**

<i>&lt;ip_address&gt;</i>	Specifies an IP address for a multicast group.
<i>&lt;mac_address&gt;</i>	Specifies a MAC address for a multicast group.

### **Example**

There are several possible outputs based on the level of where IGMP snooping is performed. If IGMP Snooping is performed at the sVLAN level, then the C-VLAN is ignored and is represented by a wild card (i.e. '\*') in the vlan column. If IGMP Snooping is performed at the C-VLAN level, then the sVLAN is ignored and is represented by a wild card (i.e. '\*') in the sVLAN column.

#### **IGMP snooping performed at the CVLAN Level:**

```
> show ip igmp snooping group 229.255.0.128
```

```
Multicast Group: 225.0.0.128 MAC: 01:00:5e:7f:00:80
```

```
IGMP activity: 40 joins 12 leaves
```

```
vlan  svlan  ports  methods      last reporter
-----
100   1001    1/1    static dynamic  100.12.0.3
100   1001    LAG 2    dynamic      100.12.0.4
100   1001    1/3     dynamic      100.12.0.5
```

#### **IGMP snooping performed at the sVLAN level:**

```
> show ip igmp snooping group 229.255.0.129
```

Multicast Group: 225.0.0.129 MAC: 01:00:5e:7f:00:81

IGMP activity: 40 joins 12 leaves

vlan	svlan	ports	methods	last reporter
*	1001	1/17	dynamic	100.12.0.3
*	1001	LAG 3	dynamic	100.12.0.4
*	1001	1/18	dynamic	100.12.0.5

**A particular multicast group mapped to a sVLAN for a given C-VLAN (i.e. 100), and mapped to the default sVLAN on all other C-VLAN:**

> show ip igmp snooping group 229.255.0.130

Multicast Group: 225.0.0.130 MAC: 01:00:5e:7f:00:82

IGMP activity: 40 joins 12 leaves

vlan	svlan	ports	methods	last reporter
100	1002	1/17	dynamic	100.12.0.3
*	1001	LAG 3	dynamic	100.12.0.4
*	1001	1/18	dynamic	100.12.0.5

## 3.2.39 *show ip igmp snooping mfdb*

### **Syntax**

Show ip igmp snooping mfdb [*<mac\_address>*]

### **Purpose**

To display information on the IGMP Snooping Multicast Forwarding Information stored in the hardware.

### **Defaults**

None.

### **Options & Parameters**

<i>&lt;mac_address&gt;</i>	Specifies the MAC address.
----------------------------	----------------------------

### **Example**

```
> show ip igmp snooping mfdb 01:00:5e:7f:01:01
```

```
Multicast MAC   vlan   svlan   Forwarding ports
-----
01:00:5e:7f:01:01 *   1001   1/1 1/3 1/12
```

```
> show ip igmp snooping mfdb 01:00:5e:7f:01:02
```

```
Multicast MAC   vlan   svlan   Forwarding ports
-----
01:00:5e:7f:01:02 100   1003   1/1 1/4 1/12
```

```
> show ip igmp snooping mfdb
```

```
Multicast MAC   vlan   svlan   Forwarding ports
-----
01:00:5e:7f:01:01 *   1001   1/1 1/3 1/12
01:00:5e:7f:01:02 100   1003   1/1 1/4 1/12
01:00:5e:7f:01:03 *   1004   1/17 1/18 1/20
```

## 3.2.40 *show ip igmp snooping querier*

### **Syntax**

**show ip igmp snooping querier [vlan <1-4094>]**

### **Purpose**

To display IGMP queriers.

### **Defaults**

If a customer VLAN is not specified, then the command displays information for all configured VLANs.

### **Options & Parameters**

<b>vlan &lt;1-4094&gt;</b>	Specifies the VLAN.
----------------------------	---------------------

### **Example**

> show ip igmp snooping querier

```
vlan  svlan  query IP address  query-interval  query sent
-----
100   1001   12.12.0.1      60              200
200   1001   10.10.0.1     120             12
```

## 3.2.41 *show ip igmp snooping router*

### **Syntax**

**show ip igmp snooping router** [vlan <1-4094>]

### **Purpose**

To display router interfaces known by the system (either dynamically discovered or statically configured) using the customer VLAN.

### **Defaults**

If a customer VLAN is not specified, then the command displays information for all configured VLANs.

### **Options & Parameters**

vlan <1-4094>	Specifies the VLAN.
---------------	---------------------

### **Notes**

It is possible to have a router statically configured or dynamically discovered on a customer VLAN. In case of conflict, static configuration takes precedence.

### **Example**

```
> show ip igmp snooping router
```

```
vlan  svlan  ports  methods      router MAC      router IP
-----
100   1001    1/1    static dynamic  xx:xx:xx:xx:xx:xx  n.n.n.n
200   1001    LAG 2    dynamic      yy:yy:yy:yy:yy:yy  m.m.m.m
```

## 3.2.42 *show ipfix*

### **Syntax**

`show ipfix`

### **Purpose**

To display the Internet Protocol Flow Information Export (IPFIX) configuration.

### **Options & Parameters**

This command has no options or parameters.

### **Example**

(FS5CX420F1087012) #show ipfix

IPFIX Collector Address	Port
-------------------------	------

-----

10.10.10.23	3023
-------------	------

10.10.10.24	2022
-------------	------

Port	IPFIX State
------	-------------

-----

1/1	Enable
-----	--------

1/2	Enable
-----	--------

1/3	Disable
-----	---------

1/4	Enable
-----	--------

## 3.2.43 *show lag*

### Syntax

```
show lag { <lag_ID> [ lacp | stats | vlan ] | all | brief }
```

### Purpose

To display Link Aggregation Group (LAG) information.

### Options & Parameters

<b>&lt;lag_ID&gt;</b>	<b>&lt;lag_ID&gt;</b> specifies a LAG group number for which to show information.
<b>lacp</b>	Shows Link Aggregation Control Protocol (LACP) information for the specified LAG.
<b>stats</b>	Shows LAG statistics for the specified LAG.
<b>vlan</b>	Shows VLAN configuration information for the specified LAG.
<b>all</b>	Displays general information for all LAGs.
<b>brief</b>	Displays LAG static capability and summary information for the switch as a whole. This form of the command is also available in Default Mode.

### Notes

The **brief** option of **show lag** is also available in Default Mode.

### Examples

#### for a specified LAG:

```
(FS5CX420F1087012) # show lag 1
```

```

                                Link
LAG      LAG      Adm. Trap STP      Mbr  Port  Port
ID      Name      Link Mode Mode  Mode Protocol Ports  Speed  Active
-----
1  DEFAULT  Up  En. En. En.  None  1/1  10G Full True
                                1/2  10G Full True

```

#### for a specified LAG with the LACP option:

```
(FS5CX420F1087012) # show lag 1 lacp
```

```

Port  LACP System      Admin  Oper  Actor LACP
Port  State  Priority  System ID  Key  Key  State
-----

```

```

1/1 Down 32768 00:1A:F6:00:08:C4 0x00000092 0x00000092 0x00000005
1/2 Down 32768 00:1A:F6:00:08:C4 0x00000092 0x00000092 0x00000005
1/3 Down 32768 00:1A:F6:00:08:C4 0x00000092 0x00000092 0x00000005
1/4 Down 32768 00:1A:F6:00:08:C4 0x00000092 0x00000092 0x00000005

```

```

          Partner
Partner System          Partner Partner LACP
Port Port  Priority Partner ID   Admin Key Oper Key State
-----
1/1  0    0      00:00:00:00:00:00 0x00000000 0x00000000 0x00000005
1/2  98   32768 00:1A:F6:00:04:6B 0x00000000 0x00000092 0x00000037
1/3  0    0      00:00:00:00:00:00 0x00000000 0x00000000 0x00000005
1/4  0    0      00:00:00:00:00:00 0x00000000 0x00000000 0x00000005

```

```

          LACP PDUs      Marker      Marker Response      LACP PDUs      LACP PDUs
Port Sent  Recv  Sent  Recv  Sent  Recv  Error  Dropped
-----
1/1  0    0    0    0    0    0    0    0
1/2  0    0    0    0    0    0    0    0
1/3  0    0    0    0    0    0    0    0
1/4  0    0    0    0    0    0    0    0

```

**for a specified LAG with the VLAN option:**

(FS5CX420F1087012) # show lag 1 vlan

```

          Port Acceptable      Default
Port VLAN ID Frame Types GVRP Priority
-----
LAG 1  1    Admit All  Enable  0

```

**all:**

(FS5CX420F1087012) # show lag all

```

          Link
LAG      LAG      Adm. Trap STP Mbr  Port Port
ID      Name      Link Mode Mode Mode Ports Speed Active
-----
1  DEFAULT  Up  En. En. En. 1/1 10G Full True
          1/2 10G Full False

```

							1/3	10G	Full	True
							1/4	10G	Full	True
							1/5	10G	Full	True
							1/6	10G	Full	True
2	DEFAULT	Up	En.	En.	En.	1/7	10G	Full	True	True
							1/8	10G	Full	True
							1/9	10G	Full	True
							1/10	10G	Full	True
							1/11	10G	Full	True
							1/12	10G	Full	True

**brief:**

(FS5CX420F1087012) # show lag brief

LAG ID	LAG Name	Link State	Mbr Ports	Active Ports
1	DEFAULT	Up	1/1,1/2, 1/1,1/3,1/4, 1/3,1/4, 1/5,1/6 1/5,1/6	
2	DEFAULT	Up	1/7,1/8, 1/7,1/8,1/9, 1/9,1/10, 1/10,1/11, 1/11,1/12 1/12	

**statistics:**

(FS5CX420F1087012) # show lag 1 stats

Total Packets Received (Octets)..... 0  
Total Oversize Packets Received..... 0  
Packets RX and TX 64 Octets..... 0  
Packets RX and TX 65-127 Octets..... 0  
Packets RX and TX 128-255 Octets..... 0  
Packets RX and TX 256-511 Octets..... 0  
Packets RX and TX 512-1023 Octets..... 0  
Packets RX and TX 1024-1518 Octets..... 0  
Packets RX and TX 1519-1522 Octets..... 0  
Packets RX and TX 1523-2047 Octets..... 0  
Packets RX and TX 2048-4095 Octets..... 0  
Packets RX and TX 4096-9216 Octets..... 0

Total Packets Received Without Errors..... 0  
Unicast Packets Received..... 0  
Multicast Packets Received..... 0  
Broadcast Packets Received..... 0

Total Packets Received with MAC Errors..... 0  
Jabbers Received..... 0  
Fragments/Undersize Received..... 0  
Alignment Errors..... 0  
FCS Errors..... 0  
Overruns..... 0

Total Packets Transmitted (Octets)..... 0

Total Packets Transmitted Successfully..... 0  
Unicast Packets Transmitted..... 0  
Multicast Packets Transmitted..... 0  
Broadcast Packets Transmitted..... 0

Total Transmit Errors..... 0  
FCS Errors..... 0  
Tx Oversized..... 0  
Underrun Errors..... 0  
  
Total Transmit Packets Discarded..... 0  
Single Collision Frames..... 0  
Multiple Collision Frames..... 0  
Excessive Collision Frames..... 0  
  
Time Since Counters Last Cleared..... 0 day 9 hr 11 min 45 sec

## 3.2.44 *show load-balance hash*

### **Syntax**

**show load-balance hash**

### **Purpose**

To give an overview of the LAG hash settings currently applied to the LAG group.

### **Options & Parameters**

None.

### **Examples**

(load-balance) # show load-balance hash

Load Balance Hash Setting src-dst-mac

## 3.2.45 *show logging*

### **Syntax**

**show logging [ buffered | hosts | trap-logs ]**

### **Purpose**

To display logging parameters.

### **Options & Parameters**

<b>buffered</b>	Displays buffered (in-memory) log entries.
<b>hosts</b>	Displays logging hosts.
<b>trap-logs</b>	Displays trap records.

### **Examples**

#### **Default:**

```
(FS5CX420F1087012) # show logging
```

```
Logging Client Local Port      : 514
CLI Command Logging           : disabled
Console Logging               : disabled
Console Logging Severity Filter : alert
Buffered Logging              : enabled

Syslog Logging                : disabled

Log Messages Received         : 272
Log Messages Dropped          : 0
Log Messages Relayed          : 0
Log Messages Ignored          : 0
```

#### **Buffered:**

```
(FS5CX420F1087012) # show logging buffered
```

```
Buffered (In-Memory) Logging   : enabled
Buffered Logging Wrapping Behavior : On
Buffered Log Count              : 270
```

<13> Jun 5 19:12:19 0.0.0.0-1 TRAPMGR[282482864]: traputil.c(706) 145 %% Link U  
p: Unit: 1 Slot: 6 Port: 2  
<13> Jun 5 19:12:19 0.0.0.0-1 TRAPMGR[282482864]: traputil.c(706) 146 %% Link U  
p: Unit: 1 Slot: 6 Port: 1  
<13> Jun 5 19:12:19 0.0.0.0-1 TRAPMGR[282482864]: traputil.c(706) 147 %% Link U  
p: Unit: 1 Slot: 6 Port: 3  
[etcetera]

**Hosts:**

(FS5CX420F1087012) # show logging hosts

Logging Host List Empty

**Trap Logs:**

(FS5CX420F1087012) # show logging trap-logs

Number of Traps Since Last Reset..... 215  
Trap Log Capacity..... 256  
Number of Traps Since Log Last Viewed..... 215

Log System Up Time	Trap
0 0 days 00:30:03	Multiple Users: Unit: 1 Slot: 32 Port: 1
1 0 days 00:27:21	Spanning Tree Topology Change: 32, Unit: 1
2 0 days 00:27:20	Spanning Tree Topology Change: 31, Unit: 1
3 0 days 00:27:19	Spanning Tree Topology Change: 30, Unit: 1
4 0 days 00:27:19	Spanning Tree Topology Change: 29, Unit: 1
5 0 days 00:27:18	Spanning Tree Topology Change: 28, Unit: 1

[etcetera]

## 3.2.46 *show login-session*

### **Syntax**

**show login-session**

### **Purpose**

To display information about the current login session.

### **Options & Parameters**

This command has no options or parameters.

### **Example**

(FS5CX420F1087012) # show login-session

ID	User Name	Connection From	Idle Time	Session Time	Session Type
01	admin	10.10.20.141	00:00:00	00:32:22	Telnet

## 3.2.47 *show mgmt-ip*

### **Syntax**

`show mgmt-ip { inband | service-port | sshd | stats | telnetd }`

### **Purpose**

To display management interface configuration information.

### **Options & Parameters**

<b>inband</b>	Displays configuration information for in-band connectivity.
<b>service-port</b>	Displays service port configuration information.
<b>sshd</b>	Displays IP secure shell (SSH) information.
<b>stats</b>	Displays inband counters.
<b>telnetd</b>	Displays telnet configuration information.

### **Notes**

The **sshd** and **telnetd** options are available only in Enable Mode.

### **Examples**

#### **Inband:**

```
(FS5CX420F1087012) # show mgmt-ip inband
```

```
IP Address..... 0.0.0.0
Subnet Mask..... 0.0.0.0
Default Gateway..... 0.0.0.0
Burned In MAC Address..... 00:1A:F6:00:03:61
Locally Administered MAC Address..... 00:00:00:00:00:00
MAC Address Type..... Burned In
Network Configuration Protocol Current..... None
Management VLAN ID..... 1
```

#### **Service-Port:**

```
(FS5CX420F1087012) # show mgmt-ip service-port
```

```
IP Address..... 172.16.0.116
Subnet Mask..... 255.255.255.0
Default Gateway..... 172.16.0.1
ServPort Configured Protocol Current..... DHCP
Burned In MAC Address..... 00:1A:F6:00:03:61
```

**SSHD:**

SSH Configuration

Administrative Mode: ..... Disabled  
Protocol Levels: ..... Versions 1 and 2  
SSH Sessions Currently Active: ..... 0  
Max SSH Sessions Allowed: ..... 5  
SSH Timeout: ..... 5

**Telnetd:**

(FS5CX420F1087012) # show mgmt-ip telnetd

Remote Connection Login Timeout (minutes)..... 5  
Maximum Number of Remote Connection Sessions... 5  
Allow New Telnet Sessions..... Yes

**Stats:**

# show mgmt-ip inband stats

Total Packets Received ..... 20000  
Total Packets Transmitted ..... 18000  
Total Received Packets Discarded ..... 0  
Total Transmit Packets Discarded ..... 0  
Broadcast Packets Received..... 500  
Broadcast Packets Transmitted..... 100

## 3.2.48 *show monitor*

### **Syntax**

**show monitor**

### **Purpose**

To display port mirror settings.

### **Options & Parameters**

This command has no options or parameters.

### **Example**

(FS5CX420F1087012) # show monitor

Monitor Port	Source Port(Mode)
1/11	1/2(rx), 1/5(tx), 1/6(rx), 1/7(both)
1/12	1/1(rx)

## 3.2.49 *show phy-modules*

### **Syntax**

`show phy-modules < summary | inventory >`

### **Purpose**

To display an overview of the status of SFP+ modules inserted into the line cards ports.

### **Options & Parameters**

<b>summary</b>	Displays a summary report of SFP modules.
<b>inventory</b>	Displays a detailed inventory of SFP modules.

### **Examples**

#### **Summary:**

```
>show phy-modules summary
Monitoring Interval 10
Syslog Reporting Enabled
+ inserted, - empty, A alarm, W warning, E error
      Port
1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24
-----
-----E+-----A A A A A A - + - - +
```

#### **Inventory:**

```
> show phy-modules inventory
Port Status DMI Type Manufacturer Part Number Rev Serial Number
-----
1/1 Empty
1/2 Empty
1/3 Empty
1/4 Empty
1/5 Empty
1/6 Error
1/7 Inserted Y 10G Base-SR FINISAR CORP. FTLX8511D3 00Bh KCB02QB
1/8 Empty
1/9 Empty
1/10 Empty
1/11 Empty
1/12 Empty
```

1/13 Empty

1/14 \*Alarm Y 10G Base-LR FINISAR CORP. FTLX1471D3BCL A A8701PD

1/15 \*Alarm Y 10G Base-SR FINISAR CORP. FTLX8571D3BCL A UE7012D

1/16 \*Alarm Y 10G Base-SR FINISAR CORP. FTLX8571D3BCL A UE7025G

1/17 \*Alarm Y 10G Base-SR FINISAR CORP. FTLX8572D3BCL A UDK00SK

1/18 \*Alarm Y 10G Base-SR FINISAR CORP. FTLX8572D3BCL A UDL03DV

1/19 \*Alarm Y 10G Base-SR FINISAR CORP. FTLX8572D3BCL A UDK050K

1/20 Empty

1/21 Inserted N SFP+ Pasive Molex Inc. 74752-1101 820030089

1/22 Empty

1/23 Empty

1/24 Inserted Y 10G Base-SR PICOLIGHT INC PLRXXL-SC-S43-C1 A0Bh C736XZ00V

## 3.2.50 *show port*

### Syntax

```
show port { <slot/port> phy-module [status | limits | details] | rate-limit | stats [summary] |
vlan ] | all }
```

### Purpose

To display port mode, status and settings for all ports or for a specified port.

### Options & Parameters

<b>&lt;slot/port&gt;</b>	Specifies a port for which to display information.
<b>phy-module</b>	Displays status of SFP+ modules inserted into the specified port.
<b>rate-limit</b>	Displays rate-limit parameters for the specified port.
<b>stats</b>	Displays detailed Ethernet statistics for the specified port.
<b>vlan</b>	Displays VLAN configuration for the specified port.
<b>all</b>	Displays summary information for all ports.

### Examples

**all:**

```
(FS5CX420F1087012) # show port all
```

```

Admin Physical Physical Link Link LACP Flow
Port Type Mode Mode Status Status Trap Mode Mode
-----
1/1 Enable 10G Full 10G Full Up Enable Enable Disable
1/2 Enable 10G Full 10G Full Up Enable Enable Disable
1/3 Enable 10G Full 10G Full Up Enable Enable Disable
1/4 Enable 10G Full 10G Full Up Enable Enable Disable
1/5 Enable 10G Full Down Enable Enable Disable
1/6 Enable 10G Full Down Enable Enable Disable
1/7 Enable 10G Full Down Enable Enable Disable
1/8 Enable 10G Full Down Enable Enable Disable
1/9 Enable 10G Full Down Enable Enable Disable
1/10 Enable 10G Full Down Enable Enable Disable
1/11 Enable 10G Full Down Enable Enable Disable
1/12 Enable 10G Full Down Enable Enable Disable
1/13 LAG Mb Enable 10G Full Down Enable Enable Disable

```

1/14	LAG Mb Enable	10G Full		Down	Enable	Enable	Disable
1/15	LAG Mb Enable	10G Full		Down	Enable	Enable	Disable
1/16	LAG Mb Enable	10G Full		Down	Enable	Enable	Disable
1/17	LAG Mb Enable	10G Full		Down	Enable	Enable	Disable
1/18	LAG Mb Enable	10G Full		Down	Enable	Enable	Disable
1/19	LAG Mb Enable	10G Full	10G Full	Up	Enable	Disable	Disable
1/20	LAG Mb Enable	10G Full	10G Full	Up	Enable	Disable	Disable
1/21	LAG Mb Enable	10G Full	10G Full	Up	Enable	Disable	Disable
1/22	LAG Mb Enable	10G Full	10G Full	Up	Enable	Disable	Disable
1/23	LAG Mb Enable	10G Full	10G Full	Up	Enable	Disable	Disable
1/24	LAG Mb Enable	10G Full	10G Full	Up	Enable	Disable	Disable
LAG 1	Enable			Down	Enable	N/A	N/A
LAG 2	Enable			Up	Enable	N/A	N/A

**flow control:**

(FS5CX420F1087012) # show port 1/1 flow-control

802.3x Flow Control Mode..... Disable

**rate-limit:**

(FS5CX420F1087012) # show port 1/1 rate-limit

Rate Limit Priority : None

**stats:**

(FS5CX420F1087012) # show port 1/1 stats

Total Packets Received (Octets)..... 0  
Packets Received > 1522 Octets..... 0  
Packets RX and TX 64 Octets..... 0  
Packets RX and TX 65-127 Octets..... 0  
Packets RX and TX 128-255 Octets..... 0  
Packets RX and TX 256-511 Octets..... 0  
Packets RX and TX 512-1023 Octets..... 0  
Packets RX and TX 1024-1518 Octets..... 0  
Packets RX and TX 1519-1522 Octets..... 0  
Packets RX and TX 1523-2047 Octets..... 0

Packets RX and TX 2048-4095 Octets..... 0  
Packets RX and TX 4096-9216 Octets..... 0

Total Packets Received Without Errors..... 0  
Unicast Packets Received..... 0  
Multicast Packets Received..... 0  
Broadcast Packets Received..... 0

Total Packets Received with MAC Errors..... 0  
Jabbers Received..... 0  
Fragments/Undersize Received..... 0  
Alignment Errors..... 0  
FCS Errors..... 0  
Overruns..... 0

Total Received Packets Not Forwarded..... 0  
Local Traffic Frames..... 0  
802.3x Pause Frames Received..... 0  
Unacceptable Frame Type..... 0  
Multicast Tree Viable Discards..... 0  
Reserved Address Discards..... 0  
Broadcast Storm Recovery..... 0  
CFI Discards..... 0  
Upstream Threshold..... 0

Total Packets Transmitted (Octets)..... 0  
Max Frame Size..... 1518

Total Packets Transmitted Successfully..... 0  
Unicast Packets Transmitted..... 0  
Multicast Packets Transmitted..... 0  
Broadcast Packets Transmitted..... 0

Total Transmit Errors..... 0  
FCS Errors..... 0  
Tx Oversized..... 0  
Underrun Errors..... 0

```

Total Transmit Packets Discarded..... 0
Single Collision Frames..... 0
Multiple Collision Frames..... 0
Excessive Collision Frames..... 0
Port Membership Discards..... 0

802.3x Pause Frames Transmitted..... 0
GVRP PDUs received..... 0
GVRP PDUs Transmitted..... 0
GVRP Failed Registrations..... 0
GMRP PDUs Received..... 0
GMRP PDUs Transmitted..... 0
GMRP Failed Registrations..... 0

STP BPDUs Transmitted..... 0
STP BPDUs Received..... 0
RSTP BPDUs Transmitted..... 0
RSTP BPDUs Received..... 0
MSTP BPDUs Transmitted..... 0
MSTP BPDUs Received..... 0

EAPOL Frames Transmitted..... 0
EAPOL Start Frames Received..... 0

Time Since Counters Last Cleared..... 0 day 0 hr 59 min 0 sec

```

**stats:**

(FS5CX420F1087012) # show port 1/12 vlan

Port	Acceptable	Default		
Port	VLAN ID	Frame Types	GVRP	Priority
1/12	1	Admit All	Enable	0

**phy-modules limits:**

```

> show port 1/3 phy-modules limits
Alarm Warning
Metric High Low High Low Units
-----
Temperature 78.0000 243.0000 73.0000 248.0000 Celsius
Voltage 3.7000 2.9000 3.6000 3.0000 Volts
Laser Bias 1.1800 0.4000 1.0800 0.5000 mAmps
TX Power -0.7998 -5.9998 -1.8000 -5.0004 dBm
RX Power 0.0000 -20.0000 -1.0002 -18.0134 dBm

```

**phy-modules status:**

```

> show port 1/3 phy-modules status
Alarm Warning
Metric High Low High Low Reading Units
-----
Temperature No No No No 35.3594 Celsius
Voltage No No No No 3.2348 Volts
Laser Bias No No No No 0.8040 mAmps
TX Power No No No No -2.4949 dBm
RX Power No Yes No Yes -33.9794 dBm
Module State Supported Reading
-----
TX Disable Yes False
TX Fault Yes False
RX Loss Yes True
TX Power
Level 1 Yes True (1.0 Watts)
Level 2 No False (1.5 Watts)

```

A possible output of the command is as follows:

```

> show port 1/4 phy-modules details
Description Setting
-----
Identifier XFP
Connector LC
Transceiver 10G Base-SR
Encoding NZR,SONET Scram,8B10B,64B/66B
Length (e50um mm) 300 meter

```

Length (50um mm) 82 meter  
Length (62.5um mm) 26 meter  
Vendor name FINISAR CORP.  
Vendor OUI 0x009065  
Vendor PN FTLX8511D3  
Vendor rev 00Bh  
Vendor SN KCB039J  
Manufacture Date 09/17/2007

## 3.2.51 *show port latency-flow-control*

### **Syntax**

```
show port { <slot/port> [ latency-flow-control {limit <int> resolution <low | medium | high>
[priority<n> disable | enable, limiting <xx%>} ] }
```

### **Purpose**

To display port mode, status and settings for all ports or for a specified port.

### **Options & Parameters**

<code>&lt;slot/port&gt;</code>	Specifies a port for which to display information.
<code>latency-flow-control</code>	Displays flow-control status for the specified port.
<code>limit &lt;int&gt;</code>	
<code>resolution &lt;low   medium   high&gt;</code>	Specifies a resolution level.
<code>priority&lt;n&gt; disable   enable, limiting &lt;xx%&gt;</code>	

### **Examples**

## 3.2.52 *show radius*

### Syntax

**show radius** [ **accounting** [ **statistics** <ip\_address> ] | **servers** | **statistics** [ip\_address] ]

### Purpose

To display Remote Authentication Dial In User Service (RADIUS) configuration information for the switch or for configured RADIUS servers.

### Defaults

Shows summary RADIUS information for the switch.

### Options & Parameters

<b>accounting</b> [ <b>statistics</b> <ip_address> ]	Displays the configured RADIUS accounting mode and server. The <b>statistics</b> option shows statistics for the configured RADIUS accounting server.
<b>servers</b>	Displays overview information about the configured RADIUS server(s).
<b>statistics</b> [ip_address]	Displays statistics for the configured RADIUS server.

### Examples

#### default:

```
(FS5CX420F1087012) # show radius
```

```
Current Server IP Address..... N/A
Number of Configured Servers..... 0
Number of Retransmits..... 4
Timeout Duration..... 5
RADIUS Accounting Mode..... Disable
```

#### accounting:

```
(FS5CX420F1087012) # show radius accounting
```

```
RADIUS Accounting Mode..... Disable
IP Address.....
Port..... N/A
Secret Configured..... N/A
```

#### servers:

```
(FS5CX420F1087012) # show radius servers
```

No RADIUS servers configured.

**statistics:**

(FS5CX420F1087012) # show radius statistics 192.168.1.203

Server IP Address.....	192.168.1.203
Round Trip Time.....	0.00
Access Requests.....	0
Access Retransmissions.....	0
Access Accepts.....	0
Access Rejects.....	0
Access Challenges.....	0
Malformed Access Responses.....	0
Bad Authenticators.....	0
Pending Requests.....	0
Timeouts.....	0
Unknown Types.....	0
Packets Dropped.....	0

## 3.2.53 *show running-config*

### **Syntax**

**show running-config [all]**

### **Purpose**

To display running configuration information for the switch.

### **Defaults**

Displays the elements of the running configuration that differ from the default settings.

### **Options & Parameters**

<b>all</b>	Displays the complete details of the configuration currently running on the switch.
------------	---

### **Example**

```
(FS5CX420F1087012) # show running-config
```

```
!Current Configuration:
```

```
!
```

```
!System Description "FortiSwitch Ethernet Fabric Switch (FortiSwitch-500)"
```

```
!System Description v4.0,build0202,091015
```

```
!
```

```
no paging
```

```
configure
```

```
prompt "FortiSwitch-500-102-L2"
```

```
mgmt-ip telnetd timeout 160
```

```
mgmt-ip service-port ip 172.18.22.102 255.255.252.0 172.18.20.1
```

```
vlan
```

```
exit
```

```
logging host 172.18.22.9 port 514 debug
```

```
logging syslog
```

```
snmp-trap "public" 172.18.22.9
```

```
users password admin
```

```
bm93Zm1=
```

```
!Required for passwd
```

```
!Required for passwd
ipfix collector 172.18.22.9 port 2055 all
serial timeout 160
spanning-tree configuration name "FortiSwitch"
snmpd community "public"
snmpd community mode "public"
no fabric-control spine mode
fabric-control spine svlan 6
fabric-control svlan-id 1001 1024
```

```
port 1/1
no spanning-tree port-mode
mtu 10232
exit
```

```
port 1/2
no spanning-tree port-mode
mtu 10232
exit
```

```
[etc.]
```

## 3.2.54 *show serial*

### **Syntax**

`show serial`

### **Purpose**

To display EIA-232 parameters and serial port inactivity timeout.

### **Options & Parameters**

This command has no options or parameters.

### **Example**

(FS5CX420F1087012) #show serial

```
Serial Port Login Timeout (minutes)..... 5
Baud Rate (bps)..... 115200
Character Size (bits)..... 8
Flow Control..... Disable
Stop Bits..... 1
Parity..... none
```

## 3.2.55 *show snmpd*

### **Syntax**

**show snmpd { snmp-community | trap-flags }**

### **Purpose**

To display Simple Network Management Protocol (SNMP) community and trap flag details.

### **Options & Parameters**

<b>snmp-community</b>	Displays SNMP community entries.
<b>trap-flags</b>	Displays the trap flag settings of the switch. An “enable” setting causes the switch to generate the associated trap.

### **Examples**

#### **snmp-community:**

```
(FS5CX420F1087012) # show snmpd snmp-community
```

```
SNMP Community Name Client IP Address Client IP Mask Access Mode Status
```

```
-----  
bigmuddy      0.0.0.0      0.0.0.0      Read Only Enable  
tula          0.0.0.0      0.0.0.0      Read/Write Enable
```

#### **trap-flags:**

```
(FS5CX420F1087012) # show snmpd trap-flags
```

```
Authentication Flag..... Enable  
Link Up/Down Flag..... Enable  
Multiple Users Flag..... Enable  
Spanning Tree Flag..... Enable  
Broadcast Storm Flag..... Enable
```

## 3.2.56 *show snmp-trap*

### **Syntax**

**show snmp-trap**

### **Purpose**

To display Simple Network Management Protocol (SNMP) trap entries.

### **Options & Parameters**

This command has no options or parameters.

### **Example**

```
(FS5CX420F1087012) # show snmp-trap
```

```
SNMP Trap Status: Enabled
```

SNMP Trap Name	IP Address	SNMP Version	Status
gomer	192.168.1.206	snmpv2	Enable
gomer	192.168.2.205	snmpv2	Enable
pyle	192.168.1.206	snmpv2	Enable
pyle	192.168.2.205	snmpv2	Enable

## 3.2.57 *show sntp*

### **Syntax**

**show sntp [ client | server ]**

### **Purpose**

To display Simple Network Time Protocol (SNTP) settings.

### **Defaults**

Displays SNTP last SNTP update time and other status details.

### **Options & Parameters**

<b>client</b>	Displays SNTP client settings.
<b>server</b>	Displays SNTP server settings and lists configured servers.

### **Examples**

#### **default:**

```
(FS5CX420F1087012) # show sntp
```

```
Last Update Time:      Jan 1 00:00:00 1970
Last Unicast Attempt Time:  Jan 1 00:00:00 1970
Last Attempt Status:    Other
```

```
Broadcast Count:      0
```

#### **client:**

```
(FS5CX420F1087012) # show sntp client
```

```
Client Supported Modes:  unicast broadcast
SNTP Version:           4
Port:                   123
Client Mode:            unicast
Unicast Poll Interval:  6
Poll Timeout (seconds): 5
Poll Retry:             1
```

#### **server:**

```
(FS5CX420F1087012) # show sntp server
```

```
Server IP Address:      172.18.0.8
```

Server Type: ipv4  
Server Stratum: 2  
Server Reference Id: NTP Srv: 209.132.176.4  
Server Mode: Server  
Server Maximum Entries: 3  
Server Current Entries: 2

#### SNTP Servers

-----

IP Address: 172.18.0.8  
Address Type: IPV4  
Priority: 1  
Version: 4  
Port: 123  
Last Update Time: Dec 2 22:49:37 2008  
Last Attempt Time: Dec 1 23:34:39 2008  
Last Update Status: Success  
Total Unicast Requests: 1  
Failed Unicast Requests: 0

IP Address: 69.25.96.13  
Address Type: IPV4  
Priority: 1  
Version: 4  
Port: 123  
Last Attempt Time: Jan 1 00:00:00 1970  
Last Update Status: Other  
Total Unicast Requests: 0  
Failed Unicast Requests: 0

## 3.2.58 *show spanning-tree*

### Syntax

```
show spanning-tree [ brief | lag <lag_ID> | mst { summary | { <0-4094> { detailed | lag {  
<lag_ID> { detailed | summary } | all summary } | port { all summary | <slot/port> { detailed |  
summary } } } } | port <slot/port> | summary | vlan <vlan_ID> ]
```

### Purpose

To display spanning tree information.

### Defaults

Displays Spanning Tree Protocol (STP) settings for the chassis as a whole.

### Options & Parameters

<b>brief</b>	Displays settings for the common and internal spanning tree. (See page 147)
<b>lag</b>	Displays spanning tree information for a specified LAG. (See page 148)
<b>mst</b>	Displays overview information for a specified Multiple Spanning Tree (MST) instance. (See page 149)
<b>mst summary</b>	Displays information for all MST instances. (See page 157)
<b>mst &lt;0-64&gt; detailed</b>	Displays detailed information for a specified MST instance. (See page 151)
<b>mst &lt;0-64&gt; port</b>	Displays spanning tree settings for an MST instance on a per-port basis. (See page 154)
<b>port</b>	Displays spanning tree values on a per-port basis. (See page 158)
<b>summary</b>	Displays spanning tree settings and lists MST instances. (See page 159)
<b>vlan</b>	Displays spanning tree settings for a specified VLAN. (See page 160)

### Notes

Because of the complexity of this command's options, it is broken up here into multiple sections.

**Example**

**default:**

(FS5CX420F1087012) #show spanning-tree

Bridge Priority..... 32768  
Bridge Identifier..... 80:00:00:1A:F6:00:03:DE  
Time Since Topology Change..... 0 day 0 hr 14 min 39 sec  
Topology Change Count..... 16  
Topology Change in progress..... FALSE  
Designated Root..... 80:00:00:1A:F6:00:03:D4  
Root Path Cost..... 0  
Root Port Identifier..... 80:13  
Bridge Max Age..... 20  
Bridge Max Hops..... 20  
Bridge Forwarding Delay..... 15  
Hello Time..... 2  
Bridge Hold Time..... 3  
CST Regional Root..... 80:00:00:1A:F6:00:03:D4  
Regional Root Path Cost..... 2000

Associated FIDs	Associated VLANs
-----	-----
1	1
10	10
20	20
1000	1000
2000	2000

## 3.2.59 *show spanning-tree brief*

### **Syntax**

**show spanning-tree brief**

### **Purpose**

To display settings for the common and internal spanning tree.

### **Options & Parameters**

This command has no options or parameters.

### **Example**

```
(FS5CX420F1087012) #show spanning-tree brief
Bridge Priority..... 32768
Bridge Identifier..... 80:00:00:15:ED:00:02:00
Bridge Max Age..... 20
Bridge Max Hops..... 20
Bridge Hello Time..... 2
Bridge Forward Delay..... 15
Bridge Hold Time..... 3
```

## 3.2.60 *show spanning-tree lag*

### **Syntax**

**show spanning-tree lag** <lag\_ID>

### **Purpose**

To display spanning tree settings for a LAG.

### **Options & Parameters**

<lag_ID>	Specifies a LAG for which to display information.
----------	---

### **Example**

```
(FS5CX420F1087012) # show spanning-tree lag 1
```

```
Hello Time..... 2
Port Mode..... Enabled
Port Vscale Mode..... Edge
Port Up Time Since Counters Last Cleared..... 0 day 10 hr 11 min 47 sec
STP BPDUs Transmitted..... 0
STP BPDUs Received..... 0
RSTP BPDUs Transmitted..... 0
RSTP BPDUs Received..... 0
MSTP BPDUs Transmitted..... 43
MSTP BPDUs Received..... 61
```

## 3.2.61 *show spanning-tree mst*

### Syntax

```
show spanning-tree mst { summary | { <0-64> [ detailed | lag { all summary | <lag_ID> {
detailed | summary } } ] | port { all summary | <slot/port> { detailed | summary } } } }
```

### Default

Shows overview information for the specified MST instance.

### Purpose

To display the settings for a multiple spanning tree (MST) instance, or for one or all of the switch ports within that instance.

### Options & Parameters

<b>summary</b>	When entered without specifying an MST instance, <b>summary</b> displays summary information for all MST IDs. (See page 157)
<b>&lt;0-64&gt;</b>	Specifies a multiple spanning tree (MST) instance. Enter an MST identifier to show information for a specific MST instance by selecting the detailed option, or for a switch port or LAG within that instance by specifying the port or LAG.
<b>&lt;0-64&gt; detailed</b>	Displays detailed information for the specified MST instance. (See page 151)
<b>&lt;0-64&gt; lag</b>	Displays LAG-specific information; requires additional options. (See page 152)
<b>&lt;0-64&gt; port</b>	Displays port-specific information; requires additional options. (See page 154)

### Example

See sections below for additional examples.

#### default:

```
(FS5CX420F1087012) # show spanning-tree mst 0
```

```
Designated Root..... 80:00:00:1A:F6:00:09:3E
```

```
Root Path Cost..... 0
```

```
Designated Bridge..... 80:00:00:1A:F6:00:09:3E
```

```

          STP          STP          Port
Port  Mode  Type    State    Role
-----
1/1   Disabled Manual forwarding Disabled
```

1/2	Disabled	Manual forwarding	Disabled
1/3	Disabled	Manual forwarding	Disabled
1/4	Disabled	Manual forwarding	Disabled
1/13	Enabled	LAG Mb	Manual forwarding Disabled
1/14	Enabled	LAG Mb	Manual forwarding Disabled
1/15	Enabled	LAG Mb	Manual forwarding Disabled
1/16	Enabled	LAG Mb	Manual forwarding Disabled
1/17	Enabled	LAG Mb	Manual forwarding Disabled
1/18	Enabled	LAG Mb	Manual forwarding Disabled
1/19	Enabled	LAG Mb	Manual forwarding Disabled
1/20	Enabled	LAG Mb	Manual forwarding Disabled
1/21	Enabled	LAG Mb	Manual forwarding Disabled
1/22	Enabled	LAG Mb	Manual forwarding Disabled
1/23	Enabled	LAG Mb	Manual forwarding Disabled
1/24	Enabled	LAG Mb	Manual forwarding Disabled
LAG 1	Enabled	Forwarding	Root
LAG 2	Enabled	Forwarding	Designated

## 3.2.62 *show spanning-tree mst detailed*

### **Syntax**

**show spanning-tree mst <0-64> detailed**

### **Purpose**

To display information for a specified multiple spanning tree (MST) instance.

### **Options & Parameters**

<0-64>	Specifies a multiple spanning tree (MST) instance.
--------	--

### **Example**

```
(FS5CX420F1087012) # show spanning-tree mst 1 detailed
```

```
MST Instance ID..... 1
MST Bridge Priority..... 32768
MST Bridge Identifier..... 80:01:00:1A:F6:00:03:61
Time Since Topology Change..... 0 day 0 hr 47 min 14 sec
Topology Change Count..... 2
Topology Change in progress..... FALSE
Designated Root..... 80:01:00:1A:F6:00:03:61
Root Path Cost..... 0
Root Port Identifier..... 00:00
No FIDs or VLANs associated with this instance.
```

## 3.2.63 *show spanning-tree mst lag*

### Syntax

```
show spanning-tree mst <0-64> lag { all summary | <lag_ID> { detailed | summary } }
```

### Purpose

To display the settings for one or all of the LAGs within a specified multiple spanning tree (MST) instance.

### Options & Parameters

<0-64>	Specifies a multiple spanning tree (MST) instance.
<b>all summary</b>	Displays LAG settings for all LAGs in the specified MST instance.
<lag_ID> <b>detailed</b>	Displays detailed LAG settings for the specified LAG in the specified MST instance.
< lag_ID> <b>summary</b>	Displays summary LAG settings for the specified LAG in the specified MST instance.

### Examples

#### all summary:

```
(FS5CX420F1087012) # show spanning-tree mst 1 lag all summary
```

	STP	STP	Port	
Port	Mode	Type	State	Role
LAG 1	Enabled	Discarding	Designated	
LAG 2	Enabled	Forwarding	Root	
LAG 3	Enabled	Discarding	Designated	

#### detailed:

```
(FS5CX420F1087012) # show spanning-tree mst 1 lag 1 detailed
```

```
MST Instance ID..... 1
Port Identifier..... 80:92
Port Priority..... 128
Port Forwarding State..... Discarding
Port Role..... Alternate
Auto-calculate Port Path Cost..... Enabled
```

Port Path Cost..... 10000  
Designated Root..... 00:01:00:1A:F6:00:03:D4  
Designated Port Cost..... 0  
Designated Bridge..... 00:01:00:1A:F6:00:03:D4  
Designated Port Identifier..... 00:92

**summary:**

(FS5CX420F1087012) # show spanning-tree mst 1 lag 1 summary

MST Instance ID..... 1

	STP	STP	Port	
Port	Mode	Type	State	Role
-----				
LAG 1	Enabled		Discarding	Alternate

## 3.2.64 *show spanning-tree mst port*

### Syntax

```
show spanning-tree mst <0-64> port { all summary | <slot/port> { detailed | summary } }
```

### Purpose

To display the settings for one or all of the switch ports within a specified multiple spanning tree (MST) instance.

### Options & Parameters

<code>&lt;0-64&gt;</code>	Specifies a multiple spanning tree (MST) instance.
<code>all summary</code>	Displays port settings for all ports in the specified MST instance.
<code>&lt;slot/port&gt; detailed</code>	Displays detailed port settings for the specified port in the specified MST instance.
<code>&lt;slot/port&gt; summary</code>	Displays summary port settings for the specified port in the specified MST instance.

### Examples

`all summary:`

```
(FS5CX420F1087012) # show spanning-tree mst 1 port all summary
```

Port	STP Mode	STP Type	STP State	Port Role
1/1	Disabled	Manual forwarding	Disabled	Disabled
1/2	Disabled	Manual forwarding	Disabled	Disabled
1/3	Disabled	Manual forwarding	Disabled	Disabled
1/4	Disabled	Manual forwarding	Disabled	Disabled
1/5	Disabled	Disabled	Disabled	Disabled
1/6	Disabled	Disabled	Disabled	Disabled
1/7	Disabled	Disabled	Disabled	Disabled
1/8	Disabled	Disabled	Disabled	Disabled
1/9	Disabled	Disabled	Disabled	Disabled
1/10	Disabled	Disabled	Disabled	Disabled
1/11	Disabled	Disabled	Disabled	Disabled
1/12	Disabled	Disabled	Disabled	Disabled
1/13	Enabled	LAG Mb	Manual forwarding	Disabled

1/14	Enabled	LAG Mb	Manual forwarding	Disabled
1/15	Enabled	LAG Mb	Manual forwarding	Disabled
1/16	Enabled	LAG Mb	Manual forwarding	Disabled
1/17	Enabled	LAG Mb	Manual forwarding	Disabled
1/18	Enabled	LAG Mb	Manual forwarding	Disabled
1/19	Enabled	LAG Mb	Manual forwarding	Disabled
1/20	Enabled	LAG Mb	Manual forwarding	Disabled
1/21	Enabled	LAG Mb	Manual forwarding	Disabled
1/22	Enabled	LAG Mb	Manual forwarding	Disabled
1/23	Enabled	LAG Mb	Manual forwarding	Disabled
1/24	Enabled	LAG Mb	Manual forwarding	Disabled
LAG 1	Enabled		Forwarding	Root
LAG 2	Enabled		Forwarding	Designated

**detailed:**

(FS5CX420F1087012) # show spanning-tree mst 1 port 1/2 detailed

```

MST Instance ID..... 1
Port Identifier..... 80:26
Port Priority..... 128
Port Forwarding State..... Disabled
Port Role..... Disabled
Auto-calculate Port Path Cost..... Enabled
Port Path Cost..... 0
Designated Root..... 80:01:00:1A:F6:00:03:61
Designated Port Cost..... 0
Designated Bridge..... 80:01:00:1A:F6:00:03:61
Designated Port Identifier..... 00:00

```

**summary:**

(FS5CX420F1087012) # show spanning-tree mst 1 port 1/2 summary

MST Instance ID..... 1

	STP		STP	Port
Port	Mode	Type	State	Role
-----				
1/2	Enabled	PC Mbr	Disabled	Disabled

## 3.2.65 *show spanning-tree mst summary*

### **Syntax**

**show spanning-tree mst summary**

### **Purpose**

To display summary information for all multiple spanning tree (MST) instances.

### **Options & Parameters**

This command has no additional options or parameters.

### **Example**

```
(FS5CX420F1087012) # show spanning-tree mst summary
```

```
MST Instance ID..... 1  
No FIDs or VLANs associated with this instance.
```

```
MST Instance ID..... 2  
No FIDs or VLANs associated with this instance.
```

```
MST Instance ID..... 3  
No FIDs or VLANs associated with this instance.
```

```
[ . . . ]
```

```
MST Instance ID..... 31  
No FIDs or VLANs associated with this instance.
```

```
MST Instance ID..... 32  
No FIDs or VLANs associated with this instance.
```

## 3.2.66 *show spanning-tree port*

### **Syntax**

**show spanning-tree port** <slot/port>

### **Purpose**

To display spanning tree values on a per port basis.

### **Options & Parameters**

<slot/port>	Specifies the port for which to show spanning tree values.
-------------	--

### **Example**

```
(FS5CX420F1087012) # show spanning-tree port 1/1
```

```
Hello Time..... 2
Port Mode..... Enabled
Port Up Time Since Counters Last Cleared..... 0 day 1 hr 34 min 30 sec
STP BPDUs Transmitted..... 0
STP BPDUs Received..... 0
RSTP BPDUs Transmitted..... 0
RSTP BPDUs Received..... 0
MSTP BPDUs Transmitted..... 2
MSTP BPDUs Received..... 2829
```

## 3.2.67 *show spanning-tree summary*

### **Syntax**

**show spanning-tree summary**

### **Purpose**

To display summary of spanning tree settings.

### **Options & Parameters**

This command has no additional options or parameters.

### **Example**

```
(FS5CX420F1087012) # show spanning-tree summary
```

```
Spanning Tree Adminmode..... Enabled
Spanning Tree Version..... IEEE 802.1s
Configuration Name..... ****
Configuration Revision Level..... ****
Configuration Digest Key..... ****
Configuration Format Selector..... 0
MST Instances..... 1,2,3,4,5,6,7,8
                    ,9,10,11,12,13,14,15,16
                    ,17,18,19,20,21,22,23,24
                    ,25,26,27,28,29,30,31,32
                    ,33,34,35,36,37,38,39,40
                    ,41,42,43,44,45,46,47,48
                    ,49,50,51,52,53,54,55,56
                    ,57,58,59,60,61,62,63,64
```

## 3.2.68 *show spanning-tree vlan*

### **Syntax**

**show spanning-tree vlan** <1-4094>

### **Purpose**

To display the type of spanning-tree associated with a specified VLAN.

### **Options & Parameters**

<1-4094>	Specifies a valid VLAN identifier.
----------	------------------------------------

### **Example**

```
(FS5CX420F1087012) # show spanning-tree vlan 500
```

```
VLAN Identifier..... 500
```

```
Associated Instance..... CST
```

## 3.2.69 *show startup-config*

### **Syntax**

**show startup-config**

### **Purpose**

To display the configuration details saved in the startup configuration file.

### **Options & Parameters**

This command has no options or parameters.

### **Example**

```
(FS5CX420F1087012) # show startup-config
```

```
!Current Configuration:
```

```
!
```

```
!System Description "FortiSwitch Ethernet Fabric Switch (FortiSwitch-500)"
```

```
!System Description v4.0,build0202,091015
```

```
!
```

```
no paging
```

```
configure
```

```
prompt "FortiSwitch-500-102-L2"
```

```
mgmt-ip telnetd timeout 160
```

```
mgmt-ip service-port ip 172.18.22.102 255.255.252.0 172.18.20.1
```

```
vlan
```

```
exit
```

```
logging host 172.18.22.9 port 514 debug
```

```
logging syslog
```

```
snmp-trap "public" 172.18.22.9
```

```
users password admin
```

```
bm93Zm1=
```

```
!Required for passwd
```

```
!Required for passwd
```

```
ipfix collector 172.18.22.9 port 2055 all
```

```
serial timeout 160
```

```
[etc.]
```

## 3.2.70 *show system*

### **Syntax**

**show system** { **cardtypes-supported** | **io-card** [1-6] | **fan** [1-4] | **info** | | **mibs-supported** | **power-supply** [1-2] | **status** | **version** }

### **Purpose**

To display chassis components and system information.

### **Options & Parameters**

<b>cardtypes-supported</b>	Displays the card type(s) supported by the system. (See page 50)
<b>io-card</b> [1-6]	Displays the status and details of all IO cards or of a specified individual IO card. (See page 51)
<b>fan</b> [1-7]	Displays the status of all the fan units or a specified fan unit. (See page 53)
<b>info</b>	Displays overall chassis information. (See page 54)
<b>mibs-supported</b>	Displays the list of supported Management Information Bases (MIBs). (See page 55)
<b>power-supply</b> [1-2]	Displays the state and status of all power supply units or of a specified power supply unit. (See page 55)
<b>status</b>	Displays the status of the components in the chassis. (See page 58)
<b>version</b> [detailed]	Displays the version details of the chassis as a whole. (See page 59)

### **Examples**

See below for examples.

## 3.2.71 *show system cardtypes-supported*

### **Syntax**

**show system cardtypes-supported**

### **Purpose**

To display the card type(s) supported by the system.

### **Options & Parameters**

This command has no additional options or parameters.

### **Example**

(FS5CX420F1087012) > show system cardtypes-supported

```
CID      Card Description
-----
 8  10GE 24-Port Card
10  Power CX4 10GE 4-Port Card
11  SFP+ 10GE 4-Port Card
```

## 3.2.72 *show system io-card*

### **Syntax**

**show system io-card** [1-6]

### **Purpose**

To display the status and details of all IO cards or of a specified individual IO card.

### **Defaults**

Shows status and basic information for all IO cards.

### **Options & Parameters**

[1-6]	Specifies an individual IO card. If none is specified, command shows status and basic information for all IO cards.
-------	---

### **Example**

#### **Default:**

```
(FS5CX420F1087012) > show system io-card
```

Slot	Status	Power State	Order Number / Card Description	Powered Up
1	Operational	Enable	WV-10G4-SFP+ SFP+ 10GE 4-Port Card	Yes
2	Operational	Enable	WV-10G4-SFP+ SFP+ 10GE 4-Port Card	Yes
3	Operational	Enable	WV-10G4-SFP+ SFP+ 10GE 4-Port Card	Yes
4	Operational	Enable	WV-10G4-SFP+ SFP+ 10GE 4-Port Card	Yes
5	Operational	Enable	WV-10G4-SFP+ SFP+ 10GE 4-Port Card	Yes
6	Operational	Enable	WV-10G4-SFP+ SFP+ 10GE 4-Port Card	Yes

#### **For a specified io card:**

```
(FS5CX420F1087012) > show system io-card 3
```

```
Slot..... 3  
Slot Status..... Operational  
Power State..... Enable
```

Inserted Card:

Order Number..... WV-10G4-SFP+

Card Description..... SFP+ 10GE 4-Port Card

Manufacturer..... Fortinet

Slot Revision..... 2

Chassis Serial Number..... 0860001

## 3.2.73 *show system fan*

### **Syntax**

**show system fan** [1-7]

### **Purpose**

To display the status of all the fan units or a specified fan unit.

### **Defaults**

Shows status of all fan units.

### **Options & Parameters**

[1-7]	Specifies an individual fan unit. If none is specified, command shows status of all fan units.
-------	--

### **Notes**

To display fan speed, specify an individual fan unit.

### **Examples**

#### **default:**

```
(FS5CX420F1087012) > show system fan
```

```
Air Flow Direction
```

```
Ports to Fans
```

```
Fan Unit    State
```

```
Fan Unit 1 - Operational
```

```
Fan Unit 2 - Operational
```

```
Fan Unit 3 - Operational
```

```
Fan Unit 4 - Operational
```

```
Fan Unit 5 - Operational
```

```
Fan Unit 6 - Operational
```

```
Fan Unit 7 - Operational
```

#### **for a specific fan:**

```
(FS5CX420F1087012) > show system fan 1
```

```
Fan Unit 1:  Operational
```

```
Controller:  3
```

```
Speed:       11760 RPM 11040 RPM
```

## 3.2.74 *show system info*

### **Syntax**

**show system info**

### **Purpose**

To display overall chassis information.

### **Options & Parameters**

This command has no additional options or parameters.

### **Example**

(FS5CX420F1087012) > show system info

```
System Description..... FortiSwitch Ethernet Fabric Switch
System Name.....
System Location.....
System Contact.....
System Object ID..... 1.3.6.1.4.1.26390.5
System Up Time..... 1 days 8 hrs 48 mins 2 secs
System Time..... Fri Apr 10 23:04:03 2009
```

## 3.2.75 *show system mibs-supported*

### **Syntax**

**show system mibs-supported**

### **Purpose**

To display the list of supported MIBs.

### **Options & Parameters**

This command has no options or parameters.

### **Example**

(FS5CX420F1087012) > show system mibs-supported

MIBs Supported:

RFC 1907 - SNMPv2-MIB	The MIB module for SNMPv2 entities
RFC 2819 - RMON-MIB	Remote Network Monitoring Management Information Base
WOVEN-REF-MIB	Reference MIB
SNMP-COMMUNITY-MIB	This MIB module defines objects to help support coexistence between SNMPv1, SNMPv2, and SNMPv3.
SNMP-FRAMEWORK-MIB	The SNMP Management Architecture MIB
SNMP-MPD-MIB	The MIB for Message Processing and Dispatching
SNMP-NOTIFICATION-MIB	The Notification MIB Module
SNMP-TARGET-MIB	The Target MIB Module
SNMP-USER-BASED-SM-MIB	The management information definitions for the SNMP User-based Security Model.
SNMP-VIEW-BASED-ACM-MIB	The management information definitions for the View-based Access Control Model for SNMP.
USM-TARGET-TAG-MIB	SNMP Research, Inc.
WOVEN-POWER-ETHERNET-MIB	FortiSwitch Power Ethernet Extensions MIB
POWER-ETHERNET-MIB	Power Ethernet MIB
LAG-MIB	The Link Aggregation module for managing IEEE 802.3ad
RFC 1213 - RFC1213-MIB	Management Information Base for Network Management of TCP/IP-based internets: MIB-II
RFC 1493 - BRIDGE-MIB	Definitions of Managed Objects for Bridges (dot1d)
RFC 2674 - P-BRIDGE-MIB	The Bridge MIB Extension module for managing

Priority and Multicast Filtering, defined by  
IEEE 802.1D-1998.

RFC 2674 - Q-BRIDGE-MIB      The VLAN Bridge MIB module for managing  
Virtual Bridged Local Area Networks

RFC 2737 - ENTITY-MIB      Entity MIB (Version 2)

RFC 2863 - IF-MIB      The Interfaces Group MIB using SMIv2

RFC 3635 - Etherlike-MIB      Definitions of Managed Objects for the  
Ethernet-like Interface Types

FASTPATH-SWITCHING-MIB      FASTPATH Switching - Layer 2  
FASTPATH-INVENTORY-MIB      Unit and Slot configuration.

FASTPATH-PORTSECURITY-PRIVATE-MIB      Port Security MIB.

IEEE8021-PAE-MIB      Port Access Entity module for managing IEEE  
802.1X.

FASTPATH-RADIUS-AUTH-CLIENT-MIB      FastPath Radius MIB

RADIUS-ACC-CLIENT-MIB      RADIUS Accounting Client MIB

RADIUS-AUTH-CLIENT-MIB      RADIUS Authentication Client MIB

TACACS-AUTH-CLIENT-MIB      TACACS+ Authentication Client MIB

FASTPATH-MGMT-SECURITY-MIB      The Private MIB for FastPath Mgmt  
Security

FASTPATH-QOS-MIB      FASTPATH Flex QOS Support

FASTPATH-QOS-ACL-MIB      FASTPATH Flex QOS ACL

## 3.2.76 *show system power-supply*

### **Syntax**

**show system power-supply** [1-2]

### **Purpose**

To display the state and status of all power supply units or of a specified power supply unit.

### **Defaults**

Shows information for all power supply units.

### **Options & Parameters**

[1-2]

Specifies an individual power supply unit. If none is specified, command shows status of all power supply units.

### **Examples**

```
(FS5CX420F1087012) > show system power-supply
```

```
Power Supply Unit    State
Power Supply Unit 1 - Not Present
Power Supply Unit 2 - Operational
```

```
(FS5CX420F1087012) > show system power-supply 2
```

```
Power Supply Unit 2: Operational
Manufacturer: ASTEC
Module: G056
Revision: R03
Serial Number: 0000121
```

## 3.2.77 *show system status*

### **Syntax**

**show system status**

### **Purpose**

To display the status of the components in the chassis.

### **Options & Parameters**

This command has no additional options or parameters.

### **Example**

(FS5CX420F1087012) > show system status

Fan Unit 1: ..... Operational

Fan Unit 2: ..... Operational

Fan Unit 3: ..... Operational

Fan Unit 4: ..... Operational

Fan Unit 5: ..... Operational

Fan Unit 6: ..... Operational

Fan Unit 7: ..... Operational

Power Supply 1: ... Not Present

Power Supply 2: ... Operational

## 3.2.78 *show system version*

### **Syntax**

**show system version [ detailed ]**

### **Purpose**

To display the version details of the chassis as a whole.

### **Default**

Displays basic information for the chassis.

### **Options & Parameters**

<b>detailed</b>	Displays detailed version information for the chassis as a whole.
-----------------	---

### **Example**

#### **default:**

```
(FS5CX420F1087012) > show system version
```

```
Switch: 1
```

```
System Description..... FortiSwitch Ethernet Fabric Switch
Machine Model..... FortiSwitch-500
Chassis Serial Number..... 0855004
Model Part Number..... 800-90003-20
HW Version..... 20-F
Software Order Code..... WV-500-WFOS
Manufacturer..... Fortinet
Burned In MAC Address..... 00:1A:F6:00:0D:7E
Software Release Version..... 2.0.1
```

#### **detailed:**

```
(FS5CX420F1087012) > show system version detailed
```

```
Switch: 1
```

```
System Description..... FortiSwitch Ethernet Fabric Switch
Machine Model..... FortiSwitch-500
Chassis Serial Number..... 0855004
FRU Number..... N/A
Model Part Number..... 800-90003-20
HW Version..... 20-F
```

Software Order Code..... WV-500-WFOS  
Manufacturer..... Fortinet  
Burned In MAC Address..... 00:1A:F6:00:0D:7E  
Additional Packages..... None  
Software Revision..... 5625  
Architecture..... powerpc  
Software Release Version..... v4.0,build0202,091015  
Bootloader (Default)..... DefaultBlock, v2.1, build #26M  
Bootloader (Latest)..... MainBlock v2.1, build #26M (Feb 9 2009 - 17:32:37) \*\*\*  
FortiSwitch-500 \*\*\*

## 3.2.79 *show tacacs*

### **Syntax**

**show tacacs** [*ip-address*]

### **Purpose**

To display statistics for all TACACS+ servers. Use this command in privileged EXEC mode.

### **Options & Parameters**

<i>ip-address</i>	Displays statistics for a single TACACS+ server matching this address
-------------------	---

### **Example**

Global Timeout: 5

Tacacs+ Server : 10.10.50.52/49

Timeout:10

Priority:0

Socket opens:0

Socket closes:0

Socket aborts:0

Socket errors:0

Socket Timeouts:0

Failed Connect Attempts:0

Total Packets Sent:0

Total Packets Recv:0

Expected Replies:0

No current connection

Tacacs+ Server : 10.10.50.51/49

Timeout:Global

Priority:0

Socket opens:0

Socket closes:0

Socket aborts:0

Socket errors:0

Socket Timeouts:0

Failed Connect Attempts:0

Total Packets Sent:0

Total Packets Recv:0

Expected Replies:0  
No current connection

## 3.2.80 *show task*

### **Syntax**

**show task sleep-average**

### **Purpose**

To display the sleep average information for the switch.

### **Options & Parameters**

On the FortiSwitch-500, the **show task** command has a single, required option (**sleep-average**).

### **Example**

```
(FS5CX420F1087012) # show task sleep-average
```

Task ID	Task Name	Number of voluntary context switches
-----	-----	-----
1030	sshd	134238
1029	hapiLinkStatusTask	14686
1028	sshdEvTask	14
1027	sslTask	12

[...]

967	bcmCNTR.0	5573561
966	bcmL2X.0	8001267
964	_interrupt_thread	96745775
963	bcmDPC	1

62 tasks currently active in the system.

## 3.2.81 *show telnet*

### **Syntax**

`show telnet`

### **Purpose**

To display outbound telnet configuration information.

### **Options & Parameters**

This command has no options or parameters.

### **Example**

(FS5CX420F1087012) > show telnet

Outbound Telnet Login Timeout (minutes)..... 5

Maximum Number of Outbound Telnet Sessions..... 5

Allow New Outbound Telnet Sessions..... Yes

## 3.2.82 *show users*

### **Syntax**

**show users [authentication]**

### **Purpose**

To display account and authentication information for system users.

### **Defaults**

Displays general user account information.

### **Options & Parameters**

<b>authentication</b>	Displays all users with assigned authentication login lists and the lists assigned to them.
-----------------------	---

### **Examples**

**default:**

```
(FS5CX420F1087012) # show users
```

```

                SNMPv3   SNMPv3   SNMPv3
User Name  User Access Mode  Access Mode  Authentication  Encryption
-----  -
admin     Read/Write      Read/Write  None           None
guest     Read Only       Read Only   None           None
```

**authentication:**

```
(FS5CX420F1087012) # show users authentication
```

```

                Authentication Login Lists
User      System Login  802.1x
-----  -
admin     defaultList   defaultList
guest     defaultList   defaultList
default   defaultList   defaultList
```

## 3.2.83 *show vlan*

### **Syntax**

**show vlan** { <1-4094> | **brief** }

### **Purpose**

To display information about a specific VLAN or a list of all configured VLANs.

### **Options & Parameters**

<1-4094>	Displays detailed information about the specified VLAN.
<b>brief</b>	Displays all configured VLANs, their names and types.

### **Examples**

#### **specific VLAN:**

```
(FS5CX420F1087012) # show vlan 1
```

```
VLAN ID: 1
```

```
VLAN Name: Default
```

```
VLAN Type: Default
```

```
Interface Current Configured Tagging
```

```
-----
```

1/1	Include	Include	Untagged	Untagged
1/2	Include	Include	Untagged	Untagged
1/3	Include	Include	Untagged	Untagged
1/4	Include	Include	Untagged	Untagged
1/5	Include	Include	Untagged	Untagged
1/6	Include	Include	Untagged	Untagged
1/7	Include	Include	Untagged	Untagged
1/8	Include	Include	Untagged	Untagged
1/9	Include	Include	Untagged	Untagged
1/10	Include	Include	Untagged	Untagged
1/11	Include	Include	Untagged	Untagged
1/12	Include	Include	Untagged	Untagged
LAG 1	Include	Include	Untagged	Untagged
LAG 2	Include	Include	Untagged	Untagged

#### **brief:**

(FS5CX420F1087012) # show vlan brief

VLAN ID	VLAN Name	VLAN Type
1	Default	Default

## 3.2.84 *sleep*

### **Syntax**

**sleep** <1-600>

### **Purpose**

To pause the CLI for a specified number of seconds. Mainly used for troubleshooting using CLI scripts.

### **Options & Parameters**

<1-600>	Specifies the number of seconds.
---------	----------------------------------

### **Notes**

It is sometimes useful to insert a sleep statement between two commands in a CLI script to allow the previous command some time to conclude before executing the next command.

This command has no effect on other running processes; its only effect is to pause the CLI process and prevent further command execution for the specified number of seconds.

### **Example**

```
(FS5CX420F1087012) # sleep 30
```

## 3.2.85 *tech-support save-info*

### **Syntax**

**tech-support save-info**

### **Purpose**

To save system status information for use by Fortinet technical support.

### **Options & Parameters**

This command has no additional options or parameters.

### **Notes**

This command creates a file which captures system and configuration status information to assist Fortinet technical support in diagnosing and troubleshooting issues with the switch. Once the file is created, retrieve it using FTP or TFTP and send it to Fortinet technical support.

### **Example**

```
(FS5CX420F1087012) # tech-support save-info
```

The resulting file will appear in the main directory of the internal disk, with a file name of the format TAC\_CHASSIS-support-*date-time*.

## 3.2.86 *telnet*

### **Syntax**

**telnet** <ip\_address> [**port** <0-65535>][**debug**][**line**][**noecho**]

### **Purpose**

To telnet to a remote host.

### **Defaults**

Connects to the host IP address on TCP port 23 with debug and line modes disabled and local echo enabled by default.

### **Options & Parameters**

<b>&lt;ip_address&gt;</b>	Specifies the IP address of the host.
<b>port &lt;0-65535&gt;</b>	Connects to the specified TCP port of the host. If this option is not included, the command defaults to port 23.
<b>debug</b>	Enables telnet debugging mode.
<b>line</b>	Enables telnet linemode.
<b>noecho</b>	Disables local echo.

### **Notes**

If multiple options are entered (e.g., **port**, **debug**, **line** and **noecho**), they must be entered in order.

### **Example**

```
(FS5CX420F1087012) >telnet 10.10.10.10 port 2055 line
```

This establishes a telnet session with the host at IP address 10.10.10.10 on port 2055 with linemode enabled.

## 3.2.87 *traceroute*

### **Syntax**

`traceroute <ip_address> [0-65535]`

### **Purpose**

To trace the routes that packets take through the network hop by hop.

### **Defaults**

The default port value is 3343.

### **Options & Parameters**

<code>&lt;ip_address&gt;</code>	Specifies the destination IP address.
<code>[0-65535]</code>	Specifies the destination port. If not specified, the default port value is 3343.

### **Example**

```
(FS5CX420F1087012) # traceroute 172.16.0.118
```

Tracing route over a maximum of 20 hops

```
1          *      *      *
2          *      *      *
3          *      *      *
4          *      *      *
[etc.]
```

# 4 Config Mode

---

## 4.1 Overview

The Config Mode provides configuration commands for the switch as a whole, plus access to the other configuration modes.

### 4.1.1 Access

This mode is accessed by using the **config** command in Enable Mode or by using the **exit** command in the other configuration modes.

### 4.1.2 Exit

To exit from this mode, use the **exit** or **end** command to return to enable Mode.

## 4.2 Commands

## 4.2.1 aaa accounting

### Syntax

[no] aaa accounting {system | exec | command <level>} {default | <list-name>} {start-stop | stop-only} m1 [m2]

### Purpose

To create records for any or all of the accounting functions that are monitored.

### Defaults

None.

### Options & Parameters

<b>system</b>	Performs accounting for all system-level events not associated with users, such as reloads.
<b>exec</b>	Specifies a list name. This is a character string used to name the list of authentication methods activated when a user logs in.
<b>command &lt;level&gt;</b>	Runs accounting for all commands at the specified privilege level. Valid privilege level entries are integers from 0 through 15.
<b>default</b>	Uses the listed authentication methods (m1-m2) that follow this keyword as the default list of methods when a users logs in
<b>&lt;list-name&gt;</b>	Uses the listed accounting methods that follow this keyword as the default list of methods when a users logs in.
<b>start-stop</b>	Sends a “start” accounting notice at the beginning of a process and a “stop” accounting notice at the end of a process. The “start” accounting record is sent in the background. The requested user process begins regardless of whether the “start” accounting notice was received by the accounting servers.
<b>stop-only</b>	Sends a “stop” accounting notice at the end of the requested user process.
<b>m&lt;n&gt;</b>	Keywords: <ul style="list-style-type: none"><li>• radius - Use RADIUS accounting</li><li>• tacacs+ - Use TACACS+ accounting</li></ul>

## 4.2.2 *aaa accounting update*

### **Syntax**

**aaa accounting update** {**newinfo** | **periodic** <*seconds*>}

### **Purpose**

To create records for any or all of the accounting functions that are monitored.

### **Defaults**

None.

### **Options & Parameters**

<b>newinfo</b>	Causes interim accounting records to be sent to the accounting server every time there is new accounting information to report.
<b>periodic</b> < <i>seconds</i> >	Causes interim accounting records to be sent periodically as defined by the argument number of seconds.

## 4.2.3 *aaa authentication login*

### **Syntax**

**aaa authentication login** {**default** | *list-name*} *m1* [*m2*][*m3*][*m4*][*m5*]

### **Purpose**

To enable AAA authentication for all the supported login authentication methods.

### **Defaults**

None.

### **Options & Parameters**

<b>default</b>	Specifies the listed authentication methods that follow this keyword as the default list of methods when a user logs in.
<i>list-name</i>	Specifies a list name. This is a character string used to name the list of authentication methods activated when a user logs in.
<i>m&lt;n&gt;</i>	Refers to the actual protocol used by the authentication algorithm. Keywords: <ul style="list-style-type: none"><li>• none - No authentication</li><li>• enable - Use enable password for authentication</li><li>• local - Use local username database for authentication</li><li>• radius - Use RADIUS authentication</li><li>• tacacs+ - Use TACACS+ authentication</li></ul>

## 4.2.4 *aaa authorization*

### Syntax

```
[no] aaa authorization {exec | <command> <level>} {default | <list-name>} m1  
[m2][m3][m4][m5]
```

### Purpose

To set parameters that restrict a user's network access.

### Defaults

Authorization is turned off on the switch by default.

### Options & Parameters

<b>exec</b>	Enables authorization to determine if a user is allowed to run an EXEC shell.
<command> <level>}	Enables authorization for specific, individual EXEC commands associated with a specific privilege level. This allows the operator to authorize all commands associated with a specific command level form 0 to 15.
<b>default</b>	Uses the listed authentication methods that follow this keyword as the default list of methods when a users logs in.
<list-name>}	Specifies a list name for the methods that follow this keyword as the default list of methods when a users logs in.
m<n>	Keywords: <ul style="list-style-type: none"><li>• none - No authorization</li><li>• if-authentication - If authentication is successful</li><li>• local - Use local username database for authorization</li><li>• radius - Use RADIUS authorization</li><li>• tacacs+ - Use TACACS+ authorization.</li></ul>

### Notes

- Authorization is either provided by the TACACS+ server (tacacs+ keyword), the user is allowed run everything if authentication is successful (if-authenticated keyword), or in the last case the user is allowed to run everything whether authentication passed or failed (none keyword).
- To disable authorization for all global configuration commands, use the no aaa authorization config-command.

## 4.2.5 *aaa new-model*

### **Syntax**

[no] `aaa new-model`

### **Purpose**

To enable or disable AAA.

### **Defaults**

AAA is turned off by default.

### **Options & Parameters**

None.

## 4.2.6 *accounting*

### **Syntax**

[no] **accounting** {**commands** *level* | **exec**} [**default** | *list-name*]

### **Purpose**

To enable authentication, authorization, and accounting (AAA) accounting services to a specific line or group of lines, use the **accounting** command in line configuration mode. To disable AAA accounting services, use the **no** form of this command.

### **Defaults**

Accounting is disabled.

### **Options & Parameters**

<b>commands</b> <i>level</i>	Enables accounting on the selected lines for all commands at the specified privilege level. Valid privilege level entries are 0 through 15.
<b>exec</b>	Enables accounting for all system-level events not associated with users, such as reloads on the selected lines.
<b>default</b>	The name of the default method list, created with the <b>aaa</b> accounting command. (Optional)
<i>list-name</i>	Specifies the name of a list of accounting methods to use. If no list name is specified, the system uses the default. The list is created with the <b>aaa</b> accounting command. (Optional)

## 4.2.7 authentication login

### Syntax

**authentication login** <list\_name> [local] [radius] [reject] [tacacs]

### Purpose

To create, delete and/or configure an authentication list with up to three authentication methods.

### Defaults

In the absence of a custom list, the system by default uses local authentication only. If no method is supplied for a newly created list, the default method is **local**.

### Options & Parameters

<list_name>	Specifies the name of the authentication login list. If the name is not currently in use, this creates a new list using that name.
<b>local</b>	Specifies use of a locally stored ID and password for authentication.
<b>radius</b>	Specifies use of a Remote Authentication Dial In User Service (RADIUS) server for user authentication.
<b>reject</b>	When entered as the primary authentication method, <b>reject</b> prevents authentication of the users on the specified list.
<b>tacacs</b>	Specifies use of a Terminal Access Controller Access-Control System (TACACS) server for user authentication. <b>Note:</b> TACACS servers are not supported by the switch in the current release.

### Notes

- Use the **show authentication** command in Enable Mode to display existing authentication list(s).
- Use **no authentication login** and the list name to delete an existing list.
- Up to three authentication methods can be specified for the list.

### Example

```
(FS5CX420F1087012) (Config)# authentication login list1 radius reject
```

## 4.2.8 authorization

### Syntax

[no] authorization {exec | commands *level*} [default | *list-name*]

### Purpose

To enable authorization for a specific line or group of lines, use the authorization command in line configuration mode. To disable authorization, use the no form of this command.

### Defaults

Authorization is not enabled.

### Options & Parameters

<b>exec</b>	Enables authorization to determine if the user is allowed to run an EXEC shell on the selected lines.
<b>commands <i>level</i></b>	Enables authorization on the selected lines for all commands at the specified privilege level. Level can be 0 through 15
<b>radius</b>	Specifies use of a Remote Authentication Dial In User Service (RADIUS) server for user authentication.
<b>default</b>	The name of the default method list, created with the aaa authorization command. (Optional)
<i>list-name</i>	Specifies the name of a list of authorization methods to use. If no list name is specified, the system uses the default. The list is created with the aaa authorization command. (Optional)

## 4.2.9 *cos dot1p-mapping*

### **Syntax**

cos dot1p-mapping <0-7> <0-3>

### **Purpose**

To map an 802.1p priority to an internal traffic class.

### **Defaults**

The default 802.1p mappings for the FortiSwitch OS are as follows:

User Priority	Traffic Class
0	1
1	0
2	0
3	1
4	2
5	2
6	3
7	3

### **Options & Parameters**

<0-7>	Specifies the 802.1p priority to map.
<0-3>	Specifies the traffic class to which the 802.1p priority is mapped.

### **Notes**

The “no” form of this command is **no cos**; it restores the 802.1p mappings to the manufacturer’s default (shown above).

### **Example**

```
(FS5CX420F1087012) (Config)# cos dot1p-mapping 0 1
```

## 4.2.10 *end*

### **Syntax**

`end`

### **Purpose**

To exit to Enable Mode.

### **Options & Parameters**

This command has no options or parameters.

### **Notes**

The **end** command exits to Enable Mode from all higher modes. In Config Mode its behavior is identical to **exit**.

To exit directly to Default Mode, use **ctrl-z**.

### **Example**

```
(FS5CX420F1087012) (Config)# end
```

## 4.2.11 *exit*

### **Syntax**

`exit`

### **Purpose**

To exit to Enable Mode.

### **Options & Parameters**

This command has no options or parameters.

### **Example**

```
(FS5CX420F1087012) (Config)# exit
```

## 4.2.12 fabric-control

### Syntax

```
fabric-control { mac-svlan <2|3|4|6|12|24> | multicast <mac_address> <1-4094> <1001-1768>
| partition <2-1000> priority {a|b|c} svlan <1001-1768> ... <1001-1768> | spine { id <1-2> |
mode | svlan <6|12> } | svlan-id <1001-1768> <1001-1768> }
```

### Purpose

To configure the bandwidth allocation of the fabric.

### Defaults

- The spine ID of a switch is set to 1 by default.
- Spine mode is disabled by default (i.e., the switch is configured as an edge switch as opposed to a spine switch).
- Each spine has 6 SVLANs allocated to it by default.
- Each MAC has 3 SVLANs associated with it by default.

### Options & Parameters

<b>mac-svlan</b> <2 3 4 6 12 24>	Specifies the number of SVLANs that are to be associated with each MAC. The default value is 3; the “no” form of this command ( <b>no fabric-control mac-svlan</b> ) restores the value to 3.
<b>partition</b> <2-1000> <b>priority</b> {a b c} <b>svlan</b> <1001-1768> ... <1001-1768>	Configures the fabric partition settings of the switch. (See <b>fabric-control partition</b> on page 201)
<b>spine id</b> <1-2>	Configures the spine ID of the switch; if not set explicitly, the default value is 1. The spine ID determines the range of SVLANs which will be native to this switch if it is operating in spine mode.
<b>spine mode</b>	Enables or disables the spine mode of the switch. When spine mode is enabled, the switch is a spine switch; when it is disabled, the switch is an edge switch.
<b>spine svlan</b> <6 12>	Sets the number of SVLANs used by the switch to 6 or 12; if not set explicitly, the default value is 6 SVLANs per spine. (See below.)
<b>svlan-id</b> <1001-1768> <1001-1768>	Identifies the full range of SVLANs which the switch is expected to recognize and pass traffic on. This is an essential command in the configuration of a multi-chassis fabric. (See below.)

### Notes

The FortiSwitch-500 allows users to aggregate switches into a scalable fabric, and to carve out bandwidth for provisioning purposes. When participating in a fabric, each FortiSwitch Ethernet Fabric Switch can operate in either spine mode or non-spine (edge) mode. Spine mode, the default for the FortiSwitch-1000, allows the switch to aggregate traffic from multiple FortiSwitch switches, creating Service VLANs (SVLANs) which are used internally for optimized traffic

routing. (SVLANs – transparent VLANs used within the switch – are distinguished from user-configured VLANs.) In non-spine (edge) mode (the default for the FortiSwitch-500), the switch assigns packets entering the fabric to available SVLANs but it creates no new SVLANs of its own, allowing more FortiSwitch switches to be connected without unduly increasing the complexity of the fabric.

When running under spine mode, the FortiSwitch-500 has a spine ID of either 1 or 2 (if not set explicitly, the ID is 1 by default); when two or more FortiSwitch switches are connected in a fabric and more than one is operating in spine mode, they must carry different, consecutive spine IDs. When a switch is configured in spine mode, 12 internal VLANs, named Service VLANs (SVLANs), are automatically allocated to that spine switch. The spine switch can be configured to use either all 12 SVLANs or only 6 of them (by default, it is configured to use only 6). The SVLANs are numbered automatically in groups of 12 based on the spine ID of the switch: spine ID 1 creates SVLANs 1001-1012, ID 2 creates 1013-1024, etc. For the fabric to pass traffic correctly, each switch in the fabric must be made aware of the full range of SVLANs operating in the fabric – this is accomplished using the **fabric-control svlan-id** command.

When configured as a spine, the switch is programmed as the root bridge of the spanning trees associated with the SVLANs allocated to it. (When the spine ID is set using the **fabric-control spine ID** command, it also sets the bridge priority of MST instances associated with that spine's allocated SVLANs to 0 to ensure root bridge identification.)

To view available SVLANs, use the `show fabric-control valid-svlan` command. (See page 98)

## **Examples**

### **mac-svlan:**

```
(FS5CX420F1087012) (Config)# fabric-control mac-svlan 12
```

This specifies that 12 SVLANs are to be associated with each MAC.

### **partition:**

(See `fabric-control partition` on page 201.)

### **spine id:**

```
(FS5CX420F1087012) (Config)# fabric-control spine id 2
```

This sets the spine ID number of this switch to 2.

### **spine mode:**

```
(FS5CX420F1087012) (Config)# fabric-control spine mode
```

This enables spine mode for this switch.

### **spine svlan:**

```
(FS5CX420F1087012) (Config)# fabric-control spine svlan 12
```

This configures the switch to use all 12 of the SVLANs allocated to it. (Only the first 6 are used by default.)

### **svlan-id:**

```
(FS5CX420F1087012) (Config)# fabric-control svlan-id 1001 1024
```

This configures the switch to participate in a 2-spine fabric utilizing SVLANs 1001 through 1024.

**“no” form of the svlan-id option:**

```
(FS5CX420F1087012) (Config)# no fabric-control svlan-id 1013 1024
```

This clears SVLANs 1013 through 1024 from this switch’s SVLAN list. Note that the “no” form of this command cannot be used to remove “native” SVLANs from the switch (those which are assigned automatically based on the switch’s spine ID if the switch is in spine mode).

## 4.2.13 *fabric-control flow-control*

### **Syntax**

[no] fabric-control flow-control [ { class-based priority all | port-based } mode {rx\_enabled | tx\_enabled | both} ]

### **Purpose**

To set or disable fabric control flow control.

### **Defaults**

All parameters after flow-control are optional. Default behavior is: “fabric-control flow-control port-based mode both”.

### **Options & Parameters**

<b>class-based</b>	
<b>priority all</b>	
<b>port-based</b>	
<b>mode</b>	
<b>rx_enabled</b>	
<b>tx_enabled</b>	
<b>both</b>	

### **Notes**

Setting Pause mode here to ‘no’ does not guarantee no pause is transmitted. Latency base pause can be enabled and disable separately. The mode just follows the port mode (port or PFC) to ensure packet format compliance on the wire.

### **Examples**

## 4.2.14 *fabric-control partition*

### **Syntax**

**fabric-control partition** <2-1000> **priority** {a|b|c} **svlan** <1001-1768> ... <1001-1768>

### **Purpose**

To create and configure partitions in the fabric.

### **Defaults**

The priority class of the partition is 0 by default (below a, b and c).

### **Options & Parameters**

<2-1000>	Specifies the partition ID. If there is no existing partition with the specified ID, this creates a new one.
<b>priority</b> { a   b   c }	Configures the priority class of the specified partition (see below).
<b>svlan</b> <1001-1768> ... <1001-1768>	Specifies the SVLANs which belong to this partition up to a maximum of 20. IDs must be between 1001 and 1768.

### **Notes**

The FortiSitch OS also allows users to allocate bandwidth to specific traffic types. This can be achieved by configuring partitions in the fabric. Each partition consists of different combinations of SVLANs. The switch can distribute traffic to partitions based on a packet's input port and VLAN tag. Each partition can be further divided into 4 classes – default class (0), A, B, and C, based on either the IEEE 802.1p or DiffServ priority fields. Class A maps to 802.1p priority values 2 and 3, class B to 4 and 5, and class C to 6 and 7.

**Note:** if partitions are configured in the fabric, all FortiSwitch switches participating in the fabric must have identical partition configuration settings.

### **Example**

```
(FS5CX420F1087012) (Config)# fabric-control partition 2 priority a svlan 1001 1002 1003
```

This creates a partition and assigns it ID #2, sets its priority class to “a” and associates SVLANs 1001, 1002 and 1003 with it.

## 4.2.15 *fdb-table aging-time*

### **Syntax**

**fdb-table aging-time** <10-1000000>

### **Purpose**

To configure the Forwarding Database (FDB) table address aging time (in seconds).

### **Defaults**

The aging time is 300 seconds by default.

### **Options & Parameters**

<10-1000000>	Specifies the address aging timeout in seconds.
--------------	---

### **Example**

(FS5CX420F1087012) (Config)# fdb-table aging-time 1000

## 4.2.16 *garp timer*

### **Syntax**

**garp timer** {**join** <10-100> | **leave** <20-600> | **leave-all** <200-6000> }

### **Purpose**

To configure the Generic Attribute Registration Protocol (GARP) timer attributes.

### **Defaults**

- The default GVRP join time is 20 centiseconds.
- The default GVRP leave time is 60 centiseconds.
- The default interval for the generation of leave-all packets is 1000 centiseconds.

### **Options & Parameters**

<b>join</b> <10-100>	Specifies the GVRP join time – the interval between transmission of GARP packets registering membership for a VLAN or multicast group – in centiseconds.
<b>leave</b> <20-600>	Specifies the GVRP leave time – the interval between receiving an unregister request for a VLAN or a multicast group and deleting the VLAN entry – in centiseconds.
<b>leave-all</b> <200-6000>	Specifies the frequency with which “leave-all” packets – packets deleting all registration entries – are generated.

### **Notes**

All forms of the **garp timer** command only have an effect when GVRP is enabled.

The “no” form of this command resets the specified time to the default:

**no garp timer join** resets the GVRP join time to 20 centiseconds

**no garp timer leave** resets the GVRP leave time to 60 centiseconds

**no garp timer leave-all** resets the “leave-all” generation interval to 1000 centiseconds

### **Examples**

```
(FS5CX420F1087012) (Config)# garp timer join 30
```

```
(FS5CX420F1087012) (Config)# garp timer leave 200
```

```
(FS5CX420F1087012) (Config)# garp timer leave-all 2000
```

## 4.2.17 *gvrp*

### **Syntax**

**gvrp** {**admin-mode** | **port-mode**}

### **Purpose**

To enable or disable GARP VLAN Registration Protocol (GVRP) on the switch as a whole or on all ports.

### **Defaults**

GVRP admin-mode is disabled by default.

GVRP port-mode is disabled by default on all ports.

### **Options & Parameters**

<b>admin-mode</b>	Enables GARP VLAN Registration Protocol (GVRP) on the switch as a whole. Use “no” form of the command to disable on the switch.
<b>port-mode</b>	Enables GVRP on all switch ports. For GVRP to function, it must also be enabled on the switch as a whole using the <b>gvrp admin-mode</b> command above. Use the “no” form of this command to disable GVRP on every port. To enable GVRP only on certain ports or LAGs, use the <b>gvrp port-mode</b> command in Config-LAG Mode (see page 286) or in Config-Port Mode (see page 304).

### **Examples**

```
(FS5CX420F1087012) (Config)# gvrp admin-mode
```

```
(FS5CX420F1087012) (Config)# gvrp port-mode
```

## 4.2.18 *ip igmp snooping*

### **Syntax**

[no] ip igmp snooping

### **Purpose**

To enable or disable IGMP snooping globally.

### **Defaults**

By default IGMP snooping is enabled across all sVLANs, but disabled for all C-VLANs. If IGMP snooping is disabled, then multicast traffic is broadcasted in the vlan it is received. If it is enabled, multicast traffic will only be forwarded to the interfaces where a join for the multicast group was received and toward the router(s). Internally all timers and state machines are inactive.

### **Options & Parameters**

None.

## 4.2.19 *ip igmp snooping last-member-query-interval*

### **Syntax**

[no] ip igmp snooping last-member-query-interval <100-1000>

### **Purpose**

To set the interval for the last IGMP-Query.

### **Defaults**

1000 milliseconds.

### **Options & Parameters**

<100-1000>	Specifies the interval in milliseconds.
------------	---

### **Notes**

When an IGMP-Leave is received, the switch can send a last IGMP-Query to ensure that there are no more listeners on the link. When both IGMP fast-leave processing and the IGMP query interval are configured, fast-leave processing takes precedence.

## 4.2.20 *ip igmp snooping fast-leave*

### **Syntax**

[no] ip igmp snooping fast-leave {port <slot /port>| port range <slot/port> <slot/port> | lag <1-72>}

### **Purpose**

To enable or disable Fast-Leave processing.

Fast-Leave improves the latency of multicast group removal. When a switch receives an IGMP-Leave, if this feature is enabled, then multicast traffic will stop being forwarded on the interface.

### **Defaults**

Enabled by default.

### **Options & Parameters**

<b>port</b>	Specifies the port or slot.
<b>port range</b>	Specifies a port or slot range.
<b>lag</b>	Specifies a lag.

### **Notes**

Note that this feature can be active on an FS-500, where in this case the multicast traffic is immediately stopped, or on an FS-1000, which can aggregate all the multicast listeners of an FS-500 (or may be an FS-1000).

## 4.2.21 *ip igmp snooping interval*

### **Syntax**

**ip igmp snooping interval {query-interval <1-18000> | query-timeout <60-300>}**

**no ip igmp snooping interval**

### **Purpose**

To specify the IGMP query interval and timeout.

### **Defaults**

Query-Interval: 10 seconds. Query-Timeout: 60 seconds. The default is restored when “no ip igmp snooping interval” is used.

### **Options & Parameters**

<b>query-interval &lt;1-18000&gt;</b>	Specifies the query interval, in seconds.
<b>query-timeout &lt;60-300&gt;</b>	Specifies the query timeout, in seconds.

### **Notes**

When setting the values, if one is not specified in the command, then it remains unchanged. Using “no ip igmp snooping interval” resets the values to their defaults.

## 4.2.22 *ip igmp snooping querier ip*

### **Syntax**

**ip igmp snooping querier ip** <querier\_ip\_address> **mac** <querier\_mac\_address> **vlan** <1-4094> [**svlan** <1001-1096>]

**no ip igmp snooping querier ip** <querier\_ip\_address> **vlan** <1-4094>

### **Purpose**

To specify the IGMP querier function. If no other multicast routers are available and there is a need to route multicast packets on the local network, the switch can provide the IGMP querier function.

### **Defaults**

The function is disabled by default. If the sVLAN is not specified then the default sVLAN is used.

### **Options & Parameters**

<querier_ip_address>	Specifies the querier IP address.
<b>mac</b> <querier_mac_address>	Specifies the querier MAC address.
<b>vlan</b> <1-4094>	Specifies a VLAN.
<b>svlan</b> <1001-1096>	Specifies an sVLAN.

### **Notes**

When enabled, this function is only active when there is no multicast router detected on the specified VLAN.

## 4.2.23 *ip igmp snooping router ip*

### Syntax

```
ip igmp snooping router ip <router_ip_address> mac <router_mac_address> {port <slot/port> |  
lag <1-72>} vlan <1-4094> [svlan <1001-1096>]>}
```

```
no ip igmp snooping router ip <router_ip_address> vlan <1-4094>
```

### Purpose

To statically configure a router port.

### Defaults

There is no default router location. If the sVLAN-id is not specified, then the default one is assigned.

### Options & Parameters

<code>&lt;router_ip_address&gt;</code>	The router IP address.
<code>mac &lt;router_mac_address&gt;</code>	The router mac address.
<code>port &lt;slot/port&gt;</code>	Specifies the port or slot.
<code>lag &lt;1-72&gt;}</code>	Specifies a lag value.
<code>vlan &lt;1-4094&gt;</code>	Specifies a customer VLAN.
<code>svlan &lt;1001-1096&gt;}</code>	Specifies a sVLAN.

### Notes

IGMP snooping automatically detects ports where multicast routers are connected. You can also give a static definition of a multicast router port using this command.

## 4.2.24 *ip igmp snooping router-timeout*

### **Syntax**

[no] ip igmp snooping router-timeout <30-300>

### **Purpose**

To configure a router timeout value.

### **Defaults**

60 seconds.

### **Options & Parameters**

<30-300>	The router timeout value, in seconds.
----------	---------------------------------------

### **Notes**

For multicast routers dynamically discovered, it is possible to update the timeout value. This timeout period is the time where a router port is kept without observing any router traffic (i.e. PIM-SM Hello, IGMP Querier, etc.)

## 4.2.25 *ip igmp snooping static*

### Syntax

```
[no] ip igmp snooping static <ip_address> {port <slot/port> | lag <1-72>}  
{vlan <1-4094> [source <subnet prefix> <subnet mask>] | svlan <1001-1096>}
```

### Purpose

To statically configure an entry into the IGMP Snooping table.

This option can be useful if a server is not able to participate into the IGMP protocol. Note that this static configuration would be required across the Ethernet Fabric for the traffic to go thru. Configuring a static entry does not generate IGMP join on behalf of the server.

### Defaults

None.

### Options & Parameters

<b>port</b> <slot/port>	Specifies the port or slot.
<b>lag</b> <1-72>}	Specifies a lag value.
<b>vlan</b> <1-4094>	Specifies a customer VLAN.
<b>source</b> <subnet prefix> <subnet mask>]	Specifies a source by subnet prefix and mask using Cisco syntax (see notes), for a VLAN.
<b>svlan</b> <1001-1096>}	Specifies a sVLAN.

### Notes

It is also possible to configure a static multicast group for a VLAN (i.e. customer VLAN) with a subnet defining a set of possible sources the recipients are interested in listening to. This approach is designed to reduce the number of TCAM entries needed to support large numbers of source addresses. The subnet mask is using the Cisco's syntax. For example 10.10.10.0 255.255.255.0 represent a 24-bits subnet. It is also possible to enter the same command for different subnets (more than one subnet is supported).

The source option is not available for sVLAN.

## 4.2.26 *ip igmp snooping svlan*

### **Syntax**

[no] ip igmp snooping svlan <1001-1096>

### **Purpose**

To enable or disable IGMP snooping for a vSCALE sVLAN.

### **Defaults**

If IGMP is globally enabled, then it is on by default on all sVLANs. If IGMP is not globally enabled, then it is off by default on any of the sVLANs.

### **Options & Parameters**

<1001-1096>	Specifies a sVLAN.
-------------	--------------------

### **Notes**

This command will result in using basic L2 Multicast. Customer VLAN and IP Source Address will be ignored in any IGMP packets received. Only the IP Multicast Group is considered in the pruning decisions. All IGMP packets version are supported, but with a limited scope.

## 4.2.27 *ip igmp snooping vlan*

### **Syntax**

[no] ip igmp snooping vlan <1-4094>

### **Purpose**

To enable or disable IGMP snooping for a customer VLAN.

### **Defaults**

IGMP snooping is disabled by default for all defined C-VLAN.

### **Options & Parameters**

<1-4094>	Specifies a customer VLAN.
----------	----------------------------

### **Notes**

This command will result in using TCAM capabilities.

## 4.2.28 *ipfix*

### Syntax

```
ipfix {collector <ip_address> [{port <0-65535> | format <9> } [{all | <slot/port> } ] | report-timer <5-60> }
```

### Purpose

To configure the Internet Protocol Flow Information eXport (IPFIX) parameters of the switch.

### Defaults

The default behavior of this command is to enable IPFIX on all ports. The defaults for the parameters it configures are as follows:

- IPFIX is disabled on all switch ports by default.
- Switch exports flow data to service port 2055 by default.
- There are no collectors established by default.
- IPFIX format is set to version 9 by default.
- The IPFIX report duration is 15 seconds by default.

### Options & Parameters

<b>collector</b> <ip_address>	Adds a collector to the specified IP address.
<b>port</b> <0-65535>	Specifies the layer 4 UDP service port number to which the new collector will send data traffic. The default value is 2055.
<b>format</b> <9>	Specifies the IPFIX format as a Netflow version number. This is a placeholder for future functionality; the default value is 9, and in this release the only available format is 9.
{ <b>all</b>   <slot/port> }	Specifies the switch ports on which to enable IPFIX data transfer. Enable all ports by entering all or enable a specific port by identifying it in slot/port format.
<b>report-timer</b> <5-60>	Specifies the IPFIX report duration in seconds.

### Notes

- **Note:** The FortiSwitch-500 exports IPFIX data to service port 2055 by default, while some IPFIX collecting process listen on port 4739.  
**all:** Enabling data transfer on all service ports (see examples under "collector" below) allows the operator to configure monitoring at the collector end.

### Examples

**collector:**

```
(FS5CX420F1087012) (Config)# ipfix collector 172.16.0.151 port 2055 all
```

**report-timer:**

```
(FS5CX420F1087012) (Config)# ipfix report-timer 35
```

## 4.2.29 *lag*

### **Syntax**

**lag** <lag\_ID>

### **Purpose**

To create a new Link Aggregation Group (LAG) or enter Config-LAG Mode to configure a specified LAG.

### **Options & Parameters**

<lag\_ID>

Specifies the LAG to be configured. If the specified LAG does not exist, a LAG with no associated ports is created. (Use the **add-port** command in Config-LAG Mode to add ports to a LAG; see page 280) On the FortiSwitch-500, up to 12 LAGs (with LAG IDs 1-12) may be created.

### **Notes**

- For clarity, the FortiSwitch-500 CLI uses a LAG ID number rather than allowing the lowest port in the LAG to stand in for the LAG as a whole.
- The **lag** command is used to create or remove a LAG, and also to access Config-LAG Mode to configure the attributes of an existing LAG or add or delete member ports.
- Before the LAG can be configured, it must be created with this command; creating the LAG also enters Config-LAG Mode for the newly-created LAG.
- Existing LAGs can be removed by using the **no** form of this command.
- To determine whether a LAG already exists, use the **show lag** command. (See page 31 or page 115)

### **Example**

```
(FS5CX420F1087012) (Config)# lag 1
```

```
(FS5CX420F1087012) (Config-LAG 1)#
```

## 4.2.30 *latency-flow-control latency-threshold*

### **Syntax**

`latency-flow-control latency-threshold <1..6500>`

### **Purpose**

To set or disable latency threshold.

### **Defaults**

latency-threshold = 125 usec

### **Options & Parameters**

<code>&lt;1..6500&gt;</code>	Threshold value
------------------------------	-----------------

## 4.2.31 *latency-flow-control limiter-resolution*

### **Syntax**

`latency-flow-control limiter-resolution < low | medium | high >`

### **Purpose**

To set latency flow control limiter resolution.

### **Defaults**

high (104.8 usec)

### **Options & Parameters**

<b>low</b>	419.7 usec
<b>medium</b>	209.7 usec
<b>high</b>	104.8 usec (default)

## 4.2.32 *latency-flow-control priority*

### **Syntax**

[no] latency-flow-control priority <0..7 | all> limiting <percent>

### **Purpose**

To set or disable latency flow control priority.

### **Defaults**

- pri 0\_4 percentage 25
- pri 1\_5 percentage 25
- pri 2\_6 percentage 45
- pri 3\_7 percentage 60

### **Options & Parameters**

<0..7   all>	Priority 0 – 7, or all priorities.
limiting <percent>	Limiting percent, in the range of 1-100.

## 4.2.33 *load-balance hash*

### **Syntax**

**load-balance hash** <src-mac | dst-mac | src-dst-mac | src-ip | dst-ip | src-ip-src-ipport | dst-ip-dst-ipport | src-dst-ip | src-dst-ip-ippports | src-dst-ip-x1 | src-dst-ip-x2 | src-dst-ip-x4 | src-dst-ip-x8 >

### **Purpose**

Allows the user to specify which hash distribution algorithm they want to be applied to all LAG groups. All hash modes are fully symmetric.

### **Defaults**

**src-dst-mac** is enabled by default.

### **Options & Parameters**

<b>src-mac</b>	Source MAC address
<b>dst-mac</b>	Destination MAC address
<b>src-dst-mac</b>	Source and Destination MAC address (default)
<b>src-ip</b>	Source IP address (IPv4 and IPv6)
<b>dst-ip</b>	Destination IP address (IPv4 and IPv6)
<b>src-ip-src-ipport</b>	Source IP address and Source IP L4 Port (IPv4 and IPv6)
<b>dst-ip-dst-ipport</b>	Destination IP address and Destination IP L4 Port (IPv4 and IPv6)
<b>src-dst-ip</b>	Source and Destination IP address (IPv4 and IPv6)
<b>src-dst-ip-ippports</b>	Source and Destination IP address and Source IP L4 Port and Destination IP L4 Port (IPv4 and IPv6)
<b>src-dst-ip-x1</b>	Source and Destination IP address XOR Mode 1
<b>src-dst-ip-x2</b>	Source and Destination IP address XOR Mode 2
<b>src-dst-ip-x4</b>	Source and Destination IP address XOR Mode 4
<b>src-dst-ip-x8</b>	Source and Destination IP address XOR Mode 8

## 4.2.34 logging

### Syntax

**logging** {**buffered** [**wrap**] | **cli-command** | **console** [ <severity\_level> | <0-7> ] | **host** <ip\_address> [port\_ID] [ <severity\_level> | <0-7> ] | **syslog** [port <port\_ID>]}

### Purpose

To configure event logging settings.

### Defaults

- Buffered logging and CLI command logging are enabled by default; all other logging configurations are disabled by default.
- The default severity level is 7 (debug) for remote (syslog) logging, 6 (informational) for buffered logging, and 1 (alert) for console logging.
- The default logging port for remote (syslog) logging is 514.

### Options & Parameters

<b>buffered</b> [ <b>wrap</b> ]	Enables buffered logging on the switch itself. The <b>wrap</b> option enables line-wrapping on log entries that exceed the size of the line buffer. Use <b>no logging buffered</b> to disable buffered logging, and <b>clear logging</b> to clear the contents of the buffered log.
<b>cli-command</b>	Enables CLI command logging (logging of all commands executed via the command line interface).
<b>console</b> [severity_level]	Enables logging on the serial console attached to the switch. See below for description of severity levels. <b>Note:</b> even at lower severity levels, sending logging output to the console can make it difficult to regain control of the switch if no other mode of access (e.g., telnet) is available.
<b>host</b> <ip_address> [port_ID] [severity_level]	Specifies the host device and port for the configured syslog server that is receiving syslog messages relayed from the switch. If no port is specified, the default is 514. See below for description of severity levels.
<b>syslog</b> [ port <port_ID> ]	Enables relaying of logging messages to the remote server. The <b>port</b> option allows the user to specify which port is being monitored; if no port is specified, the default is 514.
[ <severity_level>   <0-7> ]	Specifies the logging severity level either as text or as a number; lower levels output fewer events to the console or remote logging server. The levels are as follows: 0: emergency, 1: alert, 2: critical, 3: error, 4: warning, 5: notice, 6: info, 7: debug <b>Note:</b> severity levels can be entered by name or by number.

### Notes

- Both **logging host** and **logging syslog port** can specify the logging port; logging messages are sent from the port most recently specified.
- Buffered logging stores up to 1000 lines of log messages and is reset when the switch boots.

- Console logging outputs directly to the console, which can make it difficult to regain control of the switch.
- Severity levels can be entered as numbers or text.

### **Examples**

**buffered:**

```
(FS5CX420F1087012) (Config)# logging buffered wrap
```

**cli-command:**

```
(FS5CX420F1087012) (Config)# logging cli-command
```

**console:**

```
(FS5CX420F1087012) (Config)# logging console debug
```

**or**

```
(FS5CX420F1087012) (Config)# logging console 7
```

**host:**

```
(FS5CX420F1087012) (Config)# logging host 172.16.0.116 port 55322
```

**syslog:**

```
(FS5CX420F1087012) (Config)# logging syslog port 55322
```

## 4.2.35 *logging console-mode*

### **Syntax**

[no] logging console-mode

### **Purpose**

To enable or disable logging in a telnet session.

When enabled on a valid telnet connection (not serial line), the telnet connection will be able to receive console messages that are normally only displayed to the console serial connection. In addition, the telnet connection will be marked to persist so that log messages can be captured without a timeout closing the connection

### **Defaults**

None.

### **Options & Parameters**

None.

## 4.2.36 *mgmt-ip*

### Syntax

```
mgmt-ip { inband { bootp | dhcp | disable | ip <ip_address> <netmask> <gateway> | mac-address <mac_address> | mac-type { burnedin | local } } | service-port { bootp | dhcp | disable | ip { <ip_address> <netmask> <gateway> } } | sshd [ max-sessions <0-5> | protocol <1-2> [1-2] | timeout <1-160> ] | telnetd { max-sessions <0-5> | timeout <1-160> } }
```

### Purpose

To configure management IP protocols and parameters.

### Defaults

See sub-commands for details.

### Options & Parameters

<b>inband</b>	Configures in-band connectivity. (See page 225)
<b>service-port</b>	Configures the out-of-band management port. (See page 228)
<b>sshd</b>	Configures IP Secure Shell (SSH) parameters. (See page 229)
<b>telnetd</b>	Configures telnet connection parameters for incoming telnet sessions. (See page 230) The <b>telnet</b> and <b>show telnet</b> commands are used for outgoing telnet sessions.

## 4.2.37 *mgmt-ip inband*

### Syntax

```
mgmt-ip inband { dhcp | disable | ip <ip_address> <netmask> | mac-address <mac_address> | mac-type { burnedin | local } }
```

### Purpose

To configure in-band connectivity to the switch.

### Defaults

- The MAC type is set to burned-in by default.
- In-band management is disabled by default.

### Options & Parameters

<b>dhcp</b>	Specifies Dynamic Host Configuration Protocol (DHCP) as the in-band port configuration protocol.
<b>disable</b>	Disables the current in-band management port.
<b>ip</b> <ip_address> <netmask> <gateway>	Specifies the IP address to set for in-band management.
<b>mac-address</b> <mac_address>	Configures a locally administered MAC address for in-band switch management.
<b>mac-type</b> {burnedin   local}	Specifies whether the switch uses the burned in ( <b>burnedin</b> ) or locally administered ( <b>local</b> ) MAC address for the in-band management port.

### Examples

#### dhcp:

```
(FS5CX420F1087012) (Config)# mgmt-ip inband dhcp
```

#### disable:

```
(FS5CX420F1087012) (Config)# mgmt-ip inband disable
```

#### ip:

```
(FS5CX420F1087012) (Config)# mgmt-ip inband ip 172.16.0.115 255.255.255.0 0.0.0.0
```

#### mac-address:

```
(FS5CX420F1087012) (Config)# mgmt-ip inband mac-address 00-08-74-4C-7F-1D
```

#### mac-type:

```
(FS5CX420F1087012) (Config)# mgmt-ip inband mac-type burnedin
```

## 4.2.38 *mgmt-ip inband def-vlan*

### **Syntax**

**mgmt-ip inband def-vlan** <1-4094>

### **Purpose**

To configure the default management VLAN ID.

### **Defaults**

The default management VLAN ID is set to 4094 by software during boot.

### **Options & Parameters**

<1-4094>	Specifies the default management VLAN ID.
----------	---

### **Notes**

The customer can set the default management vlan to whatever value is desired or can save this value in the startup configuration. When the inband management feature is turned on without explicitly changing the management VLAN, the default management VLAN is used as the inband management VLAN.

## 4.2.39 *mgmt-ip inband mgmt-vlan*

### **Syntax**

**mgmt-ip inband mgmt-vlan <1-4094>**

**no mgmt-ip inband mgmt-vlan**

### **Purpose**

To configure the management VLAN ID.

### **Defaults**

By default, the management VLAN ID is 1.

### **Options & Parameters**

<1-4094>	Specifies the management VLAN ID.
----------	-----------------------------------

## 4.2.40 *mgmt-ip service-port*

### **Syntax**

**mgmt-ip service-port** { **dhcp** | **disable** | **ip** { <ip\_address> <netmask> <gateway> } }

### **Purpose**

To configure the out-of-band management port.

### **Defaults**

Out-of-band management is set to DHCP by default.

### **Options & Parameters**

<b>dhcp</b>	Specifies Dynamic Host Configuration Protocol (DHCP) as the service port configuration protocol.
<b>disable</b>	Disables the current service port.
<b>ip</b> <ip_address> <netmask> <gateway>	Specifies the IP address to set for out-of-band management.

### **Examples**

#### **dhcp:**

```
(FS5CX420F1087012) (Config)# mgmt-ip service-port dhcp
```

#### **disable:**

```
(FS5CX420F1087012) (Config)# mgmt-ip service-port disable
```

#### **ip:**

```
(FS5CX420F1087012) (Config)# mgmt-ip service-port ip 172.16.0.115 255.255.255.0 0.0.0.0
```

## 4.2.41 *mgmt-ip sshd*

### **Syntax**

**mgmt-ip sshd** [ **max-sessions** <0-5> | **protocol** <1-2> [1-2] | **timeout** <1-160> ]

### **Purpose**

To configure the IP Secure Shell (SSH) parameters for incoming SSH sessions.

### **Defaults**

The default behavior of this command is to enable Secure Shell (SSH) access to the switch. The defaults for the parameters it configures are as follows:

- SSH access to the switch is turned on by default.
- SSH protocol level is set to 1 and 2 by default.
- The maximum number of SSH sessions is set to 5 by default.
- The SSH login inactivity timeout is set to 5 minutes by default.

### **Options & Parameters**

<b>max-sessions</b> <0-5>	Configures the number of remote SSH connections allowed.
<b>protocol</b> <1-2> [1-2]	Specifies the SSH protocol level (version). An optional second SSH protocol level may also be specified.
<b>timeout</b> <0-160>	Specifies the SSH login inactivity timeout in minutes.

### **Examples**

#### **default:**

```
(FS5CX420F1087012) (Config)# mgmt-ip sshd
```

#### **max-sessions:**

```
(FS5CX420F1087012) (Config)# mgmt-ip sshd max-sessions 5
```

#### **protocol:**

```
(FS5CX420F1087012) (Config)# mgmt-ip sshd protocol 1 2
```

#### **timeout:**

```
(FS5CX420F1087012) (Config)# mgmt-ip sshd timeout 160
```

## 4.2.42 *mgmt-ip telnetd*

### **Syntax**

**mgmt-ip telnetd** { **max-sessions** <0-15> | **timeout** <1-160> }

### **Purpose**

To configure incoming telnet connection parameters.

### **Defaults**

The default behavior of this command is to enable incoming telnet access to the switch. The defaults for the parameters it configures are as follows:

- Telnet access to the switch is disabled by default.
- The maximum number of remote telnet connections is set to 5 by default.
- The telnet login inactivity timeout is set to 5 minutes by default.

### **Options & Parameters**

<b>max-sessions</b> <0-15>	Configures the number of remote telnet connections allowed.
<b>timeout</b> <1-160>	Configures the telnet login inactivity timeout in minutes. Setting the timeout to 0 causes a session to remain active indefinitely.

### **Notes**

This command configures incoming telnet connections. The **show telnet** and **telnet** commands are used for outbound telnet connections from the switch.

### **Examples**

#### **default:**

```
(FS5CX420F1087012) (Config)# mgmt-ip telnetd
```

#### **max-sessions:**

```
(FS5CX420F1087012) (Config)# mgmt-ip telnetd max-sessions 5
```

#### **timeout:**

```
(FS5CX420F1087012) (Config)# mgmt-ip telnetd timeout 160
```

## 4.2.43 *phy-modules alarm-monitor-interval*

### **Syntax**

**phy-modules alarm-monitor-interval** <1..1440>

### **Purpose**

To specify the frequency with which modules are checked for alarm conditions. Input value is in minutes.

### **Defaults**

The default frequency is 10 minutes.

### **Options & Parameters**

<1...1440>	Specifies frequency, in minutes.
------------	----------------------------------

## 4.2.44 *phy-modules syslog-reporting*

### **Syntax**

[no] phy-modules syslog-reporting

### **Purpose**

To enable or disable monitoring of SFP modules. Some SFP modules can monitor specific metrics (such as power, temperature, etc.) and can report when a value is outside of the normal operating parameters.

### **Defaults**

Syslog reporting is enabled by default.

### **Options & Parameters**

None.

## 4.2.45 *port*

### **Syntax**

**port** { *<slot/port>* | **range** *<slot/port>* *<slot/port>* }

### **Purpose**

To enter Config-Port Mode to configure a specified port or range of ports.

### **Options & Parameters**

<i>&lt;slot/port&gt;</i>	Specifies the port to be configured.
<b>range</b> <i>&lt;slot/port&gt;</i> <i>&lt;slot/port&gt;</i>	Specifies a range of ports to be configured; port variables identify the first and last ports in the range to be configured.

### **Example**

#### **default:**

(FS5CX420F1087012) (Config)# port 1/1

#### **range:**

(FS5CX420F1087012) (Config)# port range 1/1 1/12

## 4.2.46 *prompt*

### **Syntax**

**prompt** <prompt\_string>

### **Purpose**

To change the system prompt.

### **Options & Parameters**

<prompt\_string>

Specifies the new system prompt. The prompt string can be up to 64 case-sensitive characters in length.

### **Notes**

Creating distinctive CLI system prompts can help to distinguish among switches when controlling several by remote access.

### **Example**

```
(FS5CX420F1087012) (Config)# prompt FortiSwitch_lab
```

## 4.2.47 radius

### Syntax

```
radius { accounting mode | server { host { acct | auth } <ip_address> [0-65535] | key { acct | auth } <ip_address> | msg-auth <ip_address> | primary <ip_address> | retransmit <1-15> | timeout <1-30> } }
```

### Purpose

To configure parameters for the Remote Authentication Dial In User Service (RADIUS) servers.

### Defaults

- RADIUS accounting mode is disabled by default.
- The connection port for the RADIUS authentication server is set to 1813 by default.
- The connection port for the RADIUS accounting server is set to 1813 by default.
- The retransmit value is set to 4 by default.
- The RADIUS server timeout is set to 5 seconds by default.

### Options & Parameters

<b>accounting mode</b>	Enables the Remote Authentication Dial In User Service (RADIUS) accounting function.
<b>server host { acct   auth } &lt;ip_address&gt; [0-65535]</b>	Specifies the RADIUS server host parameters; use <b>acct</b> or <b>host</b> to specify the accounting server or the authentication server. The optional port value specifies the UDP port to use when connecting to the RADIUS server; the default is 1812 for an authentication server and 1813 for an accounting server.
<b>server key { acct   auth } &lt;ip_address&gt;</b>	Configures the RADIUS key; use <b>acct</b> or <b>host</b> to specify the accounting server or the authentication server.
<b>server msg-auth &lt;ip_address&gt;</b>	Enables the message authenticator attribute for the specified server.
<b>server primary &lt;ip_address&gt;</b>	Sets the server at the specified IP address as the primary RADIUS server.
<b>server retransmit &lt;1-15&gt;</b>	Sets the retransmit value for the RADIUS server; default is 4.
<b>server timeout &lt;1-30&gt;</b>	Specifies the RADIUS server timeout value in seconds; default is 5.

### Examples

**accounting mode:**

```
(FS5CX420F1087012) (Config)# radius accounting mode
```

**server host:**

```
(FS5CX420F1087012) (Config)# radius server host acct 172.16.0.114 553211
```

**server key:**

(FS5CX420F1087012) (Config)# radius server key acct 172.16.0.114

**server msg-auth:**

(FS5CX420F1087012) (Config)# radius server msg-auth 172.16.0.114

**server primary:**

(FS5CX420F1087012) (Config)# radius server primary 172.16.0.114

**server retransmit:**

(FS5CX420F1087012) (Config)# radius server retransmit 7

**server timeout:**

(FS5CX420F1087012) (Config)# radius server timeout 30

## 4.2.48 *serial*

### **Syntax**

**serial** {**baudrate** <115200> | **timeout** <0-160> }

### **Purpose**

To configure the serial connection's baud rate and inactivity timeout.

### **Defaults**

- The baud rate is 115200 by default.
- The port login inactivity timeout is 5 minutes by default.

### **Options & Parameters**

<b>baudrate</b> <115200>	Sets the baud rate for the serial connection. <b>Note:</b> for this release, the only permissible value is 115200.
<b>timeout</b> <0-160>	Sets the serial port login inactivity timeout in minutes.

### **Examples**

**baudrate:**

```
(FS5CX420F1087012) (Config)# serial baudrate 115200
```

**timeout:**

```
(FS5CX420F1087012) (Config)# serial timeout 160
```

## 4.2.49 *snmpd*

### Syntax

```
snmpd { community { <community_name> | ipaddr <ip_address> <community_name> |  
ipmask <ip_address> <community_name> | mode <community_name> | ro <community_name>  
| rw <community_name> } | contact <contact_name> | enable-traps { authentication |  
bcaststorm | linkmode | multiusers | stpmode } | location <location> | sysname  
<system_name> }
```

### Purpose

To set Simple Network Management Protocol daemon (SNMPd) options and parameters.

### Defaults

The default behavior of this command is to enable SNMP on the switch. The defaults for the parameters it configures are as follows:

- SNMP is enabled by default.
- “Public” and “private” communities are *not* created by default.
- Undefined communities are disabled by default; naming a community enables it.
- Client IP address and netmask are set to 0.0.0.0 by default.
- The five SNMP trap flags described below are enabled by default.

### Options & Parameters

<b>community</b> <community_name>	Adds and names a new SNMP community. The name can be up to 16 case-sensitive characters. (The <b>no</b> form of this command deletes the specified community name from the table.)
<b>community ipaddr</b> <ip_address> <community_name>	Sets a client IP address to limit which clients may access the specified named SNMP community. A value of 0.0.0.0 (the default) allows community access from any IP address. (The <b>no</b> form of this command sets the IP address to 0.0.0.0.)
<b>community ipmask</b> <ip_mask> <community_name>	Sets a client IP mask for the specified named SNMP community. A value of 255.255.255.255 will allow access from only one station, and will use that machine’s IP address for the client IP address; a value of 0.0.0.0 (the default) will allow access from any IP address. (The <b>no</b> form of this command sets the IP mask to 0.0.0.0.)
<b>community mode</b> <community_name>	Enables the specified SNMP community.
<b>community ro</b> <community_name>	Sets access mode of the specified SNMP community to read-only (“public mode”).
<b>community rw</b> <community_name>	Sets access mode of the specified SNMP community to read/write (“private mode”).
<b>contact</b> <contact_name>	Enters the specified name (up to 31 characters) as the SNMP contact.
<b>enable-traps authentication</b>	Enables authentication traps. (Use the <b>no</b> form of this command to disable.)

<b>enable-traps bcaststorm</b>	Enables the broadcast storm trap. (Use the <b>no</b> form of this command to disable.)
<b>enable-traps linkmode</b>	Enables the link up / link down trap flag at the switch level. <b>Note:</b> use with caution; this trap can generate high volumes of data. (Use the <b>no</b> form of this command to disable.)
<b>enable-traps multiusers</b>	Enables the sending of a trap when multiple logins are active simultaneously. (Use the <b>no</b> form of this command to disable.)
<b>enable-traps stp-mode</b>	Enables sending of spanning tree traps. (Use the <b>no</b> form of this command to disable.)
<b>location</b> <location>	Enters the specified location (up to 31 characters) as the system location (the physical location of the system).
<b>sysname</b> <system_name>	Enters the specified name (up to 31 characters) as the system name.

## Notes

“Public” and “private” SNMP communities are **not** created by default. If you are using an older config file which includes commands related to public and private community strings, you must include a command to create those strings first.

## Examples

### community:

```
(FS5CX420F1087012) (Config)# snmpd community BigMuddy
```

### community ipaddr:

```
(FS5CX420F1087012) (Config)# snmpd community ipaddr 172.16.0.114 BigMuddy
```

### community ipmask:

```
(FS5CX420F1087012) (Config)# snmpd community ipmask 255.255.255.0 BigMuddy
```

### community mode:

```
(FS5CX420F1087012) (Config)# snmpd community mode BigMuddy
```

### community ro:

```
(FS5CX420F1087012) (Config)# snmpd community ro BigMuddy
```

### community rw:

```
(FS5CX420F1087012) (Config)# snmpd community rw BigMuddy
```

### contact:

```
(FS5CX420F1087012) (Config)# snmpd contact Roger_Hoskins_650-555-7890
```

**enable-traps authentication:**

(FS5CX420F1087012) (Config)# snmpd enable-traps authentication

**enable-traps bcaststorm:**

(FS5CX420F1087012) (Config)# snmpd enable-traps bcaststorm

**enable-traps linkmode:**

(FS5CX420F1087012) (Config)# snmpd enable-traps linkmode

**enable-traps multiusers:**

(FS5CX420F1087012) (Config)# snmpd enable-traps multiusers

**enable-traps stp-mode:**

(FS5CX420F1087012) (Config)# snmpd enable-traps stpmode

**location:**

(FS5CX420F1087012) (Config)# snmpd location sunnyvale

**sysname:**

(FS5CX420F1087012) (Config)# snmpd sysname FortiSwitch\_500\_S1

## 4.2.50 *snmp-trap*

### Syntax

```
snmp-trap { <trap_name> <ip_address> [ snmpversion { snmpv1 | snmpv2 } ] | ipaddr  
<trap_name> <ip_address_old> <ip_address_new> | mode <name> <ip_address> |  
snmpversion <trap_name> <ip_address> { snmpv1 | snmpv2 } }
```

### Purpose

To configure and enable custom SNMP traps.

### Defaults

- No custom traps are enabled by default.
- SNMP version 2 is used by default.

### Options & Parameters

<code>&lt;trap_name&gt; &lt;ip_address&gt; [ snmpversion { snmpv1   snmpv2 } ]</code>	Specifies the trap name and the IP address of the SNMP server. The <b>snmpversion</b> option specifies the SNMP version of the trap; the default is version 2. The value of <code>&lt;trap_name&gt;</code> must be either one of the standard SNMP traps listed below or the name of an SNMP community configured on the switch.
<code>ipaddr &lt;trap_name&gt; &lt;ip_address_old&gt; &lt;ip_address_new&gt;</code>	Allows the operator to change the IP address of the SNMP server. This is used only when the IP address of the server has changed.
<code>mode &lt;trap_name&gt; &lt;ip_address&gt;</code>	Enables the SNMP trap of the specified name and SNMP server IP address.
<code>snmpversion &lt;trap_name&gt; &lt;ip_address&gt; { snmpv1   snmpv2 }</code>	Configures the SNMP version for the specified trap.

### Notes

- Five traps are enabled by default (see **snmpd** on page 238). This command allows for the creation of up to five additional custom traps.
- The `<trap_name>` parameter specifies the type of trap flag to be enabled. It must be either a standard SNMP trap name as described in RFC 1157 or the name of a configured SNMP community. Using a standard trap name will add a flag for that trap; using an SNMP community name will send uptime information about the specified community.

#### Acceptable trap names:

- coldStart
- warmStart
- linkUp
- linkDown
- egpNeighborLoss

- the name of a configured SNMP community

## **Examples**

### **default:**

```
(FS5CX420F1087012) (Config)# snmp-trap test1 172.16.0.144 snmp-version snmpv1
```

This adds an SNMP trap to monitor uptime of community “test1” in format SNMPv1. **Note:** this assumes that an SNMP community named “test1” has been configured on the switch.

### **ipaddr:**

```
(FS5CX420F1087012) (Config)# snmp-trap ipaddr test1 172.16.0.113 172.16.0.114
```

This changes the IP address to which the SNMP trap set above is sent.

### **mode:**

```
(FS5CX420F1087012) (Config)# snmp-trap mode test1 172.16.0.114
```

This enables the SNMP trap added under “default” above.

### **snmpversion:**

```
(FS5CX420F1087012) (Config)# snmp-trap snmp-version test1 172.16.0.114 snmpv1
```

This specifies that the SNMP trap added under “default” above is using SNMP version 1 (used primarily for compatibility with trap receivers which do not support SNMP version 2).

## 4.2.51 *sntp*

### Syntax

```
sntp { broadcast client poll-interval <6-10> | client { mode { broadcast | unicast } | port <1-65535> } | server <ip_address> [1-3] [version] [1-65535] | unicast client { poll-interval <6-10> | poll-retry <0-10> | poll-timeout <1-30> } }
```

### Purpose

To configure a Simple Network Time Protocol (SNTP) server and its parameters.

### Defaults

- Broadcast client poll-interval is 6 by default.
- Unicast client poll-interval is 6 by default.
- The SNTP client port ID is set to 123 by default.
- The unicast client poll retry value is set to 1 by default.
- The unicast client poll timeout is set to 5 seconds by default.

### Options & Parameters

<b>broadcast client poll interval</b> <6-10>	Sets the poll interval (in seconds) for SNTP broadcast clients as a power of two (e.g., a value of 6 is a poll interval of 2 <sup>6</sup> or 64 seconds).
<b>client mode { broadcast   unicast }</b>	Sets the SNTP client mode to broadcast or unicast.
<b>client port</b> <1-65535>	Sets the SNTP client port ID value. The default is 123.
<b>server</b> <ip_address> [1-3] [1-4] [1-65535]	Configures the SNTP server; <ip_address> specifies the address of the SNTP server, [1-3] sets the SNTP server priority, [1-4] sets the SNTP version and [1-65535] sets the SNTP server port ID.

### Examples

#### **broadcast client poll interval:**

```
(FS5CX420F1087012) (Config)# sntp broadcast client poll-interval 6
```

#### **client mode:**

```
(FS5CX420F1087012) (Config)# sntp client mode broadcast
```

#### **client port:**

```
(FS5CX420F1087012) (Config)# sntp client port 55013
```

#### **server:**

```
(FS5CX420F1087012) (Config)# sntp server 172.16.0.155 3 2
```

## 4.2.52 *spanning-tree*

### Syntax

```
spanning-tree {bpdu-migration-check { <slot/port> | all} | configuration {name <name> | revision <0-65535> } | force-version {802.1d | 802.1s | 802.1w}| forward-time <4-30> | hello-time <1-10> | max-age <6-40> | max-hops <1-127> | mst {instance <1-64> | <0-64> {priority <0-61440> | vlan <1-4094> } } }
```

### Purpose

To enable and configure Spanning-Tree Protocol (STP).

### Defaults

The default behavior of this command is to enable Spanning-Tree Protocol (STP) on the switch. The defaults for the parameters it configures are as follows:

- MSTP is enabled on the switch by default.
- MST region name is set to Fortinet by default.
- BPDU migration check is disabled by default.
- Forward time is set to 15 seconds by default.
- Hello time is set to 2 seconds by default.
- Maximum bridge age (max-age) is set to 20 seconds by default.
- Maximum hops is set to 20 by default.
- Bridge priority is set to 32768 by default.

### Options & Parameters

<b>bpdu-migration-check</b> { <slot/port>   all }	Force the specified port (or all ports) to transmit RSTP or MSTP BPDUs. <b>Note:</b> This operation is available only in bridges that support RSTP or MSTP.
<b>configuration</b> {name <name>   revision <0-65535> }	<b>Name</b> specifies the name of the MST region in which the switch is operating (maximum of 32 characters); <b>revision</b> sets the configuration identifier revision level.  The default MST region name is Fortinet (appropriate for a single chassis, which can have any name for its MST region). See notes below.  If configuring a multi-chassis fabric, use this command to change the MST region name to FortiSwitch.  In most cases, the revision number is not to be changed.
<b>force-version</b> {802.1d   802.1s   802.1w}	Sets the force protocol version parameter, determining which variety of spanning-tree is to be used by the switch. <b>802.1d</b> enables STP, <b>802.1s</b> enables MSTP, and <b>802.1w</b> enables RSTP.
<b>forward-time</b> <4-30>	Sets the bridge forward delay time in seconds. Value must be greater than or equal to (bridge max age / 2) + 1.
<b>hello-time</b> <1-10>	Sets the hello time in seconds. Value must be less than or

	equal to (bridge max age / 2) - 1.
<b>max-age</b> <6-40>	Sets the bridge max age in seconds. Value must be less than or equal to 2*(bridge forward delay time - 1).
<b>max-hops</b> <1-127>	Sets the MSTP maximum hops parameter for the common and internal spanning tree.
<b>mst instance</b> <1-64>	Creates an MST instance with the specified identifier. The bridge priority is set to 32768 on leaf switches, or automatically determined based on the spine ID for spine switches.
<b>mst</b> <0-64> <b>priority</b> <0-61440>	Sets the bridge priority for a specified MST instance. Used primarily for troubleshooting and debugging; appropriate bridge priority is set automatically based on spine settings.
<b>mst</b> <0-64> <b>vlan</b> <1-4094>	Adds the specified VLAN to the specified MST instance.

## Notes

- The default MST region name is “Fortinet” – appropriate for a single switch. In order for the switch to participate in a fabric, the MST region name must be changed to “FortiSwitch” (case sensitive).
- The FortiSwitch-500 uses STP version 802.1s (MSTP) by default; to use STP or RSTP, the operator must use the appropriate **spanning-tree force-version** command.
- Interface-level spanning-tree configuration is done in Config-LAG Mode and Config-Port Mode.
- Specifying an MST identifier of 0 indicates that there is only a single spanning tree in operation.

## Examples

### bpdu-migration-check:

```
(FS5CX420F1087012) (Config)# spanning-tree bpdu-migration-check 2/1
```

### configuration:

```
(FS5CX420F1087012) (Config)# spanning-tree configuration name FortiSwitch
```

This sets the MST region name to “FortiSwitch” in order to prepare this switch to participate in a multi-chassis fabric deployment.

### force-version:

```
(FS5CX420F1087012) (Config)# spanning-tree force-version 802.1d
```

### forward-time:

```
(FS5CX420F1087012) (Config)# spanning-tree forward-time 20
```

### hello-time:

```
(FS5CX420F1087012) (Config)# spanning-tree hello-time 12
```

**max-age:**

```
(FS5CX420F1087012) (Config)# spanning-tree max-age 35
```

**max-hops:**

```
(FS5CX420F1087012) (Config)# spanning-tree max-hops 65
```

**mst instance:**

```
(FS5CX420F1087012) (Config)# spanning-tree mst instance 1
```

**mst priority:**

```
(FS5CX420F1087012) (Config)# spanning-tree mst 13 priority 0
```

This sets the bridge priority for MST instance 13 to a value of 0. Note that this would usually be done only for troubleshooting or debugging purposes.

**mst vlan:**

```
(FS5CX420F1087012) (Config)# spanning-tree mst 1 vlan 1
```

## 4.2.53 *tacacs-server host ip-address*

### **Syntax**

**tacacs-server host ip-address** [**port** *integer*] [**timeout** *integer*] [**key** *string*]

### **Purpose**

To add the IP address specified to the end of a list of TACACS+ servers. A list of TACACS+ servers can be created by running this command with different IP addresses.

### **Defaults**

None.

### **Options & Parameters**

<b>port</b> <i>integer</i>	Specifies the TCP port number to be used when making connections to the TACACS+ daemon. The default port number is 49.
<b>timeout</b> <i>integer</i>	Specifies the period of time (in seconds) the router will wait for a response from the daemon before it times out and declares an error.
<b>key</b> <i>string</i>	Specifies an encryption key for encrypting and decrypting all traffic between the network access server and the TACACS+ daemon.

## 4.2.54 *tacacs-server key*

### **Syntax**

**tacacs-server key** *key*

### **Purpose**

To set the TACACS+ authentication key and encryption key. The same key must be configured on the TACACS+ daemon for encryption to be successful.

### **Defaults**

None.

### **Options & Parameters**

<b>key</b> <i>key</i>	Specifies the key
-----------------------	-------------------

## 4.2.55 USERS

### Syntax

```
users {access-mode <user_name> {readonly | readwrite} | default-login <list_name> | login <user_name> <list_name> | name <user_name> | password <user_name> | snmpv3 {access-mode <user_name> {readonly | readwrite} | authentication <user_name> {none | md5 | sha} | encryption <user_name> { none | des <key> } } }
```

### Purpose

To create and configure user login accounts for access to the switch.

### Defaults

SNMPv3 access mode is set to read-write by default for “admin” and to read-only by default for all other users.

### Options & Parameters

<b>access-mode</b> <user_name> {readonly   readwrite}	Sets the access mode for the specified user.
<b>default-login</b> <list_name>	Sets the default authentication list for non-configured users.
<b>login</b> <user_name> <list_name>	Sets the authentication list for the specified user.
<b>name</b> <user_name>	Adds a new user with the specified name.
<b>password</b> <user_name>	Sets or re-sets the login password for the specified user. User is prompted to enter old and new passwords; for no password, press enter.
<b>snmpv3 access-mode</b> <user_name> {readonly   readwrite}	Sets the Simple Network Management Protocol version 3 (SNMPv3) access mode for the specified user.
<b>snmpv3 authentication</b> <user_name> {none   md5   sha}	Sets the SNMPv3 authentication mode for the specified user.
<b>snmpv3 encryption</b> <user_name> { none   des <key> }	Sets encryption mode for the specified user. If setting the mode to Data Encryption Standard (DES), an encryption key must be supplied. <b>Note:</b> authentication must be enabled for the specified user before encryption can be set.

### Examples

#### access-mode:

```
(FS5CX420F1087012) (Config)# users access-mode bob readonly
```

#### default-login:

```
(FS5CX420F1087012) (Config)# users default-login defaultLoginList
```

**login:**

(FS5CX420F1087012) (Config)# users login bob bobsLoginList

**name:**

(FS5CX420F1087012) (Config)# users name bob

**passwd:**

(FS5CX420F1087012) (Config)# users passwd bob

Enter old password:

Enter new password:\*\*\*

Confirm new password:\*\*\*

Password Changed!

**snmpv3 access-mode:**

(FS5CX420F1087012) (Config)# users snmpv3 access-mode bob readonly

**snmpv3 authentication:**

(FS5CX420F1087012) (Config)# users snmpv3 authentication bob md5

**snmpv3 encryption:**

(FS5CX420F1087012) (Config)# users snmpv3 encryption bob des 0E329232EA6D0D73

## 4.2.56 *vlan*

### **Syntax**

vlan

### **Purpose**

To enter Config-VLAN Mode in order to create or configure a VLAN.

### **Options & Parameters**

This command has no options or parameters.

### **Example**

```
(FS5CX420F1087012) (Config)# vlan
```

# 5 Debug Mode

---

## 5.1 Overview

The Debug Mode provides commands for debugging purposes and low-level visibility into switch functions.

**NOTE: Many Debug Mode commands have the potential to DAMAGE THE SYSTEM, and should be used ONLY under direct guidance from a Fortinet support technician.**

For further information, please contact Fortinet technical support.

### 5.1.1 Access

This mode is accessed by using the **debug** command in Enable Mode.

### 5.1.2 Exit

To exit from this mode, use the **exit** or **end** command to return to Enable Mode.

## 5.2 Commands

<b>bcm-test</b>	Debug the switching chip.
<b>end</b>	Exit to Enable Mode.
<b>exit</b>	Exit to Enable Mode.
<b>filter-msg</b>	Filter the debug messages.
<b>port-map</b>	Display the port map for the switching chip.
<b>vsp</b>	VSP debug command.

# 6 File Mode

---

## 6.1 Overview

The File Mode provides commands for image updating and file transfer.

### 6.1.1 Access

This mode is accessed by using the **file** command in Enable Mode.

### 6.1.2 Exit

To exit from this mode, use the **exit** or **end** command to return to Enable Mode.

## 6.2 Commands

## 6.2.1 copy

### Syntax

```
copy { [path/] <source_file_name> | default-config | running-config | startup-config } { [path/] <destination_file_name> | startup-config }
```

### Purpose

To copy files or images to and from the internal or external disk. If no path is specified, the files/images are copied *from* and *to* the internal disk.

### Options & Parameters

[path/]	Specifies a file path for the source or destination file. If none is specified, the source and destination paths are both assumed to be the internal disk.
disk	Specifies the disk from which the system booted as the file path. (Not usually necessary, since the default file path is the internal disk.)
extdisk	Specifies the external disk as the file path, regardless of where the system booted from. (See examples below.)
intdisk	Specifies the internal USB flash as the file path, regardless of where the system booted from.
<source_file_name>	The name of the file being copied.
<destination_file_name>	The name of the file to which data is being copied.
default-config	Specifies the factory default configuration settings file as the source to copy from. <b>Note:</b> default-config cannot be used as the destination.
running-config	Specifies the currently running configuration (saved or not) as the source to copy from. <b>Note:</b> you cannot use running-config for the destination.
startup-config	Specifies the startup configuration file as the source or the destination (see examples below). <b>Note:</b> when changes made to the running configuration are saved on exit from the CLI, these changes are saved to the startup configuration file on the internal disk.

### Notes & Examples

Each FortiSwitch-500 has two storage locations: the internal disk (specified by **disk** in the CLI) and the external disk (specified by **extdisk** in the CLI). Because the external disk can be easily removed, the configuration file used by the switch at startup is stored on the internal disk. By default, the **copy** command uses the internal disk as both its default source path and its default destination path.

**Also please note that as of the date of this publication, the external disk is not yet supported.**

**default example:**

```
(FS5CX420F1087012) (File)# copy newbootfile bootfile.062707
```

This will copy the file “newbootfile” on the internal disk into the file “bootfile.062707,” also on the internal disk.

**copying from external to internal disk:**

```
(FS5CX420F1087012) (File)# copy extdisk/monkeyfile disk/monkeyfile
```

This copies a file called “monkeyfile” from the external disk to the internal disk.

While the **copy** command is primarily used for copying u-boot image files, system image files, core dump files, trace files, syslog files, etc. between the internal and external disks, the command can also be used for the following.

**To reset the startup configuration to the manufacturer default configuration:**

```
(FS5CX420F1087012) (File)# copy default-config startup-config
```

This copies the settings from the default configuration file to the startup configuration file on the internal disk.

**to copy the currently running configuration to a file:**

```
(FS5CX420F1087012) (File)# copy running-config startup-config
```

This copies the running configuration to the startup configuration file on the internal disk.

```
(FS5CX420F1087012) (File)# copy running-config config061907
```

This copies the running configuration to a file called “config061907” on the internal disk.

To copy files to or from an external location (using a network address or other locator), use the **ftp** or **tftp** commands. (See page 262 and page 274)

## 6.2.2 *delete*

### **Syntax**

**delete** [*path*] <*file\_name*>

### **Purpose**

To delete files; files can be deleted from the internal or external disk.

### **Defaults**

Deletes the specified file from the internal disk.

### **Options & Parameters**

[ <i>path</i> ]	Specifies the file path of the file to be deleted; <b>extdisk</b> / <i>&lt;file_name&gt;</i> specifies that the file is to be deleted from the external disk; otherwise the default location is the internal disk.
< <i>file_name</i> >	Specifies the file to be deleted.

### **Example**

(FS5CX420F1087012) (File)# delete oldDefault.scr

This will delete the file “oldDefault.scr” from the internal disk.

## 6.2.3 *devs*

### **Syntax**

`devs`

### **Purpose**

Show all flash devices in the system indicating which are present, mounted, and their CLI names.

### **Defaults**

None.

### **Options & Parameters**

None.

### **Example**

```
Device Mountpoint
external/extdisk
internal /intdisk
```

or

```
Device      Mountpoint
external    present but not mounted
internal    /intdisk
```

or

```
Device      Mountpoint
external    not present
internal    /intdisk
```

Information from the standby disks that are present may also be included, just below the active devices. For the standby devices no mountpoints will be shown.

```
Device      Mountpoint
external/extdisk
internal /intdisk
standbyextdisk
standbyintdisk
```

## 6.2.4 *dir*

### **Syntax**

`dir [ disk | LOG | CORE | extdisk ]`

### **Purpose**

To display the contents of the internal or external disk.

### **Defaults**

The contents of the internal disk are displayed by default.

### **Options & Parameters**

<b>disk</b>	Displays the contents of the disk from which the system booted.
<b>LOG</b>	Displays the contents of the LOG directory of the internal disk.
<b>CORE</b>	Displays the contents of the CORE directory of the internal disk.
<b>extdisk</b>	Displays the contents of the external disk. <b>Note:</b> as of the date of this publication, the external disk is not yet supported.
<b>intdisk</b>	Displays the contents of the internal disk.
<b>standby:disk</b>	Displays the contents of the internal disk.
<b>standby:extdisk</b>	Displays the contents of the external disk. <b>Note:</b> as of the date of this publication, the external disk is not yet supported.

### **Example**

```
(FS5CX420F1087012) (File)# dir extdisk
```

```
Fri Feb 27 15:07    2594 E2_single_chassis.scr
Wed Mar 11 13:49    1403 NCI.scr
Thu Mar 26 08:15  25546792 fsos.fortiswitch500.img
Wed Mar 18 16:15    1432 hybrid-1S2E
Fri Mar 27 14:39  25546792 fsos.fortiswitch500v4.01.img
Thu Mar 26 19:17    1663 soaking.scr
Thu Apr  9 09:02    1663 soak.5625.scr
Thu Apr  9 08:49  25546792 fsos.fortiswitch500v4.02.img
Thu Apr  9 08:59    744 radius.scr
```

```
Disk Usage: total 864964K|available 670580K|used 194384K(22%)
```

Dir Operation Completed!

## 6.2.5 *end*

### **Syntax**

`end`

### **Purpose**

To exit to Enable Mode.

### **Options & Parameters**

This command has no options or parameters.

### **Example**

(FS5CX420F1087012) (File)# `end`

## 6.2.6 *exit*

### **Syntax**

`exit`

### **Purpose**

To exit to Enable Mode.

### **Options & Parameters**

This command has no options or parameters.

### **Example**

(FS5CX420F1087012) (File)# `exit`

## 6.2.7 *format*

### **Syntax**

**Format** extdisk vfat

### **Purpose**

Formats an external USB device for transferring files with Windows. Typically this command does not need to be used because USB devices by default have a windows-compatible format. The internal device must always be formatted in Fortinet USB boot format and so it is not available as a target.

### **Defaults**

None.

### **Options & Parameters**

extdisk	Specifies the external USB flash. For internal flash, use the “install” command.
vfat	Specifies vfat format (the only option). For a Fortinet-bootable format, use the “install” command.

## 6.2.8 ftp

### **Syntax**

**ftp** <ip\_address> [1-65535]

### **Purpose**

To connect to a File Transfer Protocol (FTP) server in order to upload or download files.

### **Defaults**

The FTP connection uses destination TCP port 21 by default.

### **Options & Parameters**

<ip_address>	Specifies the valid host IP address for the FTP server.
[1-65535]	Specifies the destination TCP port on the FTP server. If no port number is entered, the default is port 21.

### **Example**

```
(FS5CX420F1087012) (File)# ftp 10.10.50.52 1021
```

```
Connected to 10.10.50.52.
```

```
220 (vsFTPD 2.0.5)
```

```
Name (10.10.50.52:root): anonymous
```

```
331 Please specify the password.
```

```
Password:
```

```
230 Login successful.
```

```
Remote system type is UNIX.
```

```
Using binary mode to transfer files.
```

## 6.2.9 *info*

### Syntax

**info** <path>

**info** system installed

**info** boot-loader installed

**ftp** <ip\_address> [1-65535]

### Purpose

Show information about a file. If the file is a bootable file, indicates the processor type, creation date/time, software version, size, and FS chassis type. For non-bootable files indicates the size and last modified date/time.

The second and third forms permit obtaining information on the hidden installed images and boot code.

### Defaults

None.

### Options & Parameters

<path>

The path ending with the name of a file, in UNIX-style format. An optional directory portion may be specified.

### Example

```
File Name ..... linux.dmsk.mc.img
Created ..... Mon Jan 12 20:17:54 2009
Version ..... FS-1000 MC 3433
Data Size ..... 27262988 Bytes = 26.00 MB
Bootable ..... Yes
```

Example 2:

```
File Name ..... Fortinet-support-20070704-210041.txt
Created ..... Sun Jan 4 21:00:54 2009
Data Size ..... 726390 Bytes
```

Example 3:

```
File Name ..... MngCard_image.bin
Created ..... Apr 30 2009 11:16:23
Version ..... FS-1000 MC 271
Boot Partition ..... MainBlock v2.1
Data Size ..... 4063232 Bytes
```

## 6.2.10 *install*

### **Syntax**

**install** { **internal** | **external** } <version | filename> [reformat]

### **Purpose**

Using the flash device that was used to boot up the present system, this command installs a new Fortinet software version onto the flash device that was not used to boot the system. It also copies the default configuration to the target device. In the second form, this command installs a new bootflash (identical functionality to the existing but deprecated update command).

To facilitate post-install work, if the running configuration is different from the startup configuration, the user will be prompted first whether or not to save the running configuration (similar to what is done for the reboot command).

Because this is a potentially destructive operation, a number of checks are made and the user is prompted for confirmation before proceeding. The system will indicate which device is going to be the target of the install before prompting the user for confirmation. The system will check for the presence of an appropriate version and solicit the user's input before carrying out a reformat operation, if the reformat keyword was specified. Afterwards, the system will verify that the newly installed image is valid by checking that the checksum matches.

In addition to installing the specified files, the original file(s) used to perform the installation are also copied. This allows the newly created flash to be used immediately to install from and recover a flash on a different system.

The system will complete the process by leaving the device in an unmounted state. If additional files are wanted, such as the startup configuration, the user must manually mount the device, and copy the files. If the external USB is used then the user must manually unmount it before removing it.

### **Defaults**

If no version or filename parameter is specified, the system will scan the disk and present a brief menu of available software versions. Since the scan may take some time, a brief message will display: "Please wait while disk is scanned for candidate versions for installation." Example output:

There are following images available to install:

(1) version 2-0-0, build 3423;

(2) version 2-0-0, build 4322;

(3) version 1-4-0, build 2833;

Choose one to install into external disk:

### **Options & Parameters**

<version>

Version of the software to be installed. The system will automatically scan the file system to locate files of the specified version. All components (MC, FC, and LC) must be present and available on the source (booted) USB flash. The syntax for version is the same as that displayed by the show system version command: three-numeric fields separated by dashes. Example: 2-

	<p>0-0. Optionally, the build number may be appended as a suffix.  Example: 2-0-0.4377</p>
<i>&lt;filename&gt;</i>	<p>Instead of specifying a software version, the user may specify a filename directly. In the case of the FS1000 all files belonging to a particular set must follow the factory-shipped naming convention with the files ending in a .MC.img suffix for the MC, a .LC.img suffix for the LC, and a .FC.img suffix for the FC. In addition, the base filename portion (without the suffix) must be the same for all three image types. Example: linux.dmsk.</p>
<b>external</b>	<p>The install operation will install the software from the internal USB flash to the external USB flash. The system must have been booted from the internal flash to use this operation.</p>
<b>internal</b>	<p>The install operation will install the software from the external USB flash to the internal USB flash. The system must have been booted from the external flash to use this operation.</p>
<b>reformat</b>	<p>If this option is specified, the target flash will be reformatted. Otherwise the target flash must already be in the proper Fortinet boot-USB flash format.  Without the reformat option, only the portion of the USB flash required to boot the system on the specified version will be touched. Other files such as config files, logs, etc., will remain as is. Note that there must be sufficient space on the USB flash when the option is not used.</p>

## 6.2.11 *mount*

### **Syntax**

**mount** { intdisk | extdisk }

### **Purpose**

Make a file system available for file-operations.

If a valid partition is mounted, the CLI mount point is displayed for future usage. If the partition is already mounted, the CLI mount point is displayed also. This command is most useful after using the format or install command, or when a device has been explicitly unmounted by the user.

### **Defaults**

None.

### **Options & Parameters**

<b>intdisk</b>	Refers to the internal USB flash.
<b>extdisk</b>	Refers to the external USB flash.

### **Notes**

The mount command can be used to mount a newly inserted or newly formatted USB filesystem. The implementation will automatically discern the filesystem format (Fortinet or vfat) and mount the device appropriately. A user cannot mount a currently mounted device.

## 6.2.12 *pwd*

### **Syntax**

`pwd`

### **Purpose**

Display the current working directory.

### **Defaults**

None.

### **Options & Parameters**

None.

## 6.2.13 *rename*

### **Syntax**

**rename oldpath newpath**

### **Purpose**

Rename a file or directory. Renaming of critical system files or critical system directories is not allowed.

### **Defaults**

None.

### **Options & Parameters**

<b>oldpath</b>	The old path, ending with the name of a file in unix-style format. An optional directory portion may be specified.
<b>newpath</b>	The new path, ending with name of a file in unix-style format. An optional directory portion may be specified.

## 6.2.14 *script*

### **Syntax**

**script** { **apply** | **show** | **validate** } [*path*] <*script\_name.scr*>

### **Purpose**

To apply, view or evaluate a configuration script stored on an attached disk.

### **Defaults**

If no file path is supplied, script is assumed to be on the internal disk.

### **Options & Parameters**

<b>apply</b>	Applies the specified configuration script.
<b>show</b>	Shows the contents of the specified configuration script.
<b>validate</b>	Validates the specified configuration script.
[ <i>path</i> ]	Specifies the file path to the script file; <b>extdisk</b> / <i>script_name.scr</i> specifies that the script file is on the external disk; otherwise the default location is the internal disk.
< <i>script_name.scr</i> >	Specifies the script to be acted upon. The extension <b>.scr</b> is optional.

### **Notes**

If the script to be acted upon does not reside on the internal disk, a file path (e.g., **extdisk/**) must be supplied.

Running a configuration script adds to the running configuration rather than replacing it. To *replace* the running configuration with a configuration script, first reset the configuration to manufacturer defaults by using the command sequence **copy default-config startup-config** and resetting the switch using the **reload** command, then use **script** to run the script.

### **Examples**

#### **apply:**

```
(FS5CX420F1087012) (File)# script apply mincfg.scr
```

#### **show:**

```
(FS5CX420F1087012) (File)# script show single-chassis.scr
```

```
1 : !Current Configuration:
```

```
2 : !
```

```
3 : !System Description "FortiSwitch Ethernet Fabric Switch (FortiSwitch-500)"
```

```
4 : !System Description v4.0,build0202,091015
```

```
5 : !
```

```
6 : no paging
```

```
7 : configure
```

8 : snmpd sysname "Leaf-2-r9"

9 : prompt "Leaf-2-r9"

[etc.]

**validate:**

(FS5CX420F1087012) (File)# script validate mincfg.scr

configure

mgmt-ip sshd

vlan

exit

Configuration script 'mincfg.scr' validated.

## 6.2.15 *show*

### **Syntax**

**show** *path*

### **Purpose**

Show the contents of a file. Only text files can be displayed such as user configuration scripts and log files.

### **Defaults**

None.

### **Options & Parameters**

<i>path</i>	The file path, ending with the name of a file in unix-style format. May contain an optional directory portion.
-------------	--

## 6.2.16 *system image*

### **Syntax**

**system image** [*path*] <*file\_name*>

### **Purpose**

To update the system image.

### **Options & Parameters**

[ <i>path</i> ]	Specifies the file path to the system image file. <b>extdisk</b> / <i>&lt;file_name&gt;</i> specifies that the image file is on the external disk; otherwise the default location is the internal disk.
< <i>file_name</i> >	Specifies the file from which the system image is to be updated.

### **Notes**

When upgrading system files in a fabric, all system images on all switches should be from the same build; Fortinet recommends upgrading *all* system images when performing a system upgrade on a fabric.

To update the boot-loader image (BIOS) for a switch, use the **update** command. (See page 276) (Note that boot-loader images are rarely updated in the field.)

### **Example**

(FS5CX420F1087012) (File)# system image wfos.1-3-0.fc.img

## 6.2.17 *tftp*

### Syntax

```
tftp {get <ip_address>:<file_path>/<file_name> [target_file] | put <file_name>  
<ip_address>:<file_path>/[target_file] }
```

### Purpose

To upload or download files to or from a Trivial File Transfer Protocol (TFTP) server.

### Options & Parameters

<b>get</b>	Downloads the specified file from the specified TFTP server.
<b>put</b>	Uploads the specified file to the specified TFTP server.
<ip_address>	Specifies the valid host IP address for the TFTP server.
<file_path>	Specifies the file path.
<file_name>	Specifies the file name.
[ <i>target_file</i> ]	Specifies the optional target file name. If none is specified, the name of the source file is used.

### Examples

#### get:

```
(FS5CX420F1087012) (File)# tftp get 172.67.0.115:/scripts/20070621Default.scr newDefault.scr
```

This goes to the “scripts” directory at the specified IP address and downloads a file called “20070621Default.scr” into a file called “newDefault.scr” on the internal disk.

#### put:

```
(FS5CX420F1087012) (File)# tftp put newDefault.scr 172.67.0.115:/scripts/
```

This copies a file called “newDefault.scr” from the internal disk to a file of the same name in the “scripts” directory at the specified IP address.

## 6.2.18 *unmount*

### **Syntax**

`unmount { intdisk | extdisk }`

### **Purpose**

Safely prepare a device for physical removal, or for use by the `install` or `format` commands. One cannot unmount the device used to boot the system (see the **`whichboot`** command).

### **Options & Parameters**

<b>intdisk</b>	Refers to the internal USB flash
<b>extdisk</b>	Refers to the external USB flash

### **Notes**

The internal device `intdisk` can only be unmounted if the system was booted from the external USB device.

A special case arises when trying to unmount an external flash if the system has been booted from the external flash. See the use case for the `install internal` command above.

## 6.2.19 *update boot-loader (deprecated)*

### **Syntax**

**update boot-loader** { **mgmt** | **line** | **fabric** } [1-2] *path*

This command is deprecated. Use the **install boot-loader** command instead.

### **Purpose**

Updates the bootflash image on the specified cards. The path must refer to a file that has a boot image of the correct type for the cards that are specified. You can use the info command to verify the contents of the boot image.

If no bootblock parameters are detected, the command will prompt for additional user-defined parameter values (such as ipaddr, gateway, etc) and will generate a default parameter bootblock.

Updating boot code is a sensitive operation. Power must be maintained to the card at all times during the update. The user will be prompted, "Make sure you have verified any compatibility issues with the current version of the running software "Do you really want to update boot code?"

The update command double-checks the appropriateness of the binary file used to make the bootflash image (cpu-type and that the image type is a bootflash image). Before writing the image, a checksum is computed on the source. If a reference is available, it is compared. After writing the image, the command checksums the written image and verifies that it matches the original computed checksum against the file.

### **Defaults**

None.

### **Options & Parameters**

<i>[path/]</i>	Specifies the file path to the boot loader image file, in unix-style format. May contain an optional directory portion.
----------------	---

### **Notes**

**Caution:** Before using the **system image** or **update boot-loader** command, be sure that you are loading the appropriate image file; ***boot-loader images are rarely updated in the field.***

Also note when upgrading system files in a fabric that all system images on all switches should be from the same build; Fortinet recommends upgrading *all* system images when performing a system upgrade.

## 6.2.20 *verify*

### **Syntax**

`verify { boot-loader image | system image } [path/] <file_name>`

### **Purpose**

To verify the checksum of an image file.

### **Options & Parameters**

<b>boot-loader image</b>	Verifies a boot-loader image.
<b>system image</b>	Verifies a system image.
<code>[path/] &lt;file_name&gt;</code>	Specifies the path and file name for the image to be verified. If no path is specified, the default location is the internal disk.

### **Examples**

#### **Example showing failed verification:**

```
(FS5CX420F1087012) (File)# verify system image linux.dmsk.img
verify image: Bad data checksum 8a18fb4c 64b762ea
verify system image: Failed
```

#### **Example showing successful verification:**

```
(FS5CX420F1087012) (File)# verify system image fsos.fortiswitch500v4.01.img
```

```
Image:      fortiswitch500v4.0.1
Creation:   Fri Mar 27 19:08:38 2009
Data Size:  25546728 Bytes
Data Checksum: 0x25734CDE
Verification: Passed!
```

## 6.2.21 *whichboot*

### **Syntax**

`whichboot`

### **Purpose**

Display the version of software (X-Y-Z) and 4-digit build number used to boot the present operational system, and whether the system booted off of the internal or external USB flash.

### **Defaults**

None.

### **Options & Parameters**

None.

# 7 Config-LAG Mode

---

## 7.1 Overview

The Config-LAG Mode provides configuration commands for LAGs.

### 7.1.1 Access

This mode is accessed by using the **lag** command in Config Mode (and specifying a LAG ID).

### 7.1.2 Exit

To exit from this mode, use the **exit** command to return to Config Mode or the **end** command to return to Enable Mode.

## 7.2 Commands

## 7.2.1 *add-port*

### **Syntax**

**add-port** <slot/port>

### **Purpose**

To add a port to the LAG being configured.

### **Options & Parameters**

<slot/port>	Specifies the port to be added to the LAG in slot/port format.
-------------	--

### **Note**

**IMPORTANT:** GVRP must be disabled on member ports before they are added to the LAG. Adding member ports with GVRP enabled to a LAG may prevent the LAG from passing traffic.

To enable GVRP on a LAG, first disable GVRP on the member ports using the **no gvrp port-mode** command in Config-Port Mode (see page 304), then assemble the LAG, then enable GVRP on the LAG using the **gvrp port-mode** command in Config-LAG Mode (see page 286).

### **Example**

(FS5CX420F1087012) (Config-LAG 1)#add-port 1/1

## 7.2.2 *delete-port*

### **Syntax**

`delete-port <slot/port>`

### **Purpose**

To remove a port from the LAG being configured.

### **Options & Parameters**

<code>&lt;slot/port&gt;</code>	Specifies the port to be removed from the LAG in slot/port format.
--------------------------------	--

### **Notes**

Removing all ports from a LAG does not delete the LAG itself. To remove the LAG, use the **no** form of the **lag** command in Config Mode.

### **Example**

(FS5CX420F1087012) (Config-LAG 1)#delete-port 1/1

## 7.2.3 *end*

**Syntax**  
    *end*

**Purpose**  
    To exit to Enable Mode.

**Options & Parameters**  
    This command has no options or parameters.

**Example**  
    (FS5CX420F1087012) (Config-LAG 1)# *end*

## 7.2.4 *exit*

### **Syntax**

`exit`

### **Purpose**

To exit to Config Mode.

### **Options & Parameters**

This command has no options or parameters.

### **Example**

```
(FS5CX420F1087012) (Config-LAG 1)# exit
```

## 7.2.5 *fdb-table static*

### **Syntax**

**fdb-table static** <mac\_address>

### **Purpose**

To add a static MAC address to the LAG.

### **Options & Parameters**

<mac_address>	Specifies the static MAC address to add to the FDB table for the LAG.
---------------	---

### **Notes**

To configure the FDB table aging timeout, use the **fdb-table aging-time** command in Config Mode.

If a static MAC address is already configured on the switch, the CLI will reject the configuration command. If the configured static MAC is already learned in the FDB table, the management software will overwrite the MAC entry with the newly configured static entry.

At any point, FortiSwitch OS can only handle any MAC address at one single port. This is different from typical Independent VLAN Learning (IVL) switches, which can configure multiple entries of the same MAC address as long as they have the same VLAN tag.

### **Example**

```
(FS5CX420F1087012) (Config-LAG 1)#fdb-table static 00:1A:F6:00:03:61
```

## 7.2.6 *garp timer*

### **Syntax**

**garp timer** {**join** <10-100> | **leave** <20-600> | **leave-all** <200-6000> }

### **Purpose**

To configure the Generic Attribute Registration Protocol (GARP) timer attributes.

### **Defaults**

- The default GVRP join time is 20 centiseconds.
- The default GVRP leave time is 60 centiseconds.
- The default interval for the generation of leave-all packets is 1000 centiseconds.

### **Options & Parameters**

<b>join</b> <10-100>	Specifies the GVRP join time – the interval between transmission of GARP packets registering membership for a VLAN or multicast group – in centiseconds.
<b>leave</b> <20-600>	Specifies the GVRP leave time – the interval between receiving an unregister request for a VLAN or a multicast group and deleting the VLAN entry – in centiseconds.
<b>leave-all</b> <200-6000>	Specifies the frequency with which “leave-all” packets – packets deleting all registration entries – are generated.

### **Notes**

All forms of the **garp timer** command only have an effect when GVRP is enabled.

The “no” form of this command resets the specified time to the default:

**no garp timer join** resets the GVRP join time to 20 centiseconds

**no garp timer leave** resets the GVRP leave time to 60 centiseconds

**no garp timer leave-all** resets the “leave-all” generation interval to 1000 centiseconds

### **Examples**

```
(FS5CX420F1087012) (Config-LAG 1)#garp timer join 30
```

```
(FS5CX420F1087012) (Config-LAG 1)#garp timer leave 200
```

```
(FS5CX420F1087012) (Config-LAG 1)#garp timer leave-all 2000
```

## 7.2.7 *gvrp port-mode*

### **Syntax**

`gvrp port-mode`

### **Purpose**

To enable or disable GARP VLAN Registration Protocol (GVRP) on this LAG.

### **Options & Parameters**

This command has no options or parameters.

### **Notes**

- **IMPORTANT:** You must disable GVRP on the member ports before assembling them into a LAG; failure to do so will create a LAG which cannot pass traffic.
- In order for GVRP to work on the LAG, GVRP must be enabled on the switch by using the `gvrp admin-mode` command in Config Mode. (See page 204)

### **Example**

```
(FS5CX420F1087012) (Config-LAG 1)#gvrp port-mode
```

## 7.2.8 *lacp*

### **Syntax**

lacp

### **Purpose**

To enable Link Aggregation Control Protocol (LACP) on the LAG.

### **Defaults**

LACP is enabled on all LAGs by default.

### **Options & Parameters**

This command has no options or parameters.

### **Notes**

When LACP is disabled on a LAG, the LAG becomes “static.” To disable LACP, use the **no** form of the command.

### **Examples**

#### **default:**

```
(FS5CX420F1087012) (Config-LAG 1)lacp
```

This enables LACP on LAG 1.

#### **“no” form:**

```
(FS5CX420F1087012) (Config-LAG 1)no lacp
```

This disables LACP on LAG 1.

## 7.2.9 *mtu*

### **Syntax**

mtu <64-10232>

### **Purpose**

To set the Maximum Transmission Unit (MTU) value for the LAG.

### **Defaults**

The MTU value is set to 1522 bytes (tagged) or 1518 bytes (untagged) by default.

### **Options & Parameters**

<64-10232>	Specifies the Maximum Transmission Unit (MTU) size in bytes for the LAG.
------------	--

### **Example**

(FS5CX420F1087012) (Config-LAG 1)#mtu 10232

## 7.2.10 *name*

### **Syntax**

**name** <lag\_name>

### **Purpose**

To set the name for the LAG.

### **Defaults**

Unnamed LAGs are called “default” by default.

### **Options & Parameters**

<lag_name>	Specifies the name to be used for the LAG. Name can be up to 15 alphanumeric characters in length.
------------	--

### **Notes**

A LAG name is used to identify the purpose or nature of the LAG to the operator. The LAG name appears in the output of the **show lag** commands. (See **show lag brief** on page 31 or **show lag** on page 115)

### **Example**

(FS5CX420F1087012) (Config-LAG 1)#name office7LAG

## 7.2.11 *shutdown*

### **Syntax**

**shutdown**

### **Purpose**

To disable the LAG.

### **Options & Parameters**

This command has no options or parameters.

### **Notes**

This command leaves the configuration unchanged, but prevents the LAG from forwarding traffic. To remove the LAG entirely, use the **no** form of the **lag** command. (See page 216)

When a LAG is shut down, its admin mode is disabled and its link status is changed to “down.” For all its member ports, link status is “down” but admin mode remains enabled.

When a LAG is shut down, users cannot add new member ports to the LAG or delete any existing member ports from the LAG. To add or delete member ports, first enable the LAG using the “no” form of this command.

### **Example**

```
(FS5CX420F1087012) (Config-LAG 1)#shutdown
```

## 7.2.12 *spanning-tree*

### Syntax

```
spanning-tree { edgeport | hello-time <1-10> | port-mode | mst { <0> | <1-64> } { cost { <1-200000000> | auto } | external-cost { <1-200000000> | auto } | port-priority <0-240> } }
```

### Purpose

To set and configure the spanning tree operational mode for the LAG.

### Defaults

- There is no default behavior for this command.
- STP is enabled by default on all LAGs (port mode is enabled by default).
- The hello time for the LAG is set to 2 seconds by default.
- Port priority is set to 128 by default.

### Options & Parameters

<b>edgeport</b>	Configures the LAG as an edge port.
<b>hello-time</b> <1-10>	Sets the hello-time for the LAG in seconds. If not specified, default is 2.
<b>port-mode</b>	Enables the LAG for use by spanning trees.
<b>mst</b> { <0>   <1-64> }	Configures a Multiple Spanning Tree (MST) instance. Using <b>0</b> as the instance identifier configures the common and internal spanning tree. To configure another existing MST, use its identifier (between 1 and 64).
<b>cost</b> { <1-200000000>   <b>auto</b> }	Specifies the path cost (within the MST region) for the LAG when used by the specified MST instance. If <b>auto</b> is used in place of a numeric value, the path cost value is calculated automatically on the basis of link speed.
<b>external-cost</b> { <1-200000000>   <b>auto</b> }	Specifies the external path cost (outside the MST region) for the LAG when used by the specified MST instance. If <b>auto</b> is used in place of a numeric value, the external path cost value is calculated automatically on the basis of link speed. <b>Note:</b> spanning tree version 802.1s (MSTP) is the default; if using version 802.1d (STP) or version 802.1w (RSTP) instead, use the <b>external-cost</b> option for configuring path cost for the LAG.
<b>port-priority</b> <0-240>	Specifies the priority for the port used by the specified MST instance.

### Notes

- Switch-level spanning-tree configuration is performed in Config Mode. (See **spanning-tree** on page 244)
- MSTP (802.1s) is the default spanning tree protocol used on the FortiSwitch-500. If you have configured the switch to run STP or RSTP instead, use the **external-cost** option to configure spanning tree path cost for the LAG.

### Examples

**edgeport:**

(FS5CX420F1087012) (Config-LAG 1)#spanning-tree edgeport

**hello-time:**

(FS5CX420F1087012) (Config-LAG 1)#spanning-tree hello-time 10

**mst:**

(FS5CX420F1087012) (Config-LAG 1)#spanning-tree mst 0 external-cost auto

**port-mode:**

(FS5CX420F1087012) (Config-LAG 1)#spanning-tree port-mode

## 7.2.13 *vlan*

### Syntax

**vlan** { **acceptframe** { **all** | **vlanonly** } | **participation** {**auto** <1-4094> | **exclude** <1-4094> | **include** <1-4094> } **priority** <0-7> | **pvid** <1-4094> | **tagging** <1-4094> }

### Purpose

To configure VLAN parameters for the LAG.

### Defaults

- The frame acceptance mode is set to “all” by default.
- The VLAN ID is set to 1 by default.

### Options & Parameters

<b>acceptframe</b> { <b>all</b>   <b>vlanonly</b> }	Configures the handling of untagged frames. Using <b>all</b> causes the LAG to accept all untagged or priority frames received and assign them the value of the VLAN ID for this LAG. Using <b>vlanonly</b> causes the LAG to drop all frames that do not have a VLAN tag.
<b>participation</b> { <b>auto</b>   <b>exclude</b>   <b>include</b> } <1-4094>	Sets the participation of this LAG in the specified VLAN.
<b>priority</b> <0-7>	Specifies the value for untagged frames received by this LAG.
<b>pvid</b> <1-4094>	Sets the VLAN ID for untagged frames received by the LAG.
<b>tagging</b> <1-4094>	Enables tagging for the specified VLAN. When tagging is enabled, traffic is transmitted as tagged frames.

### Examples

#### **acceptframe:**

```
(FS5CX420F1087012) (Config-LAG 1)#vlan acceptframe all
```

#### **participation:**

```
(FS5CX420F1087012) (Config-LAG 1)#vlan participation auto
```

#### **priority:**

```
(FS5CX420F1087012) (Config-LAG 1)#vlan priority 0
```

#### **pvid:**

```
(FS5CX420F1087012) (Config-LAG 1)#vlan pvid 3255
```

#### **tagging:**

(FS5CX420F1087012) (Config-LAG 1)#vlan tagging 4045

## 7.2.14 *vscale-mode*

### **Syntax**

`vscale-mode { edge | internal }`

### **Purpose**

To set the vSCALE mode for the LAG.

### **Defaults**

- The vSCALE mode is set to “edge” by default.

### **Options & Parameters**

<b>edge</b>	Sets the LAG’s vSCALE mode to “edge.” This is the appropriate mode for outward-facing ports on an edge (leaf) switch.
<b>internal</b>	Sets the LAG’s vSCALE mode to “internal.” This is the appropriate mode for ports on a spine switch, and for ports on an edge switch which connect inward into the fabric.

### **Notes**

The vSCALE mode of ports and LAGs on switches participating in a fabric is set automatically by the system (when a FortiSwitch switch is detected at the other end of a connection, the vSCALE mode is automatically set to “internal”). This command is used primarily for debugging and troubleshooting purposes.

### **Examples**

#### **edge:**

```
(FS5CX420F1087012) (Config-LAG 1)#vscale-mode edge
```

#### **internal:**

```
(FS5CX420F1087012) (Config-LAG 1)#vscale-mode internal
```

# 8 Config-Port Mode

---

## 8.1 Overview

The Config-Port Mode provides configuration commands for individual ports.

### 8.1.1 Access

This mode is accessed by using the **port** command in Config Mode (and specifying a port to be configured).

### 8.1.2 Exit

To exit from this mode, use the **exit** command to return to Config Mode or the **end** command to return to Enable Mode.

## 8.2 Commands

## 8.2.1 *description*

### **Syntax**

**description** <*description*>

### **Purpose**

To create a description for the port.

### **Options & Parameters**

<*description*>

Specifies the description for the port. Description text may be up to 256 printing characters except “!” and “?” and is to be entered in quotations marks.

### **Example**

(FS5CX420F1087012) (Config-Port 1/1)# description "in-band management port"

## 8.2.2 *end*

**Syntax**  
    *end*

**Purpose**  
    To exit to Enable Mode.

**Options & Parameters**  
    This command has no options or parameters.

**Example**  
    (FS5CX420F1087012) (Config-Port 1/1)# *end*

## 8.2.3 *exit*

### **Syntax**

`exit`

### **Purpose**

To exit to Config Mode.

### **Options & Parameters**

This command has no options or parameters.

### **Example**

(FS5CX420F1087012) (Config-Port 1/1)# `exit`

## 8.2.4 fabric-control

### Syntax

```
fabric-control { partition <2-1000> vlan { <1-4094> [1-4094] | all } | priority { 802.1d | diffserv } }
```

### Purpose

To link a port VLAN to a fabric partition or to link frame priority to partition class.

### Options & Parameters

<b>partition</b> <2-1000>	Specifies a partition to which to link one or more VLANs.
<b>vlan</b> { <1-4094> [1-4094]   all }	Specifies which VLANs are to be added to the specified partition. Up to 20 VLANs can be added individually; <b>all</b> adds all available VLANs to the partition. The incoming traffic tagged with these VLANs is forwarded internally using only member SVLANs of the partition.
<b>priority</b> { 802.1p   diffserv }	Specifies which priority field in the frame is used to delineate the partition class (default, a, b or c). If <b>802.1p</b> is selected, then the frames priorities map to partition classes as follows: 0, 1: default 2, 3: a 4, 5: b 6, 7: c If <b>diffserv</b> is selected, then the frames priorities map to partition classes as follows: 0-31: default 32-63: a 64-95: b 96-127: c

### Notes

- The **fabric-control** command in Config-Port mode is used exclusively to configure the port in relation to the fabric; to create the partitions and configure the fabric itself, use the **fabric-control** command in Config Mode.
- In addition to the default partition, a maximum of three additional partitions can be created on a port.

### Example

```
(FS5CX420F1087012) (Config-Port 1/1)#fabric-control partition 2 vlan all
```

This adds all the available VLANs on port 1/1 to partition #2 without specifying a priority.

## 8.2.5 *fdb-table static*

### **Syntax**

**fdb-table static** <mac\_address>

### **Purpose**

To add a static MAC address to the port.

### **Options & Parameters**

<mac_address>	Specifies the static MAC address to add to the FDB table for the port.
---------------	--

### **Notes**

- To configure the FDB table aging timeout, use the **fdb-table aging-time** command in Config Mode.
- If a static MAC address is already configured in the chassis, the CLI will reject the configuration command. If the configured static MAC is already learned in the FDB table, the management software will overwrite the MAC entry with the newly configured static entry.
- At any point, FortiSwitch OS can only handle a given MAC address at one single port. This is different from typical Independent VLAN Learning (IVL) switches, which can configure multiple entries of the same MAC address as long as they have the same VLAN tag.

### **Example**

(FS5CX420F1087012) (Config-Port 1/1)#fdb-table static 00:1A:F6:00:03:61

## 8.2.6 *flow-control*

### **Syntax**

**flow-control**

### **Purpose**

To enable 802.3x flow control for the port.

### **Defaults**

802.3x flow control is disabled by default.

### **Options & Parameters**

This command has no options or parameters.

### **Notes**

The **flow-control** command in Config-Port mode enables 802.3x flow control (i.e., PAUSE) for the port only.

To show the state of flow control for a specific port, use the **show port** command in Enable Mode.

### **Example**

```
(FS5CX420F1087012) (Config-Port 1/1)#flow-control
```

## 8.2.7 *garp timer*

### **Syntax**

**garp timer** {**join** <10-100> | **leave** <20-600> | **leave-all** <200-6000> }

### **Purpose**

To configure the Generic Attribute Registration Protocol (GARP) timer attributes.

### **Defaults**

- The default GVRP join time is 20 centiseconds.
- The default GVRP leave time is 60 centiseconds.
- The default interval for the generation of leave-all packets is 1000 centiseconds.

### **Options & Parameters**

<b>join</b> <10-100>	Specifies the GVRP join time – the interval between transmission of GARP packets registering membership for a VLAN or multicast group – in centiseconds.
<b>leave</b> <20-600>	Specifies the GVRP leave time – the interval between receiving an unregister request for a VLAN or a multicast group and deleting the VLAN entry – in centiseconds.
<b>leave-all</b> <200-6000>	Specifies the frequency with which “leave-all” packets – packets deleting all registration entries – are generated.

### **Notes**

All forms of the **garp timer** command only have an effect when GVRP is enabled.

The “no” form of this command resets the specified time to the default:

**no garp timer join** resets the GVRP join time to 20 centiseconds

**no garp timer leave** resets the GVRP leave time to 60 centiseconds

**no garp timer leave-all** resets the “leave-all” generation interval to 1000 centiseconds

### **Examples**

(FS5CX420F1087012) (Config-Port 1/1)#garp timer join 30

(FS5CX420F1087012) (Config-Port 1/1)#garp timer leave 200

(FS5CX420F1087012) (Config-Port 1/1)#garp timer leave-all 2000

## 8.2.8 *gvrp port-mode*

### **Syntax**

**gvrp port-mode**

### **Purpose**

To enable or disable GARP VLAN Registration Protocol (GVRP) on this port.

### **Options & Parameters**

This command has no options or parameters.

### **Notes**

In order for GVRP to work on the port, GVRP must be enabled on the switch by using the **gvrp admin-mode** command in Config Mode. (See page 204)

### **Example**

(FS5CX420F1087012) (Config-Port 1/1)#gvrp port-mode

## 8.2.9 *monitor*

### **Syntax**

**monitor** <slot/port> { **rx** | **tx** | **both** }

### **Purpose**

To enable and configure a destination for port mirroring.

### **Defaults**

Port mirroring is disabled by default.

### **Options & Parameters**

<slot/port>	Specifies the mirrored (source) port (in slot/port format) for a port mirroring session. The port currently being configured is the mirroring (destination) port. <b>Note:</b> source and destination ports must be on the same card.
{ <b>rx</b>   <b>tx</b>   <b>both</b> }	Specifies the mirroring mode. The <b>rx</b> option mirrors only traffic received, <b>tx</b> mirrors only traffic transmitted, and <b>both</b> mirrors all traffic on the source port.

### **Notes**

- Port mirroring forwards a copy of each incoming or outgoing packet (or both) from one port of a switch to another port where the packet can be studied (source and destination ports must be on the same card). In this command, the source port (port being mirrored) is specified, and the destination port is the port currently being configured in Config-Port Mode.
- Mirroring does not affect the client on the original port.
- Maximum number of mirrors supported on the FortiSwitch-500:
  - **5 mirrors per destination** (i.e., one port can be configured to mirror up to five other ports on the same switch)
  - **2 destinations per switch** (i.e., two different ports on a single switch can be configured to mirror other ports)

### **Example**

```
(FS5CX420F1087012) (Config-Port 1/1)#monitor 1/3 mode both
```

This enables mirroring of both incoming and outgoing packets on port 1/3, with the mirror destination being port 1/1.

## 8.2.10 *mtu*

### **Syntax**

`mtu <64-10232>`

### **Purpose**

To set the Maximum Transmission Unit (MTU) value for the port.

### **Defaults**

The MTU value is set to 1522 bytes (tagged) or 1518 bytes (untagged) by default.

### **Options & Parameters**

<code>&lt;64-10232&gt;</code>	Specifies the Maximum Transmission Unit (MTU) size in bytes for the port.
-------------------------------	---

### **Example**

(FS5CX420F1087012) (Config-Port 1/1)#mtu 10232

## 8.2.11 *shutdown*

### **Syntax**

**shutdown**

### **Purpose**

To disable the port.

### **Options & Parameters**

This command has no options or parameters.

### **Notes**

- This command leaves the configuration unchanged, but prevents the port from forwarding traffic.
- When a port is shut down, its admin mode is disabled and its link status is changed to “down.”

### **Example**

(FS5CX420F1087012) (Config-Port 1/1)#shutdown

## 8.2.12 *spanning-tree*

### Syntax

**spanning-tree** { **edgeport** | **hello-time** <1-10> | **port-mode** | **mst** { <0> | <1-64> } { **cost** { <1-200000000> | **auto** } | **external-cost** { <1-200000000> | **auto** } | **port-priority** <0-240> } }

### Purpose

To set and configure the spanning tree operational mode for the port.

### Defaults

- There is no default behavior for this command.
- STP is enabled by default on all ports (port mode is enabled by default).
- The hello time for the port is set to 2 seconds by default.
- Port priority is set to 128 by default.

### Options & Parameters

<b>edgeport</b>	Configures the port as an edge port.
<b>hello-time</b> <1-10>	Sets the hello-time for the port in seconds. If not specified, default is 2.
<b>port-mode</b>	Enables the port for use by spanning trees.
<b>mst</b> { <0>   <1-64> }	Configures a Multiple Spanning Tree (MST) instance. Using <b>0</b> as the instance identifier configures the common and internal spanning tree. To configure another existing MST, use its identifier (between 1 and 64).
<b>cost</b> { <1-200000000>   <b>auto</b> }	Specifies the path cost (within the MST region) for the port when used by the specified MST instance. If <b>auto</b> is used in place of a numeric value, the path cost value is calculated automatically on the basis of link speed.
<b>external-cost</b> { <1-200000000>   <b>auto</b> }	Specifies the external path cost (outside the MST region) for the port when used by the specified MST instance. If <b>auto</b> is used in place of a numeric value, the external path cost value is calculated automatically on the basis of link speed. <b>Note:</b> spanning tree version 802.1s (MSTP) is the default; if using version 802.1d (STP) or version 802.1w (RSTP) instead, use the <b>external-cost</b> option for configuring path cost for the port.
<b>port-priority</b> <0-240>	Specifies the priority for the port used by the specified MST instance.

### Notes

- Switch-level spanning-tree configuration is performed in Config Mode. (See **spanning-tree** on page 244)
- MSTP (802.1s) is the default spanning tree protocol used on the FortiSwitch-500. If you have configured the switch to run STP or RSTP instead, use the **external-cost** option to configure spanning tree path cost for the port.

### Examples

**edgeport:**

(FS5CX420F1087012) (Config-Port 1/1)#spanning-tree edgeport

**hello-time:**

(FS5CX420F1087012) (Config-Port 1/1)#spanning-tree hello-time 10

**mst:**

(FS5CX420F1087012) (Config-Port 1/1)#spanning-tree mst 0 external-cost auto

**port-mode:**

(FS5CX420F1087012) (Config-Port 1/1)#spanning-tree port-mode

## 8.2.13 *vlan*

### Syntax

**vlan** { **acceptframe** { **all** | **vlanonly** } | **participation** {**auto** <1-4094> | **exclude** <1-4094> | **include** <1-4094> } **priority** <0-7> | **pvid** <1-4094> | **tagging** <1-4094> }

### Purpose

To configure VLAN parameters for the port.

### Defaults

The frame acceptance mode is set to “all” by default.

The VLAN ID is set to 1 by default.

### Options & Parameters

<b>acceptframe</b> { <b>all</b>   <b>vlanonly</b> }	Configures the handling of untagged frames. Using <b>all</b> causes the port to accept all untagged or priority frames received and assign them the value of the VLAN ID for this port. Using <b>vlanonly</b> causes the port to drop all frames that do not have a VLAN tag.
<b>participation</b> { <b>auto</b>   <b>exclude</b>   <b>include</b> } <1-4094>	Sets the participation of this port in the specified VLAN.
<b>priority</b> <0-7>	Specifies the value for untagged frames received by this port.
<b>pvid</b> <1-4094>	Sets the VLAN ID for untagged frames received by the port.
<b>tagging</b> <1-4094>	Enables tagging on this port for the specified VLAN. When tagging is enabled, traffic is transmitted as tagged frames.

### Examples

#### **acceptframe:**

```
(FS5CX420F1087012) (Config-Port 1/1)#vlan acceptframe all
```

#### **participation:**

```
(FS5CX420F1087012) (Config-Port 1/1)#vlan participation auto 3
```

#### **priority:**

```
(FS5CX420F1087012) (Config-Port 1/1)#vlan priority 0
```

#### **pvid:**

```
(FS5CX420F1087012) (Config-Port 1/1)#vlan pvid 3255
```

**tagging:**

(FS5CX420F1087012) (Config-Port 1/1)#vlan tagging 4045

## 8.2.14 *vscale-mode*

### **Syntax**

`vscale-mode { edge | internal }`

### **Purpose**

To set the vSCALE mode for the port.

### **Defaults**

- The vSCALE mode is set to “edge” by default.

### **Options & Parameters**

<b>edge</b>	Sets the port's vSCALE mode to “edge.” This is the appropriate mode for outward-facing ports on an edge (leaf) switch.
<b>internal</b>	Sets the port's vSCALE mode to “internal.” This is the appropriate mode for ports on a spine switch, and for ports on an edge switch which connect inward into the fabric.

### **Notes**

The vSCALE mode of ports and LAGs on switches participating in a fabric is set automatically by the system (when a FortiSwitch switch is detected at the other end of a connection, the vSCALE mode is automatically set to “internal”). This command is used primarily for debugging and troubleshooting purposes.

### **Examples**

#### **edge:**

```
(FS5CX420F1087012) (Config-Port 1/1)#vscale-mode edge
```

#### **internal:**

```
(FS5CX420F1087012) (Config-Port 1/1)#vscale-mode internal
```

# 9 Config-VLAN Mode

---

## 9.1 Overview

The Config-VLAN Mode provides configuration commands for VLANs.

### 9.1.1 Access

This mode is accessed by using the **vlan** command in Config Mode.

### 9.1.2 Exit

To exit from this mode, use the **exit** command to return to Config Mode or the **end** command to return to Enable Mode.

## 9.2 Commands

## 9.2.1 *end*

**Syntax**  
end

**Purpose**  
To exit to Enable Mode.

**Options & Parameters**  
This command has no options or parameters.

**Example**  
(FS5CX420F1087012) (Config-VLAN)# end

## 9.2.2 *exit*

### **Syntax**

`exit`

### **Purpose**

To exit to Config Mode.

### **Options & Parameters**

This command has no options or parameters.

### **Example**

(FS5CX420F1087012) (Config-VLAN)# `exit`

## 9.2.3 *participation all*

### **Syntax**

**participation all** { **auto** | **exclude** | **include** } <1-4094>

### **Purpose**

To configure how all ports participate in a specified VLAN.

### **Options & Parameters**

<b>auto</b> <1-4094>	Sets participation for all ports in the specified VLAN to auto. All ports are always members of the specified VLAN.
<b>exclude</b> <1-4094>	Sets participation for all ports in the specified VLAN to “exclude.” No ports are ever members of the specified VLAN – equivalent to “forbidden”.
<b>include</b> <1-4094>	Sets participation for all ports in the specified VLAN to “include.” All ports are members of the specified VLAN.

### **Examples**

#### **auto:**

(FS5CX420F1087012) (Config-VLAN)# participation all auto 500

#### **exclude:**

(FS5CX420F1087012) (Config-VLAN)# participation all exclude 500

#### **include:**

(FS5CX420F1087012) (Config-VLAN)# participation all include 500

## 9.2.4 port

### Syntax

**port { acceptframe all { all | vlanonly } | priority all <0-7> | pvid all <1-4094> | tagging all <1-4094> }**

### Purpose

To configure 802.1Q port parameters for VLANs.

### Defaults

Frame acceptance mode is set to “all” by default.

VLAN ID for all ports is set to 1 by default.

### Options & Parameters

<b>acceptframe all { all   vlanonly }</b>	Sets the frame acceptance mode for all ports. If the option <b>all</b> is selected, untagged frames or priority frames received are accepted and assigned the value of the port VLAN ID. If the option <b>vlanonly</b> is selected, only frames received with a VLAN tag will be forwarded. All other frames will be dropped.
<b>priority all &lt;0-7&gt;</b>	Sets the priority for untagged frames received.
<b>pvid all &lt;1-4094&gt;</b>	Specifies the VLAN ID to be assigned to untagged packets received on all ports. If not specified, the default is 1.
<b>tagging all &lt;1-4094&gt;</b>	Enables tagging on frames transmitted by all ports in the specified VLAN. When tagging is enabled, traffic is transmitted as tagged frames.

### Examples

#### acceptframe:

```
(FS5CX420F1087012) (Config-VLAN)# port acceptframe all vlanonly
```

#### priority:

```
(FS5CX420F1087012) (Config-VLAN)# port priority all 0
```

#### pvid:

```
(FS5CX420F1087012) (Config-VLAN)# port pvid all 300
```

#### tagging:

```
(FS5CX420F1087012) (Config-VLAN)# port tagging all 3
```

## 9.2.5 *vlan-id*

### Syntax

**vlan-id** { <1-4094> | <1-4094> **name** <new\_name> | **makestatic** <2-4094> }

### Purpose

To create or name a VLAN, to delete a VLAN, or to make a dynamic (learned) VLAN static.

### Defaults

When executed with a valid VLAN ID and no other options, this command creates a static VLAN with the specified ID by default.

### Options & Parameters

<1-4094>	Specifies a valid VLAN. When used with no other options, this creates a static VLAN with the specified ID if it does not already exist.
<1-4094> <b>name</b> <new_name>	Sets the name of the specified VLAN to the specified name.
<b>makestatic</b> <2-4094>	Changes the specified dynamic, learned VLAN to a static VLAN. <b>Note:</b> the default VLAN (VLAN 1) is always static.

### Notes

- This command is used for the creation of static VLANs; dynamic VLANs are learned through GVRP protocol.
- If a dynamic VLAN has already been learned via GVRP, a static VLAN with the same ID cannot be created. Instead, use the **makestatic** option to make the VLAN static. (Dynamic VLANs do not persist over a reboot and can not be configured by the operator.)
- Use the **no** form of this command to delete an existing VLAN.

### Examples

#### default:

```
(FS5CX420F1087012) (Config-VLAN)# vlan-id 500
```

#### name:

```
(FS5CX420F1087012) (Config-VLAN)# vlan-id 500 name testingVlan
```

#### makestatic:

```
(FS5CX420F1087012) (Config-VLAN)# vlan-id makestatic 500
```

#### no (deleting an existing VLAN):

```
(FS5CX420F1087012) (Config-VLAN)# no vlan-id 500
```

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