

# SilverStorm 9000 Users Guide



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# Section 1

## Introduction

This manual describes the configuration and administration tasks for the SilverStorm™ 9000 series, which includes:

- The SilverStorm 9024 24-port InfiniBand switch
- The SilverStorm Multi-Protocol Fabric Director (MPFD) series:
  - SilverStorm 9020
  - SilverStorm 9040
  - SilverStorm 9080
  - SilverStorm 9120
  - SilverStorm 9240

This manual is organized as follows:

[Section 1](#) describes the intended audience and technical support.

[Section 2](#) describes all 9000 switch-related configuration and administration tasks.

[Section 3](#) describes all tasks related to the SilverStorm™ FibreChannel Virtual I/O Card (FVIC).

[Section 4](#) describes all tasks related to the SilverStorm™ Ethernet Virtual I/O Card (EVIC).

[Appendix A](#) provides troubleshooting information.

### 1.1

## Intended Audience

This manual is intended to provide network administrators and other qualified personnel a reference for configuration and administration task information for the switches.

### 1.2

## License Agreements

Refer to the *QLogic Software End User License Agreement* for a complete listing of all license agreements affecting this product.

### 1.3

## Technical Support

Customers should contact their authorized maintenance provider for technical support of their QLogic switch products. QLogic-direct customers may contact QLogic Technical Support; others will be redirected to their authorized maintenance provider.

Visit the QLogic support Web site listed in [Contact Information](#) for the latest firmware and software updates.

### 1.3.1

## Availability

QLogic Technical Support for products under warranty is available during local standard working hours excluding QLogic Observed Holidays.

## 1.3.2

**Contact Information**

<b>Support Headquarters</b>	QLogic Corporation 12984 Valley View Road Eden Prairie, MN 55344-3657 USA
QLogic Web Site	<a href="http://www.qlogic.com">www.qlogic.com</a>
Technical Support Web Site	<a href="http://support.qlogic.com">support.qlogic.com</a>
Technical Support Email	support@qlogic.com
Technical Training Email	tech.training@qlogic.com
<b>North American Region</b>	
Email	support@qlogic.com
Phone	+1-952-932-4040
Fax	+1 952-974-4910
<b>All other regions of the world</b>	
QLogic Web Site	<a href="http://www.qlogic.com">www.qlogic.com</a>



## Section 2

# Operations and Administration

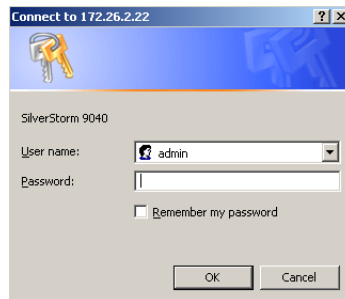
### 2.1

## Chassis Viewer

Chassis Viewer is SilverStorm™ browser-based device management software. Chassis Viewer provides the primary management interface for the SilverStorm 9000 switches, allowing the user to perform management, configuration, and monitoring tasks related to InfiniBand networks.

- Chassis Viewer runs on the Chassis Management Unit (CMU) of the 9024 and each managed spine/management module of the MPFD series (9020, 9040, 9080, 9120 and 9240).
- The browser must be on a workstation which has connectivity to the RJ-45 OOB LAN port on the switch.
- Management Workstation Requirements
  - Browser Level: Internet Explorer 6.0+ or Mozilla 1.6.x+
- To access Chassis Viewer, point a browser to the IP address of the switch.
- If user authentication is enabled, the following screen is displayed:

**Figure 2-1.**



- Enter the default user name and password:
  - ❑ Username: admin
  - ❑ Password: adminpass

The Chassis Viewer home page is displayed.

The Chassis Viewer manages:

- The switch chassis.

- Each MPFD leaf module.
- Each MPFD virtual I/O (VIO) hardware device.
- Each MPFD spine module.
- Logging and monitoring functionality.

### 2.1.1 Home Page

Figure 2-2. SilverStorm 9024 Home Page

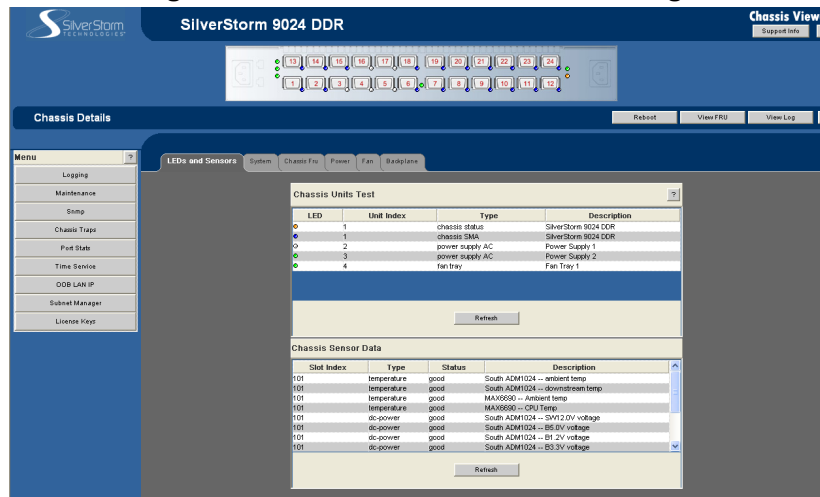
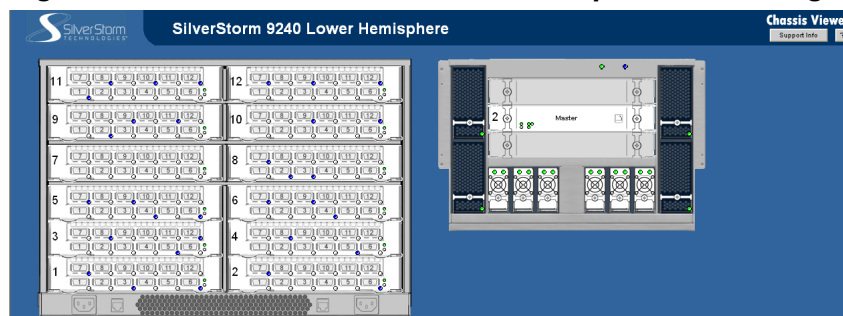


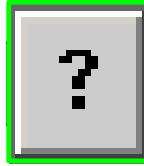
Figure 2-3. SilverStorm 9240 Lower Hemisphere Home Page



Chassis Viewer's home page provides a high-level overview of the switch. This area is the starting point to more detailed information for the chassis and components (fans and power supplies), leaf modules, and spine modules. The selected

component provides hyperlinks to related menus and information where the user can perform configuration and monitoring tasks.

**Figure 2-4. Help Button**



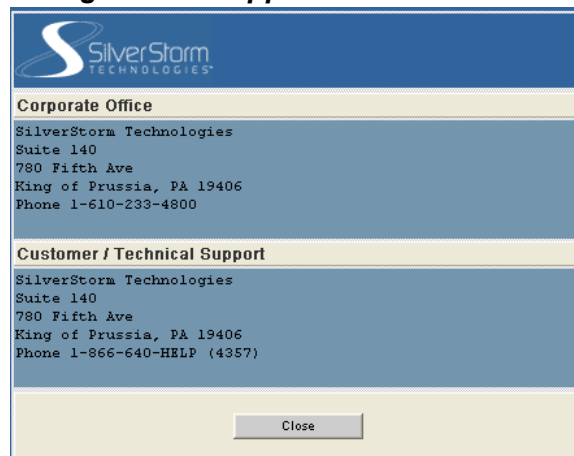
The ? (**HELP**) button displays online help. Each help screen gives the user a high-level, topic-specific description.

**Figure 2-5. Support Button**



The Support button displays key contact information for support, displayed in the following window:

**Figure 2-6. Support Contact Screen**

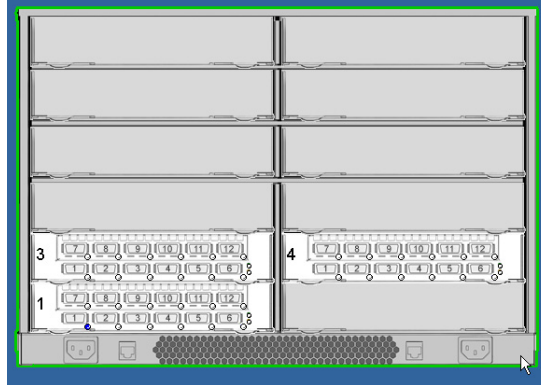


### 2.1.2 Displaying the Chassis View

There are two ways to display the chassis view for the MPFD switches:

1. Mouse over the outer region of the leaf/VIO module view. The edges of the chassis are highlighted green as shown in [Figure 2-7](#) below:

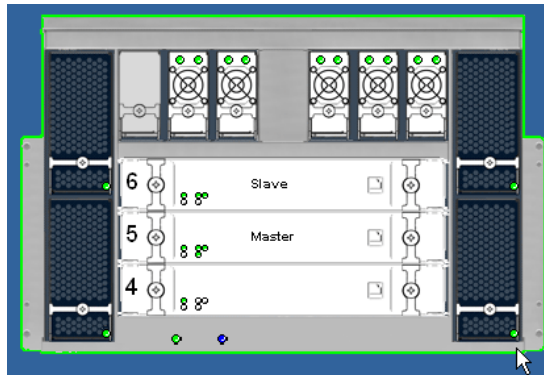
**Figure 2-7. Leaf/VIO Module Chassis Mouseover**



Click the mouse. The chassis view will be displayed.

2. The second way is to mouse over the outer region of the spine module view. The edges of the chassis are highlighted green as shown in [Figure 2-8](#) below:

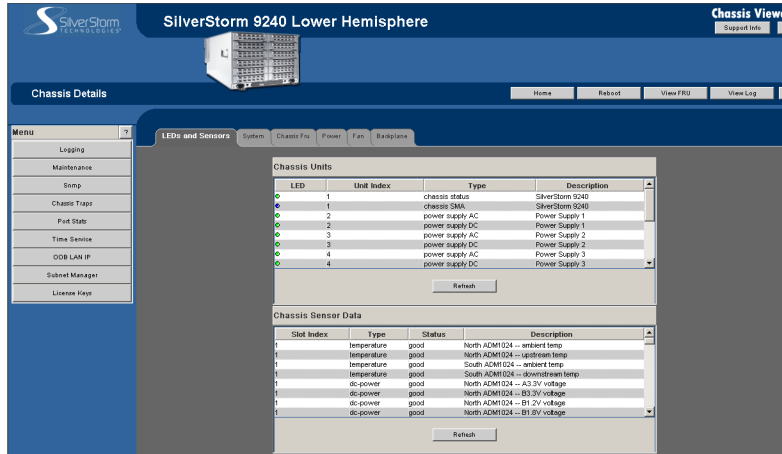
**Figure 2-8. Spine Module Chassis Mouseover**





Click the mouse. The chassis view will be displayed.

**Figure 2-9. 9240 Chassis View**



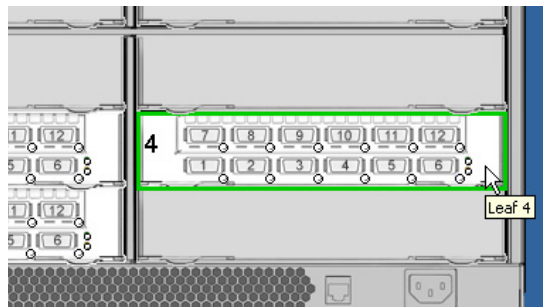
## 2.1.3 Displaying the Leaf/VIO and Spine Module Views

### 2.1.3.1 Leaf Module View

To display the leaf module views:

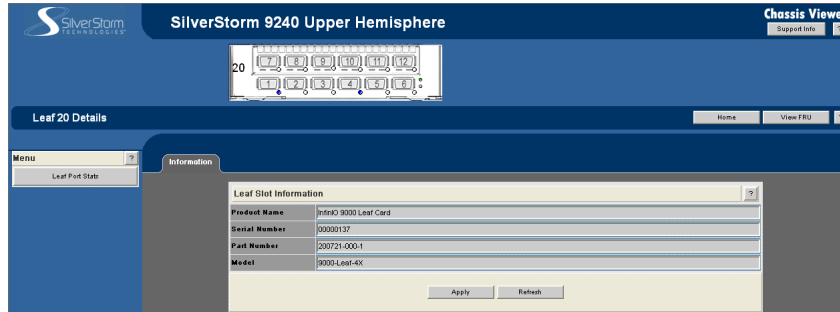
1. Mouse over the leaf module to display. The edges of the leaf module are highlighted green as shown in [Figure 2-10](#) below:

**Figure 2-10. Leaf Module Mouseover**



Click the mouse. The leaf module view will be displayed.

**Figure 2-11. Leaf Module View**

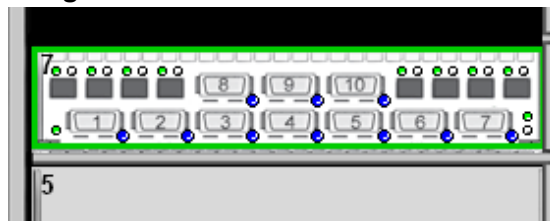


### 2.1.3.2 VIO Module View

To display the VIO module views:

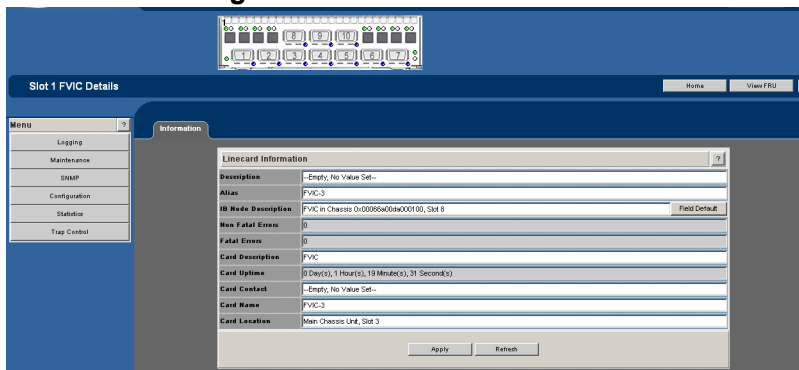
1. Mouse over the VIO module to display. The edges of the VIO module are highlighted green as shown in [Figure 2-12](#) below:

**Figure 2-12. VIO Module Mouseover**



Click the mouse. The VIO module view will be displayed.

**Figure 2-13. VIO Module View**



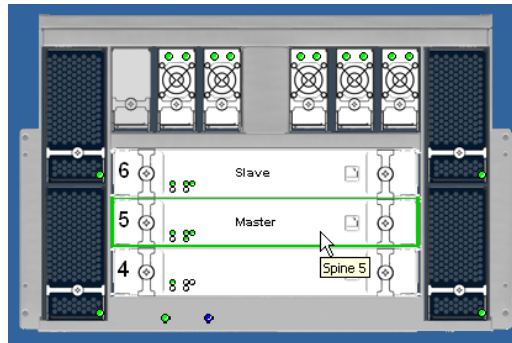
2.1.3.3

**Spine Module View**

To display the spine module view:

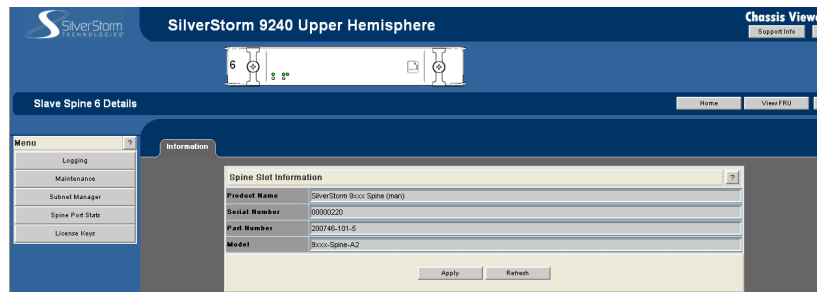
1. Mouse over the spine module to display. The edges of the spine module are highlighted green as shown in [Figure 2-14](#) below:

**Figure 2-14. Spine Module Mouseover**



Click the mouse. The spine module view is displayed.

**Figure 2-15. Spine Module View**



2.1.4

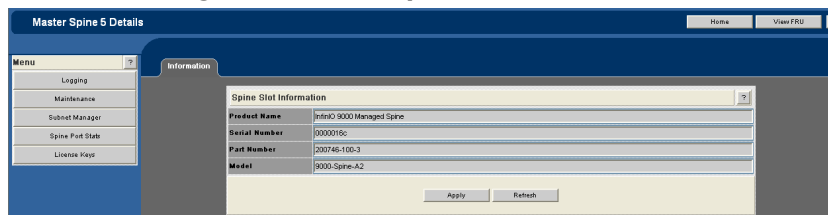
**Component Details Area**

The **Component Details Area** for the chassis, spine and leaf/VIO has three areas.

- Details Header
- Information area.

➤ Menu

**Figure 2-16. Component Details Area**



**2.1.4.1  
Details Header**

**Figure 2-17. Details Header**

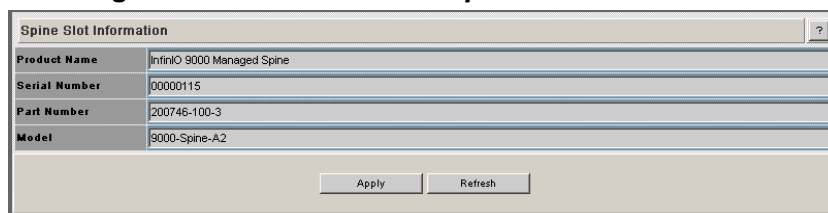


The Details Header allows the user to execute command tasks for each hardware component. The graphic above displays the Details Header.

All component Details Headers contain the following buttons:

- Logout
  - NOTE:** The Logout button is only displayed if the user has set the User Authentication parameter to **Login Enabled** through the HTTP Session Configuration submenu. Refer to "HTTP Session Configuration" on page 2-23 for more information.
- View Field Replaceable Unit (FRU) Information.
- Reboot

**Figure 2-18. Leaf/VIO and Spine Information Area**



The **Leaf/VIO and Spine Information Area** allows the user to view high-level information for each specific leaf or spine module. The information area is comprised of fields that are tied to live data from the selected hardware component as well as live system information.

Additionally, the Component Information Area has **Apply** and **Refresh** buttons, which perform the following functionality:

**Apply:**

Saves any user edits within the white fields to flash memory.

**Refresh:**

Refreshes all fields in the information areas.

**Figure 2-19. Chassis View Component Information Area**

Chassis System Information	
Out of Band LAN IP	172.26.0.236
Net Mask	255.255.240.0
System Description	SilverStorm 9240 - Firmware Version: 3.2.0.0.10, Jan 6 2006
IB Node Description	SilverStorm <span style="float: right;">Field Default</span>
System Uptime	0 Day(s), 0 Hour(s), 58 Minute(s), 33 Second(s)
System Contact	Bob J
System Name	9240 #1
System Location	Room 2, Rack 3

The **Chassis View Component Information Area** allows the user to monitor important information for each specific hardware component, as well as important system information. The information area is comprised of two different fields:

- The white fields allow the user to add or modify applicable general and system information which is specific to their environment.
- The gray fields are tied to live data from the selected hardware component as well as live system information.

#### 2.1.4.2

### Modifying Switch Component Information

Following is the procedure for modifying the fields for switch components:

1. Select the applicable tab; **LED and Sensors**, **System**, **Chassis FRU**, **Power**, **Fan**, or **Backplane**.
2. Click on the row to be modified.
3. In the text boxes, enter information which is applicable to the existing network environment.

4. To save, click the **Apply** button at the bottom of the screen.

**Figure 2-20. System Information Area**

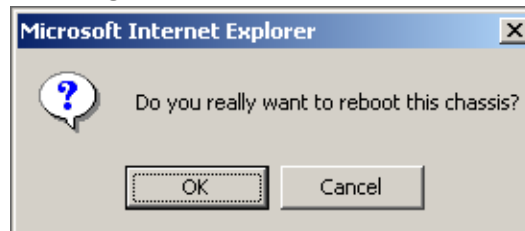
Chassis System Information	
Out of Band LAN IP	172.26.0.236
Net Mask	255.255.240.0
System Description	SilverStorm 9240 - Firmware Version: 3.2.0.0.10, Jan. 6 2006
ID Node Description	SilverStorm <span style="float: right;">Field Default</span>
System Uptime	0 Day(s), 0 Hour(s), 58 Minute(s), 33 Second(s)
System Contact	Bob J
System Name	9240 #1
System Location	Room 2, Rack 3

#### 2.1.4.2.1

### Rebooting the 9024 Switch

1. From the Chassis Details Header, click **Reboot**. The following window is displayed.

**Figure 2-21. Reboot Window**



2. Click **OK**.

#### 2.1.4.2.2

### Rebooting the MPFD switches using Chassis Viewer

1. From either the **Details** header of the Chassis Viewer home page or the chassis view **Maintenance** submenu, click **Reboot**. A screen similar to the following screen is displayed (9240 shown):

**Figure 2-22. Reboot Screen**

**Reboot** ?

Spine 1 (Slave)

Spine 2 (Master)

Reboot Entire Hemisphere

2. Select the radio button of the spine(s) to be rebooted, or select the **Reboot Entire Hemisphere** radio button to reboot the applicable hemisphere and all spines.
3. Click **Reboot**.

#### 2.1.4.2.3

### Rebooting Multiple Managed Spines using the CLI

In a redundant management configuration (9080, 9120 and 9240) it may occasionally be necessary for the user to reboot both managed spines in a hemisphere. This is accomplished through the CLI of the master spine.

1. Access the master spine CLI via Telnet, SSH, or through the switch RS232 serial ports.
2. The system prompts for a user name. At the prompt enter:

```
admin
```

3. The system prompts for a password. At the prompt enter:

```
adminpass
```

The system responds with:

```
Welcome to the <SWITCH> CLI. Type 'list' for the list of
commands.
```

4. To reboot multiple spines enter the following command:

```
reboot now -m -n
```

where:

- **now** initiates the reboot process as soon as the user presses **Enter** (i.e., no system **y/n** prompt).
- **-m** reboots just the management card of the master spine. This is a non-disruptive reboot (i.e., the reboot will not interfere with any switch traffic).
- **-n** reboots just the management card of the slave spine (in a non-disruptive manner).

**NOTE:** If accessing the CLI through Telnet or SSH, the user will need to reconnect to the CLI following the reboot.

#### 2.1.4.3

### Chassis View Component Information Area Tabs

The tabs along the top of the information area present information about the following components:

- LED and sensor information
- Overall system information

- Switch Field Replaceable Unit (FRU) Information
- Power supply information
- Fan information
- Switch backplane information

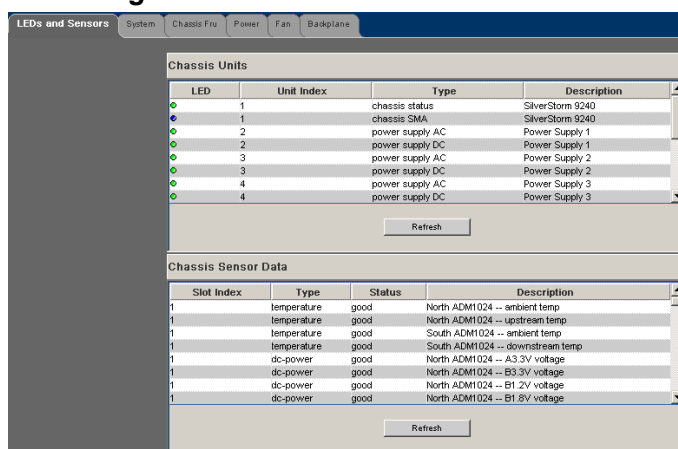
### 2.1.4.3.1

## LEDs and Sensors Tab

The LEDs and Sensors tab displays for the applicable hemisphere:

- Switch component LED information for chassis status, chassis SMA, fan and power supplies.
- Slot-based temperature and AC-power sensor data for the internal switching complex.

**Figure 2-23. LEDs and Sensors Tab**



LED	Unit Index	Type	Description
●	1	chassis status	SilverStorm 9240
●	1	chassis SMA	SilverStorm 9240
●	2	power supply AC	Power Supply 1
●	2	power supply DC	Power Supply 1
●	3	power supply AC	Power Supply 2
●	3	power supply DC	Power Supply 2
●	4	power supply AC	Power Supply 3
●	4	power supply DC	Power Supply 3

Slot Index	Type	Status	Description
1	temperature	good	North ADM1024 -- ambient temp
1	temperature	good	North ADM1024 -- upstream temp
1	temperature	good	South ADM1024 -- ambient temp
1	temperature	good	South ADM1024 -- downstream temp
1	dc-power	good	North ADM1024 -- A3.3V voltage
1	dc-power	good	North ADM1024 -- B3.3V voltage
1	dc-power	good	North ADM1024 -- B1.2V voltage
1	dc-power	good	North ADM1024 -- B1.8V voltage

**NOTE:** For a detailed explanation of physical LEDs on the hardware components, please refer to the section “9120 Component LEDs” on page 2-20.

### 2.1.4.3.2

## System Tab

The System tab displays overall system information for the applicable hemisphere. This information includes the following items:

### Out of Band LAN IP

The IP address of the switch. Note that changes to this field only take effect after a switch power cycle (i.e., shutting down the switch and powering it back up). The IP address of the switch can be changed by the administrator.



### Net Mask

The current net mask settings for the Chassis. Note that changes to this field only take effect after a chassis power cycle (i.e., shutting down the chassis and powering it back up). The net mask of the chassis can be changed by the administrator.

### System Description

A read-only textual description of the system.

### IB Node Description

Assigned by the administrator, the IB node description is an IB fabric-applicable name that will be displayed within SilverStorm Fabric Viewer. Note that changes to this field will only take effect after the chassis is rebooted. To reset this field to the default setting, click the **Field Default** button.

**NOTE:** If the IB Node Description field has been changed since the last reboot of either spine, the next reboot will be treated as disruptive.

### System Uptime

The elapsed time since the master management spine was re-initialized.

### System Contact

The textual identification of the contact person and their contact information for this system, assigned by the administrator.

### System Name

The name for the system, assigned by an administrator. One convention is to use the system's fully qualified domain name.

### System Location

The location of the system, assigned by an administrator.

### Apply Button

Saves any changes made by the user in the System tab to memory.

### Refresh Button

Refreshes all fields in the System tab.

#### 2.1.4.3.3

### Chassis FRU Tab

The Chassis FRU tab displays switch Field Replaceable Unit (FRU) information. This information includes the following items:

#### Type

The type of component.

#### Description

A description of the component, assigned by an administrator.

Alias Name

Name of the component, assigned by an administrator.

Serial Num

Component serial number

Detail

A button for each row that displays additional detail about the component. Additional details include: Part Number, Model, Version, Manufacturer Name, Product Name, Manufacturer Identification, and Manufactured Date.

Apply Button

Saves any changes made by the user in the Chassis FRU tab to memory.

Refresh Button

Refreshes all fields in the Chassis FRU tab.

#### 2.1.4.3.4

### Power Tab

The Power tab displays switch power supply information. This information includes the following items:

Description

A description of the component, assigned by an administrator.

Status

Displays the status of the component.

Part Num

Displays the part number of the component.

Detail

A button for each row that displays additional detail about the component. Additional details include: Model, Version, Manufacturer Name, Product Name, Manufacturer Id, Manufactured Date

Apply Button

Saves any changes made by the user in the Power tab to memory.

Refresh Button

Refreshes all fields in the Power tab.

#### 2.1.4.3.5

### Fan Tab

The Fan tab displays switch fan information. For descriptions of the fields, see the Power Tab.

#### 2.1.4.3.6

### Backplane Tab

The Backplane tab displays switch backplane information. For descriptions of the fields, see the Power Tab.

Additionally, the user can modify the **Description** field, adding information specific to their network environment.

## 2.2

### Configuration and Monitoring Features

The following section provides, for the applicable hemisphere, detailed, task-oriented descriptions for configuring and monitoring the switch and its feature functionality.

#### 2.2.1

### Chassis View Menu

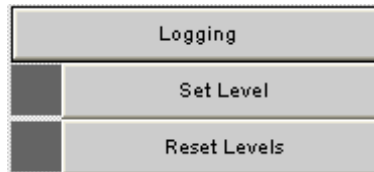
*Figure 2-24. Chassis View Menu*



## 2.2.2 Logging

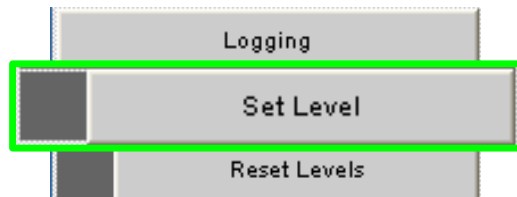
The Logging submenu allows the user to set and reset levels for log message files.

**Figure 2-25. Logging Submenu**



### 2.2.2.1 Set Level

**Figure 2-26. Set Level Button**

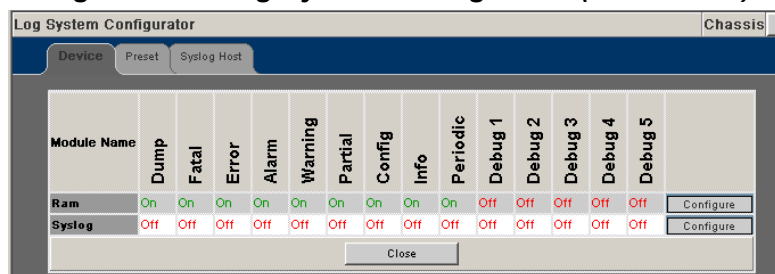


The Set Level button allows the user to set log level configuration parameters for all software modules.

To set log levels:

1. From the menu, select **Logging**.
2. From **Logging**, select **Set Level**. The Log System Configurator (Device Tab) window is displayed:

**Figure 2-27. Log System Configurator (Device Tab)**

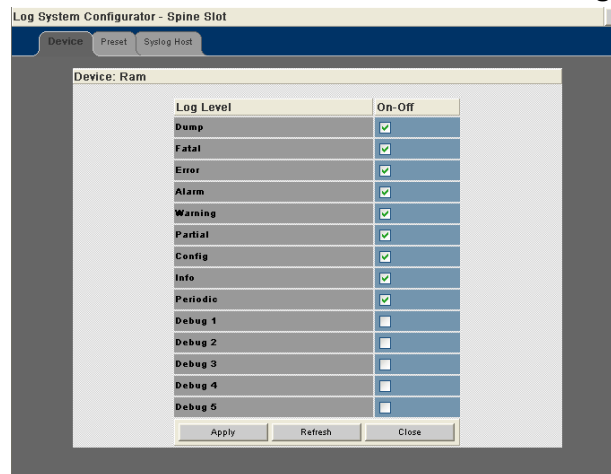


The Device tab presents current log level configuration settings for the following software modules:

- **RAM** = The circular log buffer contained in memory. To access the contents of this buffer, use the Chassis Viewer **View Log** button
- **Syslog** = Messages that are sent to the syslog host specified on the Syslog tab.

From this screen, the user can change any of the log level settings for a specific software module by clicking on the **Configure** button, which displays a configuration screen:

**Figure 2-28. Device Tab: Software Module Configurator**



To change any Log Level settings:

1. Click the **On-Off** checkbox to the right of the setting.
2. Click the **Apply** button to save any changes.

The following list describes each of the Log Level configuration parameters.

- **DUMP** – Dump: Indicates that a problem has caused the system to produce a system dump file. In most circumstances, it is recommended that the user retrieve the dump that was produced. Support engineers may require the information contained in the dump file to diagnose the cause of the problem.
- **FATAL** – Indicates that a non-recoverable system problem has occurred. The user should reboot the system or component and verify that the subsystem is fully functional to determine whether the fault has been corrected. If the problem persists, the user should contact the supplier.
- **ERROR** – Indicates that a serious system error has occurred which might be recoverable. If the system exhibits any instability, the user should reboot the system or component. If errors persist, the user should immediately contact the supplier's technical support.

- ✦ **ALARM** - Indicates that a serious problem has occurred which degrades capacity or service. If the error is recoverable, the user should correct the failure. If the alarm/failure persists, the user should reboot the system at a convenient time. If the problem is still not cleared, the user should contact the supplier.
- ✦ **WARNING** - Indicates that a recoverable problem has occurred. The user does not need to take action.
- ✦ **PARTIAL** - When more information is available, Partial causes additional message-related details to be displayed.
- ✦ **CONFIGURATION**: An informational message indicating changes that a user has made to the system configuration. The user does not need to take any action.
- ✦ **INFO**: Informational messages that occur during a system or component boot. The user does not need to take any action.
- ✦ **PERIODIC**: An informational message containing periodic statistics. The user does not need to take action.

**Debug message levels 1 through 5:** Debug messages are for supplier and/or SilverStorm engineering use and are not necessarily indicative of actions that an end user may need to take.

- ✦ **DEBUG1** – Messages that describe the states of connections and links.
- ✦ **DEBUG2** – Messages that describe major configuration changes or operations.
- ✦ **DEBUG3** – Messages that describe the I/O flow.
- ✦ **DEBUG4** – Messages that contain the packet dumps within an I/O flow. I/O flows contain multiple packets.
- ✦ **DEBUG5** – Messages that contain the packet dumps within an I/O flow. I/O flows contain multiple packets.

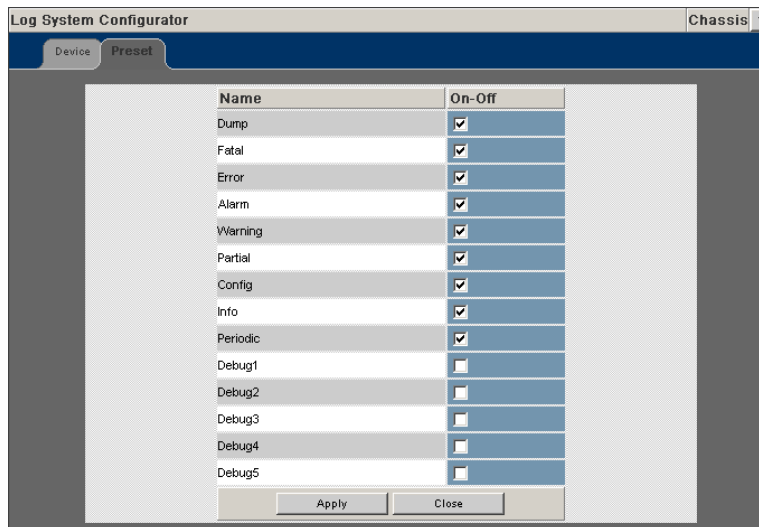
**Important:** When configuring the log levels to display debug messages, care should be taken to ensure that system performance issues are weighed against troubleshooting requirements. Generally, the higher the debug number the more information is written to the log. Specifically, debug 3-5 have the most affect on system performance.

2.2.2.1.1

**Preset Tab**

The Preset tab allows the user to quickly change log level settings for all software modules on the switch.

**Figure 2-29. Log System Configurator: Preset Tab**



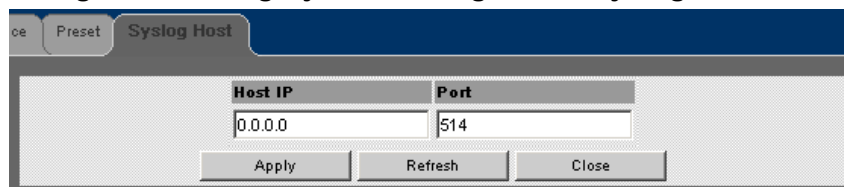
To change the log level settings:

1. Click the **On-Off** checkbox to the right of the setting(s).
2. Click the **Apply** button to save any changes.

2.2.2.1.2

**Syslog Tab**

**Figure 2-30. Log System Configurator: Syslog Host Tab**



The Syslog tab allows the user to configure logging messages to be sent to a syslog host. If the Host IP address is 0.0.0.0, no syslog host is configured, otherwise log messages are sent to the syslog server at a specified IP address and port.

To setup the syslog host:

1. In the **Host IP** dialog box, enter the IP address of the syslog host where the log files are to be saved.
2. Click the **Apply** button to save the IP address.

### 2.2.2.1.3

## Configure Syslog on the Syslog Server

1. Edit the `/etc/sysconfig/syslog` file and ensure that the `-r` is included in the `SYSLOGD_OPTIONS`. This allows logging from a remote system. For example:

```
SYSLOGD_OPTIONS="-r -m 0"
```

2. Type `/etc/init.d/syslog restart`, and press **Enter**.

**NOTE:** To centralize logging for all switches in an IB fabric, the user can configure each switch to point to the same syslog server, which has the syslog daemon (`syslogd`) running.

### 2.2.2.2

## Reset Log Levels

The Reset Levels button resets the logging levels to their factory default values.

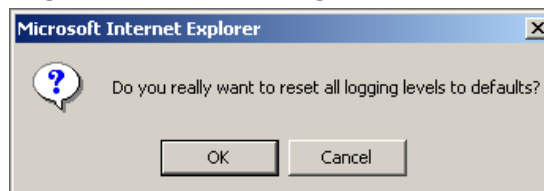
**Figure 2-31. Reset Levels Button**



To reset the logging levels:

1. From the menu, select **Logging**.
2. Click **Logging**.
3. Click **Reset Levels**. The Reset Levels window is displayed:

**Figure 2-32. Reset Log Levels Window**

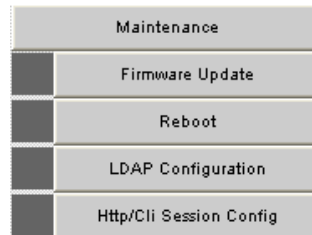




- To reset the logging levels, click **OK**.

### 2.2.3 Maintenance

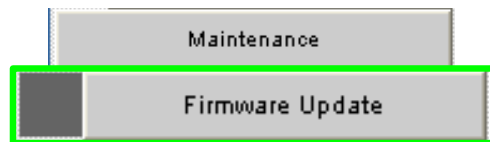
**Figure 2-33. Maintenance Menu**



**NOTE:** For rebooting information, see “Rebooting the MPFD switches using Chassis Viewer” on page 2-10.

#### 2.2.3.1 Firmware Update

**Figure 2-34. Firmware Update Button**

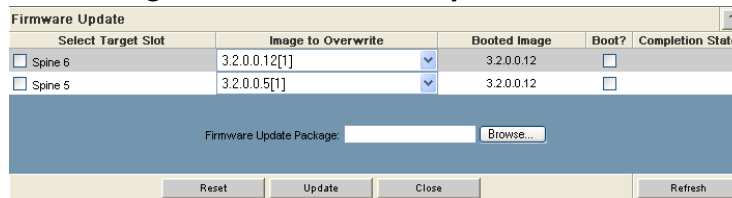


The Firmware Update button allows the user to select an alternate firmware file for the switch. These alternate files are reflected in the drop-down lists in the Firmware Update screen.

To download firmware:

- From the menu, select **Maintenance**.
- Click **Firmware Update**. The Firmware Update screen is displayed.

**Figure 2-35. Firmware Update Screen**



- In the **Select Target Slot** Column, select the hardware component to change its firmware.

**NOTE:** If there are multiple modules of the same type, the user can select all slots that apply.

4. From the **Image to Overwrite** drop-down, choose an alternate firmware file for each selected component.
5. In the **Firmware Update Package:** text box, enter the path to the alternate firmware file. If the path is not known, the user can use the **Browse...** button to locate it.

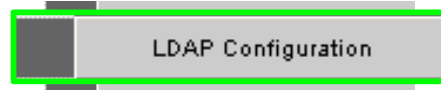
**NOTE:** Before using the **Browse...** button, make certain that the browser is tied to an FTP server where the firmware files reside (i.e., if the file(s) does not reside on a local computer).

6. To have the new image become active after the next reboot, check the box in the **Boot?** Column.
7. Click the **Update** button.

#### 2.2.4

### LDAP Configuration

**Figure 2-36. LDAP Configuration Button**



The lightweight directory access protocol (LDAP) configuration feature allows the user to set and configure authentications for the switch. The LDAP service resides on a server that has access to a usercode and password database.

On the 9000 switches with LDAP enabled, when a user attempts to login to either Chassis Viewer or the CLI, the LDAP client intercepts the login attempt and rather than authenticating internally, encrypts and packages the information in an LDAP packet and sends it to a pre-configured LDAP server over TCP/IP (i.e., the out of band LAN). The LDAP server receives the request, passes it on to the authentication services, and responds to the client with a yes or no, either allowing or denying the user access to the box.

When LDAP is disabled internal authentication becomes the default.

To setup LDAP authentication:

1. From the menu, select **Maintenance**.
2. Click **LDAP Configuration**. The LDAP Authentication screen is displayed.

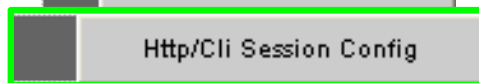
**Figure 2-37. LDAP Authentication Screen**

LDAP Authentication	
Field Name	Value
LDAP Server IP Address	<input type="text"/>
LDAP Server Port	<input type="text"/>
<input type="button" value="Apply"/> <input type="button" value="Refresh"/> <input type="button" value="Close"/>	

3. In the **LDAP Server IP Address** box, enter the address of the applicable LDAP server.
4. In the **LDAP Server Port** box, enter the applicable server port number (the default is 389).
5. When finished, click the **Apply** button.

### 2.2.5 HTTP/CLI Session Configuration

**Figure 2-38. HTTP/CLI Session Config Button**



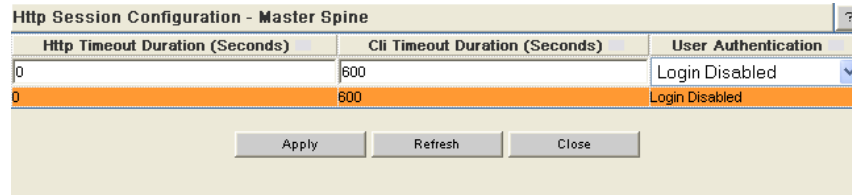
The hyper text transfer protocol (HTTP) and command line interface (CLI) session configuration feature allows the user to set HTTP and CLI session timeout parameters, as well as set security requirements for the switch.

The session timeout duration is the length of time that a session remains active if there is no GUI activity. If a session is inactive for a time exceeding the timeout duration, the user will be logged out.

To modify the HTTP and CLI configurations:

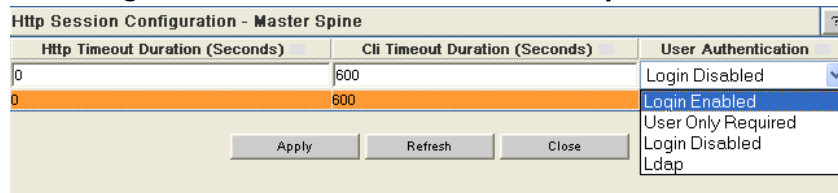
1. From the menu, select **Maintenance**.
2. Click **HTTP/CLI Session Config**. The HTTP/CLI Session Configuration screen is displayed.

**Figure 2-39. HTTP/CLI Session Configuration Screen**



3. To modify the session timeout duration (in seconds), click on the existing configuration. The row changes to orange.
4. In the **HTTP Timeout Duration** field, enter the new timeout duration (in seconds). The default is 0 seconds (i.e., no timeout).
5. In the **CLI Timeout Duration** field, enter the new timeout duration (in seconds). The default is 600 seconds.
6. To change the User Authentication parameter, click on the dropdown list. The following is displayed:

**Figure 2-40. User Authentication Dropdown List**

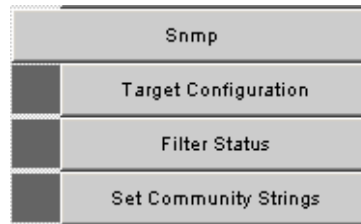


7. Select the preferred user authentication method. These are:
  - LDAP - use an LDAP server. If the user name/password validation fails to complete successfully, check in the database of the local switch.
  - Login Enabled - UserName and Password must be entered, and must match what is in the database of the local switch.
  - UserOnly Required - According to the local switch database, a valid username must be entered. A password is not required.
  - Login Disabled - Does not require username or password.
8. When finished, click the **Apply** button.

## 2.2.6 SNMP

The SNMP submenu allows the user to view and modify SNMP trap configuration information.

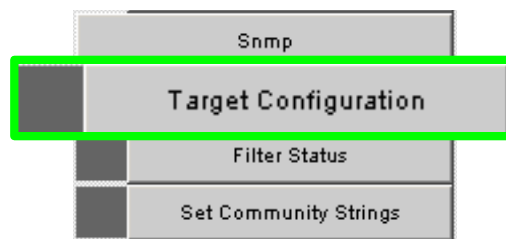
**Figure 2-41. SNMP Submenu**



### 2.2.6.1 Target Configuration

The Target Configuration button displays the SNMP Target Configuration Window, allowing the user to view and edit existing SNMP trap destinations.

**Figure 2-42. Target MIB Configuration Button**



To display the Target Configuration window:

1. From the menu, select **SNMP**.
2. Select **Target Configuration**.

3. The SNMP Target Configuration window is displayed:

**Figure 2-43. SNMP Target Configuration Window**

SNMP Target Address									
Addr Name	Transport Dom	Transport Addr	Port	Timeout	Retry Cnt	Tag List	Params	Storage Type	Status
nms v1	1.3.6.1.6.1.1	172.26.100.201	162	1500	3	rfc1493 rfc1757 rfc1907 rfc2233 tmscom	v1 params	nonVolatile	Active
nms v2	1.3.6.1.6.1.1	172.26.100.201	162	1500	3	rfc1493 rfc1757 rfc1907 rfc2233 tmscom	v2 params	nonVolatile	Active
nms v3	1.3.6.1.6.1.1	172.26.100.201	162	1500	3	rfc1493 rfc1757 rfc1907 rfc2233 tmscom	v3 params	nonVolatile	Active

SNMP Target Parameters						
Parameter Name	MP Model	Security Model	Security Name	Security Level	Storage Type	Status
v1 params	0	1	public	No Auth No Priv	nonVolatile	Active
v2 params	1	2	public	No Auth No Priv	nonVolatile	Active
v3 params	3	3	initialnone	No Auth No Priv	nonVolatile	Active

The top section of the window, SNMP Target Addresses, allows the user to determine what type of SNMP traps are sent, and where they are sent. The rows provide an area for specifying multiple trap destinations. The bottom section of the window, SNMP Target Parameters, allows the user to configure each trap destination with version, optional security information, and filtering mechanisms.

The **Apply** button applies the current settings to either the SNMP Target Addresses or SNMP Target Parameters section.

**NOTE:**The Target Configuration window is used for viewing and modifying existing SNMP target entries. It is not used for creating new target entries.

To create a new target entry, use the following CLI command:

```
snmpTargetAddr add -n name -a addr [-p port] [-t timeout] [-r
retry_count] [-l tag_list] [-v parameters] [-s storage_type]
```

For example:

To add a trap target with the IP address 192.168.0.123 that accepts SNMP v2c style traps:

```
snmpTargetAddr add -n traphost1 -a 192.168.0.123 -v "v2 params"
```

Or, to add the same target except using SNMP v1traps:

```
snmpTargetAddr add -n traphost1 -a 192.168.0.123 -v "v1 params"
```

## 2.2.6.1.1

## Target Configuration Window Field Descriptions

The following are descriptions for each field in the Target Configuration window:

SNMP Target Addresses:

- Address Name

Specifies a unique, administrator-defined name the system uses to identify a row.

- Transport Domain

Specifies the transport type of the address contained in the snmpTargetAddrTAddress object (e.g., 1.3.6.1.6.1.1 = udp, 1.3.6.1.4.1.1977.200.1 = tcp).

- Transport Address

Specifies the IP address in dotted decimal format.

**NOTE:** The combination of the Transport Domain and the Transport Address determines the trap destination.

- Port

Specifies the TCP or UDP port that the SNMP trap is sent.

- Timeout

Specifies the time (in milliseconds) that the trap sender waits on a response before re-sending the trap.

- Retry Count

Specifies the number of attempts to be made to send the trap after a timeout condition occurs.

**NOTE:** Timeout and Retry Count are SNMP v2.c and above. Not applicable for v1 traps.

- Tag List

Specifies which traps should be sent to this particular destination.

**NOTE:** RFC2233 specifies the link up/down traps. Including RFC2233 in the Tag List specifies that the trap receiver will get link up/down traps.

- Parameters

Specifies a mapping to an entry in the SNMP Target Parameters table, determining the version of SNMP to use.

- Storage Type

This field determines whether or not the entry is saved for each reboot of the switch.

- ✦ *Nonvolatile* means that the value is saved, and remains with each subsequent reboot.
- ✦ *Volatile* or *Other* indicates it will not be saved.

✦ Status

Indicates the current status of the row. The row may be in one of three states:

- ✦ Active
- ✦ Not in service
- ✦ Not Ready

**NOTE:** A status of **not in service** indicates that the current row will not be used in the event a trap is generated by the system. Toggling a trap to not in service, which temporarily suspends trap forwarding, may be useful to keep values intact.

SNMP Target Parameters:

**NOTE:** Changes can only be made to rows that have a status of **not in service**.

✦ Parameter Name

Specifies a mapping to an entry in the SNMP Target Parameters table, determining the version of SNMP to use.

✦ MP Model

The Message Processing Model to be used when generating SNMP messages for entry. Values for this field are 0 for SNMP v1, 1 for SNMP v2 and 3 for SNMP v3.

✦ Security Model

The Security Model to be used when generating SNMP messages using this entry. Values for this field are 1 for SNMP v1, 2 for SNMP v2, or 3 for SNMP v3

✦ Security Name

Security name identifies the entity for whom SNMP messages will be generated.

**NOTE:** This is equivalent to the community string in an SNMP get.

✦ Security Level

One of three options:

- ✦ *NoAuthNoPriv*: No Authentication, no privacy.
- ✦ *AuthNoPriv*: Authentication, no privacy.



- ✦ *AuthPriv*: Authentication and privacy
  - ✦ Storage Type
 

This field determines whether or not the entry is saved for each reboot of the switch.

    - ✦ *Nonvolatile* means that the value is saved, and remains with each subsequent reboot.
    - ✦ *Volatile* or *Other* indicates it will not be saved.
  - ✦ Status
 

Indicates the current status of the row. The row may be in one of three states:

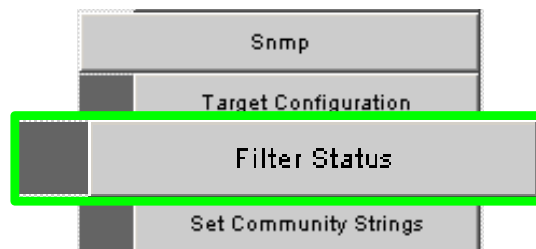
    - ✦ Active
    - ✦ Not in service
    - ✦ Not Ready
- NOTE:** A status of **not in service** indicates that the current row will not be used in the event a trap is generated by the system. Toggling a trap to not in service, which temporarily suspends trap forwarding, may be useful to keep values intact.

2.2.6.2

**Filter Status**

The SNMP Filter Status screen allows the user to view parameters for rfc2273 (SNMP-NOTIFICATION-MIB).

**Figure 2-44. Filter Status Button**



To view SNMP filter status:

1. From the menu, select **SNMP**
2. Click **Filter Status**. The **SNMP Filter Status** screen is displayed.

**Figure 2-45. SNMP Filter Status Screen**

The screenshot shows three distinct sections, each with a table of filter parameters and 'Refresh' and 'Close' buttons below it.

Notify Name	Tag	Type	Storage Type	Status
bridge	rlc1493	Trap	nonVolatile	Active
interfaces	rlc2233	Trap	nonVolatile	Active
mon	rlc1727	Trap	nonVolatile	Active
snmp	rlc1907	Trap	nonVolatile	Active
lms	lmscom	Trap	nonVolatile	Active

Filter Profile Name Parameter	Storage Type	Status
v1 params	nonVolatile	Active
v2 params	nonVolatile	Active
v3 params	nonVolatile	Active

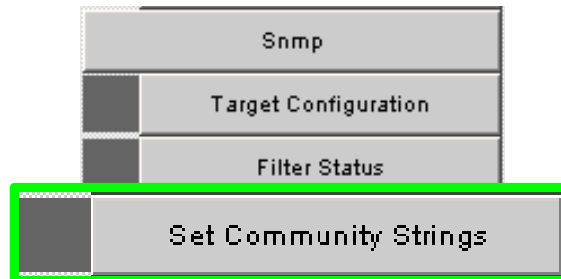
Filter Subtree	Filter Mask	Filter Type	Storage Type	Status
0	1	1	nonVolatile	Active
0	1	1	nonVolatile	Active
0	1	1	nonVolatile	Active

### 2.2.6.3 Set Community Strings

The Set Community Strings screen allows the user to set two SNMP community names:

- Read Only Community Name
- Read/Write Community Name

**Figure 2-46. Set Community Strings Button**



To set the Community Strings:

1. Click **SNMP**
2. Click **Set Community Strings**. The **Set Community Strings** screen is displayed.

**Figure 2-47. Set Community Strings Window**

<b>Read Only Comm. Name</b>	public
<b>Read/Write Comm. Name</b>	private
<input type="button" value="Apply"/> <input type="button" value="Refresh"/> <input type="button" value="Close"/>	

The first field, "**Read Only Comm. Name**," is the community string that when specified in an SNMP client, allows read only access to SNMP fields exported by the SNMP server.

The second field, "**Read/Write Comm. Name**," is the community string that when specified in an SNMP client, allows read and write access to SNMP fields exported by the SNMP server.

3. In each field, enter a meaningful name (such as **public** and **private** shown above), and click on **Apply**.

### 2.2.7

## Configuration File Administration

The Configuration File Administration menu allows the user to perform various administrative tasks related to the configuration files for each virtual I/O card populating the switch.

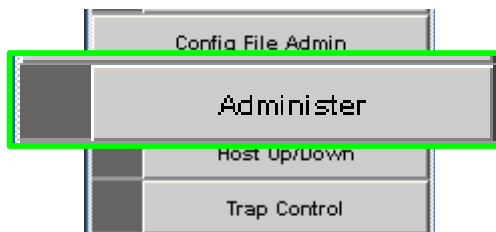
**Figure 2-48. Configuration File Administration Menu**

Config File Admin	
	Administer
	Host Up/Down
	Trap Control

### 2.2.7.1 Administer

The Administer screen allows the user to set backup and restore scenarios for the configuration file of each MPFD virtual I/O card.

**Figure 2-49. Configuration File Administration - Administer**



1. Click the chassis view.
2. Click **Config File Admin**.
3. Click **Administer**. The **Configuration File Administration** screen is displayed:

**Figure 2-50. Configuration File Administration Screen**

Index	Mode	Module	Firmware Rev	Serial Num	Timestamp	Backup	Restore	Clear
1	Disabled	EVIC	4.0.0.4.3	USA143060007	TUE JAN 23 15:20:50 2007	Backup	Restore	Clear
2	Auto Backup	None	--Empty; No Value Set--	--Empty; No Value Set--	Never	Backup	Restore	Clear
3	Disabled	FVIC	4.0.0.5.1	USA1230600010	TUE JAN 30 20:14:17 2007	Backup	Restore	Clear
4	Auto Backup	None	--Empty; No Value Set--	--Empty; No Value Set--	Never	Backup	Restore	Clear

Apply

4. Click on the virtual I/O card to be modified. The row changes to orange.
5. In the **Mode** column, click the drop-down and select the configuration file administration mode for a virtual I/O card.

**Figure 2-51. Configuration File Administration - Mode Drop-down**

Index	Mode	Module	Firmware
1	Auto Backup	None	--Empty; No Ve
2	Auto Restore	None	--Empty; No Ve
	Disabled		

Following is a description of each mode option:

Disabled

Following an Auto Restore of a configuration file to a virtual I/O card, the system sets the virtual I/O card mode to **Disabled**. This allows the user to verify that the configuration file is correct, before returning the virtual I/O card to Auto Backup mode. In the **Disabled** mode, use the **Backup** and **Restore** buttons to either back up or restore a configuration file.

Auto Backup

All configuration changes to a virtual I/O card are automatically backed up to the CMU.

Auto Restore

The most recent configuration file is restored to a virtual I/O card inserted into a specific Chassis slot. This is useful as a prerequisite to hot swapping a virtual I/O card.

6. To save, click on **Apply**.

**NOTE:** The **Clear** button deletes the configuration file from the CMU on the switch.

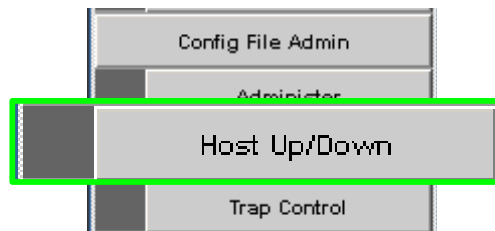
2.2.7.2

**Host Upload/Download**

The Host Up/Download screens allows the user to:

- Upload configuration files from a server to the CMU.
- Download saved configuration files from the CMU to a server.

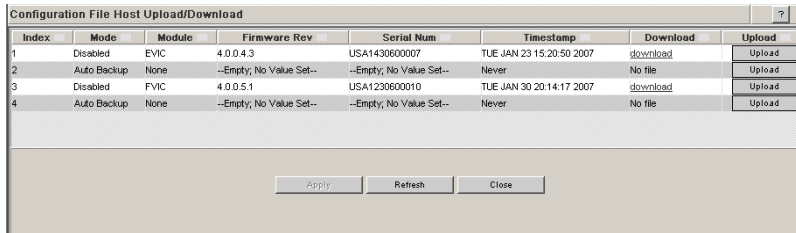
**Figure 2-52. Configuration File Administration - Host Up/Download**



1. Click the chassis view.
2. Click Config File Admin.

3. Click Host Up/Download. The Configuration File Upload/Download screen is displayed:

**Figure 2-53. Configuration File Upload/Download Screen**

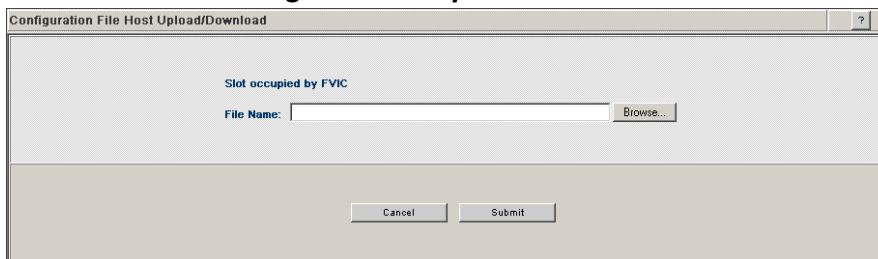


Index	Mode	Module	Firmware Rev	Serial Num	Timestamp	Download	Upload
1	Disabled	EVIC	4.0.0.4.3	USA143060007	TUE JAN 23 15:20:50 2007	download	Upload
2	Auto Backup	None	--Empty, No Value Set--	--Empty, No Value Set--	Never	No file	Upload
3	Disabled	FVIC	4.0.0.5.1	USA1230600010	TUE JAN 30 20:14:17 2007	download	Upload
4	Auto Backup	None	--Empty, No Value Set--	--Empty, No Value Set--	Never	No file	Upload

To upload a configuration file from a server to the CMU:

1. For a selected module, click the **Upload** button. The following screen is displayed:

**Figure 2-54. Upload Screen**



Configuration File Host Upload/Download

Slot occupied by FVIC

File Name:  Browse...

Cancel Submit

2. Type the path to the desired server location, or click **Browse** to locate the correct path.
3. Click **Submit**.

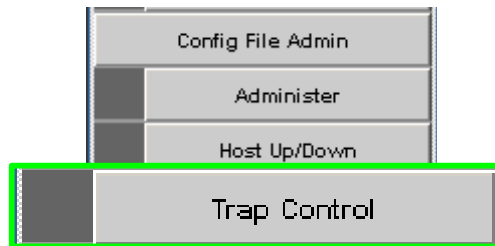
To download a configuration file from the CMU to a server:

1. For a selected module, click the **Download** button. The **File Download** screen is displayed.
2. Click **Save**.
3. In the **Save As** window, locate the correct path to the desired server location, and click **Save**.

2.2.7.3  
**Trap Control**

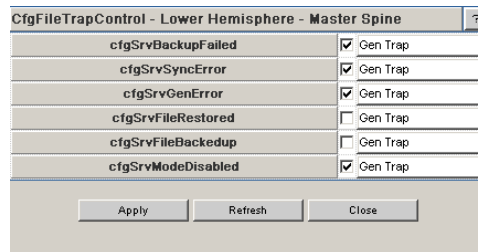
The Trap Control screen allows the user to set default trap scenarios related to configuration files.

**Figure 2-55. Trap Control**



1. Click the chassis view.
2. Click **Config File Admin**.
3. Click **Trap Control**. The **Trap Control** screen is displayed:

**Figure 2-56. Configuration File Trap Control Screen**



4. Select or deselect the desired trap(s).
- NOTE:** To generate an immediate trap, click the applicable **Gen Trap** button.
5. To save settings, click on **Apply**.
- NOTE:** If the checkbox is not checked the **Gen Trap** button will not generate a trap.

Following are definitions for each configuration file trap:

**CfgSrvBackupFailed**

The server was instructed to backup a file for a particular slot, which failed.

**CfgSrvSyncError**

Synchronization to the slave CMU failed. The problem should be resolved and attempted manually.

CfgSrvGenError

A general error has occurred.

CfgSrvFileRestored

The configuration files have been restored to a particular slot.

CfgSrvFileBackedup

The configuration files have been successfully backed up for a particular slot.

CfgSrvModeDisabled

An event has occurred that has caused the slot mode to be set to disabled. The user should resolve the error and reset the mode to the proper value for the affected slot.

**NOTE:** The default settings for this screen are as shown above. The user should not change the defaults unless instructed by Technical Support.

### 2.2.8

## Chassis Traps

The Chassis Trap Control screen allows the user to set default trap scenarios related to the switch.

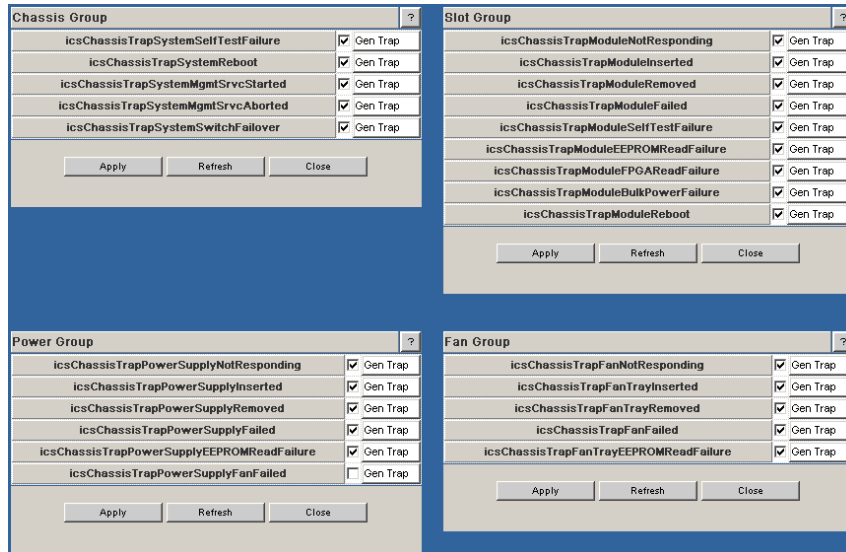
**Figure 2-57. Chassis Trap Control**





1. From the Chassis menu, click **Chassis Traps**.
2. Click **Trap Control**. The **Chassis Trap Control** screen is displayed:

**Figure 2-58. Chassis Trap Control Screen**



3. Select or deselect the desired trap(s).

**NOTE:** To generate an immediate trap, click the applicable **Gen Trap** button.

4. To save settings, click on **Apply**.

Following are definitions for each chassis trap:

**Chassis Group**

icsChassisTrapSystemSelfTestFailure

This trap indicates that the chassis failed one or more of its self-test(s).

icsChassisTrapSystemReboot

This trap indicates that the chassis is in the process of rebooting.

icsChassisTrapSystemMgmtSrvcStarted

This trap indicates that the internal service used to support the management of the chassis is operational.

icsChassisTrapSystemMgmtSrvcAborted

This trap indicates that the internal service used to support the management of the chassis has terminated abnormally.

icsChassisTrapSystemSwitchFailover

This trap indicates that there was a fail over from one switch in the chassis to the other.

#### Slot Group

##### icsChassisTrapModuleNotResponding

This trap indicates that a module is not responding to HEARTBEAT poll requests, that are issued by the internal chassis management service.

##### icsChassisTrapModuleInserted

This trap indicates that a module was inserted into the chassis.

##### lcsChassisTrapModuleRemoved

This trap indicates that a module was removed from the chassis.

##### icsChassisTrapModuleFailed

This trap indicates that a module has failed and is not operational.

##### icsChassisTrapModuleSelfTestFailure

This trap indicates that the module failed one or more of its self-test.

##### icsChassisTrapModuleEEPROMReadFailure

This trap indicates that an error condition was encountered when reading the EEPROM of the module.

##### icsChassisTrapModuleFPGAReadFailure

This trap indicates that an error condition was encountered when reading the Field-Programmable Gate Array (FPGA) of the module.

##### icsChassisTrapModuleBulkPowerFailure

This trap indicates that the bulk power used by a module has failed within the chassis.

##### icsChassisTrapModuleReboot

This trap indicates that the module is in the process of rebooting.

#### Power Group

##### icsChassisTrapPowerSupplyNotResponding

This trap indicates that a power supply is not responding to HEARTBEAT poll requests, that are issued by the internal chassis management service.

##### icsChassisTrapPowerSupplyInserted

This trap indicates that a power supply was inserted into the chassis.

##### icsChassisTrapPowerSupplyRemoved

This trap indicates that a power supply was removed from the chassis.

icsChassisTrapPowerSupplyFailed

This trap indicates that a power supply has failed and is not operational.

icsChassisTrapPowerSupplyEEPROMReadFailure

This trap indicates that an error condition was encountered when reading the EEPROM of the power supply.

icsChassisTrapPowerSupplyFanFailed

This trap indicates that a power supply fan has failed and is not operational.

Fan Group

icsChassisTrapFanNotResponding

This trap indicates that a fan is not responding to HEARTBEAT poll requests, that are issued by the internal chassis management service.

icsChassisTrapFanTrayInserted

This trap indicates that a fan was inserted into the chassis.

icsChassisTrapFanTrayRemoved

This trap indicates that a fan was removed from the chassis.

icsChassisTrapFanFailed

This trap indicates that a fan has failed and is not operational.

icsChassisTrapFanTrayEEPROMReadFailure

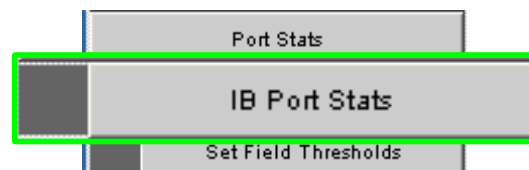
This trap indicates, that an error condition was encountered when reading the EEPROM of the fan tray.

2.2.9

**Port Statistics**

The **Chassis View Port Statistics** area provides IB port information for all of the external and internal ports of the switch.

*Figure 2-59. IB Port Statistics*



To view port statistical information, do the following:

1. From the Chassis View Port Statistics submenu, select **IB Port Stats**. The IB Port Statistics window is displayed.:

**Figure 2-60. Chassis IB Port Statistics**

Port Name	Port #	Link State	Physical State	Link Down Default	Active Link Width	Link Width Enabled	Link Width Supported	Active Link Speed	Link Speed Enabled	Link Speed Supported	Transmit 32Bit Words	Receive 32Bit Words	Transmit Packets	Receive Packets	Transmit Wait	Symbol Error	Link Error Recovery	Link Downed	Receive Error
LOIP01	1,1	down	Poling	Poling	4K	1K or 4K	1K or 4K	2.5Gbit	2.5Gbit	2.5Gbit	0	0	0	0	0	0	0	0	0
LOIP02	1,2	down	Poling	Poling	4K	1K or 4K	1K or 4K	2.5Gbit	2.5Gbit	2.5Gbit	0	0	0	0	0	0	0	0	0
LOIP03	1,3	active	Up	Poling	4K	1K or 4K	1K or 4K	2.5Gbit	2.5Gbit	2.5Gbit	191514	200304	2661	2762	0	0	0	0	0
LOIP04	1,4	down	Poling	Poling	4K	1K or 4K	1K or 4K	2.5Gbit	2.5Gbit	2.5Gbit	0	0	0	0	0	0	0	0	0
LOIP05	1,5	down	Poling	Poling	4K	1K or 4K	1K or 4K	2.5Gbit	2.5Gbit	2.5Gbit	0	0	0	0	0	0	0	0	0
LOIP06	1,6	active	Up	Poling	4K	1K or 4K	1K or 4K	2.5Gbit	2.5Gbit	2.5Gbit	424662734	424967294	4539966	4546597	0	0	0	0	0
LOIP07	1,7	active	Up	Poling	4K	1K or 4K	1K or 4K	2.5Gbit	2.5Gbit	2.5Gbit	216614	225288	3036	3129	0	0	0	0	0
LOIP08	1,8	down	Poling	Poling	4K	1K or 4K	1K or 4K	2.5Gbit	2.5Gbit	2.5Gbit	0	0	0	0	0	0	0	0	0
LOIP09	1,9	down	Poling	Poling	4K	1K or 4K	1K or 4K	2.5Gbit	2.5Gbit	2.5Gbit	0	0	0	0	0	0	0	0	0
LOIP10	1,10	down	Poling	Poling	4K	1K or 4K	1K or 4K	2.5Gbit	2.5Gbit	2.5Gbit	0	0	0	0	0	0	0	0	0
LOIP11	1,11	down	Poling	Poling	4K	1K or 4K	1K or 4K	2.5Gbit	2.5Gbit	2.5Gbit	0	0	0	0	0	0	0	0	0
LOIP12	1,12	down	Poling	Poling	4K	1K or 4K	1K or 4K	2.5Gbit	2.5Gbit	2.5Gbit	0	0	0	0	0	0	0	0	0
LOIP13	2,1	down	Poling	Poling	4K	1K or 4K	1K or 4K	2.5Gbit	2.5Gbit	2.5Gbit	0	0	0	0	0	0	0	0	0
LOIP14	2,2	down	Poling	Poling	4K	1K or 4K	1K or 4K	2.5Gbit	2.5Gbit	2.5Gbit	0	0	0	0	0	0	0	0	0
LOIP15	2,3	down	Poling	Poling	4K	1K or 4K	1K or 4K	2.5Gbit	2.5Gbit	2.5Gbit	0	0	0	0	0	0	0	0	0
LOIP16	2,4	down	Poling	Poling	4K	1K or 4K	1K or 4K	2.5Gbit	2.5Gbit	2.5Gbit	0	0	0	0	0	0	0	0	0
LOIP17	2,5	down	Poling	Poling	4K	1K or 4K	1K or 4K	2.5Gbit	2.5Gbit	2.5Gbit	0	0	0	0	0	0	0	0	0
LOIP18	2,6	active	Up	Poling	4K	1K or 4K	1K or 4K	2.5Gbit	2.5Gbit	2.5Gbit	190074	190864	2641	2762	0	0	0	0	0
LOIP19	2,7	active	Up	Poling	4K	1K or 4K	1K or 4K	2.5Gbit	2.5Gbit	2.5Gbit	424662734	424967294	4539966	4546597	0	0	0	0	0
LOIP20	2,8	down	Poling	Poling	4K	1K or 4K	1K or 4K	2.5Gbit	2.5Gbit	2.5Gbit	0	0	0	0	0	0	0	0	0
LOIP21	2,9	down	Poling	Poling	4K	1K or 4K	1K or 4K	2.5Gbit	2.5Gbit	2.5Gbit	0	0	0	0	0	0	0	0	0
LOIP22	2,10	down	Poling	Poling	4K	1K or 4K	1K or 4K	2.5Gbit	2.5Gbit	2.5Gbit	0	0	0	0	0	0	0	0	0

2.2.9.0.1

**Understanding Port Naming Conventions**

Following is an explanation of the conventions used in the **Port Name** column.

Leaf modules/ports:

L = Leaf module number

P = Leaf module port number

Example: L12P01 is leaf module 12 port number 1.

Interswitch Link (ISL) Ports:

S = Spine module number

L = Leaf leaf module number

A = Spine module switch chip A

B = Spine module switch chip B

a, b, c = Links between a leaf module and each spine chip

Example: S2AL10 is the ISL between spine module 2, switch chip A and leaf module 10.

**NOTE:** Spine chips are referenced by the spine number and the switch chip identifier. Each spine module contains two switch chips (Switch chip A and B).

## 2.2.9.1

**Port Statistics Field Descriptions****Link State:**

Indicates whether the InfiniBand link associated with the physical port is up or down. Possible values are **no state change**, **down**, **init**, **armed**, **active**, and **unknown**.

**Physical State:**

Indicates whether the internal connection to the InfiniBand port is up or down. Possible values are **No State Change**, **Sleep**, **Polling**, **Disabled**, **Training**, **Up**, and **Error Recovery**.

**Link Down Default:**

Indicates the default down state as set by the Fabric Manager. Possible values are **No State Change**, **Sleep**, **Polling**, and **Unknown**.

**Active Link Width:**

Indicates the number of full duplex serial links that are currently being used on a port. The current bandwidth capability of a port is determined by multiplying this value by the Active Link Speed of this port. For instance a 4X DDR link has a bandwidth capability of 20Gb/s.

**NOTE:** Values of 1X are possible in this field with 4X IB cables if poor cable connections or defective 4X IB cables are used.

**Link Width Enabled:**

Link Width Enabled is the allowed link width(s) that a port can arbitrate to. Normally, this defaults to the Link Width Supported value, but can be overridden by the subnet manager.

**Link Width Supported:**

Indicates the link width in terms of multipliers of 2.5 Gbit/sec full duplex serial links supported by the port.

**Active Link Speed:**

Indicates the speed of the full duplex serial link. This is either 2.5Gbps (single data rate, or SDR), or 5.0Gbps (double data rate, or DDR).

**Link Speed Enabled:**

Link Speed Enabled is the allowed link speed(s) that a port can arbitrate to. Normally this defaults to the Link Speed Supported value, but can be overridden by the subnet manager.

**Link Speed Supported:**

The supported link speed of the port. This could be 2.5Gbps (SDR), 5.0Gbps (DDR) or both.

### 2.2.9.1.1

## **InfiniBand Statistics:**

### Transmit 32 Bit Words:

The number of 32-bit data words transmitted by the port, not including flow control and VCRC data.

### Receive 32 Bit Words:

The number of 32-bit data words received by the port, not including flow control and VCRC data.

### Transmit Packets:

The number of data packets transmitted by the port, not including flow control packets.

### Receive Packets:

The number of data packets received by the port, not including flow control packets.

### Symbol Errors:

The number of times a 8B10B encoding violation, or a disparity violation was detected. If multiple errors are detected simultaneously (in more than one lane), the counter only increments by one. The value of the counter is not incremented past 65535. The Performance Manager may reset and/or consolidate the results of this counter.

### Link Error Recovery:

Indicates the number of times the link error recovery process happened successfully. The value of the counter is not incremented past 65535. The Performance Manager may reset and/or consolidate the results of this counter.

### Link Downed:

The number of times the link error recovery process failed. The value of the counter is not incremented past 65535. The Performance Manager may reset and/or consolidate the results of this counter.

### Receive Errors:

Number of errors received on the port.

### Remote Physical Errors Received:

Indicates bit errors on a link other than the physically attached link.

### Transmit Discards:

Number of port transmit discards.

Local Link Integrity Errors:

An error caused by a marginal link. Depending upon the number of code violations, physical switch problems are detected at the physical layer. These errors are based on a count of local physical errors.

Excessive Buffer Overrun:

This error is detected when the OverrunErrors threshold is exceeded by the number of consecutive flow control update periods with at least one overrun error in each period given in the PortInfo attribute.

Pkey Violations Inbound:

Indicates the number of times an invalid partition key (PKey) was received. PKeys support an advanced InfiniBand feature for logically partitioning a physical subnet into logical access domains.

Pkey Violations Outbound:

Indicates the number of times an invalid PKey was sent. PKeys support an advanced InfiniBand feature for logically partitioning a physical subnet into logical access domains.

Raw Violations Inbound:

Number of times raw inbound packet discarded.

Raw Violations Outbound:

Number of times raw outbound packet was discarded.

2.2.9.2

**Leaf and Spine Module IB Port Statistics**

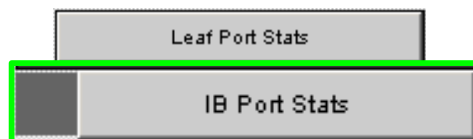
To access IB port statistics for a specific leaf or spine module, perform the following steps.

2.2.9.3

**Leaf Modules**

1. Select a leaf module. The leaf module view is displayed.
2. From the Leaf Port Stats menu, select **IB Port Stats**.

**Figure 2-61. Leaf Port Stats Menu**



The leaf port statistics window is displayed:

**Figure 2-62. Leaf Port Statistics Window**

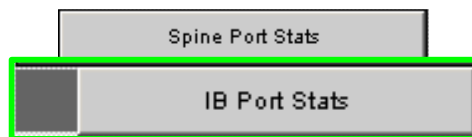
Port Name	Port #	Link State	Physical State	Link Name	Link Width	Link Width Enabled	Link Width Supported	Active Link Speed	Link Speed Enabled	Link Speed Supported	Transmit 128B Words	Receive 128B Words	Transmit Packets	Receive Packets	Transmit Wait
LOSP01	3.1	down	faulty	RoRoq	4X	1X or 4X	1X or 4X	2.5Gb/s	2.5Gb/s	2.5Gb/s	0	0	0	0	-202398
LOSP02	3.2	down	faulty	RoRoq	4X	1X or 4X	1X or 4X	2.5Gb/s	2.5Gb/s	2.5Gb/s	0	0	0	0	-202398
LOSP03	3.3	down	faulty	RoRoq	4X	1X or 4X	1X or 4X	2.5Gb/s	2.5Gb/s	2.5Gb/s	0	0	0	0	-202398
LOSP04	3.4	down	faulty	RoRoq	4X	1X or 4X	1X or 4X	2.5Gb/s	2.5Gb/s	2.5Gb/s	0	0	0	0	-202398
LOSP05	3.5	down	faulty	RoRoq	4X	1X or 4X	1X or 4X	2.5Gb/s	2.5Gb/s	2.5Gb/s	0	0	0	0	-202398
LOSP06	3.6	down	faulty	RoRoq	4X	1X or 4X	1X or 4X	2.5Gb/s	2.5Gb/s	2.5Gb/s	0	0	0	0	-202398
LOSP07	3.7	down	faulty	RoRoq	4X	1X or 4X	1X or 4X	2.5Gb/s	2.5Gb/s	2.5Gb/s	0	0	0	0	-202398
LOSP08	3.8	down	faulty	RoRoq	4X	1X or 4X	1X or 4X	2.5Gb/s	2.5Gb/s	2.5Gb/s	0	0	0	0	-202398
LOSP09	3.9	down	faulty	RoRoq	4X	1X or 4X	1X or 4X	2.5Gb/s	2.5Gb/s	2.5Gb/s	0	0	0	0	-202398
LOSP10	3.10	down	faulty	RoRoq	4X	1X or 4X	1X or 4X	2.5Gb/s	2.5Gb/s	2.5Gb/s	0	0	0	0	-202398
LOSP11	3.11	down	faulty	RoRoq	4X	1X or 4X	1X or 4X	2.5Gb/s	2.5Gb/s	2.5Gb/s	0	0	0	0	-202398
LOSP12	3.12	down	faulty	RoRoq	4X	1X or 4X	1X or 4X	2.5Gb/s	2.5Gb/s	2.5Gb/s	0	0	0	0	-202398
LOSP13a	3.13	up	up	RoRoq	4X	1X or 4X	1X or 4X	2.5Gb/s	2.5Gb/s	2.5Gb/s	0	0	0	0	-202398
LOSP13b	3.14	up	up	RoRoq	4X	1X or 4X	1X or 4X	2.5Gb/s	2.5Gb/s	2.5Gb/s	0	0	0	0	-202398
LOSP13c	3.15	up	up	RoRoq	4X	1X or 4X	1X or 4X	2.5Gb/s	2.5Gb/s	2.5Gb/s	0	0	0	0	-202398
LOSP13d	3.16	up	up	RoRoq	4X	1X or 4X	1X or 4X	2.5Gb/s	2.5Gb/s	2.5Gb/s	0	0	0	0	-202398
LOSP13e	3.17	up	up	RoRoq	4X	1X or 4X	1X or 4X	2.5Gb/s	2.5Gb/s	2.5Gb/s	0	0	0	0	-202398
LOSP13f	3.18	up	up	RoRoq	4X	1X or 4X	1X or 4X	2.5Gb/s	2.5Gb/s	2.5Gb/s	0	0	0	0	-202398

For information on the each IB port statistic field, refer to the section “Port Statistics Field Descriptions” on page 2-41

### 2.2.9.4 Spine Modules

1. Select a spine module. The spine module view is displayed.
2. From the Spine menu, select **Spine Port Stats**, then **IB Port Stats**.

**Figure 2-63. Spine Port Stats Menu**





The spine port statistics window is displayed:

**Figure 2-64. Spine Port Statistics Window**

Port Name	Port #	Link State	Physical State	Link Down Reason	Active Link Width	Link Width Enabled	Link Width Supported	Active Link Speed	Link Speed Enabled	Link Speed Supported	Transmit 32Bit Words	Receive 32Bit Words	Transmit Packets	Receive Packets	Transmit Mult
SEAL0B 13.1	down	Poling	Poling	OK	1X or 4X	1X or 4X	2.5Gb/s	2.5Gb/s	2.5Gb/s	0	0	0	0	0	2003488
SEAL0B 13.2	down	Poling	Poling	OK	1X or 4X	1X or 4X	2.5Gb/s	2.5Gb/s	2.5Gb/s	0	0	0	0	0	2003488
SEAL0B 13.3	down	Poling	Poling	OK	1X or 4X	1X or 4X	2.5Gb/s	2.5Gb/s	2.5Gb/s	0	0	0	0	0	2003488
SEAL0B 13.4	down	Poling	Poling	OK	1X or 4X	1X or 4X	2.5Gb/s	2.5Gb/s	2.5Gb/s	0	0	0	0	0	2003488
SEAL1B 13.5	down	Poling	Poling	OK	1X or 4X	1X or 4X	2.5Gb/s	2.5Gb/s	2.5Gb/s	0	0	0	0	0	2003488
SEAL1B 13.6	down	Poling	Poling	OK	1X or 4X	1X or 4X	2.5Gb/s	2.5Gb/s	2.5Gb/s	0	0	0	0	0	2003488
SEAL1B 13.7	nt	Up	Poling	OK	1X or 4X	1X or 4X	2.5Gb/s	2.5Gb/s	2.5Gb/s	0	0	0	0	0	2003488
SEAL0B 13.8	nt	Up	Poling	OK	1X or 4X	1X or 4X	2.5Gb/s	2.5Gb/s	2.5Gb/s	154286	154286	2143	2143	0	2003488
SEAL0B 13.10	down	Poling	Poling	OK	1X or 4X	1X or 4X	2.5Gb/s	2.5Gb/s	2.5Gb/s	0	0	0	0	0	2003488
SEAL0B 13.11	nt	Up	Poling	OK	1X or 4X	1X or 4X	2.5Gb/s	2.5Gb/s	2.5Gb/s	0	0	0	0	0	2003488
SEAL0B 13.12	down	Poling	Poling	OK	1X or 4X	1X or 4X	2.5Gb/s	2.5Gb/s	2.5Gb/s	0	0	0	0	0	2003488
SEAL0B 13.13	down	Poling	Poling	OK	1X or 4X	1X or 4X	2.5Gb/s	2.5Gb/s	2.5Gb/s	0	0	0	0	0	2003488
SEAL0B 13.14	down	Poling	Poling	OK	1X or 4X	1X or 4X	2.5Gb/s	2.5Gb/s	2.5Gb/s	0	0	0	0	0	2003488
SEAL0B 13.15	down	Poling	Poling	OK	1X or 4X	1X or 4X	2.5Gb/s	2.5Gb/s	2.5Gb/s	0	0	0	0	0	2003488
SEAL1B 13.16	down	Poling	Poling	OK	1X or 4X	1X or 4X	2.5Gb/s	2.5Gb/s	2.5Gb/s	0	0	0	0	0	2003488
SEAL1B 13.17	down	Poling	Poling	OK	1X or 4X	1X or 4X	2.5Gb/s	2.5Gb/s	2.5Gb/s	0	0	0	0	0	2003488
SEAL1B 13.18	down	Poling	Poling	OK	1X or 4X	1X or 4X	2.5Gb/s	2.5Gb/s	2.5Gb/s	0	0	0	0	0	2003488
SEAL0B 13.19	nt	Up	Poling	OK	1X or 4X	1X or 4X	2.5Gb/s	2.5Gb/s	2.5Gb/s	154286	154286	2143	2143	0	2003488
SEAL0B 13.20	down	Poling	Poling	OK	1X or 4X	1X or 4X	2.5Gb/s	2.5Gb/s	2.5Gb/s	0	0	0	0	0	2003488
SEAL0B 13.21	down	Poling	Poling	OK	1X or 4X	1X or 4X	2.5Gb/s	2.5Gb/s	2.5Gb/s	0	0	0	0	0	2003488
SEAL0B 13.22	down	Poling	Poling	OK	1X or 4X	1X or 4X	2.5Gb/s	2.5Gb/s	2.5Gb/s	0	0	0	0	0	2003488
SEAL0B 13.23	nt	Up	Poling	OK	1X or 4X	1X or 4X	2.5Gb/s	2.5Gb/s	2.5Gb/s	0	0	0	0	0	2003488
SEAL0B 13.24	down	Poling	Poling	OK	1X or 4X	1X or 4X	2.5Gb/s	2.5Gb/s	2.5Gb/s	0	0	0	0	0	2003488
SEAL0B 14.1	down	Poling	Poling	OK	1X or 4X	1X or 4X	2.5Gb/s	2.5Gb/s	2.5Gb/s	0	0	0	0	0	2003488
SEAL0B 14.2	nt	Up	Poling	OK	1X or 4X	1X or 4X	2.5Gb/s	2.5Gb/s	2.5Gb/s	0	0	0	0	0	2003488
SEAL0B 14.3	down	Poling	Poling	OK	1X or 4X	1X or 4X	2.5Gb/s	2.5Gb/s	2.5Gb/s	0	0	0	0	0	2003488

For information on the each IB port statistic field, refer to the section “Port Statistics Field Descriptions” on page 2-41

2.2.9.5

**Set Field Thresholds**

The Set Field Thresholds screen allows the user to set, for a specific parameter(s), an error message threshold for the cable ports on the switch.

**Figure 2-65. Set Field Thresholds**



To change error reporting thresholds, do the following:

1. Click on **Port Stats**.
2. Click on **Set Field Thresholds**. The Set Field Thresholds screen is displayed:

**Figure 2-66. Set Field Thresholds Screen**

Set Field Thresholds		
Field	Threshold	Time Unit
portXmitDataThresh	0	Percent of Max
portRecvDataThresh	0	Percent of Max
portXmitPktsThresh	0	Percent of Max
portRecvPktsThresh	0	Percent of Max
portSymbolErrThresh	0	1 Second
portLinkErrRecvThresh	0	1 Second
portLinkDownedThresh	0	1 Second
portRecvErrThresh	0	1 Second
portRecvRemPhysErrThresh	0	1 Second
portXmitDiscardThresh	0	1 Second
portPKeyViolInThresh	0	1 Second
portPKeyViolOutThresh	0	1 Second
portRawViolInThresh	0	1 Second
portRawViolOutThresh	0	1 Second
portLocalLinkIntegThresh	0	1 Second
portExcBufferOverrunThresh	0	1 Second

3. To change a threshold value for any field:
  - a. Click in the **Threshold** field.
  - b. Enter a new threshold value.

**NOTE:** For those fields with a “**Percent of Max**” time unit, the user may enter a number from 0 to 100. For those fields with a “**1 Second**” time unit, the user may enter a number from 1 to 65,535.

- c. Click **Apply**.

**NOTE:** If any threshold is exceeded on any port, the port will be displayed as red on the switch map and a warning message will be logged.

The following are descriptions for each field in the Set Field Thresholds area:

**NOTE:** The thresholds for the following four fields are set as a percentage of maximum; that is the percentage of maximum port capacity, which depending upon IB fabric configuration can be:

- 4X (10/20Gbps)
- 1X (2.5 Gbps)

portXmitDataThresh

The threshold for the number of 32-bit data words transmitted by the port.

portRecvDataThresh

The threshold for the number of 32-bit data words received by the port.

portXmitPktsThresh

The threshold for the number of data packets transmitted by the port.

portRecvPktsThresh

The threshold for the number of data packets received by the port.

**NOTE:** The thresholds for the following fields are set based upon the number of error message which can occur in one second. The value can be from 1 to 65,535.

portSymbolErrThresh

The threshold for the number of times a 8B10B encoding violation, or a disparity violation was detected on the port.

portLinkErrRecvThresh

The threshold for the number of times the link error recovery process happened successfully on the port.

portLinkDownedThresh

The threshold for the number of times the link error recovery process failed on the port.

portRecvErrThresh

The threshold for the number of errors received on the port.

portRecvRemPhysErrThresh

The threshold for the number of remote physical errors received on the port.

portXmitDiscardThresh

The threshold for the number of transmit discards received on the port.

portPKeyViolInThresh

The threshold for the number of times PKey inbound was invalid on the port.

portPKeyViolOutThresh

The threshold for the number of times PKey outbound was invalid on the port.

portRawViolInThresh

The threshold for the number of times a raw inbound packet was discarded by the port.

portRawViolOutThresh

The threshold for the number of times a raw outbound packet was discarded by the port.

portLocalLinkIntegThresh

The threshold for the number of local link integrity errors on the port.

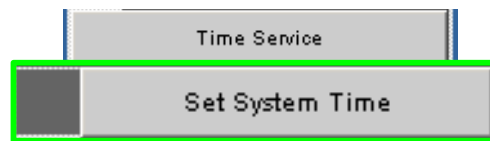
portExcBufferOverrunThresh

The threshold for the number of excessive buffer overrun errors on the port.

### 2.2.10 Time Service

The System Time Information screen allows the user to set the system time using either network time protocol (NTP) or manual overrides.

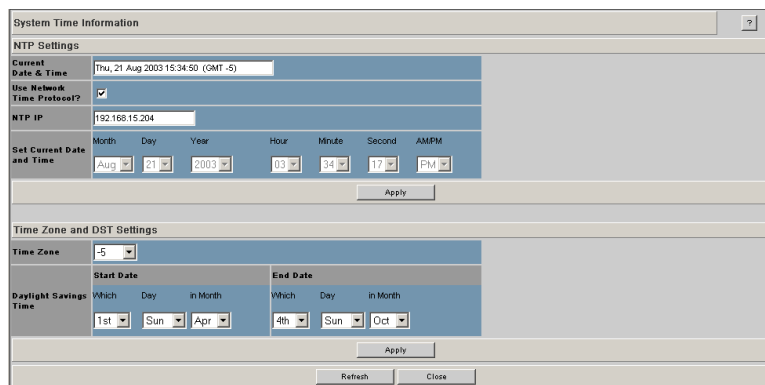
**Figure 2-67. Switch Time Service**



To set the system time:

1. From the menu, click **Time Service**.
2. Click **Set System Time**. The **System Time Information** screen is displayed:

**Figure 2-68. System Time Information Screen**



To use NTP:

1. Click the **Use Network Time Protocol?** checkbox.
2. Enter the IP address for the NTP server.
3. To save, click on **Apply**.

**Figure 2-69. Time Service - NTP Setup**

To manually set the system time:

1. Make sure the **Use Network Time Protocol?** checkbox is unchecked.
2. Set the current date and time using the drop-downs for **Month, Day, and Year** as well as **Hour, Minute, Seconds, and AM/PM**.
3. To save, click on **Apply**.

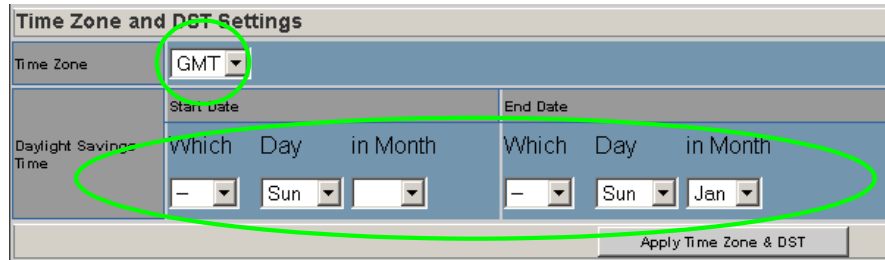
**Figure 2-70. Time Service - Manual Setup**

To set time zone and daylight saving time (DST) settings:

1. In the **Time Zone** drop-down, select the correct time zone based upon Greenwich Mean Time (GMT).
2. Using the **Which, Day, and in Month** drop-downs, set the start and end dates for daylight saving time.

3. To save, click on **Apply**.

**Figure 2-71. Time Service - Time Zone/Daylight Saving Time Setup**



#### Time Zone Tips:

In the U.S. the following time zones are in effect:

- ✦ Eastern Standard Time = GMT -5
- ✦ Central Standard Time = GMT -6
- ✦ Mountain Standard Time = GMT -7
- ✦ Pacific Standard Time = GMT -8

#### Daylight Saving Time Tips:

For most of the United States, Daylight Saving Time in the United States begins at 2 a.m. on the second Sunday of March, and ends at 2 a.m. on the first Sunday in November.

Additionally, for those US regions that do not observe DST, the start and end dates in the **Which**, **Day**, and **in Month** settings should be set to the **exact same date**.

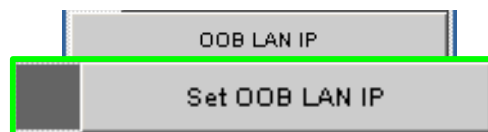
#### 2.2.11

### Configuring the Switch OOB IP Address

To configure the Switch IP address:

1. From the **OOB LAN IP** submenu, click **Set OOB LAN IP**.

**Figure 2-72. Set Switch OOB IP Address Button**



2. Click in the **OOB IP Address** field.

**Figure 2-73. Set OOB LAN IP Window**

3. Type in the desired switch IP address.
4. Type in the desired net mask.
5. Click **Apply**.

**2.2.12**

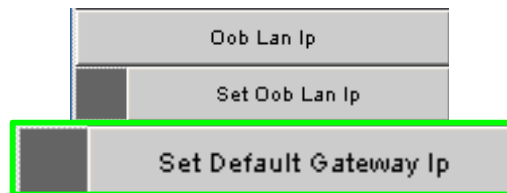
**Configuring the Switch Default Gateway IP Address**

The **Set Default Gateway IP** address Window allows the user to configure the IP address for the default gateway to route packets from the OOB management port to an external network.

To configure the Switch default gateway IP address:

1. From the **OOB LAN IP** submenu, click **Set Default Gateway IP**.

**Figure 2-74. Set Switch Default Gateway IP Address Button**



2. Click in the **OOB IP Address** field.

**Figure 2-75. Set Default Gateway IP Window**

3. Type in the correct switch default gateway IP address.

4. Click **Apply**.

**NOTE:**A reboot is required to activate the new gateway IP address.

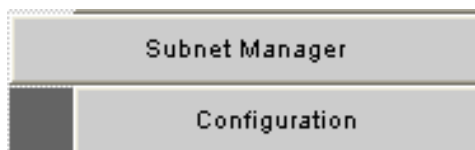
### 2.2.13

## Fabric Manager Configuration

**NOTE:** This section assumes the user has purchased and activated the embedded version of the Fabric Manager.

**NOTE:** For the SilverStorm 9020, the Fabric Manager Configuration submenu is part of the EVIC and FVIC menu.

**Figure 2-76. Subnet Manager Submenu**



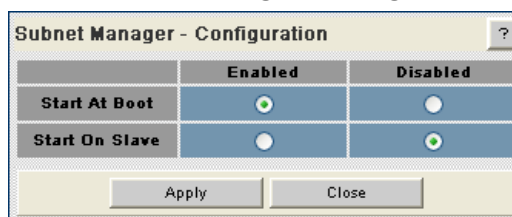
### 2.2.13.1

## Automatically starting the Fabric Manager

To enable the Fabric Manager to automatically start at boot time:

1. From the menu, click **Subnet Manager**.
2. Click **Configuration**. The Subnet Manager Configuration window is displayed:  
Subnet Manager Configuration Window

**Figure 2-77. Subnet Manager Configuration Window**



3. To configure the Fabric Manager to automatically start with each boot, click **Enabled**.

**NOTE:** If the user wants to manually activate the Fabric Manager, click **Disabled**.

4. For MPFD 9080, 9120 and 9240 switches, in a redundant management configuration, the **Start On Slave** option should be set to **Disabled**. In the event that the Fabric Manager on the master spine is disabled, the Fabric Manager



on the slave spine will turn on automatically when it becomes the chassis management spine.

5. Click **Apply**.

**NOTE:** For additional information on configuring the Fabric Manager, refer to the Subnet Management section of Appendix D, Switch Command Line Interface.

#### 2.2.13.1.1

### Determining the Active Fabric Manager

In a configuration with multiple switches, to determine where the master SM is, use the following host Fabric Manager command:

```
saquery -o sminfo
```

#### 2.2.14

### The sm\_query Application

The `sm_query` application allows the user to view fabric information and to modify the configuration of the subnet manager. This includes:

- Viewing and modifying the current subnet manager configuration.
- Viewing a list of node records (i.e., hosts and switches) on the fabric.
- Viewing a list of link records (i.e., the fabric topology).
- Viewing a list of multicast records.
- Viewing a list of service records.
- Viewing switchInfo records.
- Viewing portInfo records.

The application can be used with the host-based and embedded versions of the Fabric Manager. Following is a high-level description on how to connect to the different platforms that run the Fabric Manager:

For the Host-based Fabric Manager:

Local connection method: Run the `sm_query` application on the same host running the host-based Fabric Manager.

Remote connection method: Run `sm_query` and connect (via SNMP) to a remote host running the host-based Fabric Manager.

For the Embedded Fabric Manager:

Remote connection method: Run `sm_query` remotely and connect to an embedded SNMP agent (e.g., such as one running on a SilverStorm 9240).

### 2.2.14.1

## Installing `sm_query` from an Embedded Product CD

**NOTE:** `sm_query` only runs on Linux hosts.

1. From the 9000 product CD, copy the file `sm_query` to the desired directory on a Linux host.

**NOTE:** The host needs only an Ethernet connection to the Fabric Manager node. No InfiniBand connection is necessary.

2. `cd` to that directory and issue the command `chmod +x sm_query`.

### 2.2.14.2

## Running `sm_query` Quick Start

### 2.2.14.2.1

## For the Embedded Fabric Manager

**NOTE:** The user will need the IP address of the switch running the Fabric Manager.

1. Determine the read and write SNMP community names for the switch.

**NOTE:** This information can also be accessed through the Chassis Viewer. Please refer to “Set Community Strings” on page 2-30.

- a. Log into the switch via Telnet or SSH
- b. Issue the command `snmpCommunityConf` and press **Enter**
- c. The system displays information similar to the following:

```
-> snmpCommunityConf
```

```
Read Only Comm. Name: public
```

```
Read/Write Comm. Name: private
```

The default community names are **public** (read-only access) and **private** (read-write access). The **private** community name is only used when modifying the subnet manager configuration.

2. Issue the command `sm_query -d <IP ADDRESS> -c community -i 1 smShowConfig` and press **Enter**.

**NOTE:** For the embedded Fabric Manager, the `-i` parameter should always be `'1'`.

**NOTE:** To display a full list of available commands and parameters enter `sm_query -h`.

### 2.2.14.3

## Running sm\_query

Following is a list of command options for all three connection methods:

### 2.2.14.3.1

## smShowStatus

DESCRIPTION:

Displays the running status of the Fabric Manager

### 2.2.14.3.2

## smShowConfig

DESCRIPTION:

Displays configuration parameters

### 2.2.14.3.3

## smSetConfig

DESCRIPTION:

Configures Fabric Manager parameters

**NOTE:** For **smShowConfig** and **smSetConfig**, the command options differ between interfaces. To view the available command options - based upon the chosen connection method - execute the following command:

```
sm_query [connection method] smSetConfig help
```

Additionally, when the Fabric Manager is restarted, any configuration changes made using the Local connection method will be lost. However, configuration changes made using either the Remote Embedded or Remote Host methods will be saved.

Following is a list of command options for Local and Remote Embedded only (these options are not available yet via Remote Host):

### 2.2.14.3.4

## smShowNodes

DESCRIPTION:

Displays all node records

### 2.2.14.3.5

## smShowPorts

DESCRIPTION:

Displays all port records

2.2.14.3.6

### **smShowSwitches**

DESCRIPTION:

Displays all switch records

2.2.14.3.7

### **smShowServices**

DESCRIPTION:

Displays all service records

2.2.14.3.8

### **smShowGroups**

DESCRIPTION:

Displays all multicast records and members

2.2.14.3.9

### **smShowGuids**

DESCRIPTION:

Displays all GUID records

2.2.14.3.10

### **smShowLinks**

DESCRIPTION:

Displays all IB port links

2.2.14.3.11

### **smShowAll**

DESCRIPTION:

Displays all fabric information

2.2.14.3.12

### **Command Syntax and Options**

Syntax:

```
./sm_query [OPTIONS] COMMAND [COMMAND OPTIONS]
```

Options:

**-i <VAL>**: the instance to connect to (default = 0). For a remote system, use a value of 1.

**NOTE:** Use a value of **1** to access a remote host Fabric Manager or a remote embedded Fabric Manager. There is no need to specify a value if accessing a host Fabric Manager on the same host where **sm\_query** is running.

**-d <VAL>**: the destination IP address or host name. This is used to connect to a remote instance.

Remote Options:

**NOTE:** These options are ignored if the **-d** option is not specified.

**-h, -help**: displays help information.

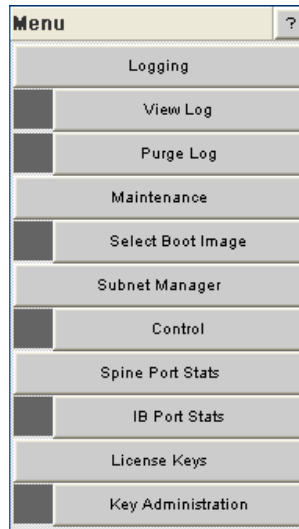
**-c COMMUNITY**: sets the community string.

2.3

**Spine View Menu**

For information on accessing the Spine View, refer to “Spine Module View” on page 2-7.

**Figure 2-78. Spine View Menu**

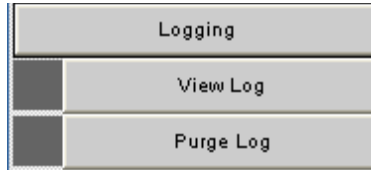


**NOTE:** For information on IB port statistics refer to the section “Port Statistics” on page 2-39.

### 2.3.1 Logging

The Logging submenu allows the user to view and purge the log message file.

**Figure 2-79. Logging Submenu**

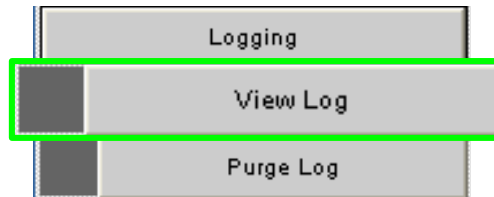


#### 2.3.1.1 Viewing the Log

**NOTE:** Each management spine maintains a separate log.

The View Log button allows the user to view the message log.

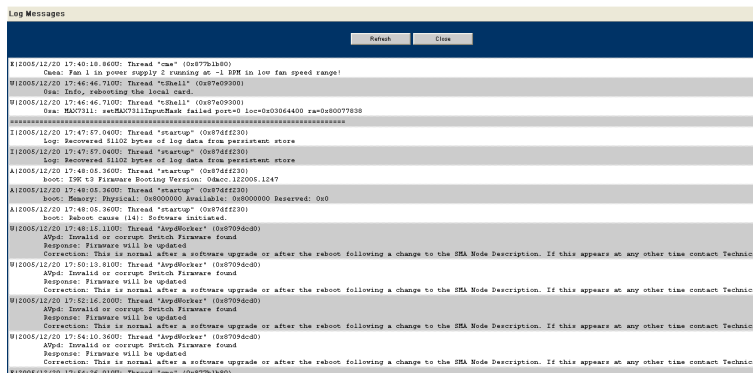
**Figure 2-80. View Log Button**



To view the message log:

1. From the menu, select **Logging**.
2. Click **View Log**. The log message window is displayed:

**Figure 2-81. Sample Message Log**



To save a log message for further analysis, perform the following steps:

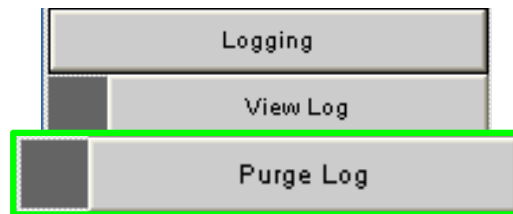
1. From the Messages window, select **Edit, Select All** (or **CTRL + A**).
2. Select **Edit, Copy** (or **CTRL + C**).
3. Open a text editing package, such as Notepad.
4. Select **Edit, Paste** (or **CTRL + V**).
5. Save as a plain text (.txt) file.

### 2.3.1.2

## Purging the Log

The Purge Log button purges the RAM, clearing the log file(s).

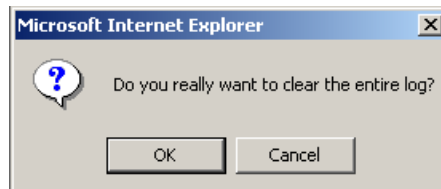
**Figure 2-82. Purge Log Button**



To purge the log:

1. From the menu, click **Logging**.
2. Click **Purge Log**. The Purge Log confirmation window is displayed

**Figure 2-83. Purge Log Confirmation Window**



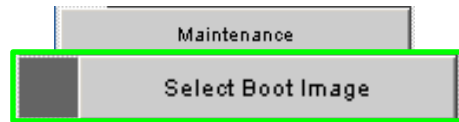
3. Click **OK**.
4. The message log file is now purged.

### 2.3.2

## Select Boot Image

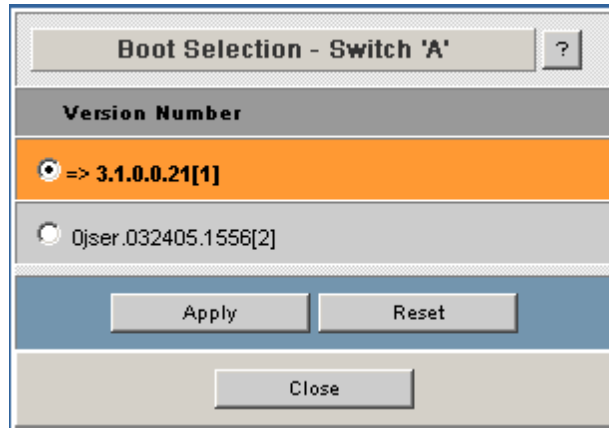
The Select Boot Image button allows the user to choose an alternative boot image for the switch. To select a boot image:

**Figure 2-84. Select Boot Image Button**



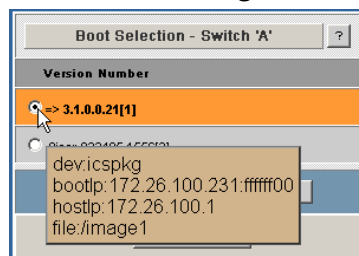
1. From the menu, select **Maintenance**.
2. Click **Select Boot Image**. The Boot Image Selection screen is displayed:

**Figure 2-85. Boot Image Selection Screen**



**NOTE:** By mousing over either radio button in the Boot Image Selection screen, the user can glean additional information about each file, as shown in [Figure 2-86](#) below:

**Figure 2-86. Boot Image File Pop Up**



To choose a new boot image:



1. Click on a radio button of the new boot image.
2. Click **Submit**. This is the image that will run after the next reboot.

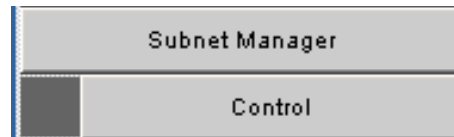
### 2.3.3

## Fabric Manager Control

**NOTE:** This section assumes the user has purchased and activated the embedded version of the Fabric Manager.

**NOTE:** For the SilverStorm 9020, the Fabric Manager Control submenu is part of the EVIC and FVIC menu.

**Figure 2-87. Subnet Manager Submenu**

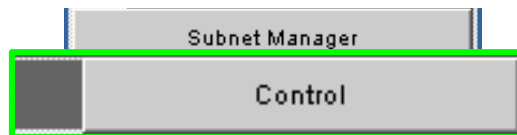


### 2.3.3.1

## Accessing the Subnet Manager Control Window

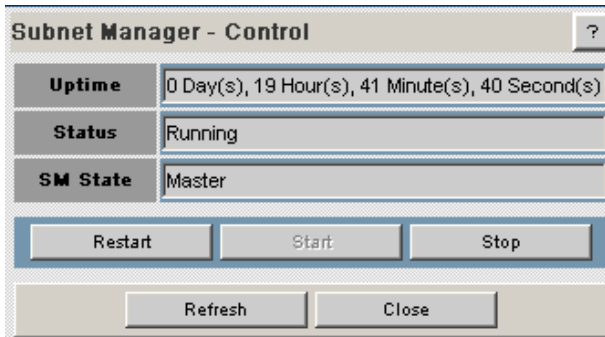
The Subnet Manager Control window presents status information relating to the Fabric Manager and provides a mechanism for starting, restarting, and stopping the Fabric Manager.

**Figure 2-88. Subnet Manager Control Button**



1. From the Spine menu, click **Subnet Manager**
2. Click **Control**. The Subnet Manager Control window is displayed:

**Figure 2-89. Subnet Manager Control Window**



#### 2.3.3.1.1

### Starting the Fabric Manager

1. From the menu, click **Subnet Manager**.
2. Click **Control**. The Subnet Manager Control window is displayed:
3. To start the Fabric Manager, click **Start**. The system responds by displaying “Starting up” in the Status area of the Subnet Manager Control Window.
4. To confirm that the Fabric Manager has started, click **Refresh**. Once the Fabric Manager is running, the system reports “Running” in the Status area and begins to increment the Uptime counter.
5. Click **Close**.

#### 2.3.3.1.2

### Restarting the Fabric Manager

1. From the menu, click **Subnet Manager**.
2. Click **Control**. The Subnet Manager Control window is displayed:
3. To restart the Fabric Manager, click **Restart**. The system responds by displaying “Shutting Down” in the Status area of the Subnet Manager Control Window.
4. To confirm that the Fabric Manager has started, click **Refresh**. Once the Fabric Manager is running, the system reports “Running” in the Status area and begins to increment the Uptime counter.
5. Click **Close**.

2.3.3.1.3

### Stopping the Fabric Manager

1. From the menu, click **Subnet Manager**.
2. Click **Control**. The Subnet Manager Control window is displayed:
3. To stop the Fabric Manager, click **Stop**. The system responds by displaying “Shutting Down” in the Status area of the Subnet Manager Control Window.
4. To confirm that the Fabric Manager has shut down, click **Refresh**. Once the Fabric Manager has shut down, the system reports “Not Started.”
5. Click **Close**.

2.3.4

### License Keys; Key Administration

The License Key submenu allows the user to activate and deactivate feature functionality that is sold as an add-on to the switch.

**NOTE:** For the SilverStorm 9020, the License Keys submenu is part of the EVIC and FVIC menu.

2.3.4.1

### Adding a New License Key

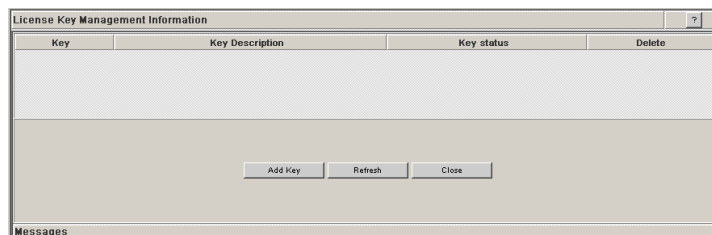
1. Click **License Keys**. The **Key Administration** button is displayed:

**Figure 2-90. License Key Submenu**



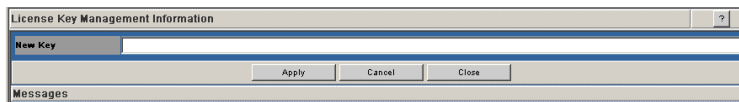
2. Click **Key Administration**. The **Key Management** window is displayed:

**Figure 2-91. Key Management Window**



3. To add a new license key, click the **Add Key** button. The **License Key Management Information** window is displayed:

**Figure 2-92. License Key Management Information Window**



4. Enter the license key information in the **New Key** text box, and click **Apply**.

**NOTE:** A license key number is given as part of the InfiniBand Fabric Suite 2008 software package.

#### 2.3.4.2

### Deleting a License Key

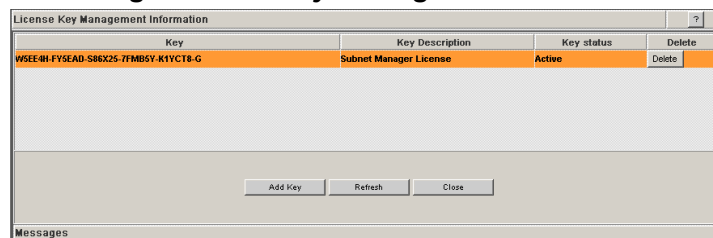
1. Click on the **License Keys** submenu.

**Figure 2-93. License Key Submenu**



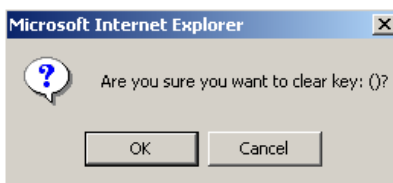
2. Click on **Key Administration**. The **Key Management** window is displayed:

**Figure 2-94. Key Management Window**



3. To delete a license key, click the **Delete** button. The system prompts with the following:

**Figure 2-95. License Key Delete Prompt**



4. Click **OK** to delete.



## **Section 3**

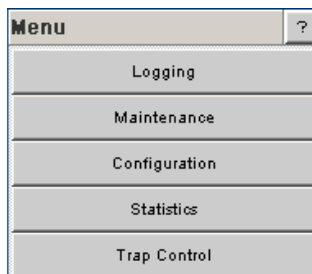
# FVIC Configuration and Monitoring Features

The following section provides detailed, task-oriented descriptions for configuring and monitoring the FVIC card and its feature functionality via the FVIC **Menu**.

**NOTE:** For 9020 users, refer to the following sections for subnet management and licence key information:

- “Fabric Manager Configuration” on page 2-52
- “Fabric Manager Control” on page 2-61
- “License Keys; Key Administration” on page 2-63

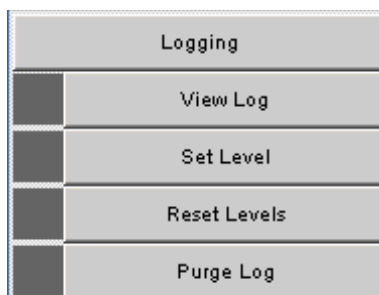
**Figure 3-1. FVIC Menu**



### 3.1 **Logging**

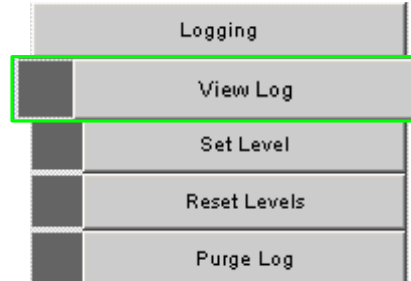
The Logging submenu allows the user to view, set levels, reset levels, and purge the message log file.

**Figure 3-2. Logging Submenu**



The View Log button allows the user to view the message log.

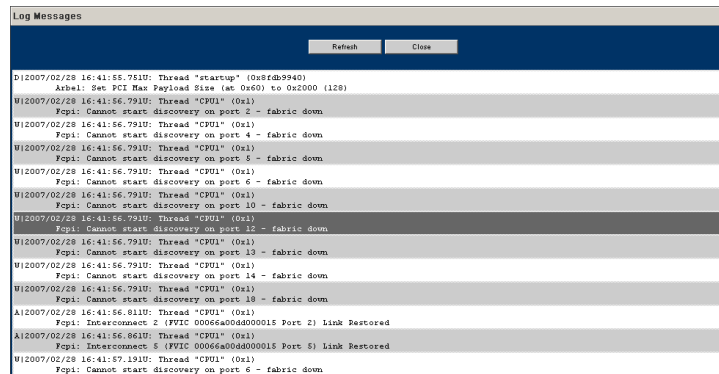
**Figure 3-3. View Log Button**



To view the message log:

1. From the menu, select **Logging**.
2. Click **View Log**. The log message window is displayed:

**Figure 3-4. Sample Message Log**



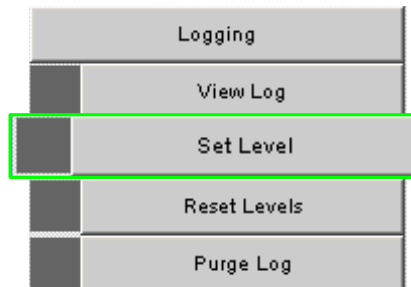
To save a log message for further analysis, perform the following steps:

1. From the Messages window, select **Edit, Select All** (or **CTRL + A**).
2. Select **Edit, Copy** (or **CTRL + C**).
3. Open a text editing package, such as Notepad.
4. Select **Edit, Paste** (or **CTRL + V**).
5. Save as a plain text (.txt) file.



### 3.1.1 Set Level

**Figure 3-5. Set Level Button**

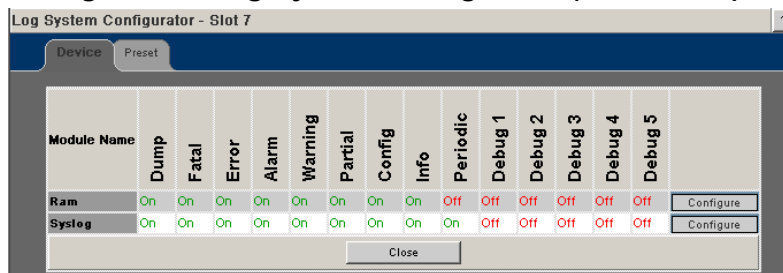


The Set Level button allows the user to set log level configuration parameters for all software modules on the FVIC.

To set log levels:

1. From the menu, select **Logging**.
2. From **Logging**, select **Set Level**. The Log System Configurator (Device Tab) window is displayed:

**Figure 3-6. Log System Configurator (Device Tab)**

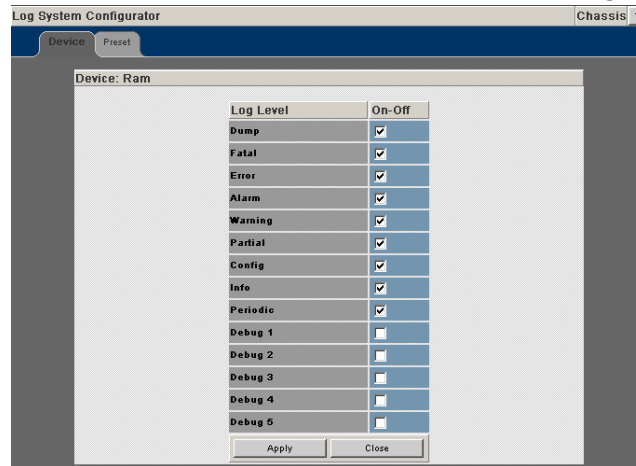


The Device tab presents current log level configuration settings for the following software modules:

- **RAM** = The circular log buffer contained in memory. To access the contents of this buffer, use the Chassis Viewer **View Log** button
- **Syslog** = Determines which messages should be logged to the syslog server.

From this screen, the user can change any of the log level settings for a specific software module by clicking on the **Configure** hyperlink, which displays a configuration screen:

**Figure 3-7. Device Tab: Software Module Configurator**



To change any Log Level settings:

1. Click the **On-Off** checkbox to the right of the setting.
2. Click the **Submit** button to save any changes.

The following list describes each of the Log Level configuration parameters.

- **DUMP** – Dump: Indicates that a problem has caused the system to produce a system dump file. In most circumstances, it is recommended that the user retrieve the dump that was produced. Support engineers may require the information contained in the dump file to diagnose the cause of the problem.
- **FATAL** – Indicates that a non-recoverable system problem has occurred. The user should reboot the system or component and verify that the subsystem is fully functional to determine whether the fault has been corrected. If the problem persists, the user should contact the supplier.
- **ERROR** – Indicates that a serious system error has occurred which might be recoverable. If the system exhibits any instability, the user should reboot the system or component. If errors persist, the user should immediately contact the supplier's technical support.
- **ALARM** - Indicates that a serious problem has occurred which degrades capacity or service. If the error is recoverable, the user should correct the failure. If the alarm/failure persists, the user should reboot the system at a convenient time. If the problem is still not cleared, the user should contact the supplier.

- ✦ **WARNING** - Indicates that a recoverable problem has occurred. The user does not need to take action.
- ✦ **PARTIAL** - When more information is available, Partial causes additional message-related details to be displayed.
- ✦ **CONFIGURATION**: An informational message indicating changes that a user has made to the system configuration. The user does not need to take any action.
- ✦ **INFO**: Informational messages that occur during a system or component boot. The user does not need to take any action.
- ✦ **PERIODIC**: An informational message containing periodic statistics. The user does not need to take action.

**Debug message levels 1 through 5:** Debug messages are for supplier and/or SilverStorm engineering use and are not necessarily indicative of actions that an end user may need to take.

- ✦ **DEBUG1** – Messages that describe the states of connections and links.
- ✦ **DEBUG2** – Messages that describe major configuration changes or operations.
- ✦ **DEBUG3** – Messages that describe the I/O flow.
- ✦ **DEBUG4** – Messages that contain the packet dumps within an I/O flow. I/O flows contain multiple packets.
- ✦ **DEBUG5** – Messages that contain the packet dumps within an I/O flow. I/O flows contain multiple packets.

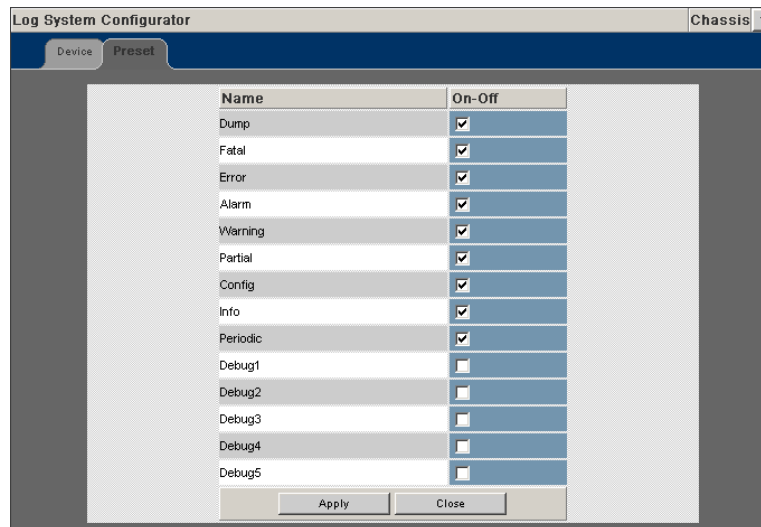
**Important:** When configuring the log levels to display debug messages, care should be taken to ensure that system performance issues are weighed against troubleshooting requirements. Generally, the higher the debug number the more information is written to the log. Specifically, debug 3-5 have the most effect on system performance.

### 3.1.1.1

## Preset Tab

The Preset tab allows the user to quickly change log level settings for all software modules on the FVIC.

**Figure 3-8. Log System Configurator: Preset Tab**



To change the log level settings:

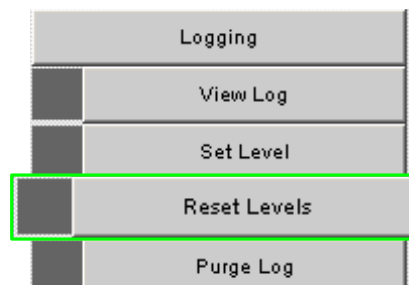
1. Click the **On-Off** checkbox to the right of the setting(s).
2. Click the **Apply** button to save any changes.

### 3.1.2

## Reset Log Levels

The Reset Levels button resets the logging levels to their factory default values.

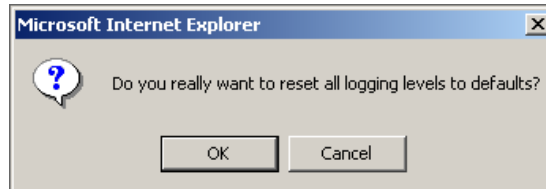
**Figure 3-9. Reset Levels Button**



To reset the logging levels:

1. From the menu, select **Logging**.
2. Click **Logging**.
3. Click **Reset Levels**. The Reset Levels window is displayed:

**Figure 3-10. Reset Log Levels Window**



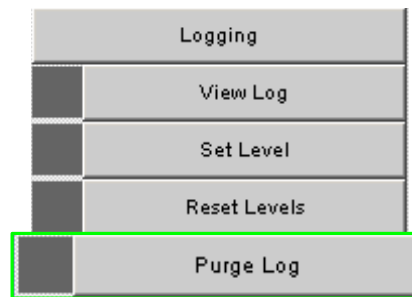
4. To reset the logging levels, click **OK**.

### 3.1.3

## Purging the Log

The Purge Log button purges the RAM, clearing the log file(s).

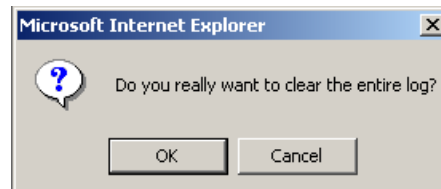
**Figure 3-11. Purge Log Button**



To purge the log:

1. From the menu, click **Logging**.
2. Click **Purge Log**. The Purge Log confirmation window is displayed

**Figure 3-12. Purge Log Confirmation Window**



3. Click **OK**.

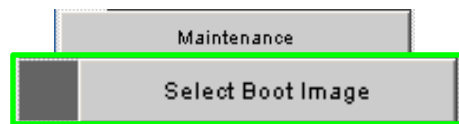
4. The message log file is now purged.

## 3.2 Maintenance

### 3.2.1 Select Boot Image

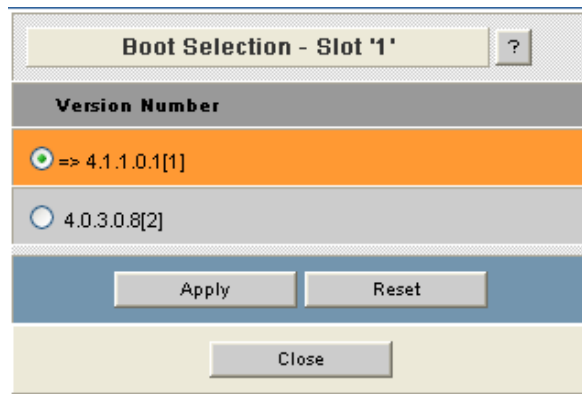
The Select Boot Image button allows the user to choose an alternative boot image for the FVIC. To select a boot image:

**Figure 3-13. Select Boot Image Button**



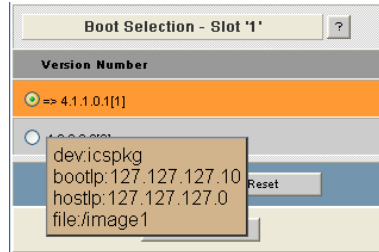
1. From the menu, select **Maintenance**.
2. Click **Select Boot Image**. The Boot Image Selection screen is displayed:

**Figure 3-14. Boot Image Selection Screen**



**NOTE:** By mousing over either radio button in the Boot Image Selection screen, the user can glean additional information about each file, as shown in [Figure 3-15](#) below:

**Figure 3-15. Boot Image File Pop Up**

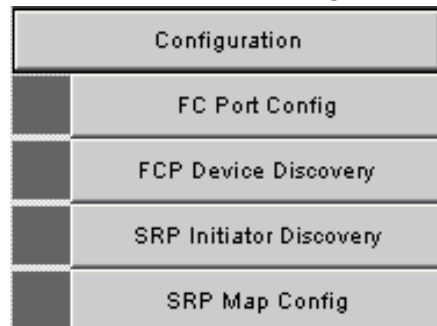


To choose a new boot image:

1. Click on a radio button of the new boot image.
2. Click **Apply**.

### 3.3 Fibre Channel Configuration

**Figure 3-16. Fibre Channel Configuration Submenu**



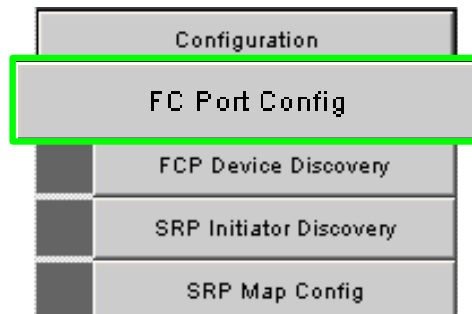
The Fibre Channel configuration submenu allows the user to perform the following tasks:

- Fibre Channel Protocol (FCP) Interconnect Configuration.
- Discover and Configure FCP Target Devices.
- Discover and Configure SRP Initiators.
- Configure SRP Mapping (LUN Mapping).

### 3.3.1 FCP Port Configuration

The FCP Port Configuration screen allows the user to set FVIC port speed and network topologies.

**Figure 3-17. FCP Port Configuration**



To configure FCP interconnections:

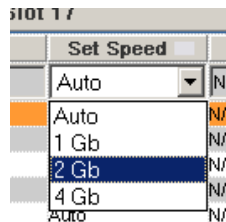
1. In the main status and navigation area, click on an FVIC.
2. From the FVIC menu, click **Configuration**.
3. Click **FC Port Configuration**. The **FCP Port Configuration** screen is displayed:

**Figure 3-18. FCP Port Configuration Screen**

Name	Set Speed	Actual Speed	Topology	NPort ID	Port WWN	Node WWN	Link Status
FVIC 00068a00d8000015 Port 1	Auto	4 Gb	Fabric	0x010800	0x500066A1D0000019	0x500066A0CC000019	Up
FVIC 00068a00d8000015 Port 2	Auto	4 Gb	Public Loop	0x010901	0x500066A2D0000019	0x500066A0CC000019	Up
FVIC 00068a00d8000015 Port 3	Auto	4 Gb	Fabric	0x010A00	0x500066A3D0000019	0x500066A0CC000019	Up
FVIC 00068a00d8000015 Port 4	Auto	4 Gb	Fabric	0x010B00	0x500066A4D0000019	0x500066A0CC000019	Up
FVIC 00068a00d8000015 Port 5	Auto	4 Gb	Fabric	0x010C00	0x500066A5D0000019	0x500066A0CC000019	Up
FVIC 00068a00d8000015 Port 6	Auto	4 Gb	Public Loop	0x010D01	0x500066A6D0000019	0x500066A0CC000019	Up
FVIC 00068a00d8000015 Port 7	Auto	4 Gb	Public Loop	0x010E01	0x500066A7D0000019	0x500066A0CC000019	Up
FVIC 00068a00d8000015 Port 8	Auto	4 Gb	Fabric	0x010F00	0x500066A8D0000019	0x500066A0CC000019	Up

4. Select the FVIC port to be modified. The row changes to orange.
5. To set the port speed, click the drop-down in the Speed column. Select either Auto-negotiate (**Auto**), **1 GB**, **2 GB** or **4 GB**.

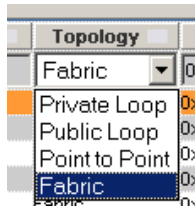
**Figure 3-19. FCP Interconnect - Set Speed**





6. Make sure topology is set to either:
  - a. **Private Loop** if a port is connected to a storage device supporting loop, but does not support a fabric login.
  - b. **Public Loop** if a port is connected to a storage device supports loop and requires a fabric login.
  - c. **Point to Point** if a port is connected to a device supporting point-to-point login.
  - d. **Fabric** is the default value to use when a port is connected to a Fibre Channel switch.

**Figure 3-20. FCP Interconnect - Set Topology**



7. To save changes, click **Apply**.

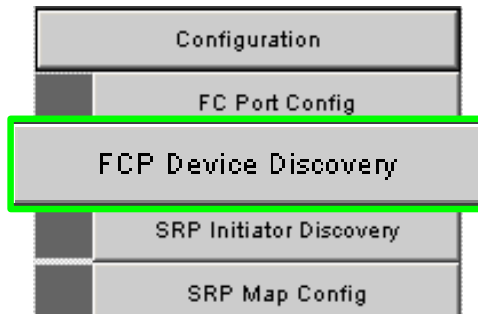
### 3.3.2

## FCP Device Discovery

The FCP Device Discovery screen allows the user to discover and configure Fibre Channel devices on the fabric.

**NOTE:** Each Fibre Channel device must first be configured here before it can be part of a SRP Map.

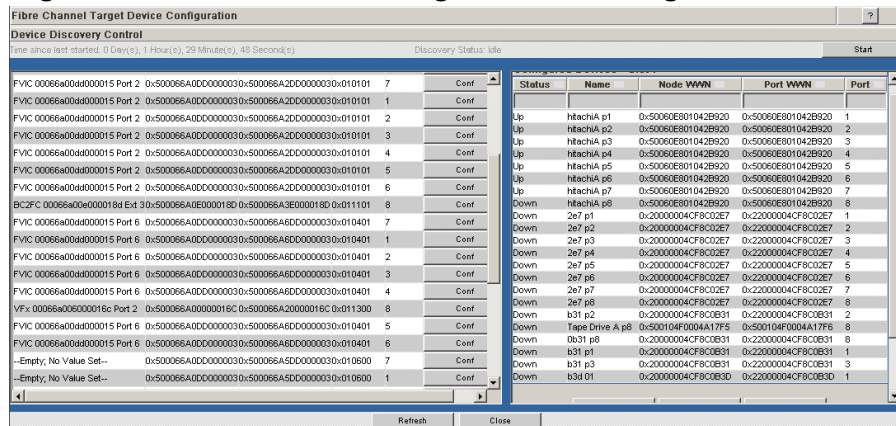
**Figure 3-21. FCP Device Discovery Button**



To discover and configure FCP devices:

1. In the main status and navigation area, click on a FVIC.
2. From the FVIC menu, click on **Configuration**.
3. Click on **FCP Device Discovery**. The **Fibre Channel Target Device Configuration** window is displayed:

**Figure 3-22. Fibre Channel Target Device Configuration Window**



Any devices listed in the **Configured Devices** table have been previously discovered and configured. The devices must have a status of **Up** in order to be utilized by an SRP Initiator. A device will have a status of **Down** if it is no longer logically connected to the FVIC port listed in the **Port** column. For example, if the FVIC previously discovered the device through Port 1, and the Fibre Channel cable has been moved to Port 2, the device will be displayed as **Down**.

4. If the desired device and FVIC port does not appear in the **Configured Devices** table, click **Start**. All newly discovered devices are displayed in the **Discovered Devices** table.

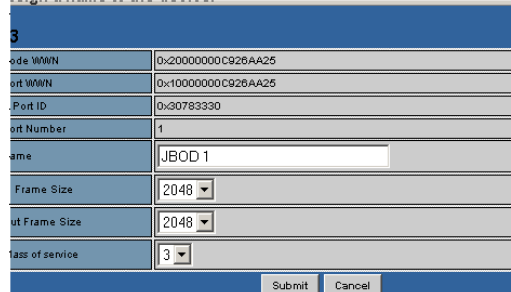
**NOTE:** A device will appear for each FVIC port connected to the same fabric (e.g., multiple FVIC ports are connected to the same Fibre Channel switch).

**Figure 3-23. Discovered Devices Table**

Discovered Devices						
Name	NodeWWN	PortWWN	NPortID	Port	Conf	
BC2FC 00066a0e000018d Ext 40:	500066A0E000018D	0x500066A4E000018D	0x010000	1	Conf	
BC2FC 00066a0e000018d Ext 40:	500066A0E000018D	0x500066A4E000018D	0x010000	2	Conf	
BC2FC 00066a0e000018d Ext 40:	500066A0E000018D	0x500066A4E000018D	0x010000	3	Conf	
BC2FC 00066a0e000018d Ext 40:	500066A0E000018D	0x500066A4E000018D	0x010000	4	Conf	
BC2FC 00066a0e000018d Ext 40:	500066A0E000018D	0x500066A4E000018D	0x010000	5	Conf	
BC2FC 00066a0e000018d Ext 40:	500066A0E000018D	0x500066A4E000018D	0x010000	7	Conf	
BC2FC 00066a0e000018d Ext 40:	500066A0E000018D	0x500066A4E000018D	0x010000	6	Conf	
LSI INF-01-00 0540	0x200E00A0B8126F66	0x200E00A0B8126F66	0x011000	8	Conf	
FVIC 00066a0d4d000015 Port 2	0x500066A0D0000030	0x500066A2D0000030	0x010101	7	Conf	
FVIC 00066a0d4d000015 Port 2	0x500066A0D0000030	0x500066A2D0000030	0x010101	1	Conf	
FVIC 00066a0d4d000015 Port 2	0x500066A0D0000030	0x500066A2D0000030	0x010101	2	Conf	
FVIC 00066a0d4d000015 Port 2	0x500066A0D0000030	0x500066A2D0000030	0x010101	3	Conf	
FVIC 00066a0d4d000015 Port 2	0x500066A0D0000030	0x500066A2D0000030	0x010101	4	Conf	
FVIC 00066a0d4d000015 Port 2	0x500066A0D0000030	0x500066A2D0000030	0x010101	5	Conf	
FVIC 00066a0d4d000015 Port 2	0x500066A0D0000030	0x500066A2D0000030	0x010101	6	Conf	
BC2FC 00066a0e000018d Ext 30:	500066A0E000018D	0x500066A3E000018D	0x011101	8	Conf	

- Click on **Configure**. For each discovered device, enter a name which is applicable to the user environment.

**Figure 3-24. Configuring a Discovered Target**



Node WWN	0x20000000C926AA25
Port WWN	0x10000000C926AA25
Port ID	0x30783330
Port Number	1
Name	JBOD 1
Frame Size	2048
Out Frame Size	2048
Class of Service	3

**NOTE:**The fields **In Frame Size**, **Out Frame Size**, and **Class of Service** are currently not supported in the GUI. Each field is set by hardware.

- Click **Submit**. The configured devices are now displayed in the **Configured Devices** table.

**Figure 3-25. Configured Target Devices Table**

Configured Devices - Slot 1				
Status	Name	Node WWN	Port WWN	Port
Down	d1-p8	0x50060E8000035051	0x50060E8000035051	8
Down	LSI P1	0x200E00A0B8126F66	0x200F00A0B8126F67	1
Down	LSI P2	0x200E00A0B8126F66	0x200F00A0B8126F67	2
Down	LSI P3	0x200E00A0B8126F66	0x200F00A0B8126F67	3
Down	LSI P4	0x200E00A0B8126F66	0x200F00A0B8126F67	4
Down	LSI P5	0x200E00A0B8126F66	0x200F00A0B8126F67	5
Down	LSI P6	0x200E00A0B8126F66	0x200F00A0B8126F67	6
Down	LSI P7	0x200E00A0B8126F66	0x200F00A0B8126F67	7
Up	LSI P8	0x200E00A0B8126F66	0x200F00A0B8126F67	8

To edit the name of any configured target in the **Configured Devices** table:

- Click on any row.
- Type a new name in the **Name** text box.
- Click on **Apply**.

To delete any configured target in the **Configured Devices** table:

- Click on any row.
- Click on **Delete**.

**NOTE:** Configured devices can only be deleted if they are not assigned to a SRP Map. Additionally, deleting a device only removes it from the **Configured Devices** table. It may still appear in the **Discovered Devices** table.

### 3.3.3 SRP Initiator Discovery and Configuration

The SRP Initiator Configuration screen allows the user to discover and configure IB-enabled hosts on the fabric.

There are three methods for configuring SRP Initiators. The user must decide which method best meets the needs of the network environment:

#### **Discover the SRP Initiators**

This method utilizes the **Start** button on the SRP Initiator Configuration screen to find and configure each individual SRP Initiator.

This method reports on the SRP Initiators that have attempted, but have been unsuccessful in establishing an SRP connection to the FVIC since the last reboot.

The advantage of this method is that each individual SRP initiator has a name, which makes debugging connection problems simpler. The disadvantage is that each SRP Initiator must be manually configured.

#### **Manually Configure each SRP Initiator Port**

In this method use the **Click to Add Host** button to individually add SRP Initiators. The advantages of this method are each individual SRP initiator has a name, which may be debugging connection problems easier, and the FVIC can be configured even if the SRP hosts are not currently connected to the IB fabric. The disadvantages are (1) the information for each SRP Initiator must be manually entered, and (2) each SRP Initiator must be configured individually.

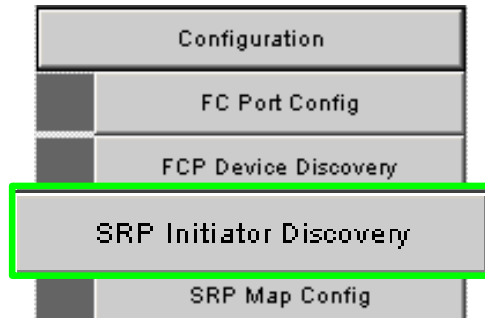
#### **Use Wildcarding**

In this method the individual SRP Initiator Ports (i.e. the HCA Port GUIDs) are not used when matching a request from a host to an entry in the SRP Initiators table. Instead, only the SRP Initiator Extension from the host is matched against the SRP Extension ID on the FVIC SRP Initiators screen.

Therefore, only a single SRP Initiator needs to be defined on the FVIC. This Initiator can be used by many hosts. The FVIC can be configured even when the SRP hosts are not currently connected to the IB fabric. The disadvantage is that debugging problems with individual hosts failing to connect will be difficult to perform from the FVIC. For example, if the user expects 24 hosts are connected to the FVIC, but only 23 are, it will be difficult to tell which host has not connected using only the FVIC Chassis Viewer screens. This type of debugging needs to be done using the host-based tools contained in the Fast Fabric toolset.

**NOTE:** Before using this screen to discover hosts, the user must verify that InfiniBand connectivity has been established with each IB-enabled host connected to the switch.

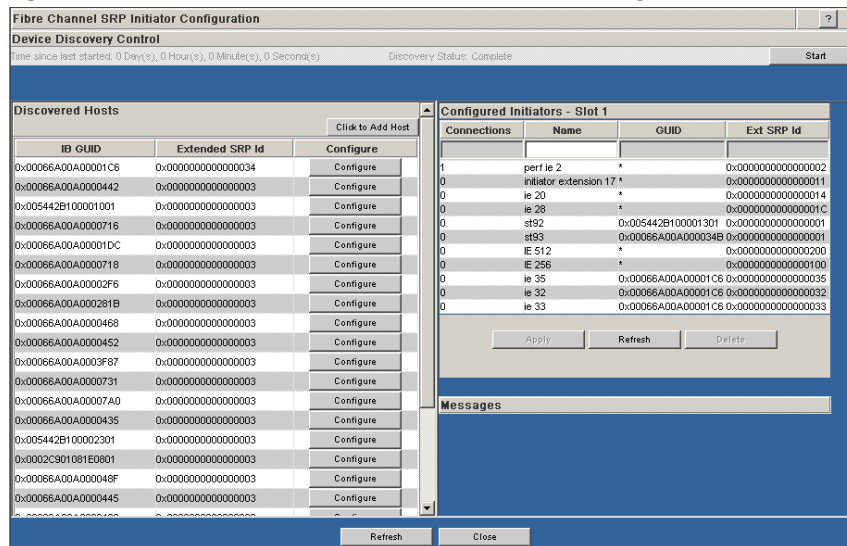
**Figure 3-26. SRP Initiator Discovery and Configuration Button**



To discover and configure SRP initiators:

1. In the main status and navigation area, click on a FVIC.
2. From the FVIC menu, click on **Configuration**.
3. Click on **SRP Initiator Discovery**. The **Fibre Channel SRP Initiator Configuration** window is displayed:

**Figure 3-27. Fibre Channel SRP Initiator Configuration Window**



- Click **Start**. All discovered hosts are displayed in the **Discovered Hosts** table.

**Figure 3-28. Discovered Hosts Table**

Discovered Hosts		
		<a href="#">Click to Add Host</a>
IB GUID	Extended SRP Id	Configure
0x00066A00A00001C6	0x0000000000000034	<a href="#">Configure</a>
0x00066A00A0000442	0x0000000000000003	<a href="#">Configure</a>
0x005442B100001001	0x0000000000000003	<a href="#">Configure</a>

- Click on **Configure**. For each discovered hosts, enter a name which is applicable to the user environment.

**Figure 3-29. Configuring a Discovered Initiator**

**Assign a name to the device.**

IB GUID	0xD00000B71000B90A
Extended SRPT ID	0x0000000000000001
Name	<input type="text" value="Host 2"/>

- Click **Submit**. The configured devices are now displayed in the **Configured Initiators** table.

**Figure 3-30. Configured Initiators Table**

Configured Initiators - Slot 1			
Connections	Name	GUID	Ext SRP Id
1	NETLinux4	0x00D0B70000100B31	0x0000000000000001
0	Host 2	0xD00000B71000B90A	0x0000000000000001

To edit the name of any configured initiator in the **Configured Initiators** table:

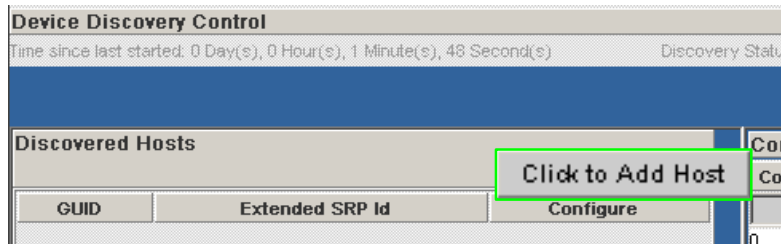
- Click on any row.
- Type a new name in the **Name** text box.
- Click on **Apply**.

To delete any configured initiator in the **Configured Initiators** table:

- Click on any row.
- Click on **Delete**.

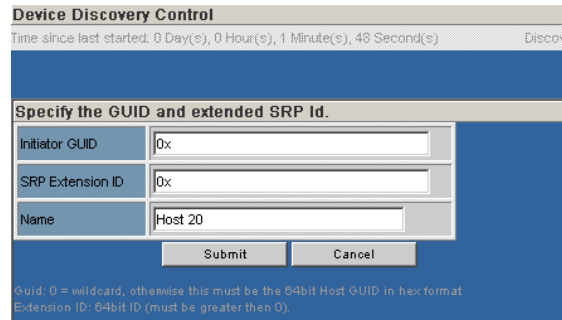
In addition to using the method above, the user can click on the **Click to Add Host** button in the **Discovered Hosts** table to add and configure IB hosts.

**Figure 3-31. Click to Add Host Button**



1. In the **Discovered Hosts** table, click the **Click to Add Host** button. The following is displayed:

**Figure 3-32. Add Host Window**



The screenshot shows the 'Add Host Window' dialog box. It has a title bar 'Device Discovery Control' and a subtitle 'Specify the GUID and extended SRP Id.'. The dialog contains three text input fields: 'Initiator GUID' with '0x' entered, 'SRP Extension ID' with '0x' entered, and 'Name' with 'Host 20' entered. Below the fields are 'Submit' and 'Cancel' buttons. At the bottom, there is a small note: 'Guid: 0 = wildcard, otherwise this must be the 64bit Host GUID in hex format. Extension ID: 64bit ID (must be greater than 0)'.

2. In the **Initiator GUID** text box, enter the 16-digit SRP Initiator port GUID number.
 

**NOTE:**A user can determine an HCA 7000 or HCA 9000 Port GUID by entering the following at any host prompt:

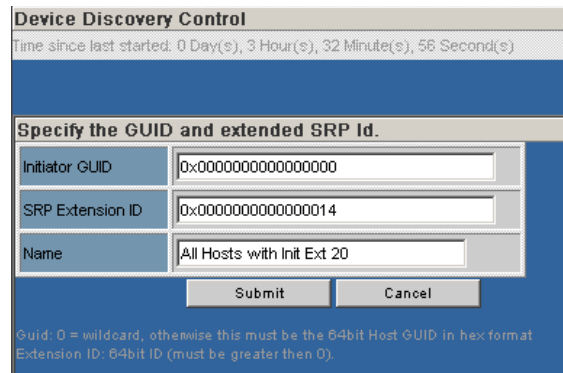
  - ❑ `p1info` for port 1
  - ❑ `p2info` for port 2
3. In the **SRP Extension ID** text box, enter the 16-digit SRP Extension ID number.
 

**NOTE:**The user can find the SRP extension ID in the `ics_srp` configuration file.
4. In the **Name** text box, enter an applicable host name.
5. Click **Submit**. The host will now appear in the **Configured Initiators** table.

Using the **Click to Add Host** button is also useful for wildcarding IB hosts. Wildcarding allows the user to create SRP Initiators that can be utilized by multiple hosts. In the following example, the Initiator GUID will match any host using "InitiatorExtension: 20" in its session definition (as defined in the `ics_srp.cfg` file).

1. In the **Discovered Hosts** table, click the **Click to Add Host** button. The following is displayed:

**Figure 3-33. Add Host Window: Wildcarding**



The screenshot shows a window titled "Device Discovery Control" with a timer at the top indicating "Time since last started: 0 Day(s), 3 Hour(s), 32 Minute(s), 56 Second(s)". Below the timer is a section titled "Specify the GUID and extended SRP Id." containing three input fields: "Initiator GUID" with the value "0x0000000000000000", "SRP Extension ID" with the value "0x0000000000000014", and "Name" with the value "All Hosts with Init Ext 20". At the bottom of this section are "Submit" and "Cancel" buttons. A small note at the very bottom of the window reads: "Guid: 0 = wildcard, otherwise this must be the 64bit Host GUID in hex format. Extension ID: 64bit ID (must be greater than 0)." The window has a blue background.

2. In the **Initiator GUID** text box, enter all zeros (16-digits) as shown in Figure 3-33.. An SRP port GUID of all zeros is considered a wildcard - it will match any port GUID value.
3. In the **SRP Extension ID** text box, enter the 16-digit SRP Extension ID number. In this example (as shown in Figure 3-33.) an SRP Extension ID of 14 is the hexadecimal equivalent of an Initiator Extension of 20, which is found in the `ics_srp.cfg` file.

**NOTE:**By default Initiator extensions are in decimal format in the host `ics_srp.cfg` files (prefacing the decimal number with 0x will make it hexadecimal), but must be entered as hexadecimal strings in the **Add Host** window.

4. In the **Name** text box, enter an applicable host name.
5. Click **Submit**. The host will now appear in the **Configured Initiators** table.

**NOTE:**As shown in Figure 3-34., any SRP initiator that utilizes wildcarding will appear in the **Configured Initiators** table as an asterisk (\*) in the GUID column.

**Figure 3-34. SRP Initiators: Wildcarding**

GUID	Ext SRP Id
*	0x0000000000000002
*	0x0000000000000011
*	0x0000000000000014

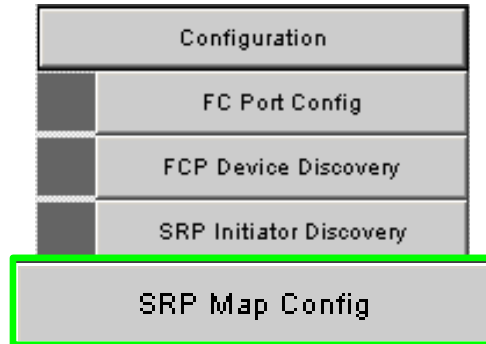


3.3.4

**SRP Map Configuration**

The SRP Map Configuration screen allows the user to map discovered and configured SRP Initiators to discovered and configured Fibre Channel devices on the FC fabric.

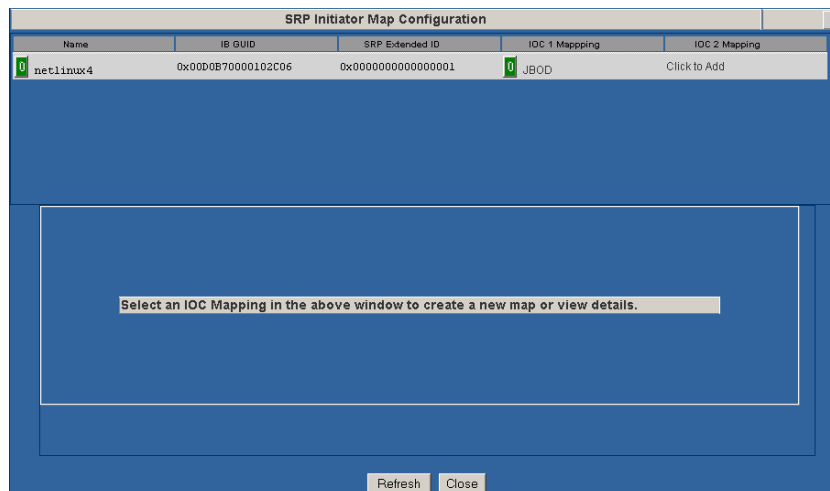
**Figure 3-35. SRP Map Configuration Button**



To configure initiators to target devices:

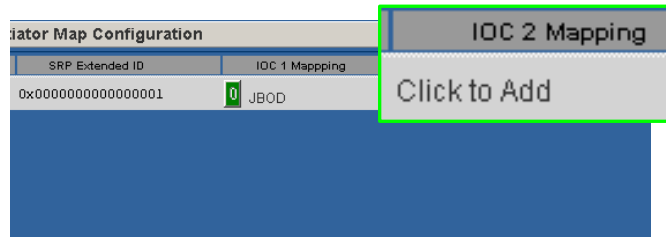
1. In the main status and navigation area, click on a FVIC.
2. From the FVIC menu, click on **Configuration**.
3. Click on **SRP Map Configuration**. The **SRP Initiator Map Configuration** window is displayed:

**Figure 3-36. SRP Map Configuration Window**



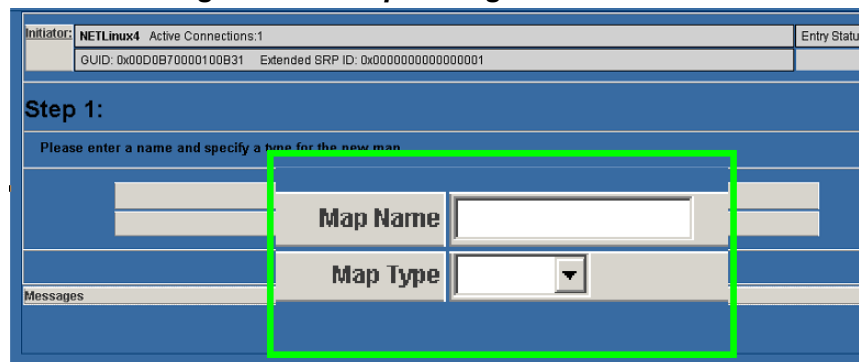
**NOTE:**The number in green box of the **Name** column represents how many sessions are active for that SRP initiator. The number in the green box in the **IOC (X) Mapping** column represents how many session are active for that map.

**Figure 3-37. Click to Add Link**



- Click the **Click to Add** link of the SRP Initiator and column of the IOC. The IOC is the path through the FVIC through which the IB traffic flows (i.e. it selects one of the two HCA(s) on the FVIC). The **Map Configuration Wizard** is displayed:

**Figure 3-38. Map Configuration Wizard**



**NOTE:**The FCP target device must be accessible through the IOC chosen in order for the SRP initiator to communicate with the FCP target device.

- Enter a map name applicable to the user environment.
- For map type, choose **Direct** or **Explicit**. This example presents an *Explicit* map type.

**NOTE:**If the SRP initiator only requires access to LUN 0 of the target device as Host LUN 0, use a **Direct** map. In general, each disk of a JBOD must be configured as a separate LUN. Depending on how a device is configured, the user may need to configure multiple LUNs for communication with an “intelligent” target device. If a storage device has multiple virtual drives, a **Direct** map to that device will allow access to all virtual drives (LUNs). An **Explicit** map to such a device allows the user to choose which LUNs to connect.

- Click **Next**. Step 2 of the **Map Configuration Wizard** is displayed

**Figure 3-39. Map Configuration Wizard - Step 2**

Target	Host LUN	Target LUN
J1 - 0x210000203771983B	0	0
EMC SP-B - 0x5006016888034043		
Hitachi 9200 - 0x50060E8000035052		
J1 - 0x210000203771983B		
J2 - 0x210000203771994F		
J3 - 0x2100002037719987		
J4 - 0x21000020377195AE		
J5 - 0x210000203771983A		
J6 - 0x210000203771985A		

Row Add Row Update finish

- Choose a **Target** from the drop-down list.
- Enter a **Host LUN** number. Host LUNs are numbered from 0 through  $n$ .
- Enter a **Target LUN** number. Target LUNs are numbered from 0 through  $n$ .
- Click **Finish**.

**NOTE:** If the user chooses a **Direct** mapping, **Steps 9** and **10** of the above procedure would be omitted. A **Direct** map is essentially an **Explicit** map with a single row containing Host LUN 0 and Target LUN 0.

#### 3.3.4.1

### Deleting a Configured Map

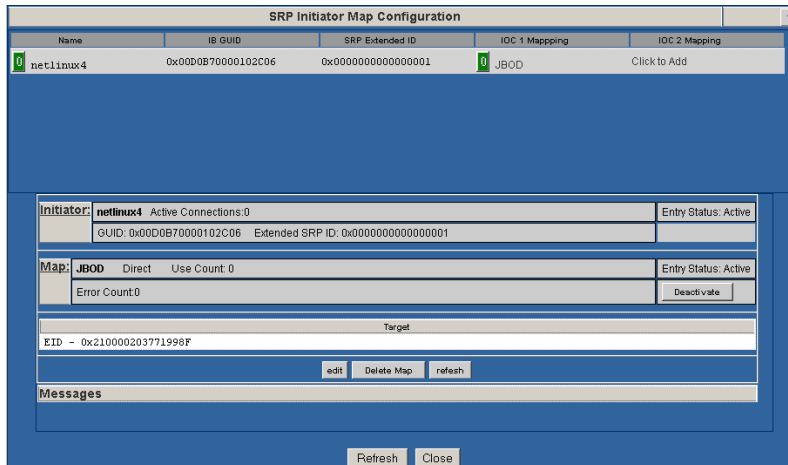
**NOTE:** A map can be deleted or deactivated only if there are no active sessions associated with it.

To delete a configured initiator to target map, perform the following steps:

- In the main status and navigation area, click on a FVIC.
- From the FVIC menu, click on **Configuration**.
- Click on **SRP Map Configuration**. The **SRP Initiator Map Configuration** window is displayed.

- Select the mapping to be deleted. The **Initiator** and **Map** configuration information is displayed in the bottom of the window.

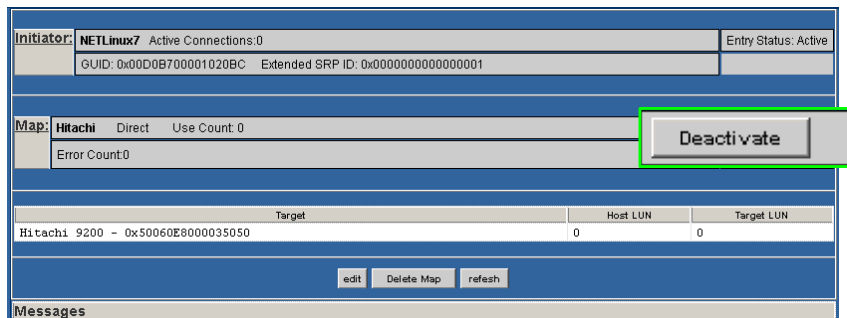
**Figure 3-40. Initiator and Map Configuration Information**



- In the **Map** configuration information area, click the **Deactivate** button.

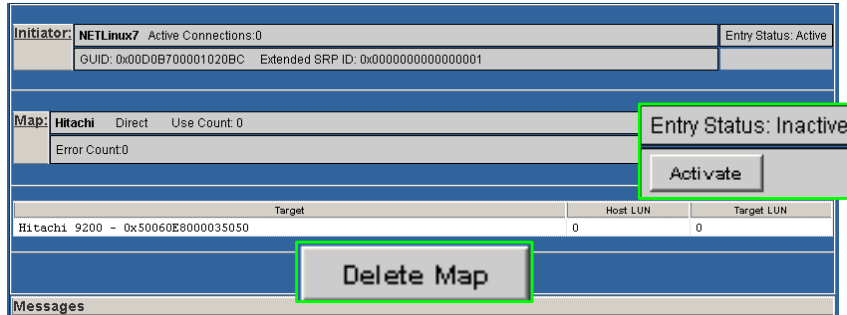
**NOTE:**When a map is deactivated the map is still present. SRP initiators requesting to connect to the map will be rejected. Additionally, the green box in the **IOC (X) Mapping** column will change to yellow.

**Figure 3-41. Deactivate Button**



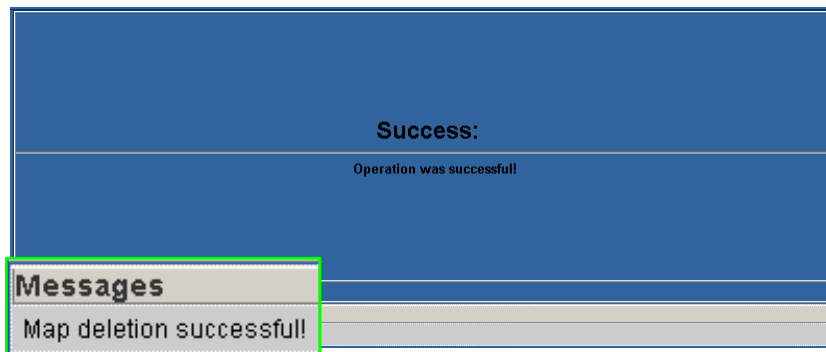
6. Once the **Entry Status** changes to **Inactive**, click on the **Delete Map** button.

**Figure 3-42. Inactive Entry Status and Delete Map Button**



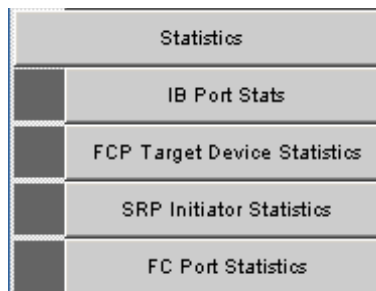
7. The system returns the following screen:

**Figure 3-43. Map Deletion Successful Message**



### 3.3.5 Statistics

**Figure 3-44. Statistics Submenu**



The Statistics submenu allows the user to monitor the following:

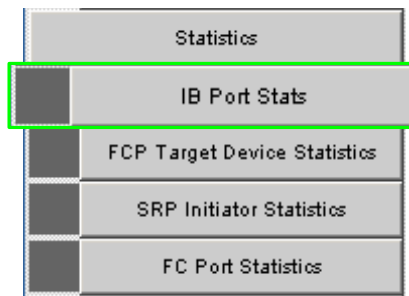
- IB Port Statistics
- FCP Target Device Statistics
- SRP Initiator Statistics
- FC Interconnect Statistics

### 3.3.6

## InfiniBand Port Statistics

The IB Port Statistics area provides IB port information for the FVIC.

**Figure 3-45. IB Port Statistics**



To view port statistical information, do the following:

1. From the Statistics submenu, select **IB Port Stats**. The IB Port Statistics window is displayed:

**Figure 3-46. FVIC IB Port Statistics**

Leaf Slot IB Port Statistics

Port Name	Port #	Link State	Physical State	Link Down Default	Active Link Width	Link Width Enabled	Link Width Supported	Active Link Speed	Link Speed Enabled	Link Speed Supported	Transmit S2BH Words	Receive S2BH Words	Transmit Packets	Receive Packets	Symbol Errors	Link Error Recovery	Link Downed
LD1P01	1,1	active	Up	Poling	4X	1X or 4X	1X or 4X	2.50Gbps	2.5G/0Gbps	2.5G/0Gbps	10152	10440	141	145	0	0	0
LD1P02	1,2	active	Up	Poling	4X	1X or 4X	1X or 4X	2.50Gbps	2.5G/0Gbps	2.5G/0Gbps	12096	12888	168	179	0	0	0
LD1P03	1,3	active	Up	Poling	4X	1X or 4X	1X or 4X	2.50Gbps	2.5G/0Gbps	2.5G/0Gbps	10152	10440	141	145	0	0	0
LD1P04	1,4	active	Up	Poling	4X	1X or 4X	1X or 4X	2.50Gbps	2.5G/0Gbps	2.5G/0Gbps	12096	12888	168	179	0	0	0
LD1P05	1,5	active	Up	Poling	4X	1X or 4X	1X or 4X	2.50Gbps	2.5G/0Gbps	2.5G/0Gbps	47160	63792	655	866	0	0	0
LD1P06	1,6	active	Up	Poling	4X	1X or 4X	1X or 4X	2.50Gbps	2.5G/0Gbps	2.5G/0Gbps	12024	12888	167	179	0	0	0
LD1P07	1,7	active	Up	Poling	4X	1X or 4X	1X or 4X	5.00Gbps	2.5G/0Gbps	2.5G/0Gbps	11952	12888	166	179	0	0	0
LD1P08	1,8	active	Up	Poling	4X	1X or 4X	1X or 4X	5.00Gbps	2.5G/0Gbps	2.5G/0Gbps	11952	12888	166	179	0	0	0
LD1P09	1,9	active	Up	Poling	4X	1X or 4X	1X or 4X	5.00Gbps	2.5G/0Gbps	2.5G/0Gbps	16560	16776	230	233	0	0	0
LD1P10	1,10	active	Up	Poling	4X	1X or 4X	1X or 4X	5.00Gbps	2.5G/0Gbps	2.5G/0Gbps	11952	12888	166	179	0	0	0
LD1P11	1,11	active	Up	Poling	4X	1X or 4X	1X or 4X	5.00Gbps	2.5G/0Gbps	2.5G/0Gbps	14112	14112	196	196	0	0	0
LD1P12	1,12	active	Up	Poling	4X	1X or 4X	1X or 4X	5.00Gbps	2.5G/0Gbps	2.5G/0Gbps	13032	12960	181	180	0	0	0
LD1STB0	1,13	active	Up	Poling	4X	1X or 4X	1X or 4X	5.00Gbps	2.5G/0Gbps	2.5G/0Gbps	625240	479952	7295	6666	0	0	0
LD1STB0	1,14	active	Up	Poling	4X	1X or 4X	1X or 4X	5.00Gbps	2.5G/0Gbps	2.5G/0Gbps	2016	5616	28	78	0	0	0
LD1STB0	1,15	active	Up	Poling	4X	1X or 4X	1X or 4X	5.00Gbps	2.5G/0Gbps	2.5G/0Gbps	2016	10656	28	148	0	0	0
LD1STB0	1,16	active	Up	Poling	4X	1X or 4X	1X or 4X	5.00Gbps	2.5G/0Gbps	2.5G/0Gbps	2016	5688	28	79	0	0	0
LD1STB0	1,17	active	Up	Poling	4X	1X or 4X	1X or 4X	5.00Gbps	2.5G/0Gbps	2.5G/0Gbps	2016	399024	28	5542	0	0	0
LD1STB1	1,18	active	Up	Poling	4X	1X or 4X	1X or 4X	5.00Gbps	2.5G/0Gbps	2.5G/0Gbps	2016	5616	28	78	0	0	0
LD1STA0	1,19	active	Up	Poling	4X	1X or 4X	1X or 4X	5.00Gbps	2.5G/0Gbps	2.5G/0Gbps	860472	12096	11951	168	0	0	0

**NOTE:** Ports 11 and 12 of the FVIC (e.g L01P11 and L01P12) represent the ports between the switch chip on the FVIC and one of the FVIC internal HCA chips.

### 3.3.6.1

## Port Statistics Field Descriptions

### Link State:

Indicates whether the InfiniBand link associated with the physical port is up or down. Possible values are **no state change**, **down**, **init**, **armed**, **active**, and **unknown**.

### Physical State:

Indicates whether the internal connection to the InfiniBand port is up or down. Possible values are **No State Change**, **Sleep**, **Polling**, **Disabled**, **Training**, **Up**, and **Error Recovery**.

### Link Down Default:

Indicates the default down state as set by the Fabric Manager. Possible values are **No State Change**, **Sleep**, **Polling**, and **Unknown**.

### Active Link Width:

Indicates the bandwidth of the link on the backplane. The bandwidth is specified as a multiplier of 2.5 Gbit/sec full duplex serial links. As an example, 4X specifies a bandwidth of 10 Gbit/sec.

**NOTE:** Values of 1X are possible in this field with 4X IB cables if poor cable connections or defective 4X IB cables are used.

### Link Width Enabled:

Indicates actual link width as opposed to the supported link width.

### Link Width Supported:

Indicates the link width in terms of multipliers of 2.5 Gbit/sec full duplex serial links supported by the port.

### Active Link Speed:

Indicates the speed of the full duplex serial link. This is either 2.5Gbps (single data rate, or SDR), or 5.0Gbps (double data rate, or DDR).

### Link Speed enabled:

Indicates the actual link speed as opposed to the supported link speed. This could be 2.5Gbps (SDR), 5.0Gbps (DDR) or both.

### Link Speed supported:

The supported link speed of the port. This could be 2.5Gbps (SDR), 5.0Gbps (DDR) or both.

### 3.3.6.2

## **InfiniBand Statistics:**

#### Transmit 32 Bit Words:

The number of 32-bit data words transmitted by the port, not including flow control and VCRC data.

#### Receive 32 Bit Words:

The number of 32-bit data words received by the port, not including flow control and VCRC data.

#### Transmit Packets:

The number of data packets transmitted by the port, not including flow control packets.

#### Receive Packets:

The number of data packets received by the port, not including flow control packets.

#### Symbol Errors:

The number of times a 8B10B encoding violation, or a disparity violation was detected. If multiple errors are detected simultaneously (in more than one lane), the counter only increments by one. The value of the counter is not incremented past 255. The Performance Manager may reset and/or consolidate the results of this counter.

#### Link Error Recovery:

Indicates the number of times the link error recovery process happened successfully. The value of the counter is not incremented past 255. The Performance Manager may reset and/or consolidate the results of this counter.

#### Link Downed:

The number of times the link error recovery process failed. The value of the counter is not incremented past 255. The Performance Manager may reset and/or consolidate the results of this counter.

#### Receive Errors:

Number of errors received on the port.

#### Remote Physical Errors Received:

Number of remote physical errors received on the port.

#### Transmit Discards:

Number of port transmit discards.

#### Local Link Integrity Errors:

Number of local link integrity errors.



Excessive Buffer Overrun:

Number of excessive buffer overrun errors.

Pkey Violations Inbound:

Indicates the number of times an invalid partition key (PKey) was received. PKeys support an advanced InfiniBand feature for logically partitioning a physical subnet into logical access domains.

Pkey Violations Outbound:

Indicates the number of times an invalid PKey was sent. PKeys support an advanced InfiniBand feature for logically partitioning a physical subnet into logical access domains.

Raw Violations Inbound:

Number of times raw inbound packet discarded.

Raw Violations Outbound:

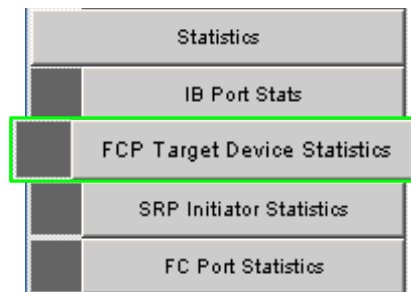
Number of times raw outbound packet was discarded.

### 3.3.7

## FCP Target Device Statistics

Provides statistical information on any configured FC target device. This screen enables the user to monitor how much Fibre Channel traffic is moving through the FVIC card for a given FC target.

**Figure 3-47. FCP Target Device Statistics Button**



To view FCP target device statistics:

1. In the main status and navigation area, click on a FVIC.
2. From the FVIC menu, click on **Statistics**.

- Click on **FCP Target Device Statistics**. The **FCP Target Device Statistics** window is displayed:

**Figure 3-48. FCP Target Device Statistics Window**

Name	Connect Status	Port Number	N Port ID	Port WWN	Node WWN	In frame size	Out frame size	Class of service	Total requests	Succeeded Requests	Failed Requests	Outstanding requests	Data in	Data out
--Empty, No Value Set--	Down	1	0x000000	0x50060E01042E920	0x50060E01042E920	0	0	0	0	0	0	0	0	0
--Empty, No Value Set--	Down	2	0x000000	0x50060E01042E920	0x50060E01042E920	0	0	0	0	0	0	0	0	0
--Empty, No Value Set--	Down	3	0x000000	0x50060E01042E920	0x50060E01042E920	0	0	0	0	0	0	0	0	0
--Empty, No Value Set--	Down	4	0x000000	0x50060E01042E920	0x50060E01042E920	0	0	0	0	0	0	0	0	0
--Empty, No Value Set--	Down	5	0x000000	0x50060E01042E920	0x50060E01042E920	0	0	0	0	0	0	0	0	0
--Empty, No Value Set--	Down	6	0x000000	0x50060E01042E920	0x50060E01042E920	0	0	0	0	0	0	0	0	0
--Empty, No Value Set--	Down	7	0x000000	0x50060E01042E920	0x50060E01042E920	0	0	0	0	0	0	0	0	0
--Empty, No Value Set--	Down	8	0x000000	0x50060E01042E920	0x50060E01042E920	0	0	0	0	0	0	0	0	0
--Empty, No Value Set--	Down	1	0x000000	0x22000004CF8C02E7	0x20000004CF8C02E7	0	0	0	0	0	0	0	0	0
--Empty, No Value Set--	Down	2	0x000000	0x22000004CF8C02E7	0x20000004CF8C02E7	0	0	0	0	0	0	0	0	0
--Empty, No Value Set--	Down	3	0x000000	0x22000004CF8C02E7	0x20000004CF8C02E7	0	0	0	0	0	0	0	0	0
--Empty, No Value Set--	Down	4	0x000000	0x22000004CF8C02E7	0x20000004CF8C02E7	0	0	0	0	0	0	0	0	0
--Empty, No Value Set--	Down	5	0x000000	0x22000004CF8C02E7	0x20000004CF8C02E7	0	0	0	0	0	0	0	0	0
--Empty, No Value Set--	Down	6	0x000000	0x22000004CF8C02E7	0x20000004CF8C02E7	0	0	0	0	0	0	0	0	0
--Empty, No Value Set--	Down	7	0x000000	0x22000004CF8C02E7	0x20000004CF8C02E7	0	0	0	0	0	0	0	0	0

The following is a description of each field of the FCP Target Device Statistics window:

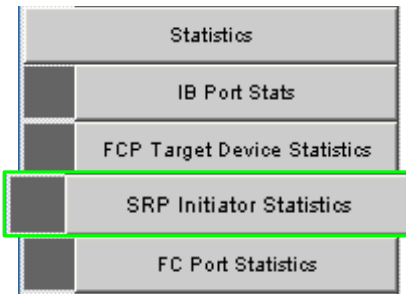
- **Name**  
Contains the name defined by the user in the Fibre Channel Target Device Configuration Screen.
- **Connect Status**  
Indicates whether the FVIC port is logged into the specified target. May be one of two states:
  - ❑ Up: Indicating that the device is connected.
  - ❑ Down: Indicating Attention/Error - that is, the device is a configured device - but the FVIC card was unable to establish a connection to the device.
- **Port Number**  
Indicates the port numbers on the FVIC.
- **N Port ID**  
N Port ID is a 24-bit address that identifies the target. The Fabric Controller dynamically assigns the N Port ID to the target. The N Port ID displayed in this field is the target ID and designates the address of the target on the SAN.
- **Node WWN**  
A unique 64-bit identifier that is assigned by the device vendor.
- **Port WWN**  
A unique 64-bit identifier that is assigned by the device vendor.
- **In Frame Size**  
Indicates the size of frames that is sent to the FVIC card from the SAN. The size is reported in bytes. Valid values are:

- ❑ 128
- ❑ 512
- ❑ 1024
- ❑ 2048
- Out Frame Size
  - Indicates the size of frames that the FVIC card sends to the devices on the SAN.
- Class of Service
  - Indicates the Fibre Channel Class of service. May be either Class 2 or Class 3.
- Total Requests
  - Total number of requests to a target device
- Succeeded Requests
  - Total number of successful requests to a target device.
- Failed Requests
  - Total number of failed requests to a target device.
- Outstanding Requests
  - Number of requests to the target device that have not yet completed.
- Data In
  - Indicates the total bytes read from the target device.
- Data Out
  - Indicates the total bytes written to the target device.

### 3.3.8 SRP Initiator Statistics

The **SRP Initiator Statistics** screen displays information about an InfiniBand Host (SRP initiator) connected to the InfiniBand fabric. This screen enables the user to monitor for host usage information.

**Figure 3-49. SRP Initiator Statistics Button**



To view SRP initiator statistics:

1. In the main status and navigation area, click on a FVIC.
2. From the FVIC menu, click on **Configuration**.
3. Click on **SRP Initiator Statistics**. The **SRP Initiator Statistics** window is displayed:

**Figure 3-50. SRP Initiator Statistics Window**

Srp Initiator Statistics - Slot 1									
Name	Initiator ID	Active Connections	Total Requests	Succeeded Requests	Failed Requests	Outstanding Requests	Data In	Data Out	
NETLinux4	0x00D0B70000100B310000000000000001	1	10681	10681	0	0	14376	337083392	
NETLinux2	0xD00000B71000870A0000000000000001	0	0	0	0	0	0	0	

Refresh Close

Messages  
Table view successful.

The following is a description of each field of the SRP Initiator Statistics window:

- **Name**  
This field contains the Node Name that was assigned to the storage device by the user and/or the manufacturer of the storage device
- **Initiator ID**  
128 bit field in which:
  - The first 64 bits are the port GUID of the SRP initiator port.
  - The second 64 bits are extended SRP ID.

- Active Connections

Indicates how many active sessions an initiator has.
- Total Requests

The total number of requests from an initiator.
- Succeeded Requests

The total number of successful requests from an initiator.
- Failed Requests

The total number of failed requests from an initiator.
- Outstanding Requests

The number of requests outstanding from an initiator.
- Data In

The total number of bytes read by an initiator.
- Data Out

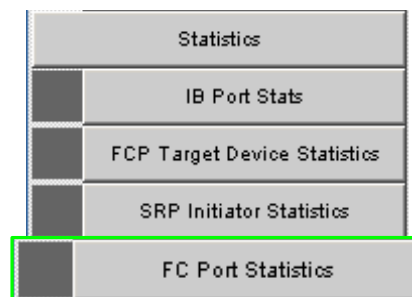
The total number of bytes written by an initiator.

### 3.3.9

## Fibre Channel Port Statistics

The FC Port Statistics screen provides general connectivity status about the ports of the FVIC line card.

**Figure 3-51. FC Port Statistics Button**



To view FC port statistics:

1. Click on FVIC.
2. Click on **Statistics**.

3. Click on **FC Port Statistics**. The **FC Port Statistics** window is displayed:

**Figure 3-52. FC Port Statistics Window**

Name	Set Speed	Actual Speed	Topology	NPort ID	Port WWN	Node WWN	Loss of Signal Count	Loss of Sync Count	Invalid Transmission Count	CR
FVIC 00066A00d4000015 Port 1	Auto	4 Gb	Fabric	0x010800	0x500066A1DD000019	0x500066A0DD000019	109	1	513	0
FVIC 00066A00d4000015 Port 2	Auto	4 Gb	Public Loop	0x010901	0x500066A2DD000019	0x500066A0DD000019	100	0	765	0
FVIC 00066A00d4000015 Port 3	Auto	4 Gb	Fabric	0x010A00	0x500066A3DD000019	0x500066A0DD000019	91	4	765	0
FVIC 00066A00d4000015 Port 4	Auto	4 Gb	Fabric	0x010B01	0x500066A4DD000019	0x500066A0DD000019	82	2	765	0
FVIC 00066A00d4000015 Port 5	Auto	4 Gb	Fabric	0x010C00	0x500066A5DD000019	0x500066A0DD000019	73	2	765	0
FVIC 00066A00d4000015 Port 6	Auto	4 Gb	Public Loop	0x010D01	0x500066A6DD000019	0x500066A0DD000019	64	0	765	0
FVIC 00066A00d4000015 Port 7	Auto	4 Gb	Public Loop	0x010E01	0x500066A7DD000019	0x500066A0DD000019	55	0	765	0
FVIC 00066A00d4000015 Port 8	Auto	4 Gb	Fabric	0x010F00	0x500066A8DD000019	0x500066A0DD000019	48	1	765	0

Following is a description of each field of the FC Port Statistics window:

- **Name**  
This field displays the name that was assigned to the connection by the system.
- **Set Speed**  
The FVIC port speed setting.
- **Actual Speed**  
Actual speed of the FVIC port.
- **Topology**  
Type of network topology.
- **N PORT ID**  
A 24-bit address that the Fabric Controller dynamically assigns to the port. When the FVIC card logs onto the Fibre Channel fabric, the Fabric Controller assigns each port on the card an N Port ID. In this field, the N Port ID displays the source ID and designates the address of the FVIC port on the SAN.
- **Port WWN**  
A unique 64-bit identifier that is assigned by the target device vendor. The FVIC uses WWNs and N-Port IDs to connect to FC storage devices.
- **Node WWN**  
A unique 64-bit identifier that is assigned by the device vendor.
- **Loss of Signal Count**  
Monitors port signal loss. Indicates the number of times the port has lost the optical signal entirely.
- **Loss of Sync Count**

Monitors port synchronization loss. Indicates the number of times the signal from the FVIC Fibre Channel port to the FC fabric was not of sufficient quality to support synchronization with the incoming data stream.

➤ Invalid Transmission Count

Monitors port invalid transmissions. Indicates the number of invalid transmissions received. The counter is created at boot time and increments as long as the FVIC is running.

➤ Invalid CRC Count

Monitors port Cyclic Redundancy Check errors. Indicates the number of times that a CRC error occurs.

➤ Link Status

Monitors the status of the port link state. Indicates whether the port is up or down.

### 3.3.10

## Fibre Channel Trap Control

*Figure 3-53. Fibre Channel Trap Control Submenu*



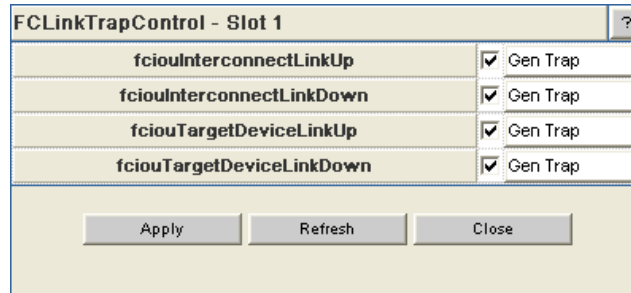
The FC Trap Control screen allows the user to set default trap scenarios related to FVIC line card.

To set Fibre Channel traps:

1. Click FVIC.
2. Click **Trap Control**.

3. Click **FC Trap Control**. The FC Trap Control screen is displayed:

**Figure 3-54. FC Trap Control Screen**



4. Select or deselect the desired trap(s). To generate an immediate trap, click the applicable **Gen Trap** button.
5. To save settings, click on **Apply**.

Following are definitions for all Fibre Channel traps:

- fciouInterconnectLinkUp  
The connection between the FVIC and an IB host is up.
- fciouInterconnectLinkDown  
The connection between the FVIC and an IB host is down.
- fciouTargetDeviceLinkUp  
The connection between the FVIC and an FC Target Device is up.
- fciouTargetDeviceLinkDown  
The connection between the FVIC and an FC Target Device is down.

**NOTE:** The FVIC uses the SNMP target specified on the applicable 9000 switch chassis.



## Section 4

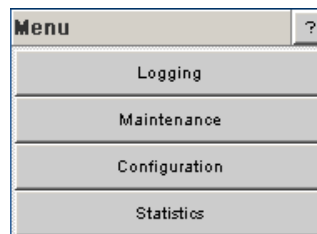
# EVIC Configuration and Monitoring Features

The following section provides detailed, task-oriented descriptions for configuring and monitoring the EVIC card and its feature functionality via the EVIC **Menu**.

**NOTE:** For 9020 users, refer to the following sections for subnet management and licence key information:

- “Fabric Manager Configuration” on page 2-52
- “Fabric Manager Control” on page 2-61
- “License Keys; Key Administration” on page 2-63

**Figure 4-1. EVIC Menu**

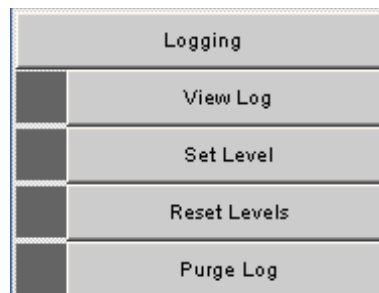


### 4.1

## Logging

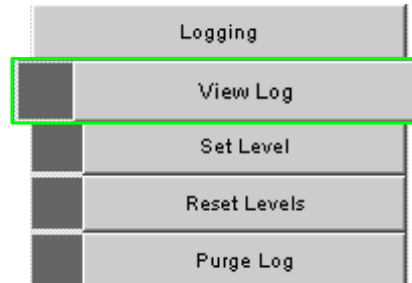
The Logging submenu allows the user to view, set levels, reset levels, and purge the message log file.

**Figure 4-2. Logging Submenu**



The View Log button allows the user to view the message log.

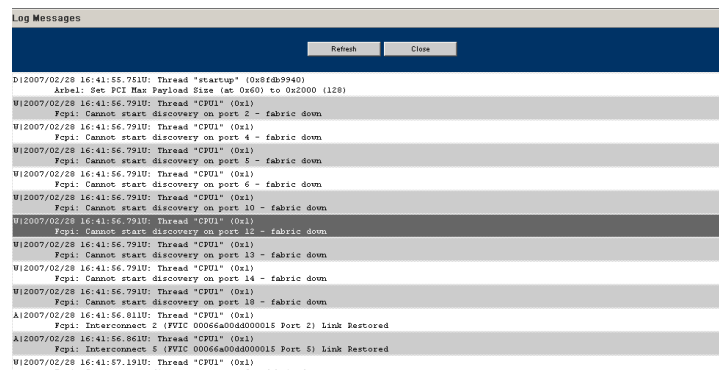
**Figure 4-3. View Log Button**



To view the message log:

1. From the menu, select **Logging**.
2. Click **View Log**. The log message window is displayed:

**Figure 4-4. Sample Message Log**

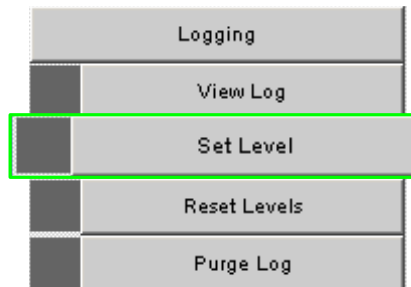


To save a log message for further analysis, perform the following steps:

1. From the Messages window, select **Edit, Select All** (or **CTRL + A**).
2. Select **Edit, Copy** (or **CTRL + C**).
3. Open a text editing package, such as Notepad.
4. Select **Edit, Paste** (or **CTRL + V**).
5. Save as a plain text (.txt) file.

4.1.1  
**Set Level**

**Figure 4-5. Set Level Button**



The Set Level button allows the user to set log level configuration parameters for all software modules on the EVIC.

To set log levels:

1. From the menu, select **Logging**.
2. From **Logging**, select **Set Level**. The Log System Configurator (Device Tab) window is displayed:

**Figure 4-6. Log System Configurator (Device Tab)**

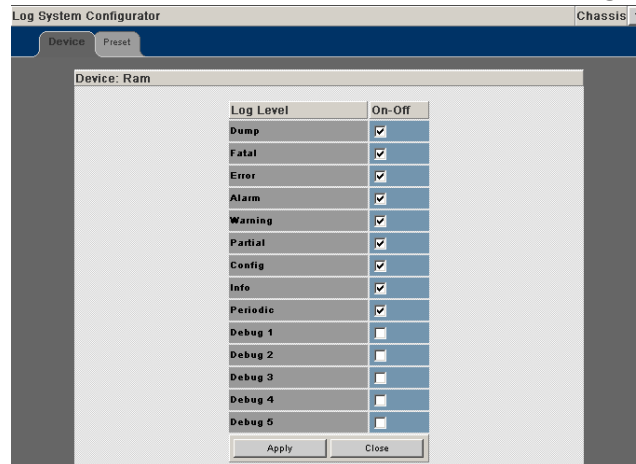
Module Name	Dump	Fatal	Error	Alarm	Warning	Partial	Config	Info	Periodic	Debug 1	Debug 2	Debug 3	Debug 4	Debug 5	
Ram	On	On	On	On	On	On	On	On	Off	Off	Off	Off	Off	Off	Configure
Syslog	On	On	On	On	On	On	On	On	On	Off	Off	Off	Off	Off	Configure

The Device tab presents current log level configuration settings for the following software modules:

- **RAM** = The circular log buffer contained in memory. To access the contents of this buffer, use the Chassis Viewer **View Log** button
- **Syslog** = All output messages are saved to the syslog host. If a log level is ON, that type of message is sent to a syslog server. The syslog server is defined at the switch chassis level within Syslog Host tab of the Logging/Set Level submenu.

From this screen, the user can change any of the log level settings for a specific software module by clicking on the **Configure** hyperlink, which displays a configuration screen:

**Figure 4-7. Device Tab: Software Module Configurator**



To change any Log Level settings:

1. Click the **On-Off** checkbox to the right of the setting.
2. Click the **Submit** button to save any changes.

The following list describes each of the Log Level configuration parameters.

- **DUMP** – Dump: Indicates that a problem has caused the system to produce a system dump file. In most circumstances, it is recommended that the user retrieve the dump that was produced. Support engineers may require the information contained in the dump file to diagnose the cause of the problem.
- **FATAL** – Indicates that a non-recoverable system problem has occurred. The user should reboot the system or component and verify that the subsystem is fully functional to determine whether the fault has been corrected. If the problem persists, the user should contact the supplier.
- **ERROR** – Indicates that a serious system error has occurred which might be recoverable. If the system exhibits any instability, the user should reboot the system or component. If errors persist, the user should immediately contact the supplier's technical support.
- **ALARM** - Indicates that a serious problem has occurred which degrades capacity or service. If the error is recoverable, the user should correct the failure. If the alarm/failure persists, the user should reboot the system at a convenient time. If the problem is still not cleared, the user should contact the supplier.

- ✦ **WARNING** - Indicates that a recoverable problem has occurred. The user does not need to take action.
- ✦ **PARTIAL** - When more information is available, Partial causes additional message-related details to be displayed.
- ✦ **CONFIGURATION**: An informational message indicating changes that a user has made to the system configuration. The user does not need to take any action.
- ✦ **INFO**: Informational messages that occur during a system or component boot. The user does not need to take any action.
- ✦ **PERIODIC**: An informational message containing periodic statistics. The user does not need to take action.

**Debug message levels 1 through 5:** Debug messages are for supplier and/or SilverStorm engineering use and are not necessarily indicative of actions that an end user may need to take.

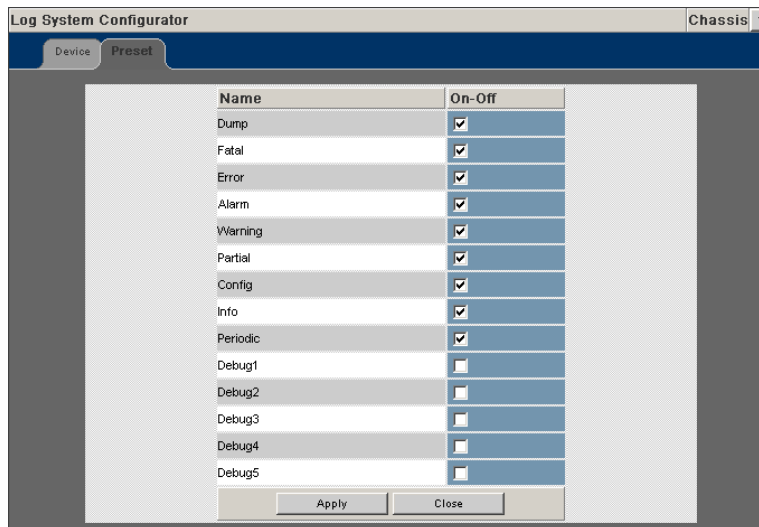
- ✦ **DEBUG1** – Messages that describe the states of connections and links.
- ✦ **DEBUG2** – Messages that describe major configuration changes or operations.
- ✦ **DEBUG3** – Messages that describe the I/O flow.
- ✦ **DEBUG4** – Messages that contain the packet dumps within an I/O flow. I/O flows contain multiple packets.
- ✦ **DEBUG5** – Messages that contain the packet dumps within an I/O flow. I/O flows contain multiple packets.

**Important:** When configuring the log levels to display debug messages, care should be taken to ensure that system performance issues are weighed against troubleshooting requirements. Generally, the higher the debug number the more information is written to the log. Specifically, debug 3-5 have the most effect on system performance.

### 4.1.1.1 Preset Tab

The Preset tab allows the user to quickly change log level settings for all software modules on the EVIC.

**Figure 4-8. Log System Configurator: Preset Tab**



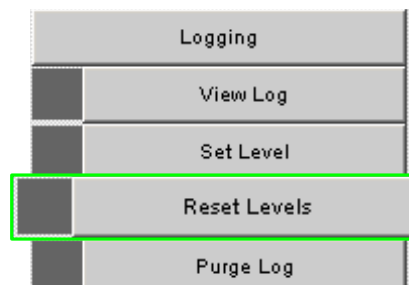
To change the log level settings:

1. Click the **On-Off** checkbox to the right of the setting(s).
2. Click the **Submit** button to save any changes.

### 4.1.2 Reset Log Levels

The Reset Levels button resets the logging levels to their factory default values.

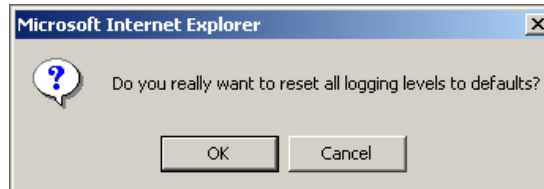
**Figure 4-9. Reset Levels Button**



To reset the logging levels:

1. From the menu, select **Logging**.
2. Click **Logging**.
3. Click **Reset Levels**. The Reset Levels window is displayed:

**Figure 4-10. Reset Log Levels Window**



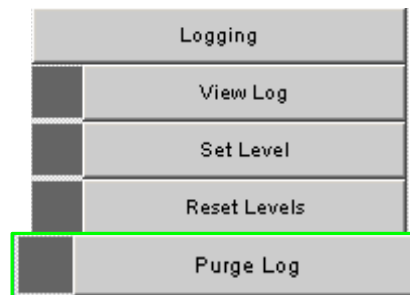
4. To reset the logging levels, click **OK**.

#### 4.1.3

### Purging the Log

The Purge Log button purges the RAM, clearing the log file(s).

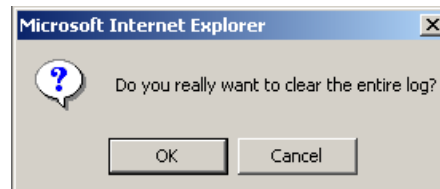
**Figure 4-11. Purge Log Button**



To purge the log:

1. From the menu, click **Logging**.
2. Click **Purge Log**. The Purge Log confirmation window is displayed

**Figure 4-12. Purge Log Confirmation Window**



3. Click **OK**.

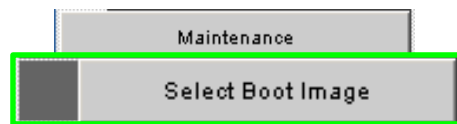
4. The message log file is now purged.

## 4.2 Maintenance

### 4.2.1 Select Boot Image

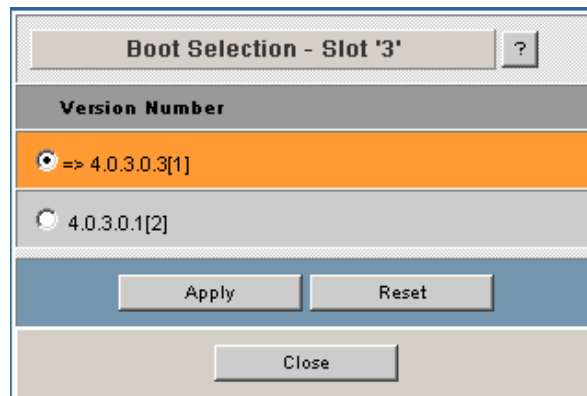
The Select Boot Image button allows the user to choose an alternative boot image for the EVIC. To select a boot image:

**Figure 4-13. Select Boot Image Button**



1. From the menu, select **Maintenance**.
2. Click **Select Boot Image**. The Boot Image Selection screen is displayed:

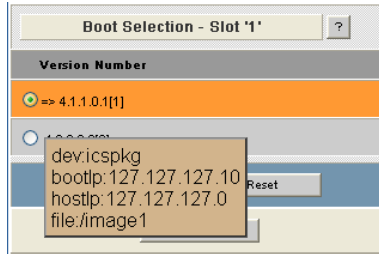
**Figure 4-14. Boot Image Selection Screen**





**NOTE:** By mousing over either radio button in the Boot Image Selection screen, the user can glean additional information about each file, as shown in [Figure 4-15](#) below:

**Figure 4-15. Boot Image File Pop Up**

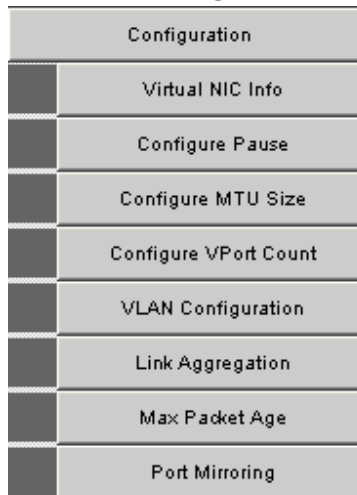


To choose a new boot image:

1. Click on a radio button of the new boot image.
2. Click Submit.

### 4.3 Configuration

**Figure 4-16. Configuration Menu**



The Configuration submenu allows the user to perform the following tasks:

- View Virtual NIC information.
- Configure PAUSE.
- Configure maximum transmission unit (MTU) size.
- Configure VPort counts

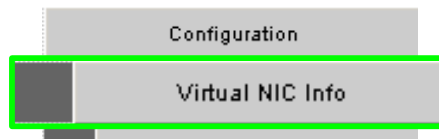
- Configure virtual LAN (VLAN) parameters
- View configured virtual LAN (VLAN) information
- Configure Ethernet link aggregation
- Configure maximum packet age parameters
- Configure port mirroring

4.3.1

### Virtual NIC Information

The **Virtual NIC Info** button displays detailed information for all Virtual NICs associated with the EVIC.

**Figure 4-17. Virtual NIC Button**



To view the Virtual NIC Information window:

1. From Menu, select **Configuration**.
2. Select **Virtual NIC**. The Virtual NIC Information window is displayed.

**Figure 4-18. Virtual NIC Information Window**

Virtual Nic	In Use	Last Host Name	Remote Host Types	Last Host GUID	Last Host Instance	Date Last Used	MTU	MAC	IOC	Port	Control OP	Data OP
1	0	st11	InfraNc	0-00066A00980015B	0	TUE MAR 20 10:58:23 2007	1	00:06:6a:00:b6:4e	1	1	0	0
2	0	st11	InfraNc	0-00066A00980015B	1	SUN FEB 06 06:28:15 2106	0	00:06:6a:00:b6:4f	1	1	0	0
3	0	st11	InfraNc	0-00066A00980015B	2	SUN FEB 06 06:28:15 2106	0	00:06:6a:00:b6:50	1	1	0	0
4	0	st11	InfraNc	0-00066A00980015B	3	SUN FEB 06 06:28:15 2106	0	00:06:6a:00:b6:51	1	1	0	0
5	0	st11	InfraNc	0-00066A00980015B	4	SUN FEB 06 06:28:15 2106	0	00:06:6a:00:b6:52	1	1	0	0
6	0	st13	InfraNc	0-00066A009800034E	0	TUE MAR 20 10:58:23 2007	1	00:06:6a:00:b6:53	1	1	0	0
7	0	st13	InfraNc	0-00066A009800034E	1	SUN FEB 06 06:28:15 2106	0	00:06:6a:00:b6:54	1	1	0	0
8	0	st13	InfraNc	0-00066A009800034E	2	SUN FEB 06 06:28:15 2106	0	00:06:6a:00:b6:55	1	1	0	0
9	0	st13	InfraNc	0-00066A009800034E	3	SUN FEB 06 06:28:15 2106	0	00:06:6a:00:b6:56	1	1	0	0
10	0	st13	InfraNc	0-00066A009800034E	4	SUN FEB 06 06:28:15 2106	0	00:06:6a:00:b6:57	1	1	0	0
11	0	st10	InfraNc	0-00066A00980045E0	0	TUE MAR 20 08:47:44 2007	1	00:06:6a:00:b6:58	1	1	0	0
12	0	st10	InfraNc	0-00066A00980045E0	1	SUN FEB 06 06:28:15 2106	0	00:06:6a:00:b6:59	1	1	0	0
13	0	st10	InfraNc	0-00066A00980045E0	2	SUN FEB 06 06:28:15 2106	0	00:06:6a:00:b6:5a	1	1	0	0
14	0	st10	InfraNc	0-00066A00980045E0	3	SUN FEB 06 06:28:15 2106	0	00:06:6a:00:b6:5b	1	1	0	0
15	0	st10	InfraNc	0-00066A00980045E0	4	SUN FEB 06 06:28:15 2106	0	00:06:6a:00:b6:5c	1	1	0	0
16	0	st12	InfraNc	0-00066A0098001DC	0	TUE MAR 20 09:32:55 2007	1	00:06:6a:00:b6:5d	1	1	0	0
17	0	st12	InfraNc	0-00066A0098001DC	1	SUN FEB 06 06:28:15 2106	0	00:06:6a:00:b6:5e	1	1	0	0
18	0	st12	InfraNc	0-00066A0098001DC	2	SUN FEB 06 06:28:15 2106	0	00:06:6a:00:b6:5f	1	1	0	0
19	0	st12	InfraNc	0-00066A0098001DC	3	SUN FEB 06 06:28:15 2106	0	00:06:6a:00:b6:60	1	1	0	0
20	0	st12	InfraNc	0-00066A0098001DC	4	SUN FEB 06 06:28:15 2106	0	00:06:6a:00:b6:61	1	1	0	0
21	0	st11	InfraNc	0-00066A00980015B	0	SUN FEB 06 06:28:15 2106	0	00:06:6a:00:b6:62	3	1	0	0
22	0	st11	InfraNc	0-00066A00980015B	1	SUN FEB 06 06:28:15 2106	0	00:06:6a:00:b6:63	3	1	0	0
23	0	st11	InfraNc	0-00066A00980015B	2	TUE MAR 20 10:58:23 2007	1	00:06:6a:00:b6:64	3	1	0	0
24	0	st11	InfraNc	0-00066A00980015B	3	SUN FEB 06 06:28:15 2106	0	00:06:6a:00:b6:65	3	1	0	0
25	0	st11	InfraNc	0-00066A00980015B	4	SUN FEB 06 06:28:15 2106	0	00:06:6a:00:b6:66	3	1	0	0
26	0	st13	InfraNc	0-00066A009800034E	0	SUN FEB 06 06:28:15 2106	0	00:06:6a:00:b6:67	4	1	0	0
27	0	st13	InfraNc	0-00066A009800034E	1	SUN FEB 06 06:28:15 2106	0	00:06:6a:00:b6:68	4	1	0	0
28	0	st13	InfraNc	0-00066A009800034E	2	SUN FEB 06 06:28:15 2106	0	00:06:6a:00:b6:69	4	1	0	0

For each Virtual NIC, the following information is displayed:

- Virtual NIC

A number identifying the Virtual NIC to the user.

- In Use

Indicates whether the IOC is in use by the Host. A value of 1 indicates the Host GUID identified in the Last Host GUID column is utilizing this Virtual NIC. A value of 0 indicates that no host is utilizing this Virtual NIC.

✦ Last Host Name

The name of the host that last used the IOC.

✦ Remote Host Types

Identifies the type of remote IB host (e.g., VirtualNIC). This field is valid when the In Use field has a value of 1.

✦ Last Host GUID

The GUID of the Channel Adapter of the last host that used the IOC. If the In Use field has a value of 1, this is the GUID of the host currently utilizing the Virtual NIC.

✦ Last Host Instance

An index that the Host provides to the EVIC. This index is used by the EVIC in conjunction with the Last Host GUID and the IOC Number to determine whether the Virtual NIC currently exists in the Virtual NIC Information window. If the Virtual NIC does not exist, the EVIC adds the Virtual NIC to the table and assigns it a MAC address which has not been previously used by another host. If a virtual NIC does exist, the EVIC assigns the same MAC address it had previously used.

Since the maximum number of Virtual NICs supported by a EVIC is 128, the connection request from a host will be refused if the limit has been reached.

✦ Date Last Used

If the IOC is currently in use, this field indicates the time at which it connected. If the IOC is *not* currently in use, this field indicates when the Host disconnected from the IOC

✦ MTU

The maximum transmission unit. Valid only when the In Use field value is 1.

✦ MAC

The default unicast address of the Virtual NIC.

✦ IOC

An index into the IOC table.

✦ Ethernet Port

Identifies which of the 2 EVIC Ethernet ports a Virtual NIC is utilizing to access the Ethernet network.

✦ Control QP

The queue pair number that the control path is using.

• Data QP

The queue pair number that the data path is using.

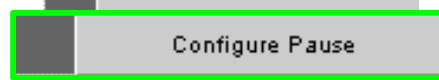
4.3.2

### Configure Pause

As defined by the IEEE 802.3x specification, PAUSE is a simple stop-start form of flow control. A device can temporarily halt incoming data by sending a PAUSE frame, which is a parameter indicating the length of time the sender should wait before sending additional data.

If enabled, the EVIC port issues a PAUSE command across the Ethernet port when the number of receive buffers currently posted to the MAC falls below a predetermined value. The PAUSE condition is relieved when the number of receive buffers currently posted to the MAC exceeds this predetermined value. An EVIC port will always react to a *received* PAUSE command.

**Figure 4-19. Configure Pause**

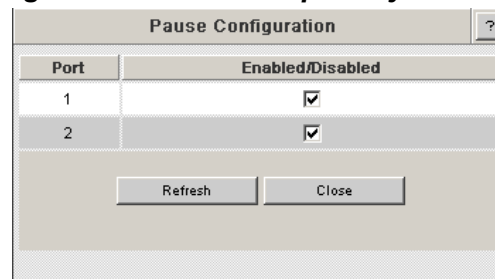


**NOTE:** Pause is enabled on both Ethernet ports by default. Disabling Pause is currently not an option.

To view the Pause Configuration window:

1. From Menu, select **Configuration**.
2. Select **Configure Pause**. The Pause Configuration window is displayed:

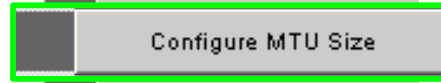
**Figure 4-20. Pause Capability Window**



3. For each EVIC port, select **ENABLED** or **DISABLED**.

### 4.3.3 Configure MTU Size

**Figure 4-21. Configure MTU Size**



To configure MTU size, perform the following tasks.

1. From Menu, select **Configuration**.
2. Select **Configure MTU Size**. The MTU Capability window is displayed:

**Figure 4-22. MTU Capability Window**

Current	Next	Min	Max
8146	<input type="text" value="8146"/>	1500	8174

3. In the **Next** field, enter a number between **1500** and **8174** (the maximum jumbo frame size currently supported). This value should be equal to or greater than the largest MTU size of any of the VirtualNIC host connections using the EVIC. If it is not, host will be unable to connect.

**NOTE:** Values larger than 1500 bytes are used to support Jumbo Frames. When enabling Jumbo Frames, make certain that all devices in the Ethernet network are configured to support the same MTU size. Additionally, If any of the Ethernet ports are using tagged VLANs, the MTU size should be increased by 4 bytes (even if the port is not using jumbo frames), since a VLAN tag adds 4 bytes to the message size of a packet. Additionally, an MTU value that is larger than is required may degrade performance.

4. Click **Apply**.

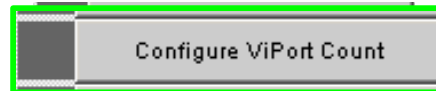
**NOTE:** The EVIC must be rebooted for the new MTU size to be updated.

### 4.3.4 ViPort Count Configuration

Configuring ViPort counts allows the user to set the number of host connections allowed below the maximum supported by the VIO hardware. Doing so allows users

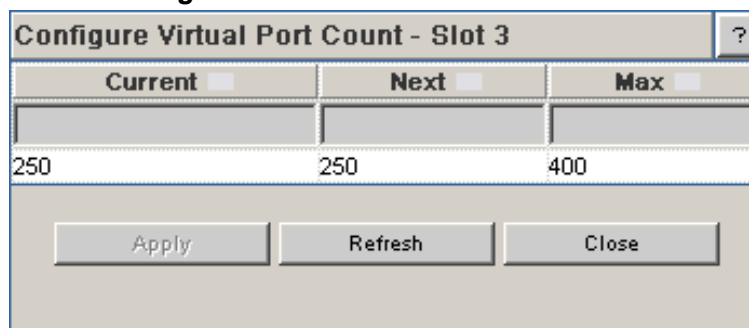
to have more Ethernet buffers per ViPort when not using all the host connections (i.e. ViPorts).

**Figure 4-23. VPort Count**



1. From Menu, select **Configuration**.
2. Select **Configure ViPort Count**. The ViPort Count window is displayed:

**Figure 4-24. ViPort Count Window**



Current	Next	Max
250	250	400

Apply Refresh Close

Following is a high-level description for each field in the window:

**Current**

The current number of host virtual ports in use (view only).

**Next**

Represents the number of virtual ports that will be in use following a reboot. Can be modified by the user.

**Max**

The maximum number of virtual ports available (view only).

3. If the user has updated the **Next** field, click **Apply**. The ViPort Count will be updated following a reboot.

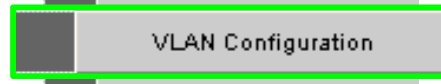
**4.3.5**

**VLAN Configuration**

VLAN Configuration allows the user to configure the virtual local area network as specified in IEEE 802.1p and 802.1q.

**NOTE:**When using tagged VLANs for Ethernet ports, the MTU size should be changed to 1504 since a VLAN tag adds 4 bytes to the message size of a packet. For more information on setting MTU size, please refer to the section “Configure MTU Size” on page 4-13.

**Figure 4-25. VLAN Configuration**



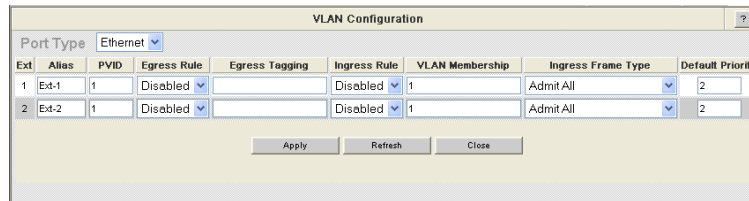
1. From Menu, select **Configuration**.
2. Select **VLAN Configuration**. The VLAN Configuration window is displayed.

**NOTE:**If the user is configuring VLAN tagging on Ethernet ports only (and not on any host ports), all default values for **PortType=Host** are acceptable.

4.3.5.1

**Port Type: Ethernet**

**Figure 4-26. VLAN Configuration Window: Ethernet Ports**



Ext	Alias	PVID	Egress Rule	Egress Tagging	Ingress Rule	VLAN Membership	Ingress Frame Type	Default Priority
1	Ext-1	1	Disabled		Disabled	1	Admit All	2
2	Ext-2	1	Disabled		Disabled	1	Admit All	2

Following is a high-level description for each field in the window:

**Port Type**

A user can select between "Ethernet" and "Host". If set to **Ethernet**, all fields on the screen are relative to the two external Ethernet ports of the EVIC.

**Ext**

Specifies the external Ethernet port number.

**Alias**

Alias is the user assigned name for the external port.

**PVID**

The Primary VLAN ID (PVID) of a port. For any incoming frame(s) without a VLAN tag, or with a VLAN ID of 0 this column specifies which VLAN the incoming frame(s) will be associated with. By default, untagged packets or those with a VLAN ID of 0 (also known as priority tagged frames) are assigned

the VLAN specified by the PVID value (which defaults to 1). The PVID of a port should be between 1 and 4094.

### Egress Rule

This is a filter on the forwarded packets on a per-port basis. The user can enable or disable the filter. If the Egress Rules field is enabled, the **Egress Tagging** field is enabled.

If Egress Rules are set to **Disabled**, a frame is sent out the external Ethernet port without a VLAN tag, or with a VLAN ID of 0 if a Priority value is to be included in the frame.

If the Egress Rules are set to **Enabled**, and the VLAN of a packet is in the VLAN Membership field of the Ethernet port, the frame is sent out the external Ethernet port. Otherwise the frame is discarded (i.e., not sent out the Ethernet port). When the Egress Rule is enabled, the user should typically include the PVID value in the VLAN Membership.

### Egress Tagging

Indicates whether the outgoing packet should be tagged with the specified VLAN ID. The tagging is enabled only if the Egress Rule is **Enabled**. A user can add the port to a particular VLAN by specifying the VLAN ID in this field. Deleting a VLAN ID from this field removes the port from this VLAN. Multiple VLAN IDs should be specified as a space-separated list. The valid VLAN ID values are between 1 and 4094.

- ❑ If the VLAN of a packet is listed in the Egress Tagging field for a specified external Ethernet port, the packet is sent with a VLAN tag.
- ❑ If the VLAN of the packet is not listed in the Egress Tagging field for a specified external Ethernet Port, the packet is sent untagged. An exception to this would be if a host has specified a priority value, in which case the packet is sent with a VLAN tag but with a VLAN ID of 0.

The Egress Tagging field contains a list of space-separated VLAN IDs, which should be all the VLAN IDs for devices that understand VLAN tags reachable over a specified external Ethernet port.

### Ingress Rule

Is a filter on the incoming packets (on a per-port basis). A user can enable or disable the filter. If the rule is enabled then the VLAN Membership and Ingress Frame Type fields are enabled.

If this is set to **Disabled**, no filtering is done based on the VLAN tag (or absence of a VLAN tag). Any packet received on the port is forwarded to the Egress Rules of the appropriate host port for possible filtering.



If the Ingress Rules are set to **Enabled**, the VLAN Membership and Ingress Frame Type values are checked before forwarding the frame to the Egress Rules of the appropriate host port for possible filtering.

#### VLAN Membership

Indicates which VLANs a port is member of. A user can add or delete the port to a particular VLAN by specifying the VLAN ID. Multiple VLAN IDs should be specified as a space-separated list. A valid VLAN ID is between 1 and 4094.

When Ingress Filtering is enabled, the following rules apply. Tagged frames received on the Ethernet port will be forwarded if the VLAN ID of the frame is in the VLAN Membership list. Untagged and priority tagged frames received on the Ethernet link will be forwarded if the PVID of the Ethernet port is in the VLAN Membership list. Otherwise the frame is discarded.

#### Ingress Frame Type

The Ingress Frame Type is a rule controlling whether non-VLAN tagged frames are accepted. When the Ingress Frame Type is set to Admit All, all packets (both VLAN and non-VLAN tagged) are accepted. Otherwise, only packets that arrived with an explicit VLAN tag are accepted.

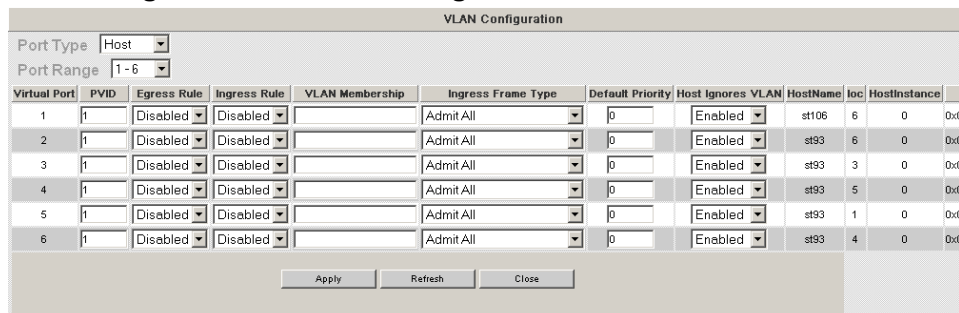
#### Default Priority

Indicates the 802.1p-based priority of a packet if the incoming frame does not contain a VLAN tag. The priority should be between 0 and 7.

#### 4.3.5.2

### Port Type: Host

**Figure 4-27. VLAN Configuration Window: Host Ports**



Virtual Port	PVID	Egress Rule	Ingress Rule	VLAN Membership	Ingress Frame Type	Default Priority	Host Ignores VLAN	HostName	loc	HostInstance
1	f1	Disabled	Disabled		Admit All	0	Enabled	st106	6	0 0x0
2	f1	Disabled	Disabled		Admit All	0	Enabled	st93	6	0 0x0
3	f1	Disabled	Disabled		Admit All	0	Enabled	st93	3	0 0x0
4	f1	Disabled	Disabled		Admit All	0	Enabled	st93	5	0 0x0
5	f1	Disabled	Disabled		Admit All	0	Enabled	st93	1	0 0x0
6	f1	Disabled	Disabled		Admit All	0	Enabled	st93	4	0 0x0

Following is a high-level description for each field in the window:

#### Port Type

A user can select between "Ethernet" and "Host". If set to **Host**, all fields on the screen are relative to the 256 virtual ports between hosts running the VNIC driver and the EVIC.

**NOTE:**An EVIC contains both Ethernet and "virtual" ports. A virtual port is a logical port going from the EVIC to an InfiniBand host. When a VirtualNIC host connects to an IOC of the EVIC, the EVIC assigns a virtual port to the connection.

#### Port Range

A dropdown list where a user selects virtual ports (in 6-port increments).  
Selecting one of the port ranges displays the information for those virtual ports.

#### Virtual Port

Displays the virtual port numbers selected in the Port Range dropdown list.

#### PVID

The Primary VLAN ID (PVID) of a port. For any frame(s) without a VLAN tag, or with VLAN ID of 0 this column specifies which VLAN the frame(s) will be associated with. By default, untagged packets or those with a VLAN ID of 0 (also known as priority tagged frames) are assigned the VLAN specified by the PVID value (which defaults to 1). Packets from a host are untagged unless the interface has been set up with a VLAN tag (e.g., through the use of the Linux `vconfig` command). The PVID of a port must be between 1 and 4094.

#### Egress Rule

This is a filter on the forwarded packets on a per-port basis. The user can enable or disable the filter. If the Egress Rules field is enabled, the **Egress Tagging** field is enabled.

If Egress Rules are set to **Disabled**, a frame is sent out the external Ethernet port without a VLAN tag, or with a VLAN ID of 0 if a Priority value is to be included in the frame.

If the Egress Rules are set to **Enabled**, and the VLAN of a packet is in the VLAN Membership field of the Ethernet port, the frame is sent out the external Ethernet port. Otherwise the frame is discarded (i.e., not sent out the Ethernet port). When the Egress Rule is enabled, the user should typically include the PVID value in the VLAN Membership.

In general, the Egress Rules should be **Enabled** only if the host interface has been configured to be in a VLAN (e.g., through the use of the Linux `vconfig` command).

#### Ingress Rule

Is a filter on the incoming packets (on a per-port basis). A user can enable or disable the filter. If the rule is enabled then the VLAN Membership and Ingress Frame Type fields are enabled.

If this is set to **Disabled**, no filtering is done based on the VLAN tag (or absence of a VLAN tag). Any packet received on the port is forwarded to the Egress Rules of the appropriate host port for possible filtering.

If the Ingress Rules are set to **Enabled**, the VLAN Membership and Ingress Frame Type values are checked before forwarding the frame to the Egress Rules of the appropriate host port for possible filtering.

**NOTE:** A frame coming from a Linux host will have a VLAN tag only if the host interface has been configured to send vlan tags (e.g., with a `vconfig` command).

#### VLAN Membership

Indicates which VLANs a port is member of. A user can add or delete the port to a particular VLAN by specifying the VLAN ID. Multiple VLAN IDs should be specified as a space-separated list. A valid VLAN ID is between 1 and 4094.

When Ingress Filtering is enabled, the following rules apply. Tagged frames received on the Ethernet port will be forwarded if the VLAN ID of the frame is in the VLAN Membership list. Untagged and priority tagged frames received on the Ethernet link will be forwarded if the PVID of the Ethernet port is in the VLAN Membership list. Otherwise the frame is discarded.

#### Ingress Frame Type

The Ingress Frame Type is a rule controlling whether non-VLAN tagged frames are accepted. When the Ingress Frame Type is set to Admit All, all packets (both VLAN and non-VLAN tagged) are accepted. Otherwise, only packets that arrived with an explicit VLAN tag are accepted.

#### Default Priority

Indicates the 802.1p-based priority of a packet if the incoming frame does not contain a VLAN tag. The priority should be between 0 and 7.

#### Host Ignores VLAN

If set to **Enabled** (default), the host ignores the current VLAN configuration. This field should be set to **Disabled** if the host is specifying a VLAN (e.g., the `vconfig` command is used on the interface on a Linux host).

#### Host Name

For virtual ports that are currently connected, this field indicates the host name associated with a specific virtual port.

#### IOC

The IOC number of the EVIC associated with a virtual port. In an `/etc/sysconfig/ics_inic.cfg` file, each `'create'` item defines a virtual port. The IOC number for a particular virtual port comes from the `'create'` block for the virtual port. The Host Instance value also comes from the `'create'` block for the virtual port. These fields are only valid for the virtual ports in use.

### Host Instance

For each instance that a host is connected to the same IOC, a unique number must be assigned. The default value is zero (range = 0-255).

### Host GUID

The globally unique identifier for a host port GUID. This is the port GUID of the HCA port of the virtual port specified in a 'create' block of an `/etc/sysconfig/ics_inic.cfg` file of a host. This field is only valid for the virtual port(s) in use.

**NOTE:** For information on assigning a host connection to a specific viPort using the `ethVirtAssignedHostSet` command, refer to the section "Appendix D - Command Line Interface".

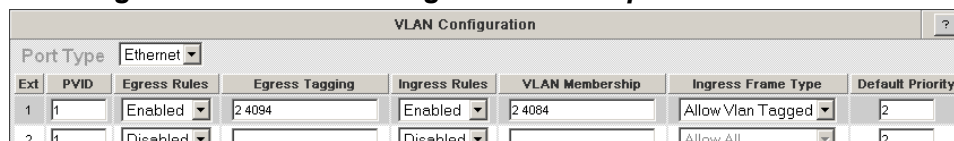
#### 4.3.5.3

### VLAN Configuration Example

An Ethernet network can be accessed via Ethernet port 1, which contains Ethernet hosts in VLAN 2 and Ethernet hosts in VLAN 4094. InfiniBand (IB) host 1 needs to be a member of VLAN 2 and IB host 2 needs to be a member of VLAN 4094.

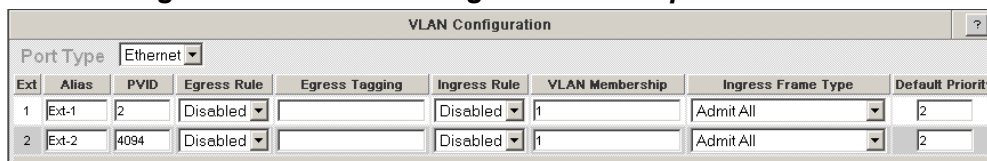
In this example, IB host 1 is virtual port 1 and IB host 2 is virtual port 2. Given these parameters, the following configuration allows communication between the IB hosts and the appropriate Ethernet hosts:

**Figure 4-28. VLAN Configuration Example: Ethernet Ports**



Ext	PVID	Egress Rules	Egress Tagging	Ingress Rules	VLAN Membership	Ingress Frame Type	Default Priority
1	1	Enabled	24094	Enabled	24084	Allow Vlan Tagged	2
2	1	Disabled		Disabled		Allow All	5

**Figure 4-29. VLAN Configuration Example: Host Ports**



Ext	Alias	PVID	Egress Rule	Egress Tagging	Ingress Rule	VLAN Membership	Ingress Frame Type	Default Priority
1	Ext-1	2	Disabled		Disabled	1	Admit All	2
2	Ext-2	4094	Disabled		Disabled	1	Admit All	2

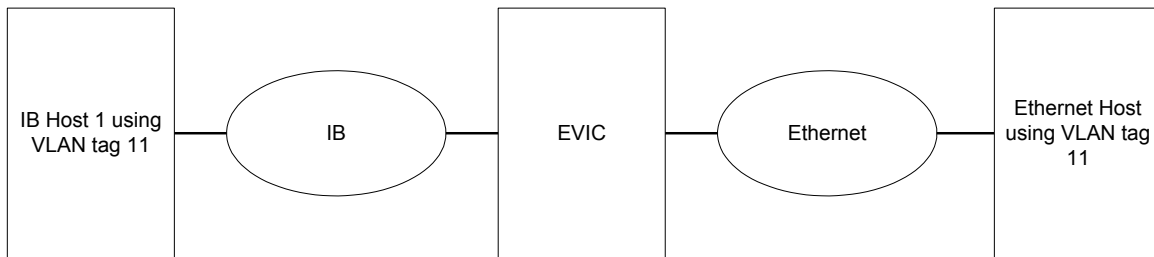
**NOTE:** The PVID on the Ethernet port does not need to be changed since all frames received from the Ethernet network will have VLAN tags and non-zero VLAN IDs.

## 4.3.5.4

**VLAN Setup**

This section describes the necessary procedures to configure an IB host to communicate with an Ethernet host(s), both hosts using VLAN tags.

**Figure 4-30. VLAN Setup**



## 4.3.5.4.1

**Host Interface Configuration**

1. On a Linux Host, use the `vconfig` command to assign the interface in the `ics_inic.cfg` file to VLAN 11 (using the example in [figure 4-30](#)). Assume that the `ics_inic` file contains the line:

```
{CREATE; NAME="eioc2";
```

```
PRIMARY={IOCGUID=0x66a02e1000110; INSTANCE=1; PORT=1; }
```

```
}
```

and `ics_inic` has been started (`/etc/init.d/ics_inic start`).

2. Using the `vconfig` command, create an interface in VLAN 11:

```
vconfig add eioc2 11
```

This creates an interface named `eioc2.11` that sends/receives packets with a VLAN tag of 11.

Make certain there is an

`/etc/sysconfig/network-scripts/ifcfg-eioc2.11` file, as well as the file `/etc/sysconfig/network-scripts/ifcfg-eioc2` (on some kernels the name of the directory will be `/etc/sysconfig/network` instead of `/etc/sysconfig/network-scripts`). For the remainder of this section, assume that the IP address of `eioc2.11` is 172.26.48.25.

#### 4.3.5.4.2

### EVIC Configuration

Access the EVIC CLI using the `rlogin <slot #>` command within the switch CLI. Find the interface with the `hostname` (i.e., `IBHost1` in this example), `IOCGuid` (i.e., `0x66a02e1000110` in this example), and `Instance` (i.e., `1` in this example) using the `ethVirtInfoTable` command. Assume that the `host/IOC/Instance` combination was found in the row for `virtPort 56`. The user must perform the following steps for the host ports (i.e., `viPorts`) and the Ethernet ports to allow VLAN tagging between the host virtual port `virtPort 56` and the Ethernet network. In the example assume that external Ethernet port `2` is connected to the Ethernet network.

#### 4.3.5.4.3

### Host Port Configuration

1. Enable Egress rules on `virtPort 56` with the command `vlanEgressRuleSet` command:  

```
vlanEgressRuleSet vi 56 1
```
2. Enable Ingress Rules on `virtPort 56` with the command `vlanIngressRuleSet`:  

```
vlanIngressRuleSet vi 56 1
```
3. Allow packets in VLAN `11` to be sent to `virtPort 56` with the command `vlanMapMemberSet`:  

```
vlanMapMemberSet vi 56 11 1
```
4. Remove the Ignore VLAN option on `virtPort 56` with the command `ethVirtIgnoreVlanSet`:  

```
ethVirtIgnoreVlanSet 56
```

The configuration of the host ports on the EVIC is now complete. Next, the Ethernet ports of the EVIC must also be configured.

#### 4.3.5.4.4

### Ethernet Port Configuration

Ethernet ports are configured in a similar way. As in the previous example, Ethernet port `2` is used. To configure Ethernet ports, do the following:

1. Enable egress rules on Ethernet Port `2` with the command `vlanEgressRuleSet`:  

```
vlanEgressRuleSet eth 2 1
```
2. Tag packets going to Ethernet port `2` with VLAN tag `11` with the command `vlanMapTaggedSet`:  

```
vlanMapTaggedSet eth 2 11 1
```

3. Enable Ingress rules on Ethernet port 2 with the command `vlanIngressRuleSet`:

```
vlanIngressRuleSet eth 2 1
```

4. Allow packets in VLAN 11 to be sent over Ethernet port 2 with the command `vlanMapMemberSet`

```
vlanMapMemberSet eth 2 11 1
```

#### 4.3.5.4.5

### Additional Notes

All of these commands are active when issued, with the exception of the `ethVirtIgnoreVlanSet` command. This command takes effect the next time the `virtPort` comes up. A `virtPort` comes up when the `ics_inic` driver is started and the EVIC is also up. Therefore, either the EVIC must be rebooted or `ics_inic` must be restarted on the host at the other end of the `virtPort`. Restart `ics_inic` as follows:

```
/etc/init.d/ics_inic restart
```

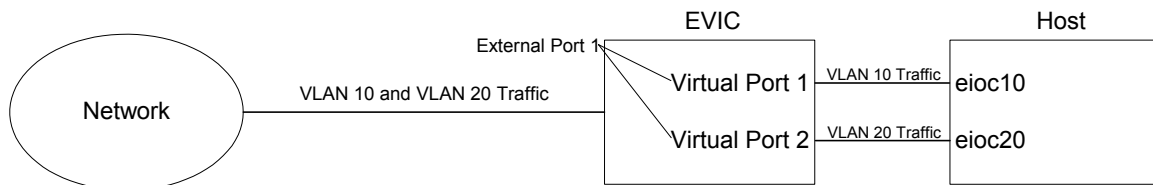
Once done, any VLAN definitions made containing interfaces referenced in the `ics_inic.cfg` file need to be redone. In the case of this example, the command `vconfig add eioc2 11` needs to be reissued.

#### 4.3.5.5

### Alternative VLAN Setup

This is an example explains how to setup two interfaces on a host, each on a different VLAN.

**Figure 4-31. Alternative VLAN Setup**



**NOTE:** For this example, `eioc10` will be on VLAN 10 and `eioc20` will be on VLAN 20.

1. Host configuration. Edit the file `/etc/sysconfig/ics_inic.cfg` as follows:

```
{CREATE; NAME="eioc10";
  PRIMARY={IOCGUID=0x66a01e1000abc; INSTANCE=10; PORT=1; } }
{CREATE; NAME="eioc20";
  PRIMARY={IOCGUID=0x66a01e1000abc; INSTANCE=20; PORT=1; } }
```

This sets up the two interfaces to the same external port 1 on the EVIC with a GUID of 00066A01E1000ABC. This is possible because each `INSTANCE` is

different. The instance and name are not required to be the same as the VLAN number.

The two virtual ports on the EVIC that have been setup need to be configured.

2. From the EVIC GUI, select Configuration, VLAN Configuration and Port Type as Host. Set the PVID to the VLAN number 10 or 20 for the virtual port that corresponds to the correct HostName, HostInstance, and HostGUID.
3. Select Configuration, VLAN Configuration and Port Type Ethernet. Enable Ingress Rules and set the VLAN Membership to include the two desired VLANs 10 and 20.

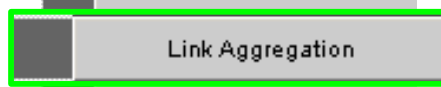
The EVIC will know that traffic coming from eioc10 is on VLAN 10 and eioc20 is on VLAN 20.

#### 4.3.6

### Link Aggregation

Link Aggregation (or trunking) is a method of combining physical network links into a single, logical link for increased bandwidth. Link Aggregation also provides load balancing where processing and communication activity is distributed across several links in a trunk to reduce the likelihood that a single link becomes over-subscribed.

**Figure 4-32. Link Aggregation**



1. From Menu, select **Configuration**.
2. Select **Link Aggregation**. The Link Aggregation window is displayed:

**Figure 4-33. Link Aggregation Window**

Link Aggregation											
Port No.	Link Status	Lacp Enabled	Current Aggr#	Manual Aggr#	Lacp State	Fallover	Actor Key	Actor ID	PartnerPort	PartnerKey	PartnerID
1	Up	Yes ▾	0	0	Fail	0	1	00:06:6a:00:00:11	0	1	00:00:00:00:00:00
2	Up	Yes ▾	0	0	Fail	0	1	00:06:6a:00:00:11	0	1	00:00:00:00:00:00

Following is a high-level description for each field in the window:

**Ext**

The external Ethernet Port number that applies to the remainder of the settings in each row. This field is viewable only.

**Link Status**



Indicates whether the Ethernet link is up or down (viewable only).

#### LACP Enabled

Indicates whether the Link Aggregation Control Protocol (LACP , IEEE 802.3ad ) is enabled on the port. If LACP is enabled (i.e. LACP Enabled = Yes) then the current aggregation number is selected automatically and the actor key (1- 65535) should be specified (see 'actor key' definition later in this section). If LACP is disabled (i.e., LACP Enabled = No), then the aggregation index should be specified (see Manual Agg# definition below). Disabling LACP is also known as manual mode.

#### Current Agg #

This field describes the aggregation where a port is currently located. If two rows contain the same value, they are part of the same aggregation.

#### Manual Agg #

If LACP is disabled (i.e., LACP Enabled = No), then the user sets this field to describe which ports should be in the same aggregation.

#### LACP State

Indicates the LACP state (OK, N/A, or Fail). This field is view only.

#### Failover

The minimum number of links that must be remaining in an aggregation in order for aggregation failover to occur. When failover occurs for a port, traffic that would normally be directed over the link that went down is redistributed across the remaining links in the aggregation. Ports that are running in failover mode do not count towards the number of remaining links.

For an EVIC, this value should be 0 or 1.

If the value is 0, failover is disabled. In this case when a link goes down, all viPorts using that Ethernet port will receive a 'link down' event regardless of the state of other links in the aggregation. This causes the viPort to failover to the Secondary definition (this could possibly be a different EVIC).

If the value is 1 and a link goes down, there must be 1 or more remaining links in the aggregation for the viPort to consider the port to still be up and can continue to send data.

#### Actor Key

If LACP is enabled, then the user inputs an identical Actor Key in each row that is to be part of the same aggregation. If LACP is disabled, this field is greyed out. Valid values are 1-65535.

#### Actor ID

This field is set by the EVIC firmware. A remote Ethernet switch uses the combination of Actor ID and Actor Key to uniquely-define an aggregation.. This field is view only.

#### Partner Port

This field is significant for only the ports having LACP Enabled. For those ports, this indicates the the port number of the remote switch at the opposite end of the Ethernet cable. This field is view only.

#### Partner Key

This field is significant for only the ports having LACP Enabled. For those ports, this indicates the partner key for the aggregation of the remote switch at the opposite end of the Ethernet cable. This field is view only.

#### Partner ID

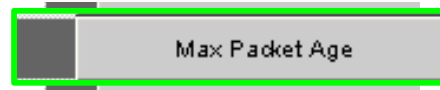
This field is significant for only the ports having LACP Enabled. For those ports, this indicates the partner ID for the aggregation of the remote switch at the opposite end of the Ethernet cable. This field is view only.

#### 4.3.7

### Maximum Packet Age

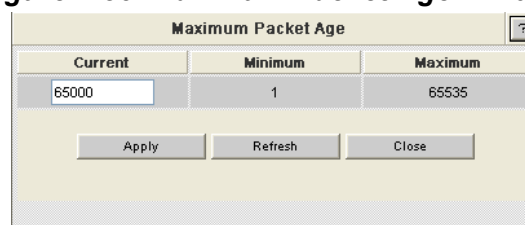
Maximum Packet Age allows the user to view and/or set the maximum packet age value (in milliseconds).

**Figure 4-34. Maximum Packet Age**



1. From Menu, select **Configuration**.
2. Select **Max Packet Age**. The Maximum Packet Age window is displayed:

**Figure 4-35. Maximum Packet Age Window**



Current	Minimum	Maximum
65000	1	65535

Apply Refresh Close

3. To change the maximum packet age, click in the **Current** text box and enter the new value (default equals 65,000 milliseconds).

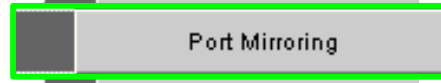
4. Click **Apply**.

4.3.8

**Port Mirroring**

Port mirroring is used for duplicating the traffic of a port (or ports) to another port for the purpose of traffic and/or network monitoring.

**Figure 4-36. Port Mirroring**



1. From Menu, select **Configuration**.
2. Select **Port Mirroring**. The Port Mirroring window is displayed:

**Figure 4-37. Port Mirroring Window**

Port Mirroring		
Mirror Port	Mirror State	Monitor Port
1	Disabled	
2	Disabled	

Apply    Refresh    Close

Following is a high-level description for each field in the window:

**Mirror Port**

The Mirror Port values represent the two external Ethernet ports of the EVIC. When a Mirror Port is enabled, traffic from a monitored port is sent out the Mirror Port. For example, if the mirror state for mirror port 1 is enabled, and the monitor port field for mirror port 1 has a value of 2, then traffic sent and received on ports 2 is sent out port 1 (that may have some form of traffic monitoring device attached).

**Mirror State**

Mirroring can be enabled or disabled on a port.

**Monitor Port**

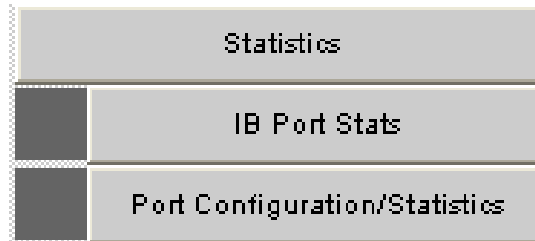
External port(s) whose traffic is duplicated to another port (i.e., the Mirror Port) for network monitoring. The selections are one or two.

**NOTE:**The monitor port must be a port different then the mirror port (e.g., port 1 cannot monitor itself).

3. Once any changes are made, click **Apply**.

#### 4.4 Statistics

**Figure 4-38. Statistics Submenu**



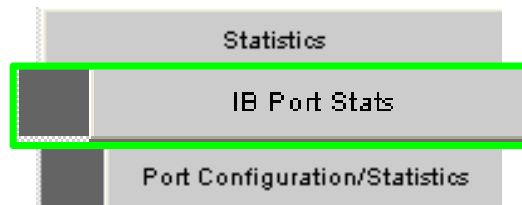
The Statistics submenu allows the user to monitor the following

- IB Port Statistics
- Ethernet Port Configuration and Statistics

##### 4.4.1 InfiniBand Port Statistics

The **IB Statistics** area provides IB port statistical information for the EVIC.

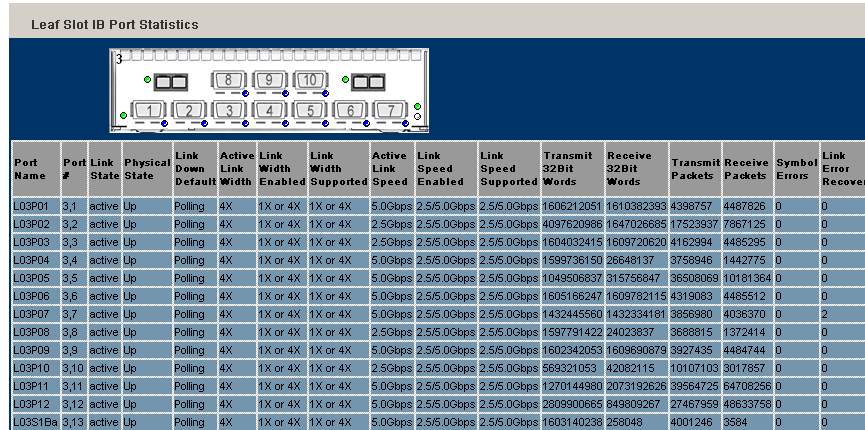
**Figure 4-39. IB Port Statistics**



To view port statistical information, do the following:

1. Select an EVIC port or from the **Statistics** submenu select **IB Port Stats**. The IB Port Statistics window is displayed.:

**Figure 4-40. IB Port Statistics**



The following are descriptions for each field in the Port Statistics area:

**Link State:**

Indicates whether the InfiniBand link associated with the physical port is up or down. Possible values are **no state change**, **down**, **init**, **armed**, **active**, and **unknown**.

**Physical State:**

Indicates whether the internal connection to the InfiniBand port is up or down. Possible values are **No State Change**, **Sleep**, **Polling**, **Disabled**, **Training**, **Up**, and **Error Recovery**.

**Link down default:**

Indicates the default down state as set by the Fabric Manager. Possible values are **No State Change**, **Sleep**, **Polling**, and **Unknown**.

**Active Link Width:**

Indicates the bandwidth of the link on the backplane. The bandwidth is specified as a multiplier of 2.5 Gbit/sec full duplex serial links. As an example, 4X specifies a bandwidth of 10 Gbit/sec.

**Link Width enabled:**

Indicates actual link width as opposed to the supported link width.

**Link Width supported:**

Indicates the link width in terms of multipliers of 2.5 Gbit/sec full duplex serial links supported by the port.

Active Link Speed:

Indicates the speed of the full duplex serial link. If the link width is 4x, the speed of each link is multiplied by 4 to determine the bandwidth of the link. DDR links have a link speed of 5.0, while SDR links have a link speed of 2.5.

Link Speed enabled:

Indicates the actual link speed as opposed to the supported link speed.

Link Speed supported:

The supported link speed of the port.

**4.4.1.1**

**InfiniBand Statistics:**

Transmit 32 Bit Words:

The number of 32-bit data words transmitted by the port, not including flow control and VCRC data.

Receive 32 Bit Words:

The number of 32-bit data words received by the port, not including flow control and VCRC data.

Transmit Packets:

The number of data packets transmitted by the port, not including flow control packets.

Receive Packets:

The number of data packets received by the port, not including flow control packets.

Symbol Errors:

The number of times a 8B10B encoding violation, or a disparity violation was detected. If multiple errors are detected simultaneously (in more than one lane), the counter only increments by one. The value of the counter is not incremented past 255. The Performance Manager may reset and/or consolidate the results of this counter.

Link Error Recovery:

Indicates the number of times the link error recovery process happened successfully. The value of the counter is not incremented past 255. The Performance Manager may reset and/or consolidate the results of this counter.

Link Downed:

The number of times the link error recovery process failed. The value of the counter is not incremented past 255. The Performance Manager may reset and/or consolidate the results of this counter.

Receive Errors:

Number of errors received on the port.

Remote Physical Error Received:

Number of remote physical errors received on the port.

Transmit Discards:

Number of port transmit discards.

Local Link Integrity Errors:

Number of local link integrity errors.

Excessive Buffer Overrun:

Number of excessive buffer overrun errors.

Pkey Violations Inbound:

Indicates the number of times an invalid partition key (PKey) was received. PKeys support an advanced InfiniBand feature for logically partitioning a physical subnet into logical access domains.

Pkey Violations Outbound:

Indicates the number of times an invalid PKey was sent. PKeys support an advanced InfiniBand feature for logically partitioning a physical subnet into logical access domains.

Raw Violations Inbound:

Number of times raw inbound packet discarded.

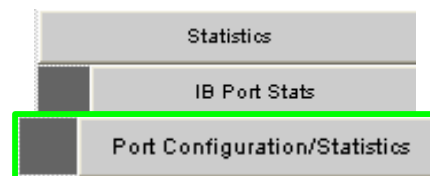
Raw Violations Outbound:

Number of times raw outbound packet was discarded.

#### 4.4.2

### Port Configuration and Statistics

**Figure 4-41. Port Configuration and Statistics Button**



The EVIC Port Configuration/Statistics window presents:

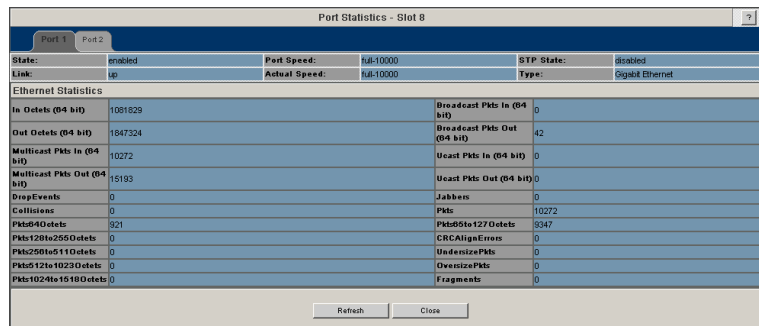
- EVIC port configuration information.
- Common RMON Ethernet Statistics (on a per EVIC port basis).

To view EVIC port statistics:

1. From Menu, select **Statistics**.
2. Select **Port Configuration/Statistics**. The Port Statistics Window is displayed.

**NOTE:**At the user’s discretion, the Port State for each EVIC Ethernet port can be **enabled** or **disabled**.

**Figure 4-42. Port Statistics Overview**



Port Statistics - Slot 8			
Port 1	Port 2		
State:	enabled	Port Speed:	full-10000
Link:	up	Actual Speed:	full-10000
STP State:	disabled	Type:	gigabit Ethernet
<b>Ethernet Statistics</b>			
In Octets (64 bit)	1081829	Broadcast Pkts In (64 bit)	0
Out Octets (64 bit)	1847324	Broadcast Pkts Out (64 bit)	42
Multicast Pkts In (64 bit)	10272	Unicast Pkts In (64 bit)	0
Multicast Pkts Out (64 bit)	15193	Unicast Pkts Out (64 bit)	0
DropEvents	0	Jabbers	0
Collisions	0	Pkts	10272
Pkts0Octets	921	Pkts0to127Octets	347
Pkts128to255Octets	0	CRCAlignErrm	0
Pkts256to511Octets	0	UndersizePkts	0
Pkts512to1023Octets	0	OversizePkts	0
Pkts1024to1518Octets	0	Fragments	0

The following are high-level descriptions for the EVIC port and Ethernet Statistics (EtherStats) displayed in the EVIC Port Configuration/Statistics Window.

**State**

Values are **Enabled** or **Disabled**.

**Set Speed**

The default value is full-10,000.

**STP State**

Indicates whether Spanning Tree Protocol (STP) is enabled or disabled.

**Link**

Indicates whether the link is up or down.

**Actual Speed**

Indicates the actual performance of the link as opposed to the set speed.

**Type**

Indicates the type of link layer connection.

**RMON (etherStats)**

**Drop Events**

The total number of events in which packets were dropped due to lack of resources.

**Octets**



The total number of octets of data received on the network.

#### Pkts

The total number of packets (including bad packets, broadcast packets, and multicast packets) received.

#### BroadcastPkts

The total number of good packets received that were directed to the broadcast address.

#### Multicast Pkts

The total number of good packets received that were directed to a multicast address.

#### CRCAlignErrors

CRC = Cyclic Redundancy Check.

The total number of packets received that had a length of between 64 and 1518 octets, inclusive, but had either a bad Frame Check Sequence (FCS) with an integral number of octets (FCS Error) or a bad FCS with a non-integral number of octets (Alignment Error).

#### UndersizePkts

The total number of packets received that were less than 64 octets long, but were otherwise well formed.

#### OversizePkts

The total number of packets received that were longer than 1518 octets, but were otherwise well formed.

#### Fragments

The total number of packets received that were less than 64 octets in length (excluding framing bits but including FCS octets) and had either a bad Frame Check Sequence (FCS) with an integral number of octets (FCS Error) or a bad FCS with a non-integral number of octets (Alignment Error).

#### Jabbers

The total number of packets received that were longer than 1518 octets (excluding framing bits, but including FCS octets), and had either a bad Frame Check Sequence (FCS) with an integral number of octets (FCS Error) or a bad FCS with a non-integral number of octets (Alignment Error).

#### Collisions

The best estimate of the total number of collisions on this Ethernet segment.

#### Pkts64Octets

---

The total number of packets (including bad packets) received that were 64 octets in length.

Pkts65to127Octets

The total number of packets (including bad packets) received that were between 65 and 127 octets in length inclusive.

Pkts128to255Octets

The total number of packets (including bad packets) received that were between 128 and 255 octets in length inclusive.

Pkts256to511Octets

The total number of packets (including bad packets) received that were between 246 and 511 octets in length inclusive.

Pkts512to1023Octets

The total number of packets (including bad packets) received that were between 512 and 1023 octets in length inclusive.

Pkts1024to1518Octets

The total number of packets (including bad packets) received that are 1024 or greater.

## *Appendix A*

# Troubleshooting and Technical Reference

This section describes troubleshooting scenarios and technical reference information for the SilverStorm 9000 series. The document is organized in the following manner:

Hardware Checks

Troubleshooting Scenarios

### A.1

## Hardware Checks

### A.1.1

## Switch

Problem	Fix
The Switch has no power	Ensure that the power cord(s) is attached to the Switch and the power outlet. Ensure that the power supply(s) is seated properly.

### A.1.2

## Power Supply

Problem	Fix
DC OK LED is off	Indicates DC power failure or no DC power is present
AC OK LED is off	Indicates AC power failure or no AC power is present

## A.1.3

**Fan**

Problem	Fix
Red LED is lit	Call Tech Support
Fan not running	Ensure fan is seated properly. If fan continues to be inoperable, call Tech Support

## A.1.4

**OOB Ethernet RJ45 Port**

Problem	Fix
The RJ45 Ethernet Port(s) have a RJ45 Cable with a Noise Problem: This problem would occur if there is a RJ45 cable that has poor shielding or contact of pins.	Ensure that the cable is a straight-through Cat 5 cable (not a crossover cable).  If using a straight-through cable and still experiencing this problem, test with a known good cable.
Absence of Ethernet link and/or intermittent Ethernet connectivity.	Ensure that the Ethernet cable is Cat 5E or Cat 6 certified.

## A.1.5

**Leaf Module IB Ports**

Problem	Fix
No LED	Make sure the IB cable is properly connected to both the leaf port and to the destination device. Make sure the other end of the connection is plugged into a functioning HCA or switch. Make sure the cable does not exceed maximum distances.
Bad IB Cable	Test with a known good IB cable.

## A.2 Troubleshooting Scenarios

### A.2.1 InfiniBand

This section documents common problems seen with the SilverStorm 9000 series switches.

#### A.2.1.1 Invalid IP Address entered via Console Port

##### Symptoms

Cannot access the Chassis Viewer browser window. The browser window times out and Chassis Viewer will not come up.

##### Resolution / Workaround

1. Invalid IP Address entered for the chassis or spine modules via the console port. Use the `showChassisIpAddr` command to be sure the address has been set correctly.
2. If attempting to access the switch from a remote LAN, ensure that the default gateway/default route addresses are set correctly.

#### A.2.1.2 Nodes cannot be seen in SilverStorm Fabric Viewer

##### Symptoms

When viewing the IB fabric with the SilverStorm Fabric Viewer, no nodes are seen.

##### Resolution / Workaround

1. Possibly a bad IB cable(s). Ensure that there is a Blue LED illuminated on the leaf module IB ports of the switch. Make sure that all devices (nodes) can be seen in the Fabric Viewer window.
2. Check the cables and connections subnet manager and the rest of the fabric.
3. The subnet manager may not be running on the IP address specified in Fabric Viewer. Check the IP address and make sure the subnet manager is in the Active state on that node. Depending on the configuration of that node, following a reboot the subnet manager may or may not restart.

