Lenovo Flex System SI4091 10Gb System Interconnect Module

Release Notes

for Networking OS 8.2

lenovo

Note: Before using this information and the product it supports, read the general information in the *Safety information and Environmental Notices and User Guide* documents on the Lenovo *Documentation* CD and the *Warranty Information* document that comes with the product.

Release Notes

This release supplement provides the latest information regarding Lenovo Networking OS 8.2 for the SI4091 10Gb System Interconnect Module.

This supplement modifies and extends the following Networking OS documentation for use with N/OS 8.2:

● *Lenovo Networking OS Application Guide for the* SI4091 10Gb System Interconnect Module

● *Lenovo Networking OS ISCLI Reference for the* SI4091 10Gb System Interconnect Module

● SI4091 10Gb System Interconnect Module *User's Guide*

The publications listed are available at the following address:

http://publib.boulder.ibm.com/infocenter/flexsys/information/index.jsp

Please keep these release notes with your product manuals.

Hardware Support

N/OS 8.2 software is supported on the SI4091 10Gb System Interconnect Module for the Lenovo Flex System. The SI4091 10Gb System Interconnect Module (SI4091), shown in Figure 1, is a high performance network switch that features tight integration with the Lenovo Flex System chassis management module.

Figure 1. SI4091 10Gb System Interconnect Module Faceplate
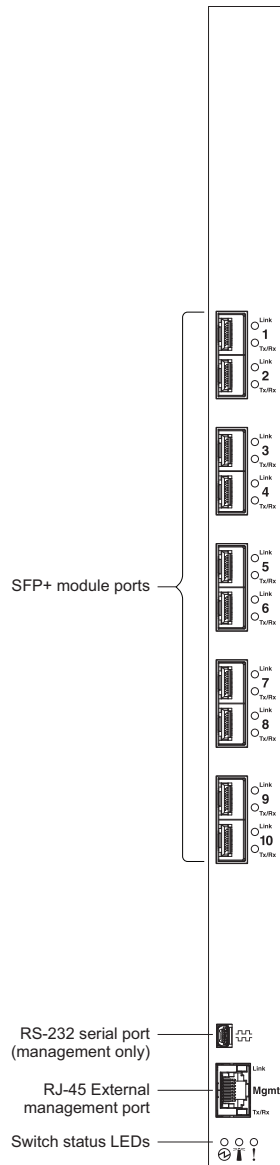
The SI4091 has the following port capacities:

- Ten external 10 Gb E/1 GbE SFP+ ports

- Single compute node port capability (fourteen 10 GbE/1 GbE internal ports)

- One RJ-45 external management port

- One RS-232 serial console port

Updating the Switch Software Image

The switch software image is the executable code running on the SI4091. A version of the image comes pre-installed on the device. As new versions of the image are released, you can upgrade the software running on your switch. To get the latest version of software supported for your , go to the following website:

http://www.ibm.com/support

To determine the software version currently used on the switch, use the following switch command:

```
# show version
```

The typical upgrade process for the software image consists of the following steps:

- Load a new software image and boot image onto an SFTP, FTP or TFTP server on your network.

- Transfer the new images to your switch.

- Specify the new software image as the one which will be loaded into switch memory the next time a switch reset occurs.

- Reset the switch.

For instructions on the typical upgrade process, see "Loading New Software to Your Switch" on page 5.

Loading New Software to Your Switch

The SI4091 can store up to two different switch software images (called `image1` and `image2`) as well as special boot software (called `boot`). When you load new software, you must specify where it should be placed: either into `image1`, `image2`, or `boot`.

For example, if your active image is currently loaded into `image1`, you would probably load the new image software into `image2`. This lets you test the new software and reload the original active image (stored in `image1`), if needed.

ATTENTION: When you upgrade the switch software image, always load the new boot image and the new software image before you reset the switch. If you do not load a new boot image, your switch might not boot properly (To recover, see "Recovering from a Failed Software Upgrade" on page 8).

To load a new software image to your switch, you will need the following:

- The image and boot software loaded on an SFTP, FTP or TFTP server on your network.

  Note: Be sure to download both the new boot file and the new image file.

- The hostname or IP address of the SFTP, FTP or TFTP server

  Note: The DNS parameters must be configured if specifying hostnames.

- The name of the new software image or boot file

When the software requirements are met, use the following procedure to download the new software to your switch.

1. In Privileged EXEC mode, enter the following command:

```
SI4091# copy {sftp|tftp|ftp} {image1|image2|boot-image}
```

2. Enter the hostname or IP address of the SFTP, FTP or TFTP server.

```
Address or name of remote host: <name or IP address>
```

3. Enter the name of the new software file on the server.

```
Source file name: <filename>
```

The exact form of the name will vary by server. However, the file location is normally relative to the SFTP, FTP or TFTP directory (for example, tftpboot).

4. If required by the SFTP, FTP or TFTP server, enter the appropriate username and password.

5. The switch will prompt you to confirm your request.

Once confirmed, the software will begin loading into the switch.

6. When loading is complete, use the following commands to enter Global Configuration mode to select which software image (image1 or image2) you want to run in switch memory for the next reboot:

```
SI4091# configure terminal
SI4091(config)# boot image {image1|image2}
```

The system will then verify which image is set to be loaded at the next reset:

```
Next boot will use switch software image1 instead of image2.
```

7. Reboot the switch to run the new software:

```
SI4091(config)# reload
```

The system prompts you to confirm your request. Once confirmed, the switch will reboot to use the new software.

Note: If you select "No" when asked to confirm the reload, any changes made to the configuration since the last reboot will be lost.

Supplemental Information

This section provides additional information about configuring and operating the SI4091 and N/OS.

The Boot Management Menu

The Boot Management menu allows you to switch the software image, reset the switch to factory defaults, or to recover from a failed software download.

You can interrupt the boot process and enter the Boot Management menu from the serial console port. When the system displays Memory Test, press **<Shift B>**. The Boot Management menu appears.

```
u-Boot 2009.06 (Nov 18 2014 - 18:50:46

CPU:   P1010, version: 1.0, (0x80f10010)
core:  E500, Version: 5.1, (0x80212151)
Clock Configuration:
       CPU0:800  MHz,
       CCB:400  MHz,
       DDR:333.333 MHz (666.667 MT/s data rate) (Asynchronous), IFC:100
MHZ
L1:    D-cache 32 KB enabled
       I-cache 32 KB enabled
Board: Flex System SI4081 System Interconnect Module
I2C:   ready
DRAM:   2 GB

Memory Test .........

Boot Menu Mode

FLASH: 32 MB
L2:    356 KB enabled
NAND:  1024 MiB
PCIE1: ROot complex of PCIe1,x1, regs @ 0xffe0a000
PCIE1: Bus 00 - 01
Net:   eTSEC1, eTSEC2, eTSEC3

Boot Management Menu
    1 - Change booting image
    2 - Change configuration block
    3 - Boot in recovery mode (tftp and xmodem download of images to
        recover switch)
    5 - Reboot
    6 - Exit

Please choose your menu option:
```

The Boot Management menu allows you to perform the following actions:

● To change the booting image, press **1** and follow the screen prompts.

● To change the configuration block, press **2** and follow the screen prompts.

● To perform a software image recovery, press **3** and follow the screen prompts.

● To reboot the switch press **5** and follow the screen prompts.

- To exit the Boot Management menu, press **6**. The booting process continues.

Recovering from a Failed Software Upgrade

The Boot Management menu allows you to perform fundamental device management operations, such as selecting which software image will be loaded, resetting the SI4091 to factory defaults, or recovering from a failed software download.

Use the following procedure to recover from a failed software upgrade.

1. Connect a PC to the serial Console port of the SI4091.

2. Open a terminal emulator program that supports XModem Download (for example, HyperTerminal, SecureCRT, PuTTY) and select the following port characteristics:

   - Speed: 9600 bps
   - Data Bits: 8
   - Stop Bits: 1
   - Parity: None
   - Flow Control: None

3. To access the Boot Management menu, you must interrupt the boot process from the Console port. Boot the SI4091, and when the system begins displaying Memory Test progress (a series of dots), press **<Shift B>**.

   The Boot Management menu will appear:

   ```
   Resetting the System ...
   Memory Test ...............................

   Boot Management Menu
       1 - Change booting image
       2 - Change configuration block
       3 - Boot in recovery mode (tftp and xmodem download of images to
           recover switch)
       5 - Reboot
       6 - Exit
   ```

4. Select **3** to boot in recovery mode. The following menu will appear:

   ```
   Please select one of the following options:
       T) Configure networking and tftp download an image
       X) Use xmodem 1K to serial download an image
       P) Physical presence (low security mode)
       R) Reboot
       E) Exit
   ```

   If you choose option **X** (Xmodem serial download), go to Step 5.

   If you choose option **T** (TFTP download), go to Step 6.

5. **Xmodem download:** When you see the following message, change the serial port characteristics to 115200 bps:

```
Change the baud rate to 115200 bps and hit the ENTER key before
initiating the download.
```

a. Press <**Enter>** to set the system into download accept mode. When the readiness meter displays (a series of "C" characters), start XModem on your terminal emulator.

b. When you see the following message, change the serial port characteristics to 9600 bps:

```
Change the baud rate back to 9600 bps, hit the <ESC> key.
```

c. When you see the following prompt, enter the image number where you want to install the new software and press **<Enter>**:

```
install software image 1 or 2 (hit return to just boot image): 1
```

The following message is displayed when the image download is complete:

```
Please select one of the following options:
    T) Configure networking and tftp download an image
    X) Use xmodem 1K to serial download an image
    P) Physical presence (low security mode)
    R) Reboot
    E) Exit
```

Continue to .

6. TFTP download: The switch prompts you to enter the following information:

```
Performing TFTP rescue. Please answer the following questions (enter 'q'
to quit):
IP Addr    :
Server Addr:
Netmask    :
Gateway    :
Image Filename:
```

a. Enter the required information and press **<Enter>**. You will see a display similar to the following:

```
          Host IP    : 10.10.98.110
          Server IP  : 10.10.98.100
          Netmask    : 255.255.255.0
          Broadcast  : 10.10.98.255
          Gateway    : 10.10.98.254
 Installing image 6.8.3_OS.img from TFTP server 10.10.98.100
```

b. When you see the following prompt, enter the image number where you want to install the new software and press **<Enter>**:

```
 Install image as image 1 or 2 (hit return to just boot image): 1
```

The following message is displayed when the image download is complete:

```
 Please select one of the following options:
    T) Configure networking and tftp download an image
    X) Use xmodem 1K to serial download an image
    P) Physical presence (low security mode)
    R) Reboot
    E) Exit
```

Continue to .

7. Image recovery is complete. Perform one of the following steps:

- Press **5** to reboot the switch.

- Press **6** to exit the Boot Management menu.

- Press the Escape key (**<Esc>**) to re-display the Boot Management menu.

Recovering a Failed Boot Image

Use the following procedure to recover from a failed boot image upgrade.

1. Connect a PC to the serial port of the switch.

2. Open a terminal emulator program that supports Xmodem download (for example, HyperTerminal, CRT, PuTTY) and select the following serial port characteristics:

- Speed: 9600 bps

- Data Bits: 8

- Stop Bits: 1
- Parity: None
- Flow Control: None

3. Boot the switch and access the Boot Management menu by pressing <**Shift B**> while the Memory Test is in progress and the dots are being displayed.

4. Select **3** to boot in recovery mode, then select X (Xmodem serial download). You will see the following display:

```
Perform xmodem download

To download an image use 1K Xmodem at 115200 bps.
```

5. When you see the following message, change the Serial Port characteristics to 115200 bps:

```
Change the baud rate to 115200 bps and hit the <ENTER> key before
initiating the download.
```

a. Press <**Enter**> to set the system into download accept mode. When the readiness meter displays (a series of "C" characters), start Xmodem on your terminal emulator.You will see a display similar to the following:

```
Extracting images ... Do *NOT* power cycle the switch.
**** RAMDISK ****
Un-Protected 38 sectors
Erasing Flash...
.................................... done
Erased 38 sectors
Writing to Flash...9....8....7....6....5....4....3....2....1....done
Protected 38 sectors
**** KERNEL ****
Un-Protected 24 sectors
Erasing Flash...
..................... done
Erased 24 sectors
Writing to Flash...9....8....7....6....5....4....3....2....1....
```

b. When you see the following message, change the Serial Port characteristics to 9600 bps:

```
Change the baud rate back to 9600 bps, hit the <ESC> key.
```

Boot image recovery is complete.

Chassis Management Module

When configuring the IP interface, which is dedicated to the internal management port (IF128, MGT1), you cannot use a subnet that is already configured on any other enabled interface (IF1-127). This results in IF128 being disabled and an IP configuration of all zeros displayed on the CMM user interface. The CMM event log will indicate that a "Duplicate route" was detected.

For example, consider is configured or enabled to the following IP address and mask:

```
Interface information:
127: IP4 192.168.71.120  255.255.255.0
```

The switch will reject an attempt made from the CMM CLI to configure the internal management port (MGT1, IF128) to the following IP address and mask:

```
system:switch[1]> ifconfig -i 192.168.71.130 -s 255.255.255.0
```

In this scenario, the switch rejects the attempt by disabling any current configuration on IF128, and responds to the CMM with an IP address, mask, and gateway that contains all zeros.

On the CMM CLI, the resulting condition appears as follows:

```
system:switch[1]> ifconfig
Ethernet ScSE
Enabled
-c  static
-i  0.0.0.0
-s  0.0.0.0
-g  0.0.0.0
system:mm[1]> displaylog
1  I  IOMod_01  04/03/12  08:02:49  (iomodule01) Duplicate route detected
to I/O module iomodule01.
2  I  IOMod_01  04/03/12  08:02:49  (iomodule01) I/O module 1 IP address
was changed to 0.0.0.0.
```

External Port Link Negotiation

Autonegotiation settings for each external switch port must be the same as those of the devices being connected. In a valid configuration, both ends of a port link are set with autonegotiation on, or both ends are set to specific speed and link properties with autonegotiation disabled.

Port Mirroring Tags BPDU Packets

When you perform port mirroring, Spanning Tree BPDU packets are VLAN tagged at the monitoring port. This is standard behavior of port mirroring on the SI4091. All mirrored egress traffic is tagged.

Secure Management Network

The following SI4091 attributes are reserved to provide secure management access to and from the chassis management module:

- MGT port (MGT1)
- VLAN 4095
- IP interface 126, 128
- Gateway 4

For more information about remotely managing the SI4091 through the external ports, see "Accessing the Switch" in the *Lenovo Networking OS 8.2 Application Guide*.

Secure Shell (SSH)

Because SSH key generation is CPU intensive, the SI4091 attempts to avoid unnecessary key generation. The process generates three server keys:

1. One key is generated to replace the current server key, if used.

2. A second key is generated as a spare, in case the current server key is used and the specified interval expires.

3. A third key is generated for use at the next reboot.

Therefore, if you never login via SSH, you will only see two key generation events. You may see all three events directly following a reboot. If you want to witness the key generation after the specified interval has expired, then you must login via SSH at least once during each expiration interval.

Syslog Configuration Tip

The *facility* parameter traditionally is used to correlate services (such as IP, CLI, etc.) to messages. This is done to distinguish between the different services that are running in the network/device. However, for the SI4091, there is a single configured facility value (0-7) used on all messages. By configuring a unique facility value for each switch, a single SYSLOG server can distinguish between the various SI4091s in the network. Refer to "System Host Log Configuration" in the *Command Reference.*

Trunk Group Configuration Tips

Please be aware of the following information when you configure trunk groups:

- Always configure trunk groups first, on both ends, before you physically connect the links.
- Configure all ports in a trunk group to the same speed (you cannot aggregate 1Gb ports with 10GBASE-SFP+ ports).
- Configure all ports in a trunk group with the same duplex.
- Configure all ports in a trunk group with the same flow control.

Known Issues

This section describes known issues for N/OS 8.2 on the SI4091 10Gb System Interconnect Module.

Note: Please review the Change History documentation posted with the Switch Firmware to check if any of these issues have been fixed in the latest release.

LACP Goes Down When Changing System Priority

Given a switch connected to two devices using an LACP portchannel, when you change the LACP system priority for that LACP channel, LACP goes down and then up for the members that were in LACP suspended state.

The ports that were initially in the LACP suspended state are then aggregated in the LACP portchannel (LACP up), and the ports connected to the second device, initially in LACP up state, are changed to the LACP suspended state. (ID: XB291490)

Flow Control Parameters Change When Auto-Negotiation is Disabled

When auto-negotiation is disabled and re-enabled on the interface portchannel, the link disconnects and reconnects. When reconnected, the flow control parameters for portchannel member ports are changed in the running configuration to non-default values.

Workaround: Manually set the flow control parameters for portchannel member ports to their default values. (ID: XB292214)

Packet Drop Interval Value Incorrect

The Packet Drop Interval default value is 2 instead of 30 minutes. To change it to 30, configure it manually using the following command:

```
SI4091(config)# logging pdrop interval 30
```

(ID: XB296301)

Link: 1 Gb Copper: Flow Control Parameters are Not Automatically Set to Configured Values When Auto-Negotiation is Turned Off

When auto-negotiation is turned off, flow control parameters are not automatically set to configured values.

Workaround: Manually disable and re-enable the port. (ID: XB295636)

SNMP FDB

When an SNMP FDB has the same MAC on a tagged port in multiple VLANs, only the entry for the first VLAN is displayed for that port.

Workaround: Use the following command to check FDB entries:

```
SI4091# show mac-address table
```

(ID: LV298603)