SOFTWARE UPGRADE GUIDE

Extreme SLX-OS Software Upgrade Guide, 17r.2.00

Supporting the Extreme SLX 9850 and SLX 9540 devices

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Contents

Preface

Document conventions

The document conventions describe text formatting conventions, command syntax conventions, and important notice formats used in Extreme technical documentation.

Notes, cautions, and warnings

Notes, cautions, and warning statements may be used in this document. They are listed in the order of increasing severity of potential hazards.

NOTE
A Note provides a tip, guidance, or advice, emphasizes important information, or provides a reference to related information.

ATTENTION
An Attention statement indicates a stronger note, for example, to alert you when traffic might be interrupted or the device might reboot.

CAUTION
A Caution statement alerts you to situations that can be potentially hazardous to you or cause damage to hardware, firmware, software, or data.

DANGER
A Danger statement indicates conditions or situations that can be potentially lethal or extremely hazardous to you. Safety labels are also attached directly to products to warn of these conditions or situations.

Text formatting conventions

Text formatting conventions such as boldface, italic, or Courier font may be used to highlight specific words or phrases.

Format	Description
bold text	Identifies command names.
	Identifies keywords and operands.
	Identifies the names of GUI elements.
	Identifies text to enter in the GUI.
italic text	Identifies emphasis.
	Identifies variables.
	Identifies document titles.
`Courier font`	Identifies CLI output.

Format	Description
	Identifies command syntax examples.

Command syntax conventions

Bold and italic text identify command syntax components. Delimiters and operators define groupings of parameters and their logical relationships.

Convention	Description
bold text	Identifies command names, keywords, and command options.
italic text	Identifies a variable.
value	In Fibre Channel products, a fixed value provided as input to a command option is printed in plain text, for example, **--show** WWN.
[ ]	Syntax components displayed within square brackets are optional. Default responses to system prompts are enclosed in square brackets.
{ **x** | **y** | **z** }	A choice of required parameters is enclosed in curly brackets separated by vertical bars. You must select one of the options. In Fibre Channel products, square brackets may be used instead for this purpose.
x | **y**	A vertical bar separates mutually exclusive elements.
< >	Nonprinting characters, for example, passwords, are enclosed in angle brackets.
...	Repeat the previous element, for example, *member*[*member*...].
\	Indicates a "soft" line break in command examples. If a backslash separates two lines of a command input, enter the entire command at the prompt without the backslash.

Extreme resources

Visit the Extreme website to locate related documentation for your product and additional Extreme resources.

White papers, data sheets, and the most recent versions of Extreme software and hardware manuals are available at www.extremenetworks.com. Product documentation for all supported releases is available to registered users at www.extremenetworks.com/support/documentation.

Document feedback

Quality is our first concern at Extreme, and we have made every effort to ensure the accuracy and completeness of this document. However, if you find an error or an omission, or you think that a topic needs further development, we want to hear from you.

You can provide feedback in two ways:

- Use our short online feedback form at http://www.extremenetworks.com/documentation-feedback-pdf/
- Email us at internalinfodev@extremenetworks.com

Provide the publication title, part number, and as much detail as possible, including the topic heading and page number if applicable, as well as your suggestions for improvement.

Contacting Extreme Technical Support

As an Extreme customer, you can contact Extreme Technical Support using one of the following methods: 24x7 online or by telephone. OEM customers should contact their OEM/solution provider.

If you require assistance, contact Extreme Networks using one of the following methods:

- GTAC (Global Technical Assistance Center) for immediate support
  - Phone: 1-800-998-2408 (toll-free in U.S. and Canada) or +1 408-579-2826. For the support phone number in your country, visit: www.extremenetworks.com/support/contact.
  - Email: support@extremenetworks.com. To expedite your message, enter the product name or model number in the subject line.
- GTAC Knowledge - Get on-demand and tested resolutions from the GTAC Knowledgebase, or create a help case if you need more guidance.
- The Hub - A forum for Extreme customers to connect with one another, get questions answered, share ideas and feedback, and get problems solved. This community is monitored by Extreme Networks employees, but is not intended to replace specific guidance from GTAC.
- Support Portal - Manage cases, downloads, service contracts, product licensing, and training and certifications.

Before contacting Extreme Networks for technical support, have the following information ready:

- Your Extreme Networks service contract number and/or serial numbers for all involved Extreme Networks products
- A description of the failure
- A description of any action(s) already taken to resolve the problem
- A description of your network environment (such as layout, cable type, other relevant environmental information)
- Network load at the time of trouble (if known)
- The device history (for example, if you have returned the device before, or if this is a recurring problem)
- Any related RMA (Return Material Authorization) numbers

About This Document

What's new in this document

The following tables include descriptions of new information added to this guide for this release of Brocade SLX-OS.

TABLE 1 Summary of enhancements

Feature	Description	Described in
CPLD peripheral upgrade	Process for upgrading the CPLD firmware modules.	Installing and Maintaining Firmware
64-bit Full Install	New command to allow firmware download of the 64-bit OS software.	Installing and Maintaining Firmware

NOTE

On October 30, 2017, Extreme Networks, Inc. acquired the SLX-OS product line from Brocade Communications Systems, Inc. This transitional release includes references to both companies.

Supported hardware and software

In those instances in which procedures or parts of procedures documented here apply to some devices but not to others, this guide identifies exactly which devices are supported and which are not.

Although many different software and hardware configurations are tested and supported by Brocade Communications Systems, Inc. for SLX-OS Release 17r.2.00, documenting all possible configurations and scenarios is beyond the scope of this document.

The following hardware platforms are supported by this release:

- Brocade SLX 9850-4 router
- Brocade SLX 9850-8 router
- Brocade SLX 9540 switch

To obtain information about other Brocade OS versions, refer to the documentation specific to that version.

Interface module capabilities

The following table lists the supported capabilities for the following Brocade SLX 9850 interface modules:

- BR-SLX9850-10Gx72S-M
- BR-SLX9850-100Gx36CQ-M
- BR-SLX9850-10Gx72S-D
- BR-SLX9850-100Gx36CQ-D

TABLE 2 Brocade SLX 9850 interface modules capabilities

Capability	Modular interface module
MPLS	Yes
Packet Buffer memory per interface module	12GB (BR-SLX9850-10Gx72S-M) 36GB (BR-SLX9850-100Gx36CQ-M) 8GB (BR-SLX9850-10Gx72S-D) 24GB (BR-SLX9850-100Gx36CQ-D)

Installing and Maintaining Firmware

Firmware management overview

Brocade firmware upgrades consist of multiple firmware packages listed in a .plist file. The .plist file contains specific firmware information (time stamp, platform code, version, and so on) and the names of the firmware packages to be downloaded. These packages are made available periodically to add features or to remedy defects in the firmware. In SLX-OS, the firmware upgrade is performed incrementally. The **firmware download** command compares the new firmware packages against the current installation and only downloads the packages that contain new features or have been modified.

You can download the firmware from a remote server by means of the File Transfer Protocol (FTP), SSH File Transfer Protocol (SFTP), Trivial File Transfer Protocol (TFTP), or Secure Copy Protocol (SCP). If you want to download firmware from a remote server, you must connect the management Ethernet port of the router to the server. In a modular chassis, both management Ethernet ports must be connected. Downloading from a Brocade proprietary USB drive is also supported.

If a firmware download session is interrupted by an unexpected reboot, SLX-OS attempts to recover the previously installed firmware. Success depends on the state of the firmware download. You must wait for the recovery to complete before initiating another firmware download.

Preserving the configuration

To preserve the configurations, back up the configuration using the **copy running-config** *filename* command before the firmware download. After the upgrade is completed, run the **copy** *filename* **running-config** command.

Automatic firmware synchronization

When you replace or insert a second management module into a chassis, the active management module automatically synchronizes the hot-plugged standby management module with the same firmware version. The standby management module restarts with the upgraded firmware. The automatic firmware synchronization takes place only if all of the following conditions are met:

- The standby management module is inserted while the chassis is already up (hot-plugged insert).
- There was no firmware download process running when the standby management module was inserted.
- The active and standby firmware versions must be different.

NOTE

Automatic firmware synchronization is intrinsic to SLX-OS and no corresponding **enable** or **disable** commands are associated with automatic firmware synchronization. As a result, the automatic firmware synchronization cannot be disabled.

Connecting to the device

When you upgrade firmware in default mode, you connect to the device through the management IP address.

Use the **show system** command to display the management IP address for the chassis.

```
device# show system
Stack MAC                     : 60:9c:9f:b0:92:00

  -- UNIT 0 --
Unit Name                     : cedar-spine-2
Ethernet Port(s)              : 32
Up Time                       : up 17 days 0:33
Current Time                  : 23:20:38 GMT
SLX-OS Version                : 17s.1.0017s.1.00_bld63
Jumbo Capable                 : yes
Burned In MAC                 : 60:9C:9F:B0:93:1A
Management IP                 : 10.20.234.119 <- Chassis Management IP address
Management Port Status        : UP

  -- Power Supplies --
PS1 is faulty
PS2 is OK

  -- Fan Status --
Fan 1 is Ok, speed is 6409 RPM
Fan 2 is Ok, speed is 6225 RPM
Fan 3 is Ok, speed is 6225 RPM
Fan 4 is Ok, speed is 6409 RPM
Fan 5 is Ok, speed is 6409 RPM
Fan 6 is Ok, speed is 6409 RPM
```

NOTE

You must configure the gateway and default route that is pointing to the management interface within the management VRF and address-family unicast context.

Upgrading considerations and restrictions

Consider the following when upgrading your firmware version:

- Upgrading SLX-OS is automatically allowed because the Telnet server and SSH server status are enabled by default.
- Upgrading SLX-OS is a disruptive event and reboots the device.

Prerequisites for firmware download

To prepare for a firmware download, perform the following tasks. In the unlikely event of a failure or timeout, you will be able to provide your router support provider the information required to troubleshoot the firmware download.

1. Verify the current firmware version. Refer to Obtaining the firmware version on page 13.
2. Download the firmware package from the Brocade website to an FTP server.
3. Decompress the firmware archive. Refer to Obtaining and decompressing firmware on page 13.
4. Decide on a migration path. Check the connected devices to ensure firmware compatibility. Refer to the "SLX-OS Compatibility" section of the *SLX-OS Release Notes* for the recommended firmware version.
5. In a modular system, if you are to download firmware from a file server, verify that the management ports on both MMs are connected to the firmware file server.

6. Back up your router configuration using the **copy running-config** *filename* command before the firmware download.
7. For additional support, connect the router to a computer with a serial console cable. Ensure that all serial consoles and any open network connection sessions, such as Telnet, are logged and included with any trouble reports.
8. Enter the **copy support** command to collect all current core files prior to executing the firmware download. This information helps to troubleshoot the firmware download process in the event of a problem. Once the **copy support** command is issued collects the files, you can use the **clear support** command to remove the files from the list.
9. Enter the **clear logging raslog** command to erase all existing messages in addition to internal messages.

Obtaining the firmware version

Enter the **show version** command to obtain the firmware version for both primary and secondary partitions of each module.

```
 device# show version

SLX-OS Operating System Software
SLX-OS Operating System Version: 16r.1.01
Copyright (c) 1995-2016 Brocade Communications Systems, Inc.
Firmware name:      16r.1.01slxos_16r.1.x_maint_160819_1858
Build Time:         05:11:01 Aug 20, 2016
Install Time:       18:32:33 Aug 22, 2016
Kernel:             2.6.34.6

Control Processor:  GenuineIntel with 7890 MB of memory

System Uptime:   0days 12hrs 35mins 29secs

Slot    Name    Primary/Secondary Versions                        Status
-----------------------------------------------------------------------------
M1      SLX-OS  16r.1.01slxos_16r.1.x_maint_160819_1858           STANDBY*
                16r.1.01slxos_16r.1.x_maint_160819_1858
```

Obtaining and decompressing firmware

Firmware upgrades are available for customers with support service contracts and for partners on the Brocade website at www.mybrocade.com.

You must download the firmware package to an FTP-variant server and decompress the package *before* you can use the **firmware download** command to upgrade the firmware on your equipment.

You may also download the firmware from a USB drive using the **firmware download usb** command.

When you unpack the downloaded firmware, it expands into a directory that is named according to the firmware version. When issued with the path to the directory where the firmware is stored, the **firmware download** command performs an automatic search for the correct package file type associated with the device.

Five **firmware download** command options are available:

- coldboot: Downloads the firmware to the system and reboots the device.
- default-config: Removes all configuration and is similar to an initial installation and configuration.
- usb: Downloads the firmware to the system without activating it, so the device is not automatically rebooted.
- noactivate: Downloads the firmware to the system without activating it, so the device is not automatically rebooted.
- nocommit: Disables auto-commit mode. When auto-commit mode is disabled, firmware is downloaded only to the primary partition.
- noceboot: Disables auto-reboot mode. When auto-reboot mode is disabled, you must reboot the device manually.

Refer to the *Brocade SLX-OS Command Reference* for complete information on all of the available options for the **firmware download** command.

NOTE
To be able to address the FTP server by its name, ensure that a Domain Name System (DNS) entry is established for the server.

NOTE
SLX-OS does not support the use of special characters (such as &, !, %, or #) in FTP, TFTP, SFTP, or SCP passwords. If your password contains special characters, the download fails.

Standard method for downloading firmware

The **firmware download** command has several options for downloading firmware for your device that help control the process. For complete information on the **firmware download** command options, refer to the *Brocade SLX-OS Command Reference*.

By default, if you enter the **firmware download** command without any options, the command invokes ISSU to upgrade the entire system. ISSU involves a High Availability failover of the active management module and is non-disruptive. In contrast, both the **coldboot** and **default-config** options involve system reboots and are disruptive to traffic.

If the **firmware download** command is interrupted because of an unexpected reboot, such as the result of a software error or power failure, the command automatically recovers the corrupted secondary partition. Wait for the recovery to complete before beginning another firmware download.

The follow example shows a typical firmware download:

```
device# firmware download ftp directory /buildsjc/sre/SQA/slxos/17r.1.00/17r.1.00 host 10.31.2.27 user
releaseuser password releaseuser

Performing system sanity check...


This command will use the ISSU protocol to upgrade the system. It will cause a WARM reboot and will require
that existing telnet, secure telnet or SSH sessions be restarted.


Do you want to continue? [y/n]y
```

Once the process completes, log in to the device and enter the **show version** command. Both partitions on the device or on the modules should contain the new firmware.

```
device# show version
SLX-OS Operating System Software
SLX-OS Operating System Version: 17r.1.00
Copyright (c) 1995-2017 Brocade Communications Systems, Inc.
Firmware name:      17r.1.0017r.1.00_bld63
Build Time:         21:24:13 Mar  7, 2017
Install Time:       21:46:10 Mar  9, 2017
Kernel:             2.6.34.6
Host Version:       Ubuntu 14.04 LTS
Host Kernel:        Linux 3.14.17

Control Processor:   QEMU Virtual CPU version 2.0.0

System Uptime:   16days 23hrs 48mins 7secs

Slot    Name    Primary/Secondary Versions                      Status
-----------------------------------------------------------------------
SW/0    SLX-OS  17r.1.0017r.1.00_bld63                          ACTIVE*
                17r.1.0017r.1.00_bld63
```

Downloading firmware using the default-config option

The **firmware download default-config** command allows you to download new firmware onto the router, clean up the configuration, and then force the router to perform a cold reboot.

This option is useful to prevent issues caused by incompatible configurations between the old and the new firmware.

CAUTION
When you use firmware download default-config, traffic is disrupted and the configuration is lost. You must save the configuration information before you execute the command and then restore it afterwards.

1. Download the firmware from the source directory with the default-config option.

```
device# firmware download default-config ftp host 10.xx.xx.3 user fvt password pray4green directory
dist file release.plist

Performing system sanity check...
This command will set the configuration to default.
This command will cause Cold reboot on both psrtitionss at the same time and will require that
existing telnet, secure telnet or SSH sessions be restarted.

Do you want to continue? [y/n]: y
```

2. Log back into the device.
3. Enter the **firmware commit** command to commit the new firmware. If you entered **y** after the prompt, the device will commit the firmware automatically upon booting up.

```
device# firmware commit
Validating primary partition...
Doing firmwarecommit now.
Please wait ...
Replicating kernel image
.............
FirmwareCommit completes successfully.
```

4. Enter the **show version** command. Both partitions on the device or on the modules should contain the new firmware.

```
device# show version
SLX-OS Operating System Software
SLX-OS Operating System Version: 17s.1.00
Copyright (c) 1995-2017 Brocade Communications Systems, Inc.
Firmware name:      17s.1.0017s.1.00_bld63
Build Time:         21:24:13 Mar  7, 2017
Install Time:       21:46:10 Mar  9, 2017
Kernel:             2.6.34.6
Host Version:       Ubuntu 14.04 LTS
Host Kernel:        Linux 3.14.17

Control Processor:   QEMU Virtual CPU version 2.0.0

System Uptime:   16days 23hrs 48mins 7secs

Slot    Name    Primary/Secondary Versions                          Status
-------------------------------------------------------------------------
SW/0    SLX-OS  17s.1.0017s.1.00_bld63                              ACTIVE*
                17s.1.0017s.1.00_bld63
```

Downloading firmware using the coldboot option

The **coldboot** option of the **firmware download** command allows you to download new firmware onto a device and forces the device to perform a cold reboot. For complete information on the **firmware download** command options, refer to the *Brocade SLX-OS Command Reference*.

After the firmware completes downloading, the device reboots. This ensures that both partitions reboot with the same firmware, and prevents any firmware compatibility issues that may exist between the old and the new firmware.

CAUTION
When you use firmware download coldboot, traffic is disrupted and the configuration is lost. You must save the configuration information before you execute the command and then restore it afterwards.

1. Download the firmware from the source directory with the **coldboot** option.

```
device# firmware download coldboot ftp host 10.xx.xx.3 user fvt password pray4green directory dist
file release.plist

Performing system sanity check...
This command will set the configuration to default.
This command will cause Cold reboot on both psrtitionss at the same time and will require that
existing telnet, secure telnet or SSH sessions be restarted.

Do you want to continue? [y/n]: y
```

2. Log back into the device.
3. Enter the **firmware commit** command to commit the new firmware. If you entered **y** after the prompt, the device will commit the firmware automatically upon booting up.

```
device# firmware commit
Validating primary partition...
Doing firmwarecommit now.
Please wait ...
Replicating kernel image
.............
FirmwareCommit completes successfully.
```

4. Enter the **show version** command. Both partitions on the device or on the modules should contain the new firmware.

```
device# show version
SLX-OS Operating System Software
SLX-OS Operating System Version: 17s.1.00
Copyright (c) 1995-2017 Brocade Communications Systems, Inc.
Firmware name:      17s.1.0017s.1.00_bld63
Build Time:         21:24:13 Mar  7, 2017
Install Time:       21:46:10 Mar  9, 2017
Kernel:             2.6.34.6
Host Version:       Ubuntu 14.04 LTS
Host Kernel:        Linux 3.14.17

Control Processor:   QEMU Virtual CPU version 2.0.0

System Uptime:   16days 23hrs 48mins 7secs

Slot    Name    Primary/Secondary Versions                        Status
-----------------------------------------------------------------------
SW/0    SLX-OS  17s.1.0017s.1.00_bld63                           ACTIVE*
                17s.1.0017s.1.00_bld63
```

Downloading firmware from a USB device

Brocade devices support firmware download from a Brocade-branded USB device. Before you can access the USB device, you must enable the device and mount it as a file system. The firmware images to be downloaded must be stored in the factory-configured firmware directory. Multiple images can be stored under this directory.

1. Ensure that the USB device is connected to the device.

2. Enter the **usb on** command in privileged EXEC mode.

```
device# usb on
Trying to enable USB device. Please wait...
USB storage enabled
```

3. Enter the **usb dir** command. In this sample output, the "SLX-OS_vX.X.X" refers to the current version number.

```
device# usb dir
firmwarekey\ 0B 2016 Dec 15 15:13
support\ 106MB 2016 Dec 24 05:36
config\ 0B 2016 Dec 15 15:13
firmware\ 380MB 2016 Dec 15 15:13
SLX-OS_vX.X.X\ 379MB 2016 Dec 15 15:31
Available space on usbstorage 74%
```

4. Enter the **firmware download usb** command followed by the relative path to the firmware directory, where the "SLX-OS_vX.X.X" refers to the current version number.

```
device# firmware download usb directory SLX-OS_vX.X.X
```

5. Enter the **usb off** command to unmount the USB storage device for safe removal.

```
device# usb off
Trying to disable USB device. Please wait...
USB storage disabled.
```

Upgrading to 64-bit systems

Brocade SLX-OS supports a limited range of 32-bit and 64-bit hardware. This task downloads a larger file selection to cover the differences between 32-bit and 64-bit firmware when upgrading or downgrading the device.

For complete information on the **firmware download** command options, refer to the *Brocade SLX-OS Command Reference*.

1. Download the firmware from the source directory with the **fullinstall** option.

```
device# firmware download fullinstall ftp user releaseuser password releaseuser file release.plist
host 192.168.1.100 directory /release/SLX_17r.1.01a /dist
Performing system sanity check...


You are running firmware download on dual MM system with 'fullinstall' option.

This command will preserve startup-config and license across Firmware download
but will require manual re-play of configuration once after User verifies if
configurations are compatibile to the new image. Manual replay of configs could
be achieved using 'copy flash://startup-config running-config' command or
'copy <file> running-config' command.

This command will cause a cold/disruptive reboot and will require that existing telnet, secure
telnet or SSH sessions be restarted.

Do you want to continue? [y/n]:
```

2. Log back into the device.

3. Enter the **show version** command. Both partitions on the device or on the modules should contain the new firmware.

```
device# show version
SLX-OS Operating System Software
SLX-OS Operating System Version: 17r.1.01a
Copyright (c) 1995-2017 Brocade Communications Systems, Inc.
Firmware name:      17r.1.0117r.1.01a_bld63
Build Time:         21:24:13 Jul  7, 2017
Install Time:       21:46:10 Jul  9, 2017
Kernel:             2.6.34.6
Host Version:       Ubuntu 14.04 LTS
Host Kernel:        Linux 3.14.17

Control Processor:   QEMU Virtual CPU version 2.0.0

System Uptime:   16days 23hrs 48mins 7secs

Slot    Name    Primary/Secondary Versions                          Status
-----------------------------------------------------------------------------
SW/0    SLX-OS  17r.1.0117r.1.01a_bld63                              ACTIVE*
                17r.1.0117r.1.01a_bld63
```

Peripheral firmware upgrades

Some device peripherals can have their firmware upgraded through a Linux shell.

Brocade SLX 9850 peripheral firmware upgrade

This procedure upgrades the peripheral firmware on the Brocade SLX 9850.

1. After the device boots, log in to a Linux shell using the **start-shell**.

```
device# start-shell
```

2. Check the FPGA version. If FPGA version is not latest then use following example to upgrade it.

```
# fpga version
```

3. On the active MM use the **sysfpga_upgrade** command to upgrade the Active MM FPGA.

```
# sysfpga_upgrade
```

4. On the standby MM use the **sysfpga_upgrade** command to upgrade the Active MM FPGA.

```
# /fabos/link_bin/sysfpga_upgrade
```

5. Optional: On the active MM, upgrade the FPGA firmware for the linecard (LC) using the **sysfpga_upgrade lc <slot#>** command.

   The range of valid slot values is from 1 through 4 for the Brocade SLX 9850-4.

   The range of valid slot values is from 1 through 8 for the Brocade SLX 9850-8.

```
 # sysfpga_upgrade lc 3
```

6. Optional: On the active MM, upgrade the FPGA firmware for the Switch Fabric Module (SFM) using the **sysfpga_upgrade sfm <slot#>** command.

   The range of valid slot values is from 1 through 4 for the Brocade SLX 9850-4.

   The range of valid slot values is from 1 through 8 for the Brocade SLX 9850-8.

   ```
   # sysfpga_upgrade sfm 3
   ```

7. Once the chassis reboots, verify the FPGA version with the **fpga version** to ensure the version is correct.

   ```
   # fpga version
   ```

8. Once the FPGA upgrade is complete, issue the **exit** command to return to the privileged EXEC mode prompt.
9. Reboot the chassis with the **reload system** command.

   ```
   # reload system
   ```

FPGA version mismatch correction

Checks the FPGA versions on the BBrocade Brocade SLX 9850 hardware family.

A version mismatch between FPGA applications and hardware results in system failure and continuous reboot on every module initialization failure. This procedure corrects FPGA version mismatch issues.

NOTE

Brocade recommends that you confirm the FPGA version after doing an upgrade or downgrade between firmware releases.

1. Execute the **oscmd FPGA version** command. Verify that the dates shown in the "Version" column match the dates shown in the "Latest Version" column.

```
device# oscmd fpga version
+---------+----------------+---------+----------------+
|  Blade  |    Version     |  Type   | Latest Version |
+---------+----------------+---------+----------------+
|   MM1   | 08/25/2016(52) |  2001   | 8/25/2016      |
+---------+----------------+---------+----------------+
|   MM2   | 08/25/2016(52) |  2001   | 8/25/2016      |
+---------+----------------+---------+----------------+
|   LC1   | 08/30/2016(54) |  2017   | 8/30/2016      |
+---------+----------------+---------+----------------+
|   LC2   | 08/30/2016(54) |  2017   | 8/30/2016      |
+---------+----------------+---------+----------------+
|   LC3   |    Vacant      |  N/A    | N/A            |
+---------+----------------+---------+----------------+
|   LC4   |    Vacant      |  N/A    | N/A            |
+---------+----------------+---------+----------------+
|   LC5   |    Vacant      |  N/A    | N/A            |
+---------+----------------+---------+----------------+
|   LC6   |    Vacant      |  N/A    | N/A            |
+---------+----------------+---------+----------------+
|   LC7   |    Vacant      |  N/A    | N/A            |
+---------+----------------+---------+----------------+
|   LC8   |    Vacant      |  N/A    | N/A            |
+---------+----------------+---------+----------------+
|  SFM1   | 05/25/2016(48) |  N/A    | 8/04/2016      |  <=======Example here
+---------+----------------+---------+----------------+
|  SFM2   | 08/04/2016(50) |  N/A    | 8/04/2016      |
+---------+----------------+---------+----------------+
|  SFM3   | 08/04/2016(50) |  N/A    | 8/04/2016      |
+---------+----------------+---------+----------------+
|  SFM4   | 08/04/2016(50) |  N/A    | 8/04/2016      |
+---------+----------------+---------+----------------+
|  SFM5   | 08/04/2016(50) |  N/A    | 8/04/2016      |
+---------+----------------+---------+----------------+
|  SFM6   |    Vacant      |  N/A    | N/A            |
+---------+----------------+---------+----------------+
```

2. If the versions do not match, log into the SLX via the SSH or serial console as an administrator.
3. Execute the **start-shell** command.
4. Execute the **su** command, and provide the root user password (by default this is "fibranne").
5. Execute the **cd /fabos/bin** command.

6. Execute the **sysfpga_upgrade <option>** command, where the option is selected from the list below.

```
        ============================== Fusion Sysfpga Upgrading Help Page
    ==============================
             to upgrade sysfpga on local MM card to the latest image file:
                     sysfpga_upgrade mm

             to upgrade sysfpga on a remote F4 LC lc1/lc2/lc3/lc4 card to the latest image file:
                     sysfpga_upgrade lc1
                     sysfpga_upgrade lc2
                     sysfpga_upgrade lc3
                     sysfpga_upgrade lc4

             to upgrade sysfpga on a remote F8 LC lc1/lc2/../lc8 card to the latest image file:
                     sysfpga_upgrade lc1
                     sysfpga_upgrade lc2
                     ......
                     sysfpga_upgrade lc8

             to upgrade sysfpga on a remote SFM s1/s2/../s6 card to the latest image file:
                     sysfpga_upgrade s1
                     sysfpga_upgrade s2
                     ......
                     sysfpga_upgrade s6

             to upgrade entire chassis fpga:
                     sysfpga_upgrade all

             to retrieve chassis/slot/fpga info:
                     sysfpga_upgrade show

             to get help:
                     sysfpga_upgrade help
```

7. Once the FPGA upgrade is complete, issue the **exit** command to return to the privileged EXEC mode prompt.
8. Go to the device, and physically remove all power cords until the chassis is completely powered off.
9. Countdown 30 seconds This allows the power supplies and chassis to drain any residual power
10. Re-insert all the power cords

11. Once the chassis is back online, connect and execute the **oscmd FPGA version** command. Verify that the dates shown in the "Version" column match the dates shown in the "Latest Version" column.

```
device# oscmd fpga version
+---------+----------------+---------+----------------+
|  Blade  |    Version     |  Type   | Latest Version |
+---------+----------------+---------+----------------+
|   MM1   | 08/25/2016(52) |  2001   | 8/25/2016      |
+---------+----------------+---------+----------------+
|   MM2   | 08/25/2016(52) |  2001   | 8/25/2016      |
+---------+----------------+---------+----------------+
|   LC1   | 08/30/2016(54) |  2017   | 8/30/2016      |
+---------+----------------+---------+----------------+
|   LC2   | 08/30/2016(54) |  2017   | 8/30/2016      |
+---------+----------------+---------+----------------+
|   LC3   |    Vacant      |  N/A    | N/A            |
+---------+----------------+---------+----------------+
|   LC4   |    Vacant      |  N/A    | N/A            |
+---------+----------------+---------+----------------+
|   LC5   |    Vacant      |  N/A    | N/A            |
+---------+----------------+---------+----------------+
|   LC6   |    Vacant      |  N/A    | N/A            |
+---------+----------------+---------+----------------+
|   LC7   |    Vacant      |  N/A    | N/A            |
+---------+----------------+---------+----------------+
|   LC8   |    Vacant      |  N/A    | N/A            |
+---------+----------------+---------+----------------+
|  SFM1   | 08/04/2016(50) |  N/A    | 8/04/2016      |
+---------+----------------+---------+----------------+
|  SFM2   | 08/04/2016(50) |  N/A    | 8/04/2016      |
+---------+----------------+---------+----------------+
|  SFM3   | 08/04/2016(50) |  N/A    | 8/04/2016      |
+---------+----------------+---------+----------------+
|  SFM4   | 08/04/2016(50) |  N/A    | 8/04/2016      |
+---------+----------------+---------+----------------+
|  SFM5   | 08/04/2016(50) |  N/A    | 8/04/2016      |
+---------+----------------+---------+----------------+
|  SFM6   |    Vacant      |  N/A    | N/A            |
+---------+----------------+---------+----------------+
```

Brocade SLX 9540 peripheral firmware upgrade

This procedure upgrades the peripheral firmware on the Brocade SLX 9540.

1. After the device boots, log in to a Linux shell using the **start-shell**.

```
device# start-shell
```

2. Execute the **su** command.

```
device# su
```

3. Check the FPGA and CPLD versions.

```
# sysfpga_upgrade -v
# cpld_upgrade -v
```

4. Upgrade the FPGA firmware using the **sysfpga_upgrade -p** command.

```
# sysfpga_upgrade -p
```

5. Upgrade the CPLD firmware using the **cpld_upgrade -p** command.

```
# cpld_upgrade -p
```

6. Cycle the power on the device.
7. After the device boots, log in to a Linux shell using the **start-shell**.

```
device# start-shell
```

8. Execute the **su** command.

```
device# su
```

9. Verify the FPGA version with the **sysfpga_upgrade -v**

```
sysfpga_upgrade -v
```

10. Verify the CPLD version with the **cpld_upgrade -v**

```
cpld_upgrade -v
```

11. Once the FPGA upgrade is complete, issue the **exit** command to return to the privileged EXEC mode prompt.
12. Reboot the chassis with the **reload system** command.

```
# reload system
```

CPLD peripheral firmware upgrade

Updates the Complex Programmable Logic Device (CPLD) flash with the latest image from the installation package.

1. Confirm the peripheral firmware requires an upgrade with the **show firmware peripheral cpld** command. If the dates are not identical, the firmware must be upgraded.

```
device# show firmware peripheral cpld
+------------+---------------------+---------------------+
|  Type      |    Version          |  Latest Version     |
+------------+---------------------+---------------------+
|  cpld0     | 09/25/2016(92)      |  9/26/2016(92)      |
+------------+---------------------+---------------------+
|  cpld1     | 09/25/2016(92)      |  8/26/2016(92)      |
+------------+---------------------+---------------------+
```

2. Update the firmware with the **firmware peripheral-update cpld** command. Both units are upgraded automatically.

```
device# firmware peripheral-update cpld
erasing ….. done
programing …….……..……. 25% ……..……. 50% .....……..……..…… 75% ……. 100%
cpld0 image is upgraded successfully.


erasing ….. done
programing …….……..……. 25% ……..……. 50% .....……..……..…… 75% ……. 100%
cpld1 image is upgraded successfully.
```

3. Reboot the device with the **reload system** command.

```
device# reload system
```

4. Confirm the units were upgraded with the **show firmware peripheral cpld** command. The dates should be identical.

```
device# show firmware peripheral cpld
+----------+----------------+----------------+
|  Type    | Current Version| Latest Version |
+----------+----------------+----------------+
|  CPLD0   | 02/09/2017(92) | 02/09/2017(92) |
+--------- +----------------+----------------+
|  CPLD1   | 02/09/2017(92) | 02/09/2017(92) |
+--------- +----------------+----------------+
```

Downgrading considerations and restrictions

Consider the following when downgrading your firmware version:

- If a feature is new for the current version of your firmware, it does not function if you downgrade your firmware version.
- Firmware downgrades to previous versions are prohibited when security parameters are configured for HTTPS support.
- If you are downgrading from a 64-bit to a 32-bit system, use the **fullinstall** option when you execute the **firmware download** command.
- Before downgrading to a version that doesn't support RADIUS accounting, both login and command accounting must be disabled.
- Before downgrading to a version that doesn't support RADIUS accounting, the source interface for the RADIUS configuration must be removed.

Always refer to the release notes for compatibility information and take note of restrictions that may exist regarding upgrades and downgrades under particular circumstances.

Configuring ONIE

ONIE overview for the Brocade SLX 9540

Open Network Install Environment (ONIE) is the combination of a boot loader and a small operating system for bare metal network devices that provides an environment for automated provisioning. The Brocade SLX 9540 boots SLX-OS from the images stored on hard disk of the device. The initial installation of these images are performed by Brocade before shipping. ONIE also provides mechanisms to re-install or update SLX-OS.

The process supported by the **firmware download** command is not affected by this feature. The SLX-OS firmware is not updated to the snapshot partition during the normal upgrade process.

Refer to the Open Compute Project website for complete information on ONIE.

Accessing the ONIE rescue shell

In certain situations, you may need to boot the Brocade SLX 9540 directly to the Open Network Install Environment (ONIE) shell in order to execute ONIE commands.

The following Open Network Install Environment (ONIE) procedure is executed from the u-boot command shell.

1. Access the u-boot command shell by selecting option 3 in the u-boot boot menu.
2. Execute the command **run onie_rescue**. The system boots to the ONIE busybox shell.

   At this point, you can run custom commands from the shell, or execute one of the ONIE operations like onie_uninstall. Additionally, the "slxos_install" script can be manually downloaded and executed from the ONIE rescue shell, bypassing the SLX-OS installer automatic discovery phase.
3. Run the **image_snapshot_restore.sh** script from the ONIE/RAMDisk shell to restore SLX-OS from the firmware snapshot.

Resetting SLX-OS

This procedure uninstalls the SLX-OS from the device.

The following Open Network Install Environment (ONIE) procedure is executed from the u-boot command shell.

1. Access the u-boot command shell by selecting option 3 in the u-boot boot menu.
2. Execute the command **run onie_uninstall**.
   The system boots to ONIE and automatically executes an uninstall script that automatically performs the required steps uninstalling the SLX-OS. The u-boot environment is updated to default to the **onie_install** mode (auto discovery of SLX-OS installer) on the next reboot.
3. The device automatically boots to ONIE install mode. ONIE automatically executes the Onie Discovery & Execution environment (ODE) on the local storage and network and attempts to install SLX-OS from USB or TFTP.

ONIE SLX-OS installation from USB or TFTP

This procedure installs SLX-OS automatically from an attached USB or the default TFTP source only. This is the default boot mode on a system that has no SLX-OS present.

Once the installation is complete, the device boots directly to SLX-OS by default.

The process supported by the **firmware download** command is not affected by this feature.

The following Open Network Install Environment (ONIE) procedure is executed from the u-boot command shell.

1. Access the u-boot command shell by selecting option 3 in the u-boot boot menu.
2. Execute the command **run onie_install**.
   The system boots to ONIE and automatically executes the Onie Discovery & Execution environment (ODE) and searches for the **slxos_install** option, first on the attached USB storage and then at the default TFTP server. If found and successfully executed, the SLX-OS installer installs SLX-OS, modifies the boot environment to boot to SLX-OS at the next reboot, and then automatically reboots the system.

   NOTE
   The **onie_install** command results in an automatic installation of SLX-OS. ODE runs infinitely until it finds the installer. If you wants to stop this and gain access to the ONIE shell, execute the **onie-discovery-stop** command.

SLX-OS Capabilities

Viewing software capabilities

To display information about the software capabilities, enter the **show license** command. The command output displays the currently installed licenses for Brocade SLX-OS.

```
device# show license
Slot 1
xxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxx
Port Upgrade license
Feature name:PORT_100G_40G_UPGRADE
Capacity: 30x100G or 50X40G
License is Node-Lock and valid
xxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxx
MPLS license
Feature name: MPLS
License is Node-Lock and valid
Slot 2
xxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxx
Port Upgrade license
Feature name:PORT_10G_UPGRADE
Capacity: 36x10G
License is Node-Lock and valid
```