SOFTWARE UPGRADE GUIDE

Extreme SLX-OS Software Upgrade Guide, 18r.1.00c

Supporting the ExtremeRouting SLX 9850 and ExtremeSwitching 9540 Devices

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Contents

Preface

This section discusses the conventions used in this guide, ways to provide feedback, additional help, and other Extreme Networks® publications.

Conventions

This section discusses the conventions used in this guide.

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.

Format	Description
`Courier font`	Identifies CLI output. 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.
[ ]	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.
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.

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To find Extreme Networks product guides, visit our documentation pages at:

Current Product Documentation	www.extremenetworks.com/documentation/
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Release Notes	www.extremenetworks.com/support/release-notes
Hardware/Software Compatibility Matrices	https://www.extremenetworks.com/support/compatibility-matrices/
White papers, data sheets, case studies, and other product resources	https://www.extremenetworks.com/resources/

Training

Extreme Networks offers product training courses, both online and in person, as well as specialized certifications. For more information, visit www.extremenetworks.com/education/.

Getting Help

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

Extreme Portal	Search the GTAC (Global Technical Assistance Center) knowledge base, manage support cases and service contracts, download software, and obtain product licensing, training, and certifications.
The Hub	A forum for Extreme Networks customers to connect with one another, answer questions, and share ideas and feedback. This community is monitored by Extreme Networks employees, but is not intended to replace specific guidance from GTAC.
Call GTAC	For immediate support: 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

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

Subscribing to Service Notifications

You can subscribe to email notifications for product and software release announcements, Vulnerability Notices, and Service Notifications.

1. Go to www.extremenetworks.com/support/service-notification-form.
2. Complete the form with your information (all fields are required).
3. Select the products for which you would like to receive notifications.

   NOTE
   You can modify your product selections or unsubscribe at any time.

4. Click **Submit**.

Providing Feedback to Us

Quality is our first concern at Extreme Networks, and we have made every effort to ensure the accuracy and completeness of this document. We are always striving to improve our documentation and help you work better, so we want to hear from you! We welcome all feedback but especially want to know about:

- Content errors or confusing or conflicting information.
- Ideas for improvements to our documentation so you can find the information you need faster.
- Broken links or usability issues.

If you would like to provide feedback to the Extreme Networks Information Development team, you can do so in two ways:

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

Please 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.

About This Document

What's new in this document

On October 30, 2017, Extreme Networks, Inc. acquired the data center networking business from Brocade Communications Systems, Inc. This document has been updated to remove or replace references to Brocade Communications, Inc. with Extreme Networks., Inc., as appropriate.

"Brocade Communications, Inc." was replaced with "Extreme Networks., Inc." in the **show version** command output in the "Obtaining the firmware version" section.

This document is released with Extreme SLX OS 18r.1.00c.

For complete release information, refer to the SLX OS Release Notes.

TABLE 1 Additional changes for 18r.1.00c

Feature	Description	Described in
Modified the MCT upgrade process.	Modified MCT upgrade process from SLX-OS 17r.1.01x on page 19.	MCT upgrade process on page 18

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 this release, documenting all possible configurations and scenarios is beyond the scope of this document.

The following hardware platforms are supported by this release:

- ExtremeRouting SLX 9850-4 router
- ExtremeRouting SLX 9850-8 router
- ExtremeSwitching SLX 9540 switch

To obtain information about other releases, refer to the documentation specific to that release.

Interface module capabilities

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

- BR-SLX9850-10Gx72S-M
- BR-SLX9850-100Gx36CQ-M
- BR-SLX9850-10Gx72S-D
- BR-SLX9850-100Gx36CQ-D
- BR-SLX9850-100Gx12CQ-M

TABLE 2 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) 8GB (BR-SLX9850-100Gx12CQ-M)

Installing and Maintaining Firmware

Firmware management overview

Extreme 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 an Extreme 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 Extreme 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: 17r.1.00
Copyright (c) 2014-2018 Extreme Networks, Inc.
Firmware name:      17r.1.00_bfd_fix
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  17r.1.00slxos_17r.1.x_maint_160819_1858           ACTIVE*
                17r.1.00slxos_17r.1..x_maint_160819_1858
```

Obtaining and decompressing firmware

Firmware upgrades are available for customers with support service contracts and for partners on the Extreme Networks website at www.extremenetworks.com.

You must download the firmware package to the protocol variant server, such as FTP or SCP, and decompress the package *before* you can use the **firmware download** command to upgrade the firmware on your equipment.

> NOTE
> Extreme recommends 7zip or WinRAR to decompress the SLX-OS tar file

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.

The following **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.

- fullinstall: Downloads a larger file selection to cover the differences between 32-bit and 64-bit firmware when upgrading or downgrading the device.
- usb: Downloads the firmware to the system without activating it, so the device is not automatically rebooted.

Refer to the *Extreme 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 or SCP 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 *Extreme SLX-OS Command Reference*.

By default, if you enter the **firmware download** command without any options, the command invokes the **firmware download coldboot** command. Both the **coldboot** and **default-config** options involve system reboots and are disruptive to traffic.

The follow example shows a typical firmware download:

```
device# firmware download ftp user releaseuser password releaseuser host 10.31.2.27 file release.plist
directory /slxos/17r.1.00

Performing system sanity check...

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]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 Extreme Networks, Inc.
Firmware name:      17r.1.0017r.1.00
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                                  ACTIVE*
                17r.1.0017r.1.00
```

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

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 **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: 18r.1.00
Copyright (c) 1995-2018 Extreme Networks, Inc.
Firmware name:      18r.1.00
Build Time:         21:24:13 Mar  7, 2018
Install Time:       21:46:10 Mar  9, 2018
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  18r.1.00                                        ACTIVE*
                18r.1.00
```

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 *Extreme 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

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 **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 Extreme Networks, Inc.
Firmware name:      17r.1.0017r.1.00
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                                    ACTIVE*
                17r.1.0017r.1.00
```

Downloading firmware from a USB device

Extreme Network devices support firmware download from a 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.

NOTE
USB3.0 used for firmware download can be in VFAT or EXT4 format.

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.
```

Downloading firmware using the fullinstall option

The **fullinstall** option formats the disk and installs all of the packages. It is used between 32-bit OS and 64-bit OS transition, and between 2.6 Linux and 4.14 Linux transition. Refer to Upgrading to 64-bit systems on page 17 for more information.

Upgrading to 64-bit systems

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 *Extreme SLX-OS Command Reference*. For the specific cases of upgrading to release 18r.1.00b with the 2.6 kernel on a 64-bit system from release 17r.1.01a with the 2.6 kernel on a 32-bit system or from release 17r.2.00 or 18r.1.00 with the 2.6 kernel on a 64-bit system see the Upgrading to release 18r.1.00b on page 18 section.

NOTE

USB-based firmware upgrade from SLX-OS 17r.1.01b (32-bit) to SLX-OS 17r.2.01 (64-bit) or later is supported with the **fullinstall** option.

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_18r.1.00b /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. The **fullinstall** option retains the startup configuration file, and upon the automatic reboot of the device, the startup configuration file is reloaded automatically.
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: 18r.1.00b
Copyright (c) 1995-2019 Extreme Networks, Inc.
Firmware name:      18r.1.00b
Build Time:         21:24:13 Jan  7, 2019
Install Time:       21:46:10 Jan  9, 2019
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  18r.1.00b                                  ACTIVE*
                18r.1.00b
```

Upgrading to release 18r.1.00b

Upgrading from 2.6 kernel 32-bit sytems

When upgrading to release 18r.1.00b with the 2.6 kernel on a 64-bit system from a release such as 17r.1.01a with the 2.6 kernel on a 32-bit system, use the **fullinstall** option.

Upgrading from 2.6 kernel 64-bit sytems

When upgrading to release 18r.1.00b with the 2.6 kernel on a 64-bit system from a release such as 17r.2.00 or 18r.1.00 with the 2.6 kernel on a 64-bit system, use the **coldboot** option.

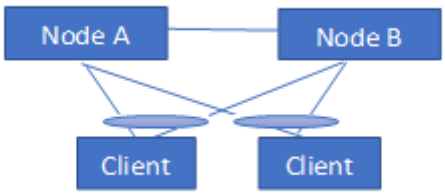
MCT upgrade process

The MCT (Multiple Chassis Trunking) upgrade process describes the process to upgrade MCT cluster nodes with minimum traffic loss disruption.

The MCT upgrade process is divided into the following sections:

1. MCT upgrade process from SLX-OS 17r.1.01x on page 19 (32-bit OS to 64-bit OS)
2. MCT upgrade process from SLX-OS 18r.1.00 on page 20 (64-bit OS to 64-bit OS)

The steps in the MCT upgrade process use the nomenclature for MCT nodes: Node A and Node B.



MCT upgrade process from SLX-OS 17r.1.01x

This section includes the procedure to upgrade MCT cluster nodes from SLX-OS 17r.1.01x to SLX-OS 18r.1.00c and later releases with minimal traffic loss disruption to the customer. This is a 32-bit OS to 64-bit OS upgrade and hence uses the **firmware download** command with the **fullinstall** option in order to perform the upgrade.

1. Configure client isolation mode under the cluster to be loose on Node A and on Node B respectively using the **client-isolation loose** command. For example:

```
Device(config)# cluster <cluster-name> <cluster-id>
Device(config-cluster-1)# client-isolation loose
```

2. Isolate Node A from the network: Disable the MCT client interfaces on Node A by entering the **client-interfaces-shutdown** command under the cluster configuration section. Then, disable the link connected to the MCT peer node and also disable the uplink to the core network. This causes all CCEP (Cluster Client Edge Ports) traffic to switch to Node B within 30 seconds depending on the scale and other parameters.

```
Device(config-cluster-1)# client-interfaces-shutdown
```

3. Copy the running-configuration to the startup-configuration on Node A.
4. Upgrade Node A to the 18r.1.00c image and later releases using the **firmware download** command with the **fullinstall** option. While the upgrade on Node A is in progress, the traffic passes through Node B.
5. Verify that once the node comes UP, the member-vlan configuration under the cluster section is removed.
6. Create an evpn template and add it to the existing configuration on Node A. For example:

```
Device-A(config)# evpn <evpn-instance-name>
route-target both auto ignore-as
rd auto
vlan add <NUMBER: 1-4090>             (If VLAN config is present)
bridge-domain add <NUMBER: 1-4090>    (If L2VPN config is present)
```

7. Isolate Node B from the network: There is complete traffic loss at this step. Disable the MCT client interfaces on Node B using the **client-interfaces-shutdown** command under cluster configuration section. Then, disable the link connected to the MCT peer node and disable the uplink to the core.

   Note: This step is suggested at this stage in order to avoid traffic duplication if L2VPN configuration is present. If L2VPN configuration is not present, then enter the **no client-interfaces-shutdown** command first on Node A before isolating Node B in order to minimize traffic loss (swap Step 7 and Step 9).
8. Copy the running-configuration to the startup-configuration on Node B.
9. Enable the interface towards the peer MCT node (ICL interface) and the uplink to the core network on Node A. (The ICL link still will not come up because Node B is isolated before this step. This is being done so that after Node B gets upgraded, the ICL link will come up once the **no shutdown** command is entered on the ICL link from the Node-B side.)

10. Bring back Node A to the network by entering the **no client-interfaces-shutdown** command under the cluster configuration section. This causes all CCEP traffic to switch to Node A within 30 seconds depending on the scale and other parameters.

```
Device-A(config-cluster-1)# no client-interfaces-shutdown
```

11. Upgrade Node B to the 18r.1.00c image using the **firmware download** command with the **fullinstall** option. While the upgrade on Node B is in progress, the traffic passes through Node A.
12. Verify that once the Node B comes UP, the member-vlan configuration under the cluster section is removed.
13. Create an evpn template and add it to the existing configuration on Node B. For example:

```
Device-B(config)# evpn <evpn-instance-name>
route-target both auto ignore-as
rd auto
vlan add <NUMBER: 1-4090>             (If VLAN config is present)
bridge-domain add <NUMBER: 1-4090>    (If L2VPN config is present)
```

14. Enable the interface towards the peer MCT node (ICL) and the uplink to the core network on Node B.
15. Verify if the BGP session between the MCT peers is established and the cluster is up.
16. Bring back Node B to the network by enterng the **no client-interfaces-shutdown** command under the cluster configuration section.

```
Device-B(config-cluster-1)# no client-interfaces-shutdown
```

17. Save the configuration changes to the respective nodes.

Additional SLX 9850 upgrade considerations

Additional upgrade considerations for upgrading SLX 9850 systems from 17r.1.01a or 17r.1.01b to 18r.1.00b and later releases.

When upgrading an SLX-9850 from 17r.1.01a or 17r.1.01b to 18r.1.00, if TPVM is installed in the system, you must un-install it by running the “tpvm uninstall” command before starting firmware download. Otherwise, it will cause system initialization issue. After the system is upgraded, you can install the TPVM image from 18r.1.00 by running the “tpvm install” command.

MCT upgrade process from SLX-OS 18r.1.00

This section includes the procedure to upgrade MCT cluster nodes from SLX-OS 18r.1.00 GA or SLX-OS 18r.1.00ax to SLX-OS 18r. 1.00b and later releases with minimal traffic loss disruption to the customer. This is a 64-bit OS to 64-bit OS upgrade and hence uses the **firmware download** command with the **coldboot** option in order to perform the upgrade.

1. Configure client isolation mode under the cluster to be loose on Node A and on Node B respectively using the **client-isolation loose** command. For example:

```
Device(config)# cluster <cluster-name> <cluster-id>
Device(config-cluster-1)# client-isolation loose
```

2. Isolate Node A from the network: Disable the MCT client interfaces on Node A by entering the **client-interfaces-shutdown** command under the cluster configuration section. Then, disable uplink to the core network. The link connected to the MCT peer node (ICL interface) must be in the **no shut** state. This causes all CCEP traffic to switch to Node B within 30 seconds depending on the scale and other parameters.

```
Device(config-cluster-1)# client-interfaces-shutdown
```

3. Copy the running-configuration to the startup-configuration on Node A.

4. Upgrade Node A to the 18r.1.00b image using the **firmware download** command with the **coldboot** option. While the upgrade on Node A is in progress, the traffic passes through Node B.
5. Verify that Node A is back online after the upgrade and has completed initialization.
6. Isolate Node B from the network: There is complete traffic loss at this step. Disable the MCT client interfaces on Node B using the **client-interfaces-shutdown** command under cluster configuration section. Then, disable the uplink to the core. The link connected to the MCT peer node (ICL interface) must be in the **no shut** state.

   Note: This step is suggested at this stage in order to avoid traffic duplication if L2VPN configuration is present. If L2VPN configuration is not present, then enter the **no client-interfaces-shutdown** command first on Node A before isolating Node B in order to minimize traffic loss (Swap Step 6 and Step 9).
7. Copy the running-configuration to the startup-configuration on Node B.
8. Enable the uplink to the core network on Node A. (The ICL link must be up by now because you did not shut it prior to the upgrade.)
9. Bring back Node A to the network by entering the **no client-interfaces-shutdown** command under the cluster configuration section. This causes all CCEP traffic to switch to Node A within 30 seconds depending on the scale and other parameters.

   ```
   Device-A(config-cluster-1)# no client-interfaces-shutdown
   ```

10. Upgrade Node B to the 18r.1.00b image using the **firmware download** command with the **coldboot** option. While the upgrade on Node B is in progress, the traffic passes through Node A.
11. Verify that once the Node B comes UP, the uplink to the core network on Node B is configured to come up.
12. Verify that the BGP session between MCT peers is established and the cluster is up.
13. Bring back Node B to the network by entering the **no client-interfaces-shutdown** command under the cluster configuration section.

    ```
    Device-B(config-cluster-1)# no client-interfaces-shutdown
    ```

14. Save the configuration changes to the respective nodes.

Peripheral firmware upgrades

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

SLX 9850 fpga upgrade

This procedure updates the fpga (Field Programmable Gate Array) flash with the latest image from the installation package.

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. Use the **sysfpga_upgrade help** command to display the upgrade options and execute the **sysfpga_upgrade** <option> command, where the option is selected from the list below.

```
# sysfpga_upgrade help
============================== 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
```

4. Optional: 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 SLX 9850-4.

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

   For example:

```
# sysfpga_upgrade lc3
```

5. 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 SLX 9850-4.

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

   For example:

```
# sysfpga_upgrade sfm3
```

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

```
device# reload system powercycle
```

8. Once the chassis reboots, verify the FPGA version using the **oscmd fpga version** command to ensure the version is correct. For additional information, refer to the *FPGA version mismatch correction* topic.

```
device# oscmd fpga version
```

FPGA version mismatch correction

Checks the FPGA versions on the 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
Extreme Networks 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. Perform the steps in the SLX-9850 fpga upgrade section. Execute the **sysfpga_upgrade <option>** command, where the option is selected from the list below.

```
# sysfpga_upgrade help
============================== 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
```

5. Once the FPGA upgrade is complete, issue the **exit** command to return to the privileged EXEC mode prompt.
6. Execute the **reload system powercycle** command to reboot the device.

7. 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            |
+---------+----------------+---------+----------------+
```

SLX 9540 fpga upgrade

This procedure updates the fpga (Field Programmable Gate Array) flash with the latest image from the installation package.

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

```
device# show firmware peripheral fpga

        +---------------+---------------------+--------------------------------+
        |     Type      |   Current Version   |   Latest Version Availalble    |
        +---------------+---------------------+--------------------------------+
        |    sysfpga    |    02/09/2017(92)   |        02/09/2017(92)          |
        +---------------+---------------------+--------------------------------+
```

2. Update the firmware using the **firmware peripheral-update fpga** command.

```
device# firmware peripheral-update fpga
erasing .. ... done
programming ......................... 25% ......................... 50% .........................
75% ......................... 100
sysfpga image is upgraded successfully.
```

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

```
device# reload system
```

SLX 9540 CPLD image 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.
- CFM configurations are not compatible with versions prior to SLXR 17r.2.01.
- 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.

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 Extreme 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
```