

FastIron Ethernet Switch Software Upgrade Guide, 08.0.30d

Supporting FastIron Software Release 08.0.30d

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Preface

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Document conventions

The document conventions describe text formatting conventions, command syntax conventions, and important notice formats used in Brocade 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.
<i>italic text</i>	Identifies text to enter in the GUI. Identifies emphasis. Identifies variables.
Courier font	Identifies document titles. 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.
<i>italic text</i>	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, <code>--show WWN</code> .
[]	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, <code>member[member...]</code> .
\	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.

Brocade resources

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

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Release notes are bundled with software downloads on MyBrocade. Links to software downloads are available on the MyBrocade landing page and in the Document Library.

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- For questions regarding service levels and response times, contact your OEM/solution provider.

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What's new in this document

This document is updated for FastIron software releases 08.0.30 through 08.0.30x. The following tables include information on new upgrade considerations introduced with the release. For a full description of new features, refer to the FastIron 08.0.30 release notes.

TABLE 1 Summary of Enhancements in FastIron Release 08.0.30d

Feature	Description	Location
mac-authentication enable-dynamic-vlan not supported	The mac-authentication enable-dynamic-vlan command introduced in FastIron 08.0.30b is deprecated.	References to the command in text and CLI samples have been removed throughout the section on flexible authentication.
Additional steps for loading boot code	There are additional steps for loading boot code on Brocade ICX 7250, ICX 7450, and ICX 7750 series devices.	In the section, Loading images on the device on page 27.

TABLE 2 Summary of Enhancements in FastIron Release 08.0.30b

Feature	Description	Location
Flexible authentication enhancements	Several CLI changes were introduced for flexible authentication.	Upgrading to or downgrading from FastIron 08.0.30 on page 11
Symmetric load balancing CLI	New CLI has been added for symmetric load balancing.	Upgrading to or downgrading from FastIron 08.0.30 on page 11
LAG scaling	Maximum LAGs per ICX 7250, ICX 7450, or ICX 7750 device increases to 256.	Upgrading to or downgrading from FastIron 08.0.30 on page 11
VRF ID	A new VRF ID field is introduced in the dhcpnoop.txt flash file.	Upgrading to or downgrading from FastIron 08.0.30 on page 11

TABLE 3 Summary of Enhancements in FastIron Release 08.0.30

Feature	Description	Location
BGP4+ Multi-VRF	Added in this release.	Upgrading to or downgrading from FastIron 08.0.30 on page 11
Equal Cost Multi-Path	Equal Cost Multi-Path (ECMP) increases the maximum number of paths to 32 on ICX 7750 devices.	Upgrading to or downgrading from FastIron 08.0.30 on page 11
Flash timeout configuration	This release allows the user to change flash timeout.	Upgrading to or downgrading from FastIron 08.0.30 on page 11
ICX 6610 license merge	Premium and advanced licensing features are merged under the premium license.	Upgrading to or downgrading from FastIron 08.0.30 on page 11. For more information on licenses, refer to the <i>FastIron Ethernet Switch Licensing Guide</i> , Release 08.0.30.
ICX 7450 10 Gbps stacking	10 Gbps stacking is available on 4x10G modules inserted in slot 2.	Upgrading to or downgrading from FastIron 08.0.30 on page 11
ICX 7750 breakout ports	This release introduces physical breakout of 40-Gbps ports on the ICX 7750 into four configurable 10-Gbps sub-ports.	Upgrading to or downgrading from FastIron 08.0.30 on page 11

TABLE 3 Summary of Enhancements in FastIron Release 08.0.30 (continued)

Feature	Description	Location
ICX 7750 cut-through mode	This release introduces cut-through mode on the ICX 7750.	Upgrading to or downgrading from FastIron 08.0.30 on page 11
LAG enhancements	This release introduces several LAG enhancements, including the ability to rename the LAG dynamically, increased port capacity, and the addition of the show interface lag command.	Upgrading to or downgrading from FastIron 08.0.30 on page 11
Layer 3 multicast routing over MCT	This feature is introduced on the ICX 7750.	Upgrading to or downgrading from FastIron 08.0.30 on page 11
Layer 3 unicast routing over MCT	This feature is introduced on the ICX 7750.	
sflow CLI changes	Several sflow source commands are introduced.	Upgrading to or downgrading from FastIron 08.0.30 on page 11
Stacking CLI changes	Stacking CLI changes are introduced to support removable modules on the ICX 7450.	Upgrading to or downgrading from FastIron 08.0.30 on page 11
Stacking flash file changes	The stacking.boot file changes format in this release.	Upgrading to or downgrading from FastIron 08.0.30 on page 11
Unicast Reverse Path Forwarding (uRPF) check	This feature is introduced.	Upgrading to or downgrading from FastIron 08.0.30 on page 11

Supported hardware

This guide supports the following product families from Brocade:

- FastIron X Series devices (chassis models):
 - FastIron SX 800
 - FastIron SX 1600
- Brocade FCX Series (FCX) Switch
- Brocade ICX™ 6610 (ICX 6610) Switch
- Brocade ICX 6430 Series (ICX 6430)
- Brocade ICX 6450 Series (ICX 6450)
- Brocade ICX 6650 series (ICX 6650)
- Brocade ICX 7250 series (ICX 7250)
- Brocade ICX 7450 series (ICX 7450)
- Brocade ICX 7750 series (ICX 7750)

For information about the specific models and modules supported in a product family, refer to the hardware installation guide for that product family.

NOTE

The Brocade ICX 6430-C switch supports the same feature set as the Brocade ICX 6430 switch unless otherwise noted.

NOTE

The Brocade ICX 6450-C switch supports the same feature set as the Brocade ICX 6450 switch unless otherwise noted.

Upgrade and Downgrade Considerations

- [Upgrading to or downgrading from FastIron 08.0.30.....](#) 11
- [Considerations for devices with LAGs.....](#) 16
- [Considerations for devices in stack configurations.....](#) 17
- [Upgrade considerations for devices with flexible authentication.....](#) 17

Upgrading to or downgrading from FastIron 08.0.30

NOTE

You must upgrade to the boot code that supports this release. Refer to "Software image files for Release 08.0.xx" in the release notes for detailed information.

The following sections cover the details that should be considered before upgrading to any FastIron 08.0.30 or 08.0.30x release or downgrading to previous releases from FastIron 08.0.30 or 08.0.30x. General changes are indicated by the release number 08.0.30. Changes specific to another release are indicated, for example, as being specific to the 08.0.30b or the 08.0.30d release.

Flexible Authentication

FastIron 08.0.30b introduces the **authentication vlan-mode** and **mac-authentication enable-dynamic-vlan** commands. FastIron 08.0.30b also introduces the **authentication max-sessions** command for ICX 7250, ICX 7450, and ICX 7750 devices. These commands have upgrade and downgrade implications as described in [Upgrade considerations for devices with flexible authentication](#) on page 17.

LAG scaling

In FastIron 08.0.30b, the number of LAGs supported on each ICX 7250, ICX 7450, or ICX 7750 increases to 256. When you downgrade from FastIron 08.0.30b, only the first 128 LAGs are deployed. The remaining LAGs are not deployed, and related configuration is lost.

Symmetric load balancing

In FastIron 08.0.30b, symmetric load balancing is supported. When you downgrade to an earlier release, load balancing becomes asymmetric.

VRF ID

In FastIron 08.0.30b, a new field, VRF-id, is introduced in the flash file `dhcpsnoop.txt`. When upgrading to FastIron 08.0.30b or a newer version, if the flash file does not contain the VRF-id field, the VRF ID will be determined by the virtual port number. If the virtual port number is not available, the VRF ID will be determined from the VLAN ID.

When you downgrade from FastIron 08.0.30b or a newer release to an older release, the VRF-id field in the flash file will be ignored.

BGP4+ Multi-VRF

Downgrade from FastIron 08.0.30 will cause all BGP VRF6 configuration and previously learned routes to be deleted.

Equal Cost Multi-Path

ECMP is set to 8 by default in FastIron 8.0.30 but may be configured to larger values. Downgrading from FastIron 08.0.30 restores the ECMP default, and previously learned paths are lost. The ranges for ip load-sharing are also reduced. Before downgrading to an earlier release, the customer is advised to reduce the ECMP parameter to 8.

Flash timeout configuration

The default flash timeout will remain at 12 minutes. Users can change it to any value between 12 and 60 minutes using the **flash-timeout** command. The configured timeout is synced across a stack, and is applied after configuration to the next and all subsequent flash operations. On downgrade from FastIron 08.0.30, the flash timeout returns to the default of 12 minutes.

ICX 6610 license merge

In FastIron 8.0.30, the advanced features for ICX6610 are available with a premium license. If an advanced license has been previously installed on an ICX 6610, it will function as if it has been upgraded to FastIron 8.0.30. However, if the FastIron 08.0.30 premium license is installed on an ICX 6610 and it is downgraded to an earlier release, the advanced features will be lost. Refer to the *FastIron Ethernet Switch Licensing Guide* for more information on licensing changes.

ICX 7750 breakout port configuration

FastIron 08.0.30 adds breakout port capability on the ICX 7750, which allows a breakout cable to be applied on a 40-Gbps port and for four 10-Gbps sub-ports to be configured. If you have configured breakout ports and then downgrade to an earlier release, parsing errors are returned during bootup for any port that still has breakout configuration. The configuration for the 10-Gbps ports will be lost after reload, and the port will be returned to 40-Gbps mode.

NOTE

Cut-through mode is not supported globally if any 40-Gbps port is configured for breakout. The user is prompted to switch to "store-and-forward" mode before breakout CLI can be used.

ICX 7750 cut-through mode

In FastIron 08.0.30, cut-through mode disables port flow control by default. Previous code enabled incoming port flow control ("honor flow control") by default. Cut-through mode is enabled by default on the ICX 7750, and the **disable port flow** option is disabled by default. To switch modes, store-and-forward must be configured in global configuration mode.

LAG enhancements

After a downgrade from FastIron 08.0.30 to an earlier release, the configuration is removed from all LAG ports, and the LAG is returned to an undeployed state. Maximum configurable ports per LAG is reduced to eight on downgrade. Brocade recommends that you avoid downgrading from FastIron 08.0.30 to an earlier release if you have configured LAGs. Otherwise, reduce the number of ports per LAG to eight, save the configuration, and then downgrade.

Layer 3 multicast over MCT

If you have configured Layer 3 multicast routing over MCT and you downgrade from FastIron 08.0.30 to an earlier release, the PIM configurations on MCT member VLAN VEs will be lost.

Layer 3 unicast routing over MCT

If you have configured Layer 3 unicast routing over MCT and you downgrade from FastIron 08.0.30 to an earlier release, the OSPF configuration on the MCT member VEs will be rejected.

sflow CLI changes

Several **sflow source** commands are added in FastIron 08.0.30. Their use is documented in the *FastIron Ethernet Switch Administration Guide*. If you configure these commands and then downgrade to an earlier release, the system assumes the default behavior; that is, the IP address of the outgoing interface is used as the source IP address of the sFlow datagram.

Stacking CLI changes and ICX 7450 10 Gbps stacking

FastIron 08.0.30 introduces 10-Gbps stacking on the ICX 7450. When you downgrade an ICX 7450 from FastIron 08.0.30 to an earlier release and the unit contains 4x10-Gbps stacking configuration, stack-ports are reset to x/3/1 and x/3/4. In addition, these commands may be rejected and return errors: **default-port** and **stack-port**.

NOTE

MACsec is also introduced on the ICX 7450 in FastIron 08.0.30 on the same 4x10G module. When the module is inserted in slot 2, either MACsec or stacking can be supported on the module, but not both. Refer to the *FastIron Ethernet Switch Stacking Configuration Guide* for more information.

Stacking image upgrade/downgrade

The flash file `stacking.boot` is present in every unit in a stack. It may also be present in a standalone unit that has previously been a master stacking unit. Port numbers are not compatible between FastIron 08.0.30 and earlier releases because of the way they are stored in the `stacking.boot` file. Consequently, if you switch between FastIron 08.0.30 or a later release and any release that pre-dates FastIron 08.0.30, the following message is displayed for an upgrade:

```
Upgrade stacking.boot from non-breakout to breakout. Modify stacking ports.
```

The following message is displayed for a downgrade:

```
Downgrade stacking.boot from breakout to non-breakout. Modify stacking ports.
```

Upgrade procedure on the ICX 7750 for uRPF check

Unicast reverse path forwarding (uRPF) check is introduced in FastIron 08.0.30. While there is no pre-existing configuration to consider on upgrade, Brocade recommends that users follow these upgrade guidelines. For additional information on configuring uRPF, refer to the *FastIron Ethernet Switch Layer 3 Configuration Guide*.

- uRPF should not be configured on an active device and should not be changed frequently.

Due to hardware limitations, system software automatically reduces **system-max** values by half when uRPF is enabled. As a side-effect, some VRF configuration may be deleted.

Follow this sequence to avoid issues:

1. Enable uRPF on an inactive device.
2. Reload the device to prepare the hardware for subsequent configuration.
3. Configure system-max parameters for routes and VRF as needed. Reload.
4. Configure interfaces and any other parameters.

ICX 7750 downgrade considerations for uRPF check

Brocade recommends that you disable the uRPF feature and remove related configuration before you downgrade to a previous release from FastIron 08.0.30 or a later release. If you downgrade without disabling the feature, existing VRF configuration may be deleted because of changes to system default values and **system-max** limitations. The following **system-max** values are reset to their default values and must be reconfigured after reload:

- **ip-route**
- **ip6-route**
- **ip-route-default-vrf**
- **ip6-route-default-vrf**
- **ip-route-vrf**
- **ip6-route-vrf**

General considerations

- MACsec in FastIron 08.0.20a and later releases is not compatible with previous versions of the MACsec feature due to changes in CLI functionality. An upgrade is required.
- The **erase startup-config** command erases all startup configuration files (startup-config.txt and also the backup files).
- FSX devices with FastIron 08.0.xx installed, as well as all ICX 6430 and ICX 6450 devices, support only one configured system boot preference.
- In an FSX device, using an SX Series 0-Port Third Generation XL management module together with an SX Series 2-Port 10GbE Third Generation XL management module is not supported.
- On an FSX device with the SX Series 0-Port Third Generation XL management module, a hitless upgrade from FastIron 08.0.00a or 08.0.01 to 08.0.10 is not supported.
- For ICX 6430 devices, the **system-max mac-filter-sys** parameter value changed from 512 to 508 in FastIron 08.0.xx. If the current value of **system-max mac-filter-sys** is more than 508, you should change this value to 508 before upgrading. Otherwise, during upgrade, its value will be set to the default value of 64.
- To use a FastIron 07.x.xx configuration on a device upgraded to a FastIron 08.0.xx image, replacing the running configuration with the FastIron 07.x.xx configuration is not supported. Instead, you must copy the FastIron 07.x.xx configuration onto the startup configuration file and reload the device.

NOTE

There is a change in the default route configuration between the 7.x and 8.x releases. In the 8.x releases, the default route next hop cannot be configured as an GRE tunnel, VE, or physical port interface, which was supported in 7.x releases.

Before you upgrade from FastIron 7.x to FastIron 8.x, you must change the default GRE tunnel number to the GRE tunnel IP address. Otherwise, connectivity is lost after the upgrade. For example on a 7.4 device the following output is seen in the running configuration:

```
device# show running-config | include ip route
ip route 10.10.10.10 0.0.0.0 tunnel 1
```

To change the GRE IP route configuration:

```
device(config)# ip route 10.10.10.10 0.0.0.0 10.11.11.11
device(config)# exit
device# show running-config | include ip route
ip route 10.10.10.10 0.0.0.0 10.11.11.11
```

Where 10.11.11.11 is the IP address at the other end of the GRE tunnel.

Deprecated or removed features and commands

- SNTP is no longer supported. NTPv4 replaces SNTP.
- The **stack persistent-mac-timer** command is deprecated in FastIron 08.0.20.
- The Port Speed Down-Shift feature is deprecated in FastIron 08.0.xx.
- The **link-config gig copper autoneg-control down-shift ethernet** command is deprecated.
- The **show cpu-utilization** command replaces the **show process cpu** command.

Flash memory capacity

Consider the following limitations of different devices when upgrading software:

- All FastIron devices except ICX 6430 devices can hold two Layer 2 or Layer 3 images (for example, ICX64S08030.bin for Layer 2 and ICX64R08030.bin for Layer 3).
- ICX 6430 devices can hold only two Layer 2 images.

Security

- SSHv2 RSA host key format differs between FastIron 07.x.xx and 08.0.xx software versions.
- When you upgrade from FastIron 07.x.xx or 08.0.00 to a FastIron 08.0.xx software version, if an RSA key is present in the FastIron 07.x.xx or 08.0.00 software version, the same size key is regenerated in the FastIron 08.0.xx software version. The old SSHv2 host key is also retained. Old keys can be cleared using the **crypto key zeroize** command.
- SSH host keys created with the DSA method are interoperable with FastIron 07.x.xx, 08.0.00, and 08.0.xx software versions.
- By default, the RADIUS server key encryption type is 2 (simple_encryption_base64) in FastIron 08.0.xx. This is in contrast to earlier releases, where the default value for simple_encryption is 1. If you do not follow the upgrade procedure, the RADIUS server key configuration is removed during downgrade.

Upgrade method

There are several ways to upgrade the software. With all Brocade devices you can perform a manual (step-by-step) upgrade and since release 8.0.00a and you can upgrade through a manifest file. Refer to [Software Upgrade and Downgrade](#) on page 23.

Downgrade considerations

- Any new command in FastIron 08.0.xx is discarded during downgrade.
- The startup configuration as well as the run time changes in a FastIron 08.0.xx configuration are lost during downgrade.
- IPv6 static routing becomes part of the base license for an ICX 6610 in FastIron 08.0.30d. If you downgrade an ICX 6610 from FastIron 08.0.30d to an earlier release that is covered by a premium license, there will be no impact. If the earlier release is not covered by a premium license, any IPv6 static routing configuration on the ICX 6610 will be lost. In FastIron 8.0.30, advanced features for the ICX6610 are available with a premium license. If an advanced license has been previously installed on an ICX 6610, it will function as if it has been upgraded to FastIron 8.0.30. However, if the FastIron 08.0.30 premium license is installed on an ICX 6610 and it is downgraded to an earlier release, the advanced features will be lost.
- If software-based licensing is in effect on the device, and if the software is downgraded to a version earlier than FastIron 07.1.00, software-based licensing is not supported.
- SSHv2 RSA host key format differs among FastIron 07.x.xx, 08.0.00, and 08.0.xx software versions.
- On an FSX device with the SX Series 0-Port Third Generation XL management module, a hitless downgrade from FastIron 08.0.10 to 08.0.00a or 08.0.01 is not supported.
- When you downgrade from FastIron 08.0.xx to 08.0.00 or 07.x.xx, consider the following scenarios:
 - When an SSHv2 RSA host key in FastIron 08.0.00a or later is retained from FastIron 07.x.xx or 08.0.00, booting up with FastIron 07.x.xx or 08.0.00 reads the old format SSHv2 RSA host keys and enables the SSHv2 RSA server on the switch.
 - When an SSHv2 RSA host key is created in FastIron 08.0.00a and later, booting up with FastIron 07.x.xx or 08.0.00 software does not read the new format SSHv2 RSA host key, and the SSHv2 server is not enabled on the switch.

Considerations for devices with LAGs

- If you are upgrading to FastIron 08.0.xx and have either LAGs or LACP configured, the previous configuration is automatically updated to form a new equivalent LAG. To accomplish this, the old **trunk** and **link-aggregation** commands are maintained during startup configuration parsing but are disabled during normal configurations. The following are the major differences in LAG configuration in FastIron 08.0.xx compared to earlier releases:
 - A LAG is not created until a LAG is deployed using the **deploy** command.
 - LACP is not started until a dynamic LAG is deployed.
 - The number range for LAG ports is 1 to 8. For FSX third generation modules, the range is 1 to 12.
 - A LAG is created even if a static or dynamic LAG has only one port.
- If link aggregation is configured on your device and you are upgrading to a FastIron 08.0.xx configuration, the link aggregation configuration should have the key configured to identify the LAG. If the key is not configured, when you upgrade to FastIron 08.0.xx, all the link aggregation interfaces (without the key) are bundled as one misconfigured LAG. The configuration will fail if it exceeds the supported maximum number of members per LAG limit.
- All LAG configurations are lost during downgrade.
- In FastIron 08.0.30b, the number of LAGs supported on each ICX 7250, ICX 7450, or ICX 7750 increases to 256. When you downgrade from FastIron 08.0.30b, only the first 128 LAGs are deployed. The remaining LAGs are not deployed, and any related configuration is lost.
- The trunk configuration commands (**trunk ethernet** , **trunk deploy**, **trunk-cfg-ind** , **link-aggregation active | passive** , **link-aggregation conf key**) are deprecated. Instead, you can use the new LAG configuration commands.

Considerations for devices in stack configurations

Upgrade considerations

- Hitless stacking is enabled by default for FastIron 8.0.20 and later releases. In previous releases, **hitless-failover enable** must be configured. Upgrade behavior is as follows:
 - Upgrading to FastIron release 8.0.30 from a system running release 8.0.10 configured with **hitless-failover enable** - You must manually configure **hitless-failover enable**.
 - Upgrading to FastIron release 8.0.20 from an earlier version with **hitless-failover enable** configured - Hitless failover is retained as the default.
 - Upgrading to FastIron release 8.0.20 or later on a system running an earlier release that does not have **hitless-failover enable** configured - The previous configuration is retained; hitless stacking failover is not enabled.
 - Installing a FastIron release 8.0.20 or later image on a new system with no previous configuration. - Configured with **hitless-failover enable** is the default.
- Units in a stack must run the same IPC version to communicate. After an upgrade, verify that the same image is downloaded to every unit in the stack before reloading the entire stack. To verify the images, enter the **show flash** command at any level of the CLI. A stack cannot be built and will not operate if one or more units have different software images.
- A stack cannot form if the software images are of different major versions. A stack member is not operational if it runs a different minor version from other stack members; however, the active controller can download an image and reset a non-operational unit that has a minor version number different from the active controller.
- The Layer 3 configuration on your device becomes part of the default VRF after upgrade. If no configurations are done, all interfaces are part of the default VRF.

Upgrade considerations for devices with flexible authentication

The following behavior associated with flexible authentication should be taken into consideration when you upgrade to FastIron 08.0.20 or later.

NOTE

Some behavioral differences occur when you upgrade to FastIron 08.0.30b as indicated in the following sections.

- **Dot1x authentication and MAC authentication configured on default VLAN**

After you upgrade to FastIron 08.0.20 or later, global configuration for both dot1x authentication and MAC authentication move under the **authentication** command, and the first unused VLAN becomes auth-default-vlan (the authentication default VLAN), VLAN 2 in the following example. Interface level configuration for dot1x authentication and MAC authentication conform to any new CLI changes that are part of the upgrade.

For example, before upgrade, with dot1x authentication enabled on port 2/1/24 and MAC authentication enabled on 2/1/23 globally and at the interface level, the configured ports are part of the default VLAN. After upgrade, since port 2/1/23 and 2/1/24 are part of the default VLAN, they become part of the auth-default-vlan, VLAN 2 in this example.

```
vlan 1 name DEFAULT-VLAN by port >> 2/1/24 and 2/1/23 ports are part of default vlan
!
vlan 3 by port
tagged ethe 1/1/5
```

```

!
vlan 100 by port
tagged ethe 1/1/9
untagged ethe 1/1/18
!
vlan 200 by port
untagged ethe 1/1/15
!
vlan 201 by port
!
dot1x-enable >> global configuration
enable ethe 2/1/24
!
mac-authentication enable >> global configuration
mac-authentication auth-passwd-format xxxx.xxxx.xxxx
!
interface ethernet 2/1/24 >> interface level
dot1x port-control auto
!
interface ethernet 2/1/23 >> interface level
mac-authentication enable
mac-authentication max-accepted-session 32

```

The following example shows the configuration after the upgrade.

```

vlan 1 name DEFAULT-VLAN by port
!
vlan 2 by port
!
vlan 3 by port
tagged ethe 1/1/5
!
vlan 100 by port
tagged ethe 1/1/9
untagged ethe 1/1/18
!
vlan 200 by port
untagged ethe 1/1/15
!
vlan 201 by port
!
authentication >> dot1x and mac-auth global commands appear
                        under authentication command
auth-default-vlan 2
dot1x enable
dot1x enable ethe 2/1/24
mac-authentication enable
mac-authentication enable ethe 2/1/23
mac-authentication password-format xxxx.xxxx.xxxx
!
interface ethernet 2/1/23
authentication max-sessions 32
!
interface ethernet 2/1/24
dot1x port-control auto
!

```

- **Dot1x authentication and MAC authentication configured on a VLAN other than the default VLAN**

After you upgrade to FastIron 08.0.20 or later, global configuration for both dot1x authentication and MAC authentication move under the **authentication** command, and the first unused VLAN becomes auth-default-vlan, VLAN 2 in the following example.

For example, before upgrade, with dot1x authentication enabled globally on port 2/1/24 and MAC authentication enabled globally on port 2/1/23, the configured ports are part of VLANs 600 and 601. After upgrade, VLAN 600 becomes the auth-default-vlan for port 2/1/24, and 601 becomes the auth-default-vlan for port 2/1/23.

```

vlan 1 name DEFAULT-VLAN by port
!
vlan 3 by port

```

```

tagged ethe 1/1/5
!
vlan 100 by port
tagged ethe 1/1/9
  untagged ethe 1/1/18
!
vlan 200 by port
untagged ethe 1/1/15
!
vlan 201 by port
!
vlan 600 by port
  untagged ethe 2/1/24
!
vlan 601 by port
untagged ethe 2/1/23
!
dot1x-enable >> global configuration
enable ethe 2/1/24
!
mac-authentication enable >> global configuration
mac-authentication auth-passwd-format xxxx.xxxx.xxxx
!
interface ethernet 2/1/24 >> interface level
dot1x port-control auto
!
interface ethernet 2/1/23 >> interface level
mac-authentication enable
mac-authentication max-accepted-session 32

```

The following example shows the configuration after the upgrade.

```

vlan 1 name DEFAULT-VLAN by port
!
vlan 2 by port
!
vlan 3 by port
tagged ethe 1/1/5
!
vlan 100 by port
tagged ethe 1/1/9
  untagged ethe 1/1/18
!
vlan 200 by port
untagged ethe 1/1/15
!
vlan 201 by port
!
vlan 600 by port >> 2/1/24 should be removed
!
vlan 601 by port >> 2/1/23 should be removed
!
authentication
auth-default-vlan 2
dot1x enable
dot1x enable ethe 2/1/24
mac-authentication enable
mac-authentication enable ethe 2/1/23
  mac-authentication password-format xxxx.xxxx.xxxx
!
interface ethernet 2/1/24
authentication auth-default-vlan 600
dot1x port-control auto
!
interface ethernet 2/1/23
authentication auth-default-vlan 601
authentication max-sessions 32
!

```

- **Dot1x authentication and MAC authentication configured on a voice VLAN**

After you upgrade to FastIron 08.0.20 or later, global configuration for both dot1x authentication and MAC authentication moves under the **authentication** command, and the first unused VLAN moves as auth-default-vlan (the authentication default VLAN), VLAN 2 in the following example. Any **dual-mode** commands on the interface are replaced by the auth-default-vlan at the interface level. The **voice-vlan** command remains the same.

For example, before upgrade, with dot1x authentication enabled globally on port 2/1/24 and MAC authentication enabled globally on port 2/1/23, the configured ports are part of VLANs 100 and 200 respectively as tagged. Both of these ports are also part of voice-vlan VLAN 1000 as tagged. After upgrade, VLAN 100 becomes auth-default-vlan for port 2/1/24, and VLAN 200 becomes auth-default-vlan for port 2/1/23. The **voice-vlan 1000** command is retained.

```

vlan 1 name DEFAULT-VLAN by port
!
vlan 3 by port
tagged ethe 1/1/5
!
vlan 100 by port
tagged ethe 1/1/9 ethe 2/1/24
  untagged ethe 1/1/18
!
vlan 200 by port
tagged ethe 2/1/23
  untagged ethe 1/1/15
!
vlan 1000 by port
tagged ethe 2/1/23 to 2/1/24
!
dot1x-enable >> global configuration
enable ethe 2/1/24
!
mac-authentication enable >> global configuration
mac-authentication auth-passwd-format xxxx.xxxx.xxxx
!
interface ethernet 2/1/24 >> interface level
dot1x port-control auto
dual-mode 100
voice-vlan 1000
!
interface ethernet 2/1/23 >> interface level
mac-authentication enable
mac-authentication max-accepted-session 32
dual-mode 200
voice-vlan 1000

```

The following example shows the configuration after the upgrade.

```

FCX_Stack(2U)# sh run vlan
vlan 1 name DEFAULT-VLAN by port
!
vlan 2 by port
!
vlan 3 by port
tagged ethe 1/1/5
!
vlan 100 by port
tagged ethe 1/1/9 >> 2/1/24 should be removed
  untagged ethe 1/1/18
!
vlan 200 by port >> 2/1/23 should be removed
  untagged ethe 1/1/15
!
vlan 1000 by port
tagged ethe 2/1/23 to 2/1/24
!
authentication
auth-default-vlan 2
dot1x enable
dot1x enable ethe 2/1/24

```

```

mac-authentication enable
mac-authentication enable ethe 2/1/23
  mac-authentication password-format xxxx.xxxx.xxxx
  !
interface ethernet 2/1/24
authentication auth-default-vlan 100
dot1x port-control auto
voice-vlan 1000
!
interface ethernet 2/1/23
authentication auth-default-vlan 200
authentication max-sessions 32
voice-vlan 1000
!

```

Flexible Authentication

The **authentication vlan-mode** command introduced in FastIron 08.0.30b affects upgrade and downgrade as summarized in the following tables.

TABLE 4 Flexible authentication upgrade results

Upgrade scenario	vlan-mode	Comments
FastIron 08.0.10 to FastIron 08.0.20	Multiple untagged	Port can be part of multiple VLANs.
FastIron 08.0.10 to FastIron 08.0.30b or later	Single untagged	After upgrade, the default behavior is single untagged. If required, this default behavior can be changed to multiple untagged using the new CLI.
FastIron 08.0.20 to FastIron 08.0.30b or later	Single untagged. There will not be any change in configuration.	After upgrade, the default behavior is single untagged. If required, this default behavior can be changed to multiple untagged.

TABLE 5 Flexible authentication downgrade results

Downgrade scenario	vlan-mode	Comments
FastIron 08.0.30b to FastIron 08.0.20	Multiple untagged	The new authentication vlan-mode command configuration is lost.
FastIron 08.0.30b to FastIron 08.0.10x	Single untagged	All flexible authentication configuration is lost. You must reconfigure as per CLI syntax in FastIron 08.0.10x.
FastIron 08.0.20 to FastIron 08.0.10x	Single untagged	All flexible authentication configuration is lost. You must reconfigure as per CLI syntax in FastIron 08.0.10x.

FastIron 08.0.30b introduces support for the **authentication max-sessions** command on ICX 7250, ICX 7450, and ICX 7750 devices. Consequently, when you upgrade to or downgrade from FastIron 08.0.30b or a newer release, CLI behavior changes. The following tables summarize changes for different FastIron devices.

TABLE 6 Upgrade behavior for the authentication max-sessions command

Upgrade scenario	Behavior	Comment
FastIron 08.0.10 to FastIron 08.0.20	Maximum = 32 users	The default is 2 for ICX6610, FCX, ICX6430, and ICX 6450 devices. The maximum can be set to 32. For ICX 7450 and ICX 7750 devices, the default is 32 and cannot be changed.

TABLE 6 Upgrade behavior for the authentication max-sessions command (continued)

Upgrade scenario	Behavior	Comment
FastIron 08.0.10 to FastIron 08.0.30b or later	Default = 2 users	Can be configured as a larger number, maximum 256 or 1024, depending on the type of device.
FastIron 08.0.20 to FastIron 08.0.30b or later	Default = 2 users	Can be configured as a larger number, maximum 256 or 1024, depending on the type of device.

TABLE 7 Downgrade behavior for the authentication max-sessions command

Downgrade scenario	Behavior	Comment
FastIron 08.0.30b to FastIron 08.0.20x	Maximum = 32 users	Configuration lost on downgrade when max-sessions configured value is greater than 32.
FastIron 08.0.30b to FastIron 08.0.10x	Maximum = 250 users	Configuration lost on downgrade.
FastIron 08.0.20 to FastIron 08.0.10x	Maximum = 250 users	Configuration lost on downgrade.

Refer to the *FastIron Ethernet Switch Security Configuration Guide* for more information on flexible authentication.

Software Upgrade and Downgrade

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• Loading images on the device.....	27
• Upgrade using a manifest file.....	34
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• Software recovery.....	38

Software upgrade overview

Follow these steps to upgrade software.

1. Determine the current software versions and license requirements, and download the software as described in [Initial steps](#) on page 23.
2. Upgrade the software.
 - Upgrade the software as described in [Upgrade process](#) on page 26.
 - FastIron 08.0.00a and later releases also support a manifest file upgrade. For more information, refer to [Upgrade using a manifest file](#) on page 34.

Initial steps

Perform the following steps before an upgrade or downgrade.

NOTE

You must upgrade to the boot code that supports this release. Refer to "Software image files for Release 08.0.xx" in the release notes for detailed information.

NOTE

In this section, the output is truncated. Only relevant portions of the output is displayed. For detailed output, see [Sample output - determining the software versions](#) on page 24.

1. Determine the current boot image version using the **show flash** command.

```
device# show flash
Active Management Module (Slot 9):
Compressed Pri Code size = 3613675, Version 03.1.00aT3e3 (sxr03100a.bin)
Compressed Sec Code size = 2250218, Version 03.1.00aT3e1 (sxs03100a.bin)
Compressed BootROM Code size = 524288, Version 03.0.01T3e5
Code Flash Free Space = 9699328
<output is truncated to show relevant sections only>
```

- Determine the current flash image version using the **show version** command.

```
device# show version
Copyright (c) 1996-2012 Brocade Communications Systems, Inc. All rights reserved.
  UNIT 1: compiled on Mar  2 2012 at 12:38:17 labeled as ICX64S07400
          (10360844 bytes) from Primary ICX64S07400.bin
          SW: Version 07.4.00T311

  Boot-Monitor Image size = 774980, Version:07.4.00T310 (kxz07400)
  HW: Stackable ICX6450-24
<output is truncated to show relevant sections only>
```

- Determine the current license installed using the **show version** command.

```
device# show version
...
License: BASE_SOFT_PACKAGE   (LID: dbuFJJHiFFi)
        P-ENGINE  0: type DEF0, rev 01
...
<output is truncated to show relevant sections only>
```

- Generate a new license, if required, from the [Software License](#) page on Brocade.com. If you are upgrading to a different type of image that uses a different license from the one already installed on the device, generate a separate license file. For more information on licenses, refer to the *FastIron Ethernet Switch Licensing Guide*.
- Download the required software images from the [Downloads](#) page on the MyBrocade website. For the list of software image files available for FastIron 08.0.xx, refer to the release notes.

Determining the software versions (sample output)

This section provides examples to help you determine the following:

- flash image version
- boot image versions
- current licenses installed.

Determining the flash image version

To determine the flash image version, enter the **show version** command at any level of the CLI.

```
device# show version
Copyright (c) 1996-2012 Brocade Communications Systems, Inc. All rights reserved.
  UNIT 1: compiled on Mar  2 2012 at 12:38:17 labeled as ICX64S07400
          (10360844 bytes) from Primary ICX64S07400.bin
          SW: Version 07.4.00T311

  Boot-Monitor Image size = 774980, Version:07.4.00T310 (kxz07400)
  HW: Stackable ICX6450-24
=====
UNIT 1: SL 1: ICX6450-24 24-port Management Module
        Serial #: BZSXXXXXXXXX
        License: BASE_SOFT_PACKAGE   (LID: dbuFJJHiFFi)
        P-ENGINE  0: type DEF0, rev 01
=====
UNIT 1: SL 2: ICX6450-SFP-Plus 4port 40G Module
=====
      800 MHz ARM processor ARMv5TE, 400 MHz bus
65536 KB flash memory
  512 MB DRAM
STACKID 1  system uptime is 3 minutes 39 seconds
The system : started=warm start  reloaded=by "reload"
```


In the previous example:

- "07.4.00T311" indicates the flash code version number.
- "labeled as ICX64S07400" indicates the flash code image label. The label indicates the image type and version and is especially useful if you change the image file name.
- "Primary ICX64S07400.bin" indicates the flash code image file name that was loaded.
- "License: BASE_SOFT_PACKAGE (LID: dbuFJJHiFFi)" indicates the license currently installed on the device.

Determining the boot image versions

To determine the boot and flash images installed on a device, enter the **show flash** command at any level of the CLI.

```
device# show flash
Active Management Module (Slot 9):
Compressed Pri Code size = 3613675, Version 03.1.00aT3e3 (sxr03100a.bin)
Compressed Sec Code size = 2250218, Version 03.1.00aT3e1 (sxs03100a.bin)
Compressed BootROM Code size = 524288, Version 03.0.01T3e5
Code Flash Free Space = 9699328
Standby Management Module (Slot 10):
Compressed Pri Code size = 3613675, Version 03.1.00aT3e3 (sxr03100a.bin)
Compressed Sec Code size = 2250218, Version 03.1.00aT3e1 (sxs03100a.bin)
Compressed BootROM Code size = 524288, Version 03.0.01T3e5
Code Flash Free Space = 524288
```

In the previous example:

- The "Compressed Pri Code size" line lists the flash code version installed in the primary flash area.
- The "Compressed Sec Code size" line lists the flash code version installed in the secondary flash area.
- The "Compressed BootROM Code size" line lists the boot code version installed in flash memory. The device does not have separate primary and secondary flash areas for the boot image. The flash memory module contains only one boot image.

Determining the current licenses installed

Use the **show version** command to display the licenses installed on the device.

```
device# show version
Copyright (c) 1996-2015 Brocade Communications Systems, Inc. All rights reserved.
UNIT 1: compiled on May 19 2015 at 20:07:00 labeled as SPS08040b074
(28893380 bytes) from Primary SPS08040b074.bin
SW: Version 08.0.40b074T211
Compressed Boot-Monitor Image size = 786944, Version:10.1.05T215 (spz10105)
HW: Stackable ICX7450-24
Internal USB: Serial #: 9900614090900038
Vendor: ATP Electronics, Total size = 1919 MB
=====
UNIT 1: SL 1: ICX7450-24 24-port Management Module
Serial #:CYT3346K035
License: BASE_SOFT_PACKAGE (LID: eavIILmFIK)
P-ASIC 0: type B548, rev 01 Chip BCM56548_A0
=====
```

In this example, the second section shows that a base software package license is installed, with a license ID (LID) of eavIILmFIK.

What to do next

1. If required, generate a new license from the [Software License](#) page on Brocade.com. For instructions on how to generate a license, refer to the *Brocade FastIron Software Licensing Guide*.
2. Download the software from the [Downloads](#) page on the MyBrocade website to a TFTP server.

3. Perform the upgrade:
 - If you are conducting a manual (step-by-step) upgrade, go to the section [Upgrade process](#) on page 26.
 - If you are conducting a manifest file upgrade, go to the section [Upgrade using a manifest file](#) on page 34.

Upgrade process

FastIron 08.0.xx introduces several new features and enhancements across all FastIron products. Before upgrading the software on the device, refer to [Upgrade and Downgrade Considerations](#) on page 11.

NOTE

If you are upgrading from FastIron 08.0.00a or later, you can upgrade using a manifest file. It provides a simplified upgrade mechanism, especially for units in a stack. For details, refer to [Upgrade using a manifest file](#) on page 34.

Software upgrade on ICX 6430, ICX 6450, ICX 6610, ICX 6650, ICX 7250, ICX 7450, ICX 7750, and FCX devices

NOTE

For limitations on upgrading an ICX 6650 device from FastIron 07.5.xx to 08.0.xx, refer to [Software upgrade from 07.5.xx to 08.0.01](#) on page 27.

1. Load the boot code and flash code. For detailed steps, refer to [Loading images on the device](#) on page 27.
2. Enter the **write memory** command to back up the existing startup configuration and to save the running configuration as the startup configuration. The existing startup configuration file, `startup-config.txt`, is automatically copied and synced to the standby unit.

NOTE

When a device boots up with a FastIron 08.0.xx image after an upgrade, the commands in the startup configuration are converted to corresponding FastIron 08.0.xx commands. The running configuration will have supported FastIron 08.0.xx commands, and the startup configuration file will have the configuration commands supported in the releases prior to FastIron 08.0.xx. When you enter the **write memory** command, the startup configuration file (`startup-config.txt`) is first backed up as the `startup-config.legacy` file. Then the running configuration file is saved as the startup configuration. The backup configuration file (`startup-config.legacy`) is used when you downgrade to an earlier version.

Software upgrade on FSX devices

On FastIron SX series devices, the old management module does not support FastIron 08.0.xx. The FastIron SX Series 0-Port Third Generation XL Management Module supports only FastIron 08.0.00a or later versions, and the FastIron SX Series 2-Port 10GbE Third Generation XL Management Module supports only FastIron 08.0.10 or later versions.

NOTE

For FSX devices, you can perform a hitless upgrade to a minor or patch release. For details, refer to "Hitless management on the FSX 800 and FSX 1600" in the *FastIron Ethernet Switch Administration Guide*.

To upgrade an FSX device to FastIron 08.0.xx, perform the following steps.

1. Verify that the currently installed management module supports FastIron 08.0.xx. If it does not, uninstall the management module and install a management module that supports the release. For information on installing a management module in FSX, refer to the *Brocade FastIron SX Series Chassis Hardware Installation Guide*.

NOTE

If you have installed a management module that was factory-loaded with the required software version, the upgrade is complete, and you can skip the next step.

2. Load the required boot code. For detailed steps, refer to [Loading images on the device](#) on page 27.
3. Load the required flash code. For detailed steps, refer to [Loading the flash code](#) on page 29.

NOTE

When upgrading an FSX device with the FastIron SX Series 0-Port Third Generation XL Management Module from FastIron 08.0.0x to 08.0.10 or 08.0.10a, download the flash image to the primary flash only. Downloading the flash image to the secondary flash is not supported. Reload the device with the **boot system flash primary** command to boot from the primary flash. After reload, the device automatically copies the image to the secondary flash. After a successful upgrade to FastIron 08.0.10 or 08.0.10a, downloading a later software version to the secondary as well as primary flash is supported; however, a mix of FastIron 08.0.10 or 08.0.10a and an earlier version image in the flash partitions is not supported.

Software upgrade from FastIron 07.5.xx to 08.0.01

The following limitations are applicable when upgrading from FastIron 07.5.xx to 08.0.01:

- When you load the FastIron 08.0.01 boot code on a FastIron device with FastIron 07.5.xx installed, the device loses all boot environment variables. As a result, you cannot use the **boot system flash primary** or **boot system flash secondary** commands to configure boot preference. The device also ignores any boot preference stated in the startup configuration file. As a result, the device boots from the default primary flash. This is only an upgrade limitation. Once the upgrade is complete, the device boots from the preferred flash partition as configured.
- You must load the primary as well as the secondary flash with the FastIron release 08.0.01 flash image. A mix of FastIron 07.5.xx and FastIron 08.0.01 images in the flash partitions is not supported.

Loading images on the device

Any software upgrade or downgrade requires you to copy the downloaded images onto the device and load the new image on the device. You must load the boot code and flash code on the device.

Software upgrade and downgrade file transfers

Software images for all Brocade devices can be uploaded and downloaded between flash modules on the devices and a TFTP server on the network.

Brocade devices have two flash memory modules:

- Primary flash - The default local storage device for image files and configuration files
- Secondary flash - A second flash storage device. You can use secondary flash to store redundant images for additional booting reliability or to preserve one software image while testing another one.

Only one flash device is active at a time. By default, the primary image becomes active when you reboot the device.

You can use TFTP to copy an update image from a TFTP server onto a flash module. You can also use SCP to copy images to and from a host. When you want to back up the current configuration and images for a device, you can copy the images and configuration files from a flash module to a TFTP server.

NOTE

Brocade devices are TFTP clients, not TFTP servers. You must perform a TFTP transaction from the Brocade device.

Loading the boot code

You can load the boot code using either TFTP or SCP as described in the following sections.

NOTE

To upgrade FastIron 07.3.00f to 08.0.xx or FastIron 08.0.00a to 08.0.01, it is strongly recommended that you use SCP to reliably and securely load boot code. To upgrade FastIron 07.4.xx to 08.0.xx or FastIron 07.5.xx to 08.0.01, use TFTP to ensure that you have no network disruptions during upgrade.

Loading the boot code using TFTP

1. Place the new boot code on a TFTP server to which the Brocade device has access.
2. If the device has only 8 MB of flash memory or if you want to install a full Layer 3 image on an FCX or FSX device, delete both the primary and secondary images using the **erase flash** command.
3. Enter the following command at the privileged EXEC level of the CLI to copy the boot code from the TFTP server into flash memory:

```
copy tftp flash ip-addr image-file-name bootrom
```

For example:

```
Brocade # copy tftp flash 192.168.10.12 grz07302.bin bootrom
```

FSX, FCX, and ICX 6610 devices generate an output similar to the following:

```
Brocade # Flash Memory Write (8192 bytes per dot) .....
(Boot Flash Update)Erase.....Write.....
TFTP to Flash Done
```

ICX 6430 and ICX 6450 devices generate an output similar to the following:

```
Brocade # Load to buffer (8192 bytes per dot)
.....
SYNCING IMAGE TO FLASH. DO NOT SWITCH OVER OR POWER DOWN THE UNIT...
.....
TFTP to Flash Done
```

NOTE

It is recommended that you use the **copy tftp flash** command to copy the boot code to the device during a maintenance window. Attempting to do so during normal networking operations may cause disruption to your network.

4. Verify that the code has been successfully copied by using the **show flash** command at any level of the CLI to check the boot code version. The output displays the compressed boot ROM code size and the boot code version.

Next, go to the section [Loading the flash code using TFTP](#) on page 29.

Loading the boot code using SCP

1. Place the new boot code on an SCP-enabled host to which the Brocade device has access.

2. If the device has only 8 MB of flash memory, or if you want to install a full Layer 3 image, delete both the primary and secondary image using the **erase flash** command.
3. Enter the following command to copy the boot code from the SCP-enabled host into flash memory:

```
pscp image-file-name hostname@management-ip:flash:bootrom
```

For example:

```
C:\> pscp grz07302.bin terry@10.168.1.50:flash:bootrom
```

4. Verify that the code has been successfully copied onto the device by using the **show flash** command at any level of the CLI. The output displays the compressed boot ROM code size and the boot code version.

Next, go to the section [Loading the flash code using SCP](#) on page 30.

Loading the flash code

You can load the flash code using either TFTP or SCP as described in the following sections.

NOTE

It is strongly recommended that you use SCP for reliable and secure loading of flash code.

Loading the flash code using TFTP

1. Place the new flash code on a TFTP server to which the Brocade device has access.
2. If the device has only 8 MB of flash memory, or if you want to install a full Layer 3 image, make sure that the TFTP server and the image file are reachable and then delete the primary and secondary images before proceeding.

NOTE

If the primary flash contains additional files that are not related to the software update, it is recommended that these files also be deleted.

3. Enter the following command at the privileged EXEC level of the CLI to copy the flash code from the TFTP server into flash memory.

```
copy tftp flash ip-addr image-file-name primary | secondary
```

For example,

```
Brocade # copy tftp flash 192.168.10.12 TIS07300f.bin primary
```

FSX, FCX, and ICX 6610 devices generate an output similar to the following:

```
Device# Flash Memory Write (8192 bytes per dot) .....
.....
TFTP to Flash Done
```

ICX 6430 and ICX 6450 devices generate an output similar to the following:

```
Brocade # Load to buffer (8192 bytes per dot)
.....
.....
SYNCING IMAGE TO FLASH. DO NOT SWITCH OVER OR POWER DOWN THE UNIT...
.....
TFTP to Flash Done.
```

- Verify the flash image version by using the **show flash** command at any level of the CLI.

NOTE

When upgrading the flash image version, the image is automatically updated across all stack units. For other devices, when upgrading from one major release to another (for example, from FastIron 07.1.00 to 07.2.00), make sure that every unit in the traditional stack has the same code. If you reboot the stack while units are running different code versions, the units will not be able to communicate.

- Reboot the device using the **reload** or **boot system** command.
- Verify that the new flash image is running on the device by using the **show version** command.

Loading the flash code using SCP

- Place the new flash code on an SCP-enabled host to which the Brocade device has access.
- If the device has only 8 MB of flash memory, or if you want to install a full Layer 3 image, delete the primary and secondary images before upgrading the image. If the primary flash contains additional files that are not related to the software update, delete these files also.
- Copy the flash code from the SCP-enabled host into the flash memory using the following methods.

- Copy the flash code using SCP tool using the following command.

scp *image-file-name* *hostname@management-ip:flash:primary* | *secondary*

Or, if you also want to specify the name for the image file on the FastIron device, enter the following command:

scp *image-file-name-on-scp-host* *hostname@management-ip:flash:pri* | *sec:image-file-name-on-device*

NOTE

The *image-file-name-on-device* variable is case-insensitive and converts any uppercase characters in the image file name to lowercase characters.

For example:

```
C:\> scp SPS08030.bin terry@10.168.1.50:flash:primary
```

or

```
C:\> scp SPS08030.bin terry@10.168.1.50:flash:pri:SPS08030.bin
```

or

```
C:\> scp SPS08030.bin terry@10.168.1.50:flash:secondary
```

or

```
C:\> scp SPS08030.bin terry@10.168.1.50:flash:sec:SPS08030.bin
```

- Copy the flash code using PSCP tool.

pscp *image-file-name* *hostname@management-ip:flash:primary* | *secondary*

```
D:\Images>pscp.exe SPS08030.bin brocade@172.26.67.84:flash:primary
```

NOTE

On ICX 6430 and ICX 6450 devices, you can use the same syntax as for FCX devices. However, after the copy operation is completed at the host, you do not get the command prompt back because the device is synchronizing the image to flash. To ensure that you have successfully copied the file, enter the **show flash** command. If the copy operation is not complete, the **show flash** command output shows the partition (primary or secondary) as EMPTY.

4. Verify that the flash code has been successfully copied onto the device by using the **show flash** command at any level of the CLI.
5. Reboot the device using the **reload** or **boot system** command.
6. Verify that the new flash image is running on the device by using the **show version** command.

Additional steps for loading boot code

There are additional steps for loading boot code on Brocade ICX 7250, ICX 7450, and ICX 7750 (ICX 7xxx) series devices.

Brocade ICX 7xxx series devices hold a default boot code image and a backup boot code image. These two images are managed in a manner invisible to users. When boot code is downloaded during an upgrade, the boot code is downloaded to the backup boot code image. When the download is safely complete, the backup boot code image becomes the new default boot code image, and the former default boot code image becomes the new backup boot code image. The default boot code image is used by default for all subsequent reloads. The backup boot code is used when the default is unavailable for any reason.

To upgrade both boot code images, you must reload once between each download of boot code. It is necessary to reload one more time after the second download of boot code.

On ICX 7xxx series devices, Brocade recommends that you are certain that the default and backup boot code images hold the same version and are both bootable: To assure that both boot code images are bootable and hold the same version, when you perform any upgrade involving boot code, after the first reload with new code, download the same new boot code again, and reload once again.

You can use either the TFTP or SCP method for the additional download of new boot code. For example, with the TFTP method, after booting up a Brocade ICX 7450 with 8.0.30 for the first time, download compatible boot code using TFTP again, and reload once again in this manner:

```
device# copy tftp flash 192.168.10.12 spz10105.bin bootrom
...TFTP to Flash Done.
device# reload
Are you sure? (enter 'y' or 'n'): y
```

For Brocade ICX 7xxx series devices, an alternative boot monitor download method is also available and is documented below.

Upgrading backup and default boot code images

Follow these steps to ensure that both the backup and default boot code images are identical when upgrading Brocade ICX 7xxx series devices.

The boot monitor method for boot code download available to ICX 7250, ICX 7450, and ICX 7750 is similar to the software recovery method documented later in this upgrade guide. In the procedure below an ICX 7450 device is used.

1. Connect a console cable from the console port to the terminal server.
2. Connect an Ethernet cable from the management port (the port located under the console port on the device) to the TFTP server.
3. On the TFTP server, assign an IP address to the connected NIC; for example, IP address 10.10.10.21 mask 255.255.255.0.
4. Reboot the device, and go to the boot monitor mode by pressing **b**.

```
U-Boot 10.1.04T215 (Oct 30 2014 - 00:08:19)
....
Enter 'b' to stop at boot monitor:
ICX7450-Boot> b
```

5. When in boot mode, enter the **printenv** command to display details of the environment variables available on the device memory.

```
ICX7450-Boot> printenv
baudrate=9600
ipaddr=192.168.60.13
serverip=192.168.60.1
netmask=255.255.255.0
gatewayip=192.168.0.1
uboot=spz10105
image_name=SPS08030.bin
ver=10.1.04T215 (Oct 30 2014 - 00:08:29)

Environment size: 183/16379 bytes
ICX7450-Boot>
```

6. Provide the IP address of the TFTP server that hosts a valid software image using the **setenv serverip** command.

```
ICX7450-Boot> setenv serverip 172.24.204.18
```

7. Set the IP address, netmask, and gateway IP address for the device management port.

- a) Set the IP address.

```
ICX7450-Boot> setenv ipaddr 172.24.204.19
```

- b) Set the netmask.

```
ICX7450-Boot> setenv netmask 255.255.255.0
```

- c) Set the gateway IP address.

```
ICX7450-Boot> setenv gatewayip 172.24.204.1
```

See the following section, [Save the parameters configured in boot monitor](#) on page 33.

8. Configure the filename of the boot code you intend to download.

```
ICX7450-Boot> setenv uboot spz10105.bin
```

9. Download new boot code by entering the **update_uboot** command.

```
ICX7450-Boot> update_uboot
Loading image to Uboot Partition 2
Using bcmiproc_eth-0 device
TFTP from server 172.24.204.18; our IP address is 172.24.204.19
Filename 'spz10105.bin'.
Load address: 0x61007dc0
Loading: #####
done
Bytes transferred = 786944 (c0200 hex)
sf erase 0x0 0x100000
copying uboot image to flash, it will take sometime...
sf write 0x61007fc0 0x0 0xc0000
TFTP to Flash Done.
ICX7450-Boot>
```

The **update_uboot** command is unique to this upgrade method and it does not behave like any plain CLI TFTP download command.

10. Reload using either the **reset** or **powercycle** command. This allows you to boot using the newly downloaded boot code.

- ICX7450-Boot> reset
- ICX7450-Boot> powercycle

- To upgrade the other boot code image, while the ICX is booting up again press **b** to enter boot monitor again, and continue from Step 4 above.

```
U-Boot 10.1.04T215 (Oct 30 2014 - 00:09:11)
....
Enter 'b' to stop at boot monitor:
ICX7450-Boot> b
```

Save the parameters configured in boot monitor

In boot monitor, you can use the **saveenv** command to save values configured with the **setenv** command. However, caution is required when using the **saveenv** command from boot monitor after configuring an IP address with **setenv ipaddr**. Be aware of the following:

- If you use the **saveenv** command, the IP address you used in the command is configured the next time you enter boot monitor. However, after you boot up into flash code, even when that IP address does not appear in the running configuration, the ICX continues to respond to ARP requests for that IP address. The MAC address in those ARP replies will be a special boot monitor MAC address that is similar to but slightly different from the MAC addresses you can see with the **show interface** command.
- If you configure that same IP address on any other device in the same broadcast domain, you experience difficulty communicating with that other device.
- If you are using switching flash code on the ICX and you configure that same IP address in the running configuration, you will experience difficulty communicating with the ICX at that IP address.
- If you are using routing flash code on the ICX and you configure that same IP address on the management interface, the ICX will report a duplicate IP address detected on the management interface.

If you use **saveenv** after configuring **setenv ipaddr** in boot monitor, you must be careful to not use the same IP address anywhere else in your network even in the running configuration of the same ICX.

See the following section for the procedure to view the boot monitor IP parameters.

Viewing the boot monitor IP parameters

From the flash code CLI, it is possible to check the currently configured boot monitor IP address even though it does not appear in the running configuration.

- Enter OS mode.

```
ICX# Press Ctrl+y, then the m key, then Enter
Switch to OS console...
```

- Check the configured boot monitor IP address.

```
OS>show remote
IP address      : 172.24.204.20
subnet mask    : 255.255.255.0
default gateway : 172.24.204.1
```

- Return to the flash code CLI

```
OS> Press Ctrl+z
Back to Application console...
ICX#
```

View boot monitor IP parameters example

```
ICX# Press Ctrl+y, then the m key, then Enter
Switch to OS console...
OS> show remote
  IP address      : 172.24.204.20
  subnet mask    : 255.255.255.0
  default gateway : 172.24.204.1
OS> Press Ctrl+z
Back to Application console...
ICX#
```

Upgrade using a manifest file

FastIron 08.0.00a introduced a manifest file to provide a simplified upgrade mechanism from FastIron 08.0.00a to later releases, especially for units in a stack. You can use a single command to copy boot and flash images. Using the official manifest file, the images are copied onto the devices, and all member units are upgraded.

NOTE

These devices support software upgrades using a manifest file for standalone devices as well as for homogeneous and mixed stacks: FCX, ICX 6430, ICX 6450, ICX 6610, ICX 6650, ICX 7250, ICX 7450, and ICX 7750 devices.

NOTE

The manifest file upgrade process is only applicable when you upgrade a device from FastIron 08.0.00a to a later version. For upgrades to FastIron 08.0.xx, refer to [Upgrade process](#) on page 26.

1. Unzip the downloaded FastIron image files on the TFTP server. This places the manifest file at the top of the directory structure with the images in subdirectories. Ensure that the Brocade device has access to the TFTP server.
2. If upgrading from FastIron 08.0.00a, delete the following lines from the manifest text file.

```
-DIRECTORY /RP/Boot
fxz08001b007.bin

-DIRECTORY /RP/Images
ICXS08001q033.bin
ICXR08001q033.bin

-DIRECTORY /RP/Signatures
fxz08001b007.sig
ICXS08001q033.sig
ICXR08001q033.sig

-DIRECTORY /RP/MIBs
ICXS08001q033.mib
ICXR08001q033.mib

-DIRECTORY /RP/Manuals
```

- If upgrading to FastIron 08.0.10, delete the following lines from the manifest text file.

```
-DIRECTORY /ICX7750/Boot
swz10100.bin

-DIRECTORY /ICX7750/Images
SWS08010.bin
SWR08010.bin

-DIRECTORY /ICX7750/Signatures
swz10100.sig
SWS08010.sig
SWR08010.sig

-DIRECTORY /ICX7750/MIBs
SWS08010.mib
SWR08010.mib

-DIRECTORY /ICX7750/Manuals
```

- If the FastIron device has only 8 MB of flash memory or if you want to install a full Layer 3 image on a device, delete the primary and secondary images before upgrading the image.

NOTE

Make sure that the TFTP server and the image files are reachable before deleting the image from flash. If the primary flash contains additional files that are not related to the software update, those files should also be deleted.

- The manifest file upgrade process does not support downloading boot images in a mixed stack. If a newer boot image version is available, load the boot code manually in the stack units of a mixed stack. For detailed steps, refer to [Upgrade process](#) on page 26.
- Enter the following commands to copy the manifest file and the images from the TFTP server to the device:

```
copy tftp system-manifest server-ip-address manifest-file-name [ primary | secondary ]
```

or

```
copy tftp system-manifest server-ip-address manifest-file-name [ all-images-primary | all-images-secondary ]
```

For example:

```
Brocade # copy tftp system-manifest 192.168.10.12 manifest.txt primary
```

You can use the **all-images-primary** and **all-images-secondary** options to copy all the images.

NOTE

Copying the manifest file using SCP is not supported.

NOTE

For standalone devices or a homogeneous stack, the manifest upgrade process downloads the boot image to the device only if a newer boot image version is available.

The manifest file specifies images for both router and switch types. Based on the device family and the type of image (switch or router), the appropriate images are installed.

After all the relevant images have been installed on the device, you are prompted to reboot the device to complete the upgrade process.

Example of a manifest file upgrade

```

Brocade# copy tftp system-manifest 10.20.65.49 FI08000B3_Manifest.txt all-images-primary
You are about to download boot image and boot signature image as well, ARE YOU SURE?(enter 'y' or 'n'): y
Brocade# Flash Memory Write (8192 bytes per dot) .
DOWNLOADING MANIFEST FILE Done.
Brocade# Flash Memory Write (8192 bytes per dot)
Automatic copy to member units: 2
DOWNLOAD OF ICX6610 BOOT SIGNATURE Done.
Brocade# Load to buffer (8192 bytes per dot)
Automatic copy to member units: 2
.....Write to boot flash..
DOWNLOAD OF ICX6610 BOOT Done.
Brocade#Flash Memory Write (8192 bytes per dot)
Automatic copy to member units: 2
Copy ICX6610 signature from TFTP to Flash Done
Brocade#Flash Memory Write (8192 bytes per dot)
Automatic copy to member units: 2
.....
.....
WARNING: New user connected to this port.
Current number of users: 5
.....
.....
.....
Copy ICX6610 from TFTP to Flash Done.
Brocade# Flash Memory Write (8192 bytes per dot)
Automatic copy to member units: 3 4 5 7 8
.
COPY ICX6450 SIGNATURE TFTP to Flash Done .
Brocade# Flash Memory Write (8192 bytes per dot)
Automatic copy to member units: 3 4 5 7 8
.....
.....
.....
.....
.....PLEASE WAIT. MEMBERS SYNCING IMAGE TO FLASH.
DO NOT SWITCH OVER OR POWER DOWN THE UNIT....
Copy ICX6450 from TFTP to Flash Done
Brocade# Flash Memory Write (8192 bytes per dot)
Automatic copy to member units: 3 4 5 7 8
.
DOWNLOAD OF ICX6450 BOOT SIGNATURE Done
Brocade# Load to buffer (8192 bytes per dot)
Automatic copy to member units: 3 4 5 7 8
.....PLEASE WAIT.
MEMBERS SYNCING IMAGE TO FLASH. DO NOT SWITCH OVER OR POWER DOWN THE UNIT...Write to boot flash..
ICX6450 Boot IMAGE COPY IS DONE .

```

Downgrade process

Before downgrading the software on the device, refer to [Upgrade and Downgrade Considerations](#) on page 11.

Software downgrade on ICX 6430, ICX 6450, ICX 6610, ICX 6650, and FCX devices

1. If you are downgrading from FastIron 08.0.30 to a FastIron 7.x.xx release that the device was upgraded from, enter the **downgrade_to** command at the privileged EXEC level. This command renames the backup startup-config.legacy file as startup-config.txt and overwrites the existing startup configuration file.

```
Brocade# downgrade_to 7.x-releases
This operation will delete the current configuration. Are you sure? (enter 'y' or 'n'):
```

NOTE

Do not run the **write memory** command after using the **downgrade_to** command; otherwise, you will lose the legacy configuration.

NOTE

The **downgrade_to** command renames the backup configuration file startup-config.legacy as startup-config.txt, which overwrites the FastIron 08.0.xx startup configuration file. If there is no startup-config.legacy file, the device boots with the default configuration. During downgrade, the FastIron 08.0.xx startup configuration file is not saved. You can manually back up the startup configuration file if required.

NOTE

If you reboot from a flash partition that has a FastIron image version earlier than FastIron 08.0.xx without running the **downgrade_to** command, a warning message prompts you to enter the **downgrade_to** command.

2. Load an earlier version of the boot code and flash code. Refer to [Loading images on the device](#) on page 27.

NOTE

If you are downgrading an ICX 6650 from FastIron 08.0.01 to FastIron 07.5.xx, refer to [Loading images on the device](#) on page 27.

NOTE

For downgrading ICX 6430, ICX 6450, ICX 6610, and FCX devices, it is not mandatory to load an earlier version of the boot code.

Software downgrade on FSX devices

On FastIron SX series devices, the old management module does not support FastIron 08.0.xx releases. The FastIron SX Series 0-Port Third Generation XL Management Module supports only FastIron 08.0.00a or later. The FastIron SX Series 2-Port 10GbE Third Generation XL Management Module supports only FastIron 08.0.10 or later.

NOTE

For FSX devices, you can perform a hitless downgrade if the current software is a minor upgrade or a patch release to the lower software version. For details, refer to "Hitless management on the FSX 800 and FSX 1600" in the *FastIron Ethernet Switch Administration Guide*.

To downgrade an FSX device, perform the following steps.

1. Check whether the currently installed management module supports the earlier software version. If not, uninstall the management module, and install the correct management module. For information on installing the management module in an FSX device, refer to the *Brocade FastIron SX Series Chassis Hardware Installation Guide*.

NOTE

If you have installed a management module that was factory-loaded with the required software version, skip the next step, as the downgrade is complete.

2. Load the required boot code. For detailed steps, refer to [Loading images on the device](#) on page 27.
3. Load the required flash code. For detailed steps, refer to [Loading the flash code](#) on page 29.

NOTE

When downgrading an FSX device with the FastIron SX Series 0-Port Third Generation XL Management Module from FastIron 08.0.10 or FastIron 08.0.10a to FastIron 08.0.0x, download the 08.0.0x flash image to the primary flash only. Downloading the 08.0.0x flash image to the secondary flash is not supported. Reload the device with the **boot system flash primary** command to boot from the primary flash. After reload, enter the **copy flash flash secondary command** to copy the 08.0.0x image to the secondary flash. After a successful downgrade to FastIron 08.0.0x, downloading a different FastIron 08.0.0x release to the secondary as well as primary flash is supported; however, a mix of FastIron 08.0.10 or 08.0.10a and an earlier version image in the flash partitions is not supported.

Software downgrade from FastIron 08.0.01 to FastIron 07.5.xx

Note the following while downgrading from FastIron 08.0.01 to FastIron 07.5.xx:

- You must load the primary as well as the secondary flash with the 07.5.xx flash image. A mix of 07.5.xx and 08.0.01 images in the flash partitions is not supported.
- After loading the 07.5.xx boot and flash images, reboot the device. Then load just the 07.5.xx flash image again and reboot the device. This completes the downgrade process.

Software recovery

If the software upgrade or downgrade fails, the device may reboot continuously as shown in the following CLI output:

```
bootdelay: ===
Booting image from Primary
  Bad Magic Number
could not boot from primary, no valid image; trying to boot from secondary
Booting image from Secondary
  Bad Magic Number
## Booting image at 01ffffffc0 ...
Bad Magic Number
## Booting image at 01ffffffc0 ...
Bad Magic Number
could not boot from secondary, no valid image; trying to boot from primary
Booting image from Primary
  Bad Magic Number
## Booting image at 01ffffffc0 ...
Bad Magic Number
```

This section explains how to recover devices from image installation failure or deleted or corrupted flash images.

NOTE

Software recovery should be performed under the supervision of a Brocade support engineer.

Software recovery on FCX and ICX 6610 devices

NOTE

In practice, the TFTP server is also used as the terminal server to see the CLI output.

1. Connect a console cable from the console port to the terminal server.
2. Connect an Ethernet cable from the management port (port located under the console port on the device) to the TFTP server.
3. On the TFTP server, assign an IP address to the connected NIC; for example, 10.10.10.1 mask 255.255.255.0.
4. Reboot the device, and go to the boot monitor mode by pressing "**b**"; for example:

```
BOOT INFO: RESET ACTIVE
master arbitrate : become primary arbitrator.
BOOT INFO: Become active CPU module
M2 BI Boot Code Version 07.06.05
Enter 'b' to go to boot monitor ...
BOOT MONITOR>
```

5. Set a temporary IP address from the same subnet as the TFTP server NIC for the device management port using the **ip address** command; for example:

```
BOOT MONITOR> ip address 10.10.10.2/24
BOOT INFO: set ip addr to 10.10.10.2, ip mask to 255.255.255.000
```

6. Test the connectivity from the device to the TFTP server using the **ping** command to ensure a working connection; for example:

```
BOOT MONITOR> ping 10.10.10.1
Reply from 10.10.10.1 : bytes=100 time=1ms TTL=64
```

7. Enter the following command to boot from the image on a TFTP server that hosts a valid software image:

boot system tftp ip-address image-file-name

For example:

```
Brocade # boot system tftp 192.168.1.200 FCXR08000.bin
```

You will get an output similar to the following:

```
BOOT MONITOR>
BOOT MONITOR> boot system tftp 192.168.1.200 FCXR08000.bin
BOOT INFO: try to boot thru tftp 192.168.001.200, FCXR08000.bin
BOOT INFO: tftp copy successful!
BOOT INFO: bootparam at 27ffffe0, mp_flash_size = 002d022b
BOOT INFO: code decompression completed
BOOT INFO: start with hardware reset
BOOT INFO: branch to 20000104

Reset all modules ...

Init Management module 1 ...
Init DMA 1.. 2.. 3.. 4..
Init module 5 ...
Init DMA 1.. 2.. 3..
Parsing Config Data ...
Load config data from flash memory...
SW: Version 08.0.00acT5 Copyright (c) 1996-2004 Foundry Networks, Inc.
Compiled on Apr 06 2013 at 20:13:29 labeled as FCXR08000
(2949675 bytes) from Tftp
```

- Copy the image from the TFTP server to the primary and secondary flash partition using the **copy tftp flash ip-address image-file-name primary | secondary** command; for example:

```
copy tftp flash 192.168.1.200 FCXR08000.bin primary
```

- Enter the **show flash** command to check whether the image copy process was successful.
- Reboot the device using the **reload** command.

Software recovery on ICX 6430, ICX 6450, ICX 6650, ICX 7450, ICX 7750, and FSX devices

NOTE

In practice, the TFTP server is also used as the terminal server to see the CLI output.

- Connect a console cable from the console port to the terminal server.
- Connect an Ethernet cable from the management port (the port located under the console port on the device) to the TFTP server.
- On the TFTP server, assign an IP address to the connected NIC; for example, *IP address 10.10.10.21 mask 255.255.255.0*.
- Reboot the device, and go to the boot monitor mode by pressing "b".
- When in boot mode, enter the **printenv** command to display details of the images available on the device memory; for example:

```
ICX64XX-boot> printenv
baudrate=9600
uboot=/foundry/FGS/bootcode/kxz07400.bin
ver=07.4.00T310 (Mar 1 2012 - 11:28:23)
```

- Provide the IP address of the TFTP server that hosts a valid software image using the **setenv serverip** command; for example:

```
ICX64XX-boot> setenv serverip 10.10.10.21
```

- Set the IP address, gateway IP address, and netmask for the device management port, and save the configuration using the **setenv ipaddr**, **setenv gatewayip**, **setenv netmask**, and **saveenv** commands; for example:

```
ICX64XX-boot> setenv ipaddr 10.10.10.22
ICX64XX-boot> setenv gatewayip 10.10.10.1
ICX64XX-boot> setenv netmask 255.255.255.0
ICX64XX-boot> saveenv
```

NOTE

The IP address and the gateway IP address set for the device management port should be for the same subnet as the TFTP server NIC.

- Enter the **printenv** command to verify the IP addresses that you configured for the device and the TFTP server; for example:

```
ICX64XX-boot> printenv
baudrate=9600
ipaddr=10.10.10.22
gatewayip=10.10.10.1
netmask=255.255.255.0
serverip=10.10.10.1
uboot=/foundry/FGS/bootcode/kxz07400.bin
ver=07.4.00T310 (Mar 1 2012 - 11:28:23)
```


9. Test the connectivity to the TFTP server from the device using the `ping` command to ensure a working connection; for example:

```
ICX64XX-boot> ping 10.10.10.21
ethPortNo = 0
Using egiga0 device
host 10.10.10.21 is alive
```

10. Provide the file name of the image that you want to copy from the TFTP server using the `setenv image_name` command; for example:

```
ICX64XX-boot> setenv image_name images/ICX/ICX64R08000.bin
```

11. Update the primary flash using the `update_primary` command; for example:

```
ICX64XX-boot> update_primary
ethPortNo = 0
Using egiga0 device
TFTP from server 10.10.10.21; our IP address is 10.10.10.22
Download Filename 'ICX64S07400.bin'.
Load address: 0x3000000
Download to address: 0x3000000
Loading: %#####
#####
#####
#####
#####
#####
#####
#####
#####
#####
#####
#####
#####
#####
#####
#####
#####
#####
#####
done
Bytes transferred = 10360844 (9e180c hex)
prot off f8100000 f907ffff
.....
.....
.....
.....
Un-Protected 248 sectors
erase f8100000 f907ffff
.....
.....
.....
.....
.....
Erased 248 sectors
copying image to flash, it will take sometime...
sflash write 3000000 100000 f80000
TFTP to Flash Done.
```

12. Load the image from the primary flash using the **boot_primary** command; for example:

```
ICX64XX-boot> boot_primary
Booting image from Primary
## Booting image at 00007fc0 ...
   Created:      2012-03-02  20:38:52 UTC
   Data Size:    10360268 Bytes =  9.9 MB
   Load Address: 00008000
   Entry Point:  00008000
   Verifying Checksum ... OK
OK
Starting kernel in BE mode ...
Uncompressing Image.....
.....
.....
.....
.....
.....
.....
..... done, booting the kernel.
Config partition mounted.
```

13. Enter **show flash** and see the output to check whether the image copy process was successful.
14. Copy the image from the primary to the secondary flash partition using the **copy flash flash secondary** command.

Appendix A: Changes Between Releases

- [Changes between FastIron 07.4.00 or 07.5.00 and FastIron 08.0.xx.....](#) 43

Changes between FastIron 07.4.00 or 07.5.00 and FastIron 08.0.xx

FastIron 08.0.xx adds support and enhanced functionality for a variety of desired Layer 3 features.

Modifications in specific features have changed a large amount of CLI configuration commands, **show** commands, and **show** command output. These changes are in large part due to VRF-light support in these FastIron products: FSX 800, FSX 1600, ICX 6610, ICX 6650, and FCX.

For detailed information on commands, configurations, and feature behaviors, refer to the FastIron 08.0.xx configuration guides.

For more information on supported features and platforms, refer to FastIron 08.0.xx release notes.

New or modified parameter values

The following sections cover the changes in parameters for several protocols in FastIron 08.0.xx as compared to FastIron 07.4.00.

NOTE

Only the parameters with changes to allowable values or ranges are listed.

Management parameter default values

TABLE 8 Changes in management defaults

Parameter	FastIron 08.0.xx	FastIron 07.4.00
Maximum number of outbound Telnet sessions	5	1
Maximum number of outbound SSH sessions	5	1

Multicast parameter values

TABLE 9 Changes in multicast parameter values

Parameter	Device	FastIron 08.0.xx (minimum/ maximum/default)	FastIron 07.4.00 (minimum/ maximum/default)
Layer 2 Multicast			
IGMP Group	ICX 6430	256/4096/1024	256/1024/256
MLD Groups	FCX	256/8192/4096	256/32768/8192
	ICX 6610	256/8192/4096	256/32768/8192
	SX Gen2	256/8192/4096	256/32768/8192
	SX Gen3	256/8192/4096	256/32768/8192
	ICX 6450	256/8192/4096	256/32768/8192
	ICX 6430	256/4096/1024	256/1024/256
Layer 3 Multicast			

TABLE 9 Changes in multicast parameter values (continued)

Parameter	Device	FastIron 08.0.xx (minimum/ maximum/default)	FastIron 07.4.00 (minimum/ maximum/default)
IGMP Groups	FCX	1/8192/4096	256/8192/4096
	ICX 6610	1/8192/4096	256/8192/4096
	SX Gen2	1/8192/4096	256/8192/4096
	SX Gen3	1/8192/4096	256/8192/4096
PIM (S,G) mcache	FCX	256/6144/1024	256/4096/1024
	ICX 6610	256/6144/1024	256/4096/1024
	SX Gen3	256/6144/1024	256/4096/1024
MSDP SA cache	FCX	1024/8192/4096	Not supported in FastIron 07.4.00
	ICX 6610	1024/8192/4096	Not supported in FastIron 07.4.00
MLD Groups	FCX	1/8192/4096	Not supported in FastIron 07.4.00
	ICX 6610	1/8192/4096	Not supported in FastIron 07.4.00
	SX Gen2	1/8192/4096	Not supported in FastIron 07.4.00
	SX Gen3	1/8192/4096	Not supported in FastIron 07.4.00
PIM6 (S,G) mcache	FCX	256/1024/512	Not supported in FastIron 07.4.00
	ICX 6610	256/1024/512	Not supported in FastIron 07.4.00
	SX Gen3	256/1800/1024	Not supported in FastIron 07.4.00

BGP parameter default values

TABLE 10 Changes in BGP, BGP4+, and Route Maps defaults

Parameter	FastIron 08.0.xx	FastIron 07.4.00	Note
Maximum retry interval	160	N/A	If an error occurs during the establishment of BGP adjacency, the retry interval would have exponential backoff. The maximum delay can be 160 seconds.
Maximum route map length	81	32	Configures the maximum route map length when configured through SNMP (not configurable)
Default behavior for invalid confederation AS path	Ignore	Not ignored	Not configurable
Minimal route advertisement interval	0	30	Configurable
Maximum route advertisement interval	3600 sec	600 sec	Configurable
Update time	0 - 30 sec	1 - 30 sec	Configures iBGP route update interval.
Maximum ECMP paths in BGP	8/6 (stackable and TI/others); 32 in FastIron 08.0.30	8	Configures the number of ECMP paths
Minimum allowed update time	0	1	Not configurable
Routes displayed per page	13	5	Not configurable

Command changes

Several commands have been replaced or modified in FastIron 08.0.xx. Brocade recommends that you use the new set of commands. The following sections summarize the differences in commands between FastIron 07.4.00 and FastIron 08.0.xx.

OSPFv2

TABLE 11 New OSPFv2 commands

Command	Note
Global level command (router OSPF and sub-command)	
[no] router ospf vrf	Configures OSPF instance with VRF index
[no] default-passive-interface	Sets OSPF interface passive
[no] max-metric	Configures Stub Router Advertisement
[no] nonstop-routing	Enables OSPF nonstop routing capability
[no] nssa-translator	Enables NSSA Type 7 to Type 5 LSA translation
[no] vrf-lite-capability	Configures CE Router VRF-Lite capability (disables DN bit checks)
cost (area decimal range sub-command)	Configures area range cost
cost (area decimal range advertise sub-command)	Configures area range cost for Advertise this type-3 summarization
cost (area decimal range not-advertise sub-command)	Configures the area range cost for Not Advertise this type-3 summarization
Interface level command	
[no] active	Configures Active information. FastIron 07.4.00 behavior was always active.
Show command	
show ip ospf database database-summary	Displays summary of OSPF database
show ip ospf summary	Displays summary of OSPF instances
show ip ospf traffic	Displays OSPF packet counters and errors
show ip ospf vrf	Displays OSPF information for interfaces configured in a particular VRF
Clear command	
clear ip ospf traffic	Clears OSPF packet counters and errors
clear ip ospf vrf	Resets OSPF for VRF

TABLE 12 Modified OSPFv2 commands

FastIron release 08.0.xx	FastIron release 07.4.00	Note
Global level command (router OSPF and sub-command)		
[no] timers throttle spf delay hold-time max-hold	timers spf delay hold-time	<p>FastIron release 07.4.00:</p> <p><i>delay</i> corresponds to delay between receiving changes to SPF calculation. The valid range is 0 through 65535.</p> <p><i>hold-time</i> corresponds to hold time between consecutive SPF calculations. The valid range is 0 through 65535.</p> <p>FastIron release 08.0.xx:</p>

TABLE 12 Modified OSPFv2 commands (continued)

FastIron release 08.0.xx	FastIron release 07.4.00	Note
		<p><i>delay</i> corresponds to initial delay (milliseconds) between receiving a change to SPF. The valid range is 0 through 60000.</p> <p><i>hold-time</i> corresponds to hold time (milliseconds) between two SPF calculations. The default is 0 and the valid range is 0 through 60000.</p> <p><i>max-hold</i> corresponds to maximum hold time (milliseconds) between two SPF calculations. The default is 0 and the valid range is 0 through 60000.</p>
default-information-originate always	default-information-originate	In FastIron 07.4.00, the default-information-originate command was enough to originate the default route irrespective of any static or dynamic default route present on the router. However, in FastIron 08.0.xx, if no default route is present on the router, you are required to use the default-information-originate always command.
distribute-list [<i>standard-ip-access-list</i> <i>extended-ip-access-list</i> <i>access-list-name</i> <i>route-map route-map-name</i>] in	distribute-list [<i>standard-ip-access-list</i> <i>extended-ip-access-list</i> <i>access-list-name</i>] in [<i>ethernet</i> <i>ve</i>]	In FastIron 08.0.xx, the distribute-list is applied to all interfaces. Also, you can configure the OSPF distribute-list command to use route-map route-map as input.
Show command		
show ip ospf area <i>ip-addr</i> database link-state nssa link-id adv-router router-id	show ip ospf area <i>ip-addr</i> database link-state nssa	In FastIron 08.0.xx, you can display the link state for a specific advertising router.
show ip ospf virtual link	show ip ospf virtual-links	Displays OSPF virtual link information
show ip ospf virtual neighbor	show ip ospf virtual-neighbor	Displays OSPF virtual neighbor information
Clear command		
clear ip ospf route	clear ospf route	Clears all OSPF routes or a specific OSPF route

TABLE 13 Deprecated OSPFv2 commands

Command	Note
Global level commands (router OSPF and sub-commands)	
RFC 1583-type3-cost	In FastIron 08.0.xx, if RFC 1583 compatibility is configured, sets the cost for advertised type 3 summary LSAs to the smallest cost of any of the component networks
Show command	
show ip ospf error	Displays OSPF warnings and errors
show growable pool info	Displays growable pool information
Clear command	
clear ip ospf area	Clears OSPF area
clear ip ospf error	Clears OSPF error
clear ip ospf graceful-restart	Clears OSPF graceful restart
clear ip ospf redistribution	Clears all routes redistributed through other protocols

OSPFv3

TABLE 14 New OSPFv3 commands

Command	Note
Global-level command (router OSPF and sub-command)	
[no] ipv6 router ospf vrf	Configures OSPFv3 with a VRF index
[no] graceful-restart helper	Configures OSPFv3 graceful restart options (helper only)
[no] nonstop-routing	Enables the OSPFv3 nonstop routing capability
area decimal sub-command nssa	Specifies an NSSA area
area decimal range sub-command cost	Configures area range cost
area decimal range advertise sub-command cost	Configures area range cost for Advertise this type-3 summarization
area decimal range not-advertise sub-command cost	Configures area range cost for Not Advertise this type-3 summarization
distribute-list prefix-list ascii string in loopback	Configures the OSPFv3 distribution list using an IPv6 prefix list as input
Interface-level commands	
[no] active	Sets active status. FastIron 07.4.00 behavior was always active.
[no] hello-jitter	Configures jitter between HELLO packets, in percentage
[no] suppress-linklsa	Suppresses link LSA advertisements
Show commands	
show ipv6 ospf summary	Displays summary of IPv6 OSPF instances
show ipv6 ospf vrf	Displays IPv6 OSPF information for a specific VRF interface or all VRF interfaces
Clear commands	
clear ipv6 ospf route	Clears OSPF routes
clear ipv6 ospf vrf	Clears all OSPF data, or clears data for a specific VRF interface

TABLE 15 Deprecated OSPFv3 commands

Command	Note
Global level command (router OSPF and sub-command)	
[no] virtual-link-if-address	Configures the source address to use with virtual links

RIP

TABLE 16 New RIP commands

Command	Note
Global-level command (router RIP and sub-command)	
[no] learn-default	Enables learning RIP default routes
[no] poison-local-routes	Advertises local routes with maximum metrics when they go down
Interface level commands	
[no] ip rip learn-default	Enables learning RIP default routes from this interface

TABLE 17 Modified RIP commands

FastIron release 08.0.xx	FastIron release 07.4.00	Note
Global-level command (router RIP and sub-command)		

TABLE 17 Modified RIP commands (continued)

FastIron release 08.0.xx	FastIron release 07.4.00	Note
[no] redistribute connected bgp ospf static metric value route-map name]	[no] redistribution	Redistributes routes from other routing protocols
[no] prefix-list name in out	filter filter-num permit deny source-ip-address any source-mask any [log]	Specifies the prefix list as route map to filter out specific routes
[no] timers seconds	update-time 1-1000	Configures timer to set how often RIP sends updates. This command is added for backward compatibility.
Interface-level command		
[no] ip rip metric-offset num in out	ip metric 1-16	ip metric is not supported. Since ip metric was used to modify RIP metric, it is changed to ip rip metric-offset. It is added for backward compatibility only.
[no] ip rip prefix-list name in out	[no] ip rip filter-group in out filter-list	Specifies the prefix list as route map to filter out specific routes.

TABLE 18 Deprecated RIP commands

Command	Note
Global-level command (router RIP and sub-command)	
[no] offset-list ACL-number-or-name in out offset [ethernet port]	Instead, the route-map or prefix-list command can be used.
[no] permit deny redistribute filter-num all bgp ospf static address ip-addr ip-mask [match-metric value set-metric value]	Instead, the route-map command can be used.
[no] dont-advertise-connected	Connected routes are not redistributed by default in FastIron 08.0.xx.

BGP and Route-Map

TABLE 19 Modified BGP commands

FastIron release 08.0.xx	FastIron release 07.4.00	Note
Clear command		
clear ip bgp flap-statistics	clear ip bgp flap-statistics as-path-filter list-num	The as-path-filter option is removed because flap statistics no longer have the as-path-filter option.

TABLE 20 Deprecated BGP and Route Map commands

Command	Note
Global-level command	
[no] set mirror-interface int-num	Sets a mirror interface for route maps
[no] neighbor ipvx-addr distribute-list [in out] list-num	Configures the distribution list for BGP neighbors
[no] neighbor ipvx-addr filter-list [in out] filter-num	Configures the filter list for BGP neighbors
[no] neighbor peer-group distribute-list [in out] list-num	Configures the distribution list for BGP peer groups
[no] neighbor peer-group filter-list [in out] filter-num	Configures the filter list for BGP peer groups
[no] set next-hop next-hop-addr	Configures the set route map rule for a next hop address
[no] match address-filter filter-num	Configures the match route map rule with an address filter
[no] match as-path-filters filter-num	Configures the match route map rule with an as-path filter
[no] match community-filters num	Configures the match route map rule with a community filter

TABLE 20 Deprecated BGP and Route Map commands (continued)

Command	Note
[no] match next-hop <i>next-hop-addr</i>	Configures the match route map rule with a next hop address
[no] aggregate-address <i>ip-addr mask nlri</i> [multicast unicast] [multicast unicast]	Configures the MBGP Aggregate Address to advertise in BGP
[no] neighbor <i>ip-addr peer-group string nlri</i> [multicast unicast] [multicast unicast]	Configures the BGP peer group with specific NLRIs to advertise
[no] network <i>ip-addr mask nlri</i> [multicast unicast] [multicast unicast]	Configures the BGP neighbor to announce a network with specific NLRIs to filter
[no] match nlri [multicast unicast]	Configures the route map match rule with multicast or unicast NLRI
[no] set nlri [multicast unicast]	Configures the route map set rule with multicast or unicast NLRI
[no] neighbor <i>peer-group update-source pos interface</i>	Configures the router to communicate with a neighbor through a specified interface

ARP

TABLE 21 Modified ARP commands

FastIron release 08.0.xx	FastIron release 07.4.00	Note
[no] arp <i>ip-addr mac-addr</i> [ethernet <i>unit/slot/port</i> <i>vlan vlan-id</i>]	[no] arp <i>num ip-addr mac-addr ethernet port</i>	For static ARP configuration, the index number in the CLI is no longer needed.

IGMP Snooping

TABLE 22 Modified IGMP Snooping command

FastIron release 08.0.xx	FastIron release 07.4.00	Note
Global level command		
[no] system-max igmp-snoop-group-addr <i>num</i>	[no] system-max igmp-max-group-addr <i>num</i>	Sets the maximum limit for IGMP group records

MLD Snooping

TABLE 23 Modified MLD Snooping commands

FastIron release 08.0.xx	FastIron release 07.4.00	Note
Global-level command		
ipv6 multicast	ipv6 mld-snooping	Configures MLD snooping globally. This command is now consistent with the IGMP snooping command.
[no] system-max mld-snoop-group-addr <i>num</i>	[no] system-max mld-max-group-addr <i>num</i>	Sets the maximum limit for the MLD group records
VLAN-level command		
multicast6	mld-snooping	Configures MLD snooping on a particular VLAN. This command is now consistent with the IGMP snooping command.
Show commands		
show ipv6 multicast	show ipv6 mld-snooping	Displays information related to MLD snooping. This command is now consistent with the IGMP snooping command.

TABLE 23 Modified MLD Snooping commands (continued)

FastIron release 08.0.xx	FastIron release 07.4.00	Note
Clear commands		
<code>clear ipv6 multicast</code>	<code>clear ipv6 mld-snooping</code>	Clears MLD snooping mcache or counters. This command is now consistent with the IGMP snooping command.

IGMP (Layer 3 routing)

TABLE 24 New IGMP Layer 3 routing commands

Command	Note
Show command	
<code>show ip igmp [vrf vrf-name] static</code>	Displays IGMP static membership information. The <code>show ip igmp group</code> command also displays static IGMP membership information.

TABLE 25 Modified IGMP Layer 3 routing commands

FastIron release 08.0.xx	FastIron release 07.4.00	Note
Global-level command		
<code>[no] ip igmp group-membership-time seconds</code> default: 260 secs allowed range: [5 -26000] secs	<code>[no] ip igmp group-membership-time seconds</code> default: 260 secs allowed range: [20 - 7200] secs	Configures IGMP group membership times. The allowed range for time has changed.
Interface-level command		
<code>[no] ip igmp port-version version ethernet num</code> allowed range: [2-3]	<code>[no] ip igmp port-version version ethernet num</code> allowed range: [1-3]	Configures the IGMP version on a physical port within a virtual routing interface. The allowed IGMP version range has changed.
<code>[no] ip igmp static-group group-addr [ethernet ...]</code>	<code>[no] ip igmp static-group group-addr [count num] [ethernet ...]</code>	Configures a static member of an IGMP group. In FastIron 08.0.xx, the command does not support specifying multiple contiguous static groups using the <code>count</code> option.

PIM

TABLE 26 New PIM commands

Command	Note
<code>ipv6 pimsm-snooping</code>	Enables PIM6 SM snooping globally
<code>multicast6 pimsm-snooping</code>	Enables PIM6 SM snooping on the VLAN
Show command	
<code>show ipv6 multicast pimsm-snooping</code>	Displays PIM6 SM snooping information
<code>show ip igmp [vrf vrf-name] static</code>	Displays IGMP static membership information. The <code>show ip igmp group</code> command also displays static IGMP membership information.
Clear command	
<code>clear ipv6 multicast pimsm-snooping</code>	Clears PIM6 SM snooping information

TABLE 27 Modified PIM commands

FastIron 08.0.xx	FastIron 07.4.00	Note
Global level command		

TABLE 27 Modified PIM commands (continued)

FastIron 08.0.xx	FastIron 07.4.00	Note
[no] hello-timer <i>seconds</i> default: 30 secs allowed range: [10 -3600] secs	[no] hello-timer <i>seconds</i> default: 60 secs allowed range: [10 -3600] secs	Configures the hello timer. The default value has been changed.
[no] nbr-timeout <i>seconds</i> default: 105 secs allowed range: [3 - 65535] secs	[no] nbr-timeout <i>seconds</i> default: 180 secs allowed range: [60 - 8000] secs	Configures the PIM neighbor timeout value. The default value and the allowed range have changed.
[no] prune-wait <i>seconds</i> default: 3 secs allowed range: [0 - 30] secs	[no] prune-wait <i>seconds</i> default: 3 secs allowed range: [0 - 3] secs.	Configures the PIM prune wait timer. The allowed range has changed.
[no] message-interval <i>seconds</i> default: 60 secs allowed range: [10 - 65535] secs	[no] message-interval <i>seconds</i> default: 60 secs allowed range: [1 - 65535] secs	Configures the message interval. The allowed range has changed.
[no] hardware-drop-disable Default: PMRI is enabled.	[no] hardware-drop	Configures Passive Multicast Router Insertion (PMRI). PMRI is now enabled by default.
[no] rp-address <i>address [acl-num acl-name]</i>	[no] rp-address <i>address [std-acl-num [override]]</i>	Configures static RP using ACL. FastIron 07.4.00 supports only standard numbered ACL, whereas in FastIron 08.0.xx, all ACLs (standard, extended, numbered, and named) are supported. In FastIron 07.4.00, an RP address learned from the Bootstrap protocol takes precedence over static RP, so the override option was provided to give precedence to static RP. In FastIron 08.0.xx, static RP takes precedence.
[no] rp-candidate <i>ethernet ve loopback num</i>	[no] rp-candidate <i>ethernet ve loopback num [group-list std-acl-num]</i>	Configures RP candidate using ACL. In FastIron 07.4.00, ACLs can be used to limit the RP candidate for certain groups. In FastIron 08.0.xx, this feature is not available, so the RP candidate is for all the groups.
[no] system-max pim-hw-mcache <i>num</i>	[no] system-max pim-mcache <i>num</i>	Sets the maximum limit for the PIM mcache (flows) that can be programmed in the hardware.
Interface level command		
[no] ip pim [<i>version</i>]	[no] ip pim [<i>version</i>]	Configures the PIM SM/DM version on a particular interface. PIM DM version 1 is no longer supported. Supported versions are PIM-SM v2, PIM-DM v1, and PIM-DM v2.

TABLE 28 Deprecated PIM commands

Command	Note
Global level command	
[no] disable-pim	Disables the PIM operation without removing the PIM configuration.
[no] rp-address all	Removes all static RP configurations. In FastIron 08.0.xx, all static RP address configurations must be deleted individually.
Interface level command	

TABLE 28 Deprecated PIM commands (continued)

Command	Note
[no] ip pim ttl-threshold <i>ttl</i>	Configures Multicast TTL threshold on a particular interface. This feature was never supported in FastIron software, even though the command was available. A TTL threshold value of 1 was used internally. The behavior is the same in FastIron 08.0.00.
ip-multicast-disable	Disables multicast routing and snooping on this particular interface, or on a list of ports within a virtual interface.
Show command	
show ip pim error	Displays PIM errors counters. In FastIron 08.0.xx, a new command, show ip pim counter , displays the error counters.
Clear command	
clear pim flow	Clears all PIM flows from hardware.

Network management

TABLE 29 New network management commands

Command	Note
show ip dns	Shows the Domain List and IP address of the DNS server
show ip dns-server domain-list	Shows the Domain List of DNS servers
show ip dns-server server-address	Shows the IP addresses of DNS servers
show ip ssl	Displays the SSL connection in use
show management-vrf	Shows Management Virtual Routing and Forwarding (VRF) instance information
show ntp associations	Shows NTP associations
show ntp associations detail	Shows NTP associations in detail Shows the IPv4 address of the NTP server/peer Shows the IPv6 address of the NTP server/peer
show ntp status	Shows NTP status information
show snmp buffer	Shows the SNMP buffer
show cpu-utilization tasks	Shows CPU utilization tasks
show running-config vrf	Shows the VRF-Lite running configuration
show running-config vlan <i>vlanid</i>	Shows information on a VLAN ID in the running configuration

TABLE 30 Deprecated network management commands

Command	Note
show cpu-utilization detail	Shows the CPU utilization rate in detail
show rmon statistics unit	Shows the RMON Ethernet statistics table
show rmon statistics unit <i>num</i>	Shows the RMON Ethernet statistics table for the specified unit

Appendix B: Differences in Show Command Output

- [Show command output differences between FastIron 07.4.00 and 08.0.xx.....](#) 53

Show command output differences between FastIron 07.4.00 and 08.0.xx

Output differs for several **show** commands between FastIron 07.4.00 and FastIron 08.0.xx releases. For a list of differences, refer to the chapter *show command output differences between 07.4.00 and 08.0.xx release* in the [PDF version](#) of this document.