BROCADE

SOFTWARE UPGRADE GUIDE

Brocade FastIron Software Upgrade Guide

Supporting FastIron Software Release 08.0.40a

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Contents

Preface

Document conventions

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

Text formatting conventions

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

Format	Description
bold text	Identifies command names
	Identifies keywords and operands
	Identifies the names of user-manipulated GUI elements
	Identifies text to enter at the GUI
italic text	Identifies emphasis
	Identifies variables
	Identifies document titles
`Courier font`	Identifies CLI output
	Identifies command syntax examples

Command syntax conventions

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

Convention	Description
bold text	Identifies command names, keywords, and command options.
italic text	Identifies a variable.
value	In Fibre Channel products, a fixed value provided as input to a command option is printed in plain text, for example, **--show** WWN.
[ ]	Syntax components displayed within square brackets are optional.
	Default responses to system prompts are enclosed in square brackets.
{ **x** | **y** | **z** }	A choice of required parameters is enclosed in curly brackets separated by vertical bars. You must select one of the options.
	In Fibre Channel products, square brackets may be used instead for this purpose.
x | **y**	A vertical bar separates mutually exclusive elements.
< >	Nonprinting characters, for example, passwords, are enclosed in angle brackets.

Convention	Description
...	Repeat the previous element, for example, *member*[*member*...].
\	Indicates a "soft" line break in command examples. If a backslash separates two lines of a command input, enter the entire command at the prompt without the backslash.

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.

Brocade resources

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

You can download additional publications supporting your product at www.brocade.com. Select the Brocade Products tab to locate your product, then click the Brocade product name or image to open the individual product page. The user manuals are available in the resources module at the bottom of the page under the Documentation category.

To get up-to-the-minute information on Brocade products and resources, go to MyBrocade. You can register at no cost to obtain a user ID and password.

Release notes are available on MyBrocade under Product Downloads.

White papers, online demonstrations, and data sheets are available through the Brocade website.

Contacting Brocade Technical Support

As a Brocade customer, you can contact Brocade Technical Support 24x7 online, by telephone, or by e-mail. Brocade OEM customers contact their OEM/Solutions provider.

Brocade customers

For product support information and the latest information on contacting the Technical Assistance Center, go to http://www.brocade.com/services-support/index.html.

If you have purchased Brocade product support directly from Brocade, use one of the following methods to contact the Brocade Technical Assistance Center 24x7.

Online	Telephone	E-mail
Preferred method of contact for non-urgent issues: • My Cases through MyBrocade • Software downloads and licensing tools • Knowledge Base	Required for Sev 1-Critical and Sev 2-High issues: • Continental US: 1-800-752-8061 • Europe, Middle East, Africa, and Asia Pacific: +800-AT FIBREE (+800 28 34 27 33) • For areas unable to access toll free number: +1-408-333-6061 • Toll-free numbers are available in many countries.	support@brocade.com Please include: • Problem summary • Serial number • Installation details • Environment description

Brocade OEM customers

If you have purchased Brocade product support from a Brocade OEM/Solution Provider, contact your OEM/Solution Provider for all of your product support needs.

- OEM/Solution Providers are trained and certified by Brocade to support Brocade® products.
- Brocade provides backline support for issues that cannot be resolved by the OEM/Solution Provider.
- Brocade Supplemental Support augments your existing OEM support contract, providing direct access to Brocade expertise. For more information, contact Brocade or your OEM.
- For questions regarding service levels and response times, contact your OEM/Solution Provider.

Document feedback

To send feedback and report errors in the documentation you can use the feedback form posted with the document or you can e-mail the documentation team.

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

- Through the online feedback form in the HTML documents posted on www.brocade.com.
- By sending your feedback to documentation@brocade.com.

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

About this Document

What's new in this document

TABLE 1 Summary of enhancements in FastIron release 8.0.40a

Feature	Description	Location
Command line interface	Command line interface (CLI) syntax statements and parameter tables are now in the *FastIron Command Reference Guide*.	These changes occur throughout the text.
Configuration examples	Changes have been made to configuration examples, with many examples now presented as a series of steps.	These changes occur throughout the text.
Information taxonomy applied	To improve consistency and access, the information in this guide has been restructured according to approved Brocade information taxonomy.	These changes occur throughout the text.
Downgrade LLDP warning	To avoid a warning regarding LLDP not being enabled, before a downgrade the user must enable LLDP at a global level.	Under the heading General considerations on page 11.
Boot monitor upgrade	On ICX7xxx 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.	Under the heading Additional steps for loading boot code on page 27.

Supported hardware

This guide supports the following product families from Brocade:

- 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.

Upgrade and Downgrade Considerations

Upgrading to or downgrading from FastIron 8.0.40

NOTE

You must upgrade both the boot code and flash image that supports this release before rebooting. Refer to "Software image files for Release 8.0.xx" in the release notes for detailed information.

Static routing and IPv6 features enabled in base license

FastIron release 8.0.40 introduces IPv6 static routing as part of the base license for ICX devices. This feature was previously available only under the premium license. If you downgrade from FastIron 8.0.40 to an earlier release that is covered by a premium license, there is no impact. If the earlier release is not covered by a premium license, any IPv6 static routing configuration is lost. Refer to the *Brocade FastIron Software Licensing Guide* for more information on licensing changes.

General considerations

Upgrade considerations

- If upgrading from FastIron Release 8.0.30j to either FastIron 8.0.40 or 8.0.40a, after the upgrade you must remove `/guest` in the captive portal login page, so that `.../guest/test.php` reads `.../test.php`.
- There are two ways to upgrade the software. You can perform a manual (step-by-step) upgrade through a manifest file. Refer to the chapter Software Upgrade and Downgrade on page 19.
- 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.
- If configured, syslogs do not persist across reloads.

Downgrade considerations

- When downgrading to a version earlier than FastIron 8.0.10, software-based licensing is not supported.
- SSHv2 RSA host key format may differ among FastIron software versions.
- If you downgrade to FastIron 8.0.40, before the downgrade you must enable LLDP at a global level and execute a **write memory** command. Otherwise, the 802.1br (Bridge Port Extension) setup might fail to form and a warning is displayed in the output of the **show spx** command: `Warning! has "spx-cb-enable" config but no "lldp run"`.

Deprecated or removed features and commands

- SNTP is no longer supported. NTPv4 replaces SNTP.
- The Port Speed Down-Shift feature is deprecated in FastIron 08.0.xx.
- The **stack persistent-mac-timer** command is deprecated in FastIron 08.0.20.

- 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

All FastIron devices can hold two Layer 2 or Layer 3 images (for example, SWS08040.bin for Layer 2 and SWR08040.bin for full Layer 3).

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 or 8.0.40 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 does 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.
- 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 than 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 FastIron.

Dot1x authentication and MAC authentication configured on default VLAN

Beginning with the FastIron 8.0.20 release, after you upgrade, global configuration for both dot1x authentication and MAC authentication move under the authentication section. The first unused VLAN becomes the authentication default VLAN (the auth-default-vlan), shown as 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.

In the example shown below, before an upgrade, the configured ports are part of the default VLAN. Authentication with dot1x is enabled on port 2/1/24 and MAC authentication is enabled on port 2/1/23 both globally and at the interface level. After upgrade, since port 2/1/23 and port 2/1/24 are part of the default VLAN, they become part of the authentication default VLAN (auth-default-vlan) identified as VLAN 2.

```
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

Beginning with the FastIron 8.0.20 release, after you upgrade, global configuration for both dot1x authentication and MAC authentication move under the authentication section, and the first unused VLAN becomes authentication default VLAN (the auth-default-vlan), VLAN 2 in the following example.

In the example below, 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 prot 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

Beginning with the FastIron 8.0.20 release, after you upgrade, global configuration for both dot1x authentication and MAC authentication moves under the authentication section, and the first unused VLAN moves to the authentication default VLAN (the auth-default-vlan) section, identified as VLAN 2 in the following example. The dual-mode sections are replaced by the auth-default-vlan at the interface level. The voice-vlan section remains the same.

In the example below, before an upgrade, dot1x authentication is enabled globally on port 2/1/24 and MAC authentication is enabled globally on port 2/1/23. The tagged ports are part of VLANs 100 and 200 respectively. Both of these tagged ports are part of voice-vlan VLAN 1000. After an upgrade, VLAN 100 becomes the auth-default-vlan for port 2/1/24, and VLAN 200 becomes the auth-default-vlan for port 2/1/23. The voice-vlan section 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.

```
switch# show running-config 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 8.0.30b affects upgrades and downgrades as summarized in the following tables.

TABLE 2 Flexible authentication upgrade results

FastIron upgrade scenario	vlan-mode	Comments
8.0.10 to 8.0.20	Multiple untagged	Port can be part of multiple VLANs.
8.0.10 to 8.0.30b	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.
8.0.20 to 8.0.30b	Single untagged. There are no changes to the configuration.	After upgrade, the default behavior is single untagged. If required, this default behavior can be changed to multiple untagged.

TABLE 3 Flexible authentication downgrade results

FastIron downgrade scenario	vlan-mode	Comments
8.0.30b to 8.0.20	Multiple untagged	The new **authentication vlan-mode** command configuration is lost.
8.0.30b to 8.0.10x	Single untagged	All flexible authentication configuration is lost. You must reconfigure as per CLI syntax in FastIron 8.0.10x.
8.0.20 to 8.0.10x	Single untagged	All flexible authentication configuration is lost. You must reconfigure as per CLI syntax in FastIron 8.0.10x.

FastIron 8.0.30b introduced 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 8.0.40, CLI behavior changes. The following tables summarize changes for different FastIron devices.

TABLE 4 Upgrade behavior for the authentication max-sessions command

FastIron upgrade scenario	Behavior	Comment
8.0.10 to 8.0.20	Maximum = 32 users	For ICX 7450 and ICX 7750 devices, the default is 32 and cannot be changed.
8.0.10 to 8.0.30b	Default = 2 users	Can be configured to a maximum of 256 or 1024, depending on the type of device.
8.0.20 to 8.0.30b	Default = 2 users	Can be configured to a maximum of 256 or 1024, depending on the type of device.

TABLE 5 Downgrade behavior for the authentication max-sessions command

FastIron downgrade scenario	Behavior	Comment
8.0.30b to 8.0.20x	Maximum = 32 users	Configuration is lost on downgrade when the configured max-sessions value is greater than 32.
8.0.30b to 8.0.10x	Maximum = 250 users	Configuration lost on downgrade.
8.0.20 to 8.0.10x	Maximum = 250 users	Configuration lost on downgrade.

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

Software Upgrade and Downgrade

Software upgrade overview

There are two ways you can perform an upgrade, either through a manual step-by-step process or through a manifest file.

Support is available for upgrades starting at release 8.0.0.

1. For any upgrade, follow the instructions in Initial steps on page 19 to determine the current software versions, license requirements, and instructions on where to download the software.

   If configured, syslogs do not persist across reloads.
2. Upgrade the software.
   - For a step-by-step upgrade go to the section Upgrade process on page 22 then finish by referring to Loading images on the device on page 22.
   - For a manifest file upgrade go to the section Software upgrade using a manifest file on page 30.

   Upgrade both the boot code and flash image before a reload command is executed.
3. If the device is running in FIPS mode follow these steps:
   a) Signature verify the boot image that is copied to the system.

      If signature verification fails, copy a matching boot image signature file.
   b) Copy the signature file before the upgrade.
   c) After the signature file has been copied, copy the boot image.
   d) After the boot image binary has been copied, perform a signature verification.

      The data is saved to the bootrom only when there has been a successful verification.

Initial steps

- You must upgrade to the boot code that supports this release. Refer to "Software image files for Release 8.0.xx" in the release notes for detailed information.
- The output shows an upgrade done from an 8.0.30 image to 8.0.40.
- In this section, some of the output is truncated. Detailed output is shown in the following section.

Perform the following steps before an upgrade or downgrade.

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

```
device# show flash
Stack unit 1:
  Compressed Pri Code size = 24108665, Version:08.0.40qT213 (SPR08040q074.bin)
  Compressed Sec Code size = 24108665, Version:08.0.40qT213 (SPR08040q074.bin)
  Compressed Boot-Monitor Image size = 786944, Version:10.1.06T215 (spz10106b002)
```

```
  Code Flash Free Space = 1768706048
device#
```

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

```
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 SPS08030.bin
        SW: Version 08.0.40b074T211
      Compressed Boot-Monitor Image size = 786944, Version:10.1.06T215 (spz10106b002)
  HW: Stackable ICX7450-24
...
<output is truncated to show relevant sections only>
```

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

```
device# show version
...
License: BASE_SOFT_PACKAGE   (LID: eavIIJLmFIK)
      P-ASIC  0: type B548, rev 01  Chip BCM56548_A0
...
<output is truncated to show relevant sections only>
```

4. 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 *Brocade FastIron Software Licensing Guide*.
5. 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.

Next, go to the section Determining the software versions (sample output) on page 20.

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) 1996-2015 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: eavIIJLmFIK)
      P-ASIC  0: type B548, rev 01  Chip BCM56548_A0
======================================================================
UNIT 1: SL 2: ICX7400-4X10GF 4-port 40G Module
      Serial  #:CYV3346K07G
======================================================================
```

```
UNIT 1: SL 3: ICX7400-1X40GQ 1-port 40G Module
      Serial  #:CYX3346K06F
==========================================================================
UNIT 1: SL 4: ICX7400-1X40GQ 1-port 40G Module
      Serial  #:CYX3346K00A
==========================================================================
 1000 MHz ARM processor ARMv7 88 MHz bus
 8192 KB boot flash memory
 2048 MB code flash memory
 2048 MB DRAM
STACKID 1  system uptime is 12 hour(s) 20 minute(s) 45 second(s)
The system : started=cold start
```

In this example:

- In the second line of the first section:

  "UNIT 1: compiled on May 19 2015 at 20:07:00 labeled as SPS08040b074"

  "SPS08040b074" is the flash code image label. This is the image type and version and is especially useful if you change the image file name.
- In the third line of the first section:

  "(28893380 bytes) from Primary SPS08040b074.bin "

  "SPS08040b074.bin" is the loaded flash code image file name.
- In the fifth line of the first section:

  " Compressed Boot-Monitor Image size = 786944, Version:10.1.05T215 (spz10105) "

  "10.1.05T215" is the flash code version number.
- In the third line of the second section:

  "License: BASE_SOFT_PACKAGE (LID: eavIIJLmFIK)" is the license currently installed on the device.

Determining the flash and 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
Stack unit 1:
  Compressed Pri Code size = 28893380, Version:08.0.40T211 (SPS08040b074.bin)
  Compressed Sec Code size = 28893380, Version:08.0.40T211 (SPS08040b074.bin)
  Compressed Boot-Monitor Image size = 786944, Version:10.1.05T215
  Code Flash Free Space = 1776869376
device#
```

In the previous example:

- "Compressed Pri Code size" is the flash code version installed on the primary flash area.
- "Compressed Sec Code size" is the flash code version installed in the secondary flash area.
- "Compressed Boot-Monitor Image size" is the boot code version installed in flash memory.

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: eavIIJLmFIK)
      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 eavIIJLmFIK.

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 22.
   - If you are conducting a manifest file upgrade, go to the section Software upgrade using a manifest file on page 30.

Upgrade process

This release 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 8.0.10 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 Software upgrade using a manifest file on page 30.

Software upgrade

To upgrade software on ICX 7250, ICX 7450, and ICX 7750 devices, follow the high-level steps listed below.

1. Load the boot code and flash code. For detailed steps, refer to Loading images on the device on page 22.
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 synched to the standby unit.

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 the Secure Copy Protocol (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.

Next, go to the section Loading the boot code on page 23.

Loading the boot code

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

Loading the boot code using TFTP

1. Place the new boot code on a TFTP server to which the Brocade device has access.
2. 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:

   ```
   device# copy tftp flash 192.168.10.12 spz10106.bin bootrom
   ```

   ICX devices generate an output similar to the following:

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

3. 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 24.

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 swz10106b002.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 25.

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

The boot code is loaded.

> 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 8.0.30 to 8.0.40), 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 cannot communicate.

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.

   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. Copy the flash code from the TFTP server into flash memory using the **copy tftp flash** command.

```
device# copy tftp flash 192.168.10.12 SPS08040.bin primary
device# Load to buffer (8192 bytes per dot)
.....................................................................
.....................
SYNCING IMAGE TO FLASH. DO NOT SWITCH OVER OR POWER DOWN THE UNIT...
.....................................................................
.....................
TFTP to Flash Done.
```

   This example shows the loading of an image on an ICX 7450 or ICX 7750 device to primary flash memory.
4. Verify the flash image version by entering the **show flash** command.

```
device# show flash
Stack unit 1:
  Compressed Pri Code size = 24018046, Version:08.0.40qT213 (SPR08040q042.bin)
  Compressed Sec Code size = 24018046, Version:08.0.40qT213 (SPR08040q042.bin)
  Compressed Boot-Monitor Image size = 786944, Version:10.1.05T215
  Code Flash Free Space = 1768706048
device#
```

5. Reboot the device using the **reload** or **boot system** command.
   - Reboot the device by entering the **reload** command.

```
device# reload
```

   - The following example shows how to boot the image from the secondary flash.

```
device# boot system flash secondary
```

- The following example shows how to boot the image from the primary flash and save the preference to the startup configuration.

```
device# boot system flash primary yes
```

6. Verify that the new flash image is running on the device by entering the **show version** command.

```
device# show version
Copyright (c) 1996-2015 Brocade Communications Systems, Inc. All rights
reserv
ed.
UNIT 1: compiled on Oct 1 2015 at 11:29:56 labeled as SPR08040q042
(24018046 bytes) from Secondary SPR08040q042.bin
SW: Version 08.0.40q042T213
Compressed Boot-Monitor Image size = 786944, Version:10.1.05T215
(spz10105
b008)
Compiled on Thu Jul 16 06:27:06 2015
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: ICX7450_L3_SOFT_PACKAGE (LID: eavIIJLmFIK)
License Compliance: ICX7450-PREM-LIC-SW is Compliant for next 45 days
P-ASIC 0: type B548, rev 01 Chip BCM56548_A0
==========================================================================
UNIT 1: SL 2: ICX7400-4X10GF 4-port 40G Module
Serial #:CYV3346K07G
==========================================================================
UNIT 1: SL 3: ICX7400-1X40GQ 1-port 40G Module
Serial #:CYX3346K06F
==========================================================================
UNIT 1: SL 4: ICX7400-1X40GQ 1-port 40G Module
Serial #:CYX3346K00A
==========================================================================
1000 MHz ARM processor ARMv7 88 MHz bus
8192 KB boot flash memory
2048 MB code flash memory
2048 MB DRAM
STACKID 1 system uptime is 0 day(s) 0 hour(s) 8 minute(s) 16 second(s)
The system : started=cold start
```

Loading the flash code using SCP

1. Place the new flash code on an SCP-enabled host to which the Brocade device has access.
2. 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 SPS08040.bin terry@10.168.1.50:flash:primary
```

or

```
C:\> scp SPS08040.bin terry@10.168.1.50:flash:pri:SPS08040.bin
```

or

```
C:\> scp SPS08040.bin terry@10.168.1.50:flash:secondary
```

or

```
C:\> scp SPS08040.bin terry@10.168.1.50:flash:sec:SPS08040.bin
```

- Use PSCP to copy the flash code.

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

  ```
  D:\Images> pscp.exe SPS08040.bin terry@10.168.1.50:flash:primary
  ```

3. Verify that the flash code has been successfully copied onto the device by using the **show flash** command at any level of the CLI.

```
device# show flash
Stack unit 1:
  Compressed Pri Code size = 24018046, Version:08.0.40qT213 (SPR08040q042.bin)
  Compressed Sec Code size = 24018046, Version:08.0.40qT213 (SPR08040q042.bin)
  Compressed Boot-Monitor Image size = 786944, Version:10.1.05T215
  Code Flash Free Space = 1768706048
```

4. Reboot the device using the **reload** or **boot system** command.

```
device# reload
```

or

The following example shows how to set the system to boot the image from the secondary flash.

```
device# boot system flash secondary
```

or

The following example shows how to set the system to boot the image from the primary flash and save the preference to the startup configuration.

```
device# boot system flash primary yes
```

5. Verify that the new flash image is running on the device by using the **show version** command.

```
device# show version
  Copyright (c) 1996-2015 Brocade Communications Systems, Inc. All rights
reserv                                                                    ed.
    UNIT 1: compiled on Oct  1 2015 at 11:29:56 labeled as SPR08040q042
      (24018046 bytes) from Secondary SPR08040q042.bin
        SW: Version 08.0.40q042T213
      Compressed Boot-Monitor Image size = 786944, Version:10.1.05T215
(spz10105                                                                 b008)
       Compiled on Thu Jul 16 06:27:06 2015

  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: ICX7450_L3_SOFT_PACKAGE   (LID: eavIIJLmFIK)
      License Compliance: ICX7450-PREM-LIC-SW is Compliant for next 45 days
      P-ASIC  0: type B548, rev 01  Chip BCM56548_A0
==========================================================================
```

```
UNIT 1: SL 2: ICX7400-4X10GF 4-port 40G Module
      Serial  #:CYV3346K07G
===============================================================================
UNIT 1: SL 3: ICX7400-1X40GQ 1-port 40G Module
      Serial  #:CYX3346K06F
===============================================================================
UNIT 1: SL 4: ICX7400-1X40GQ 1-port 40G Module
      Serial  #:CYX3346K00A
===============================================================================
 1000 MHz ARM processor ARMv7 88 MHz bus
 8192 KB boot flash memory
 2048 MB code flash memory
 2048 MB DRAM
STACKID 1  system uptime is 0 day(s) 0 hour(s) 8 minute(s) 16 second(s)
The system : started=cold start
```

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.

The 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 8.0.40 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 spz10106.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 use the boot monitor method to upgrade 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=spz10106
image_name=SPS08040.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 29.

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

```
ICX7450-Boot> setenv uboot spz10106.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 'spz10106.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`

11. 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.

1. Enter OS mode.

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

2. 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
```

3. 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#
```

Software upgrade using a manifest file

Manifest files are prepared for every release. They contain and list all boot, firmware, and application images as well as signature files. Brocade supports a manifest file software upgrade for both standalone devices and homogeneous stacks.

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. However:

- Copying the manifest file using the SCP is not supported.
- 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.
- The command will only accept a manifest file with a .txt extension.

1. Ensure that the Brocade device has access to a TFTP server.
2. Determine the current software versions and license requirements then download the upgrade to a TFTP server, refer to Initial steps on page 19.
3. 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.
4. If upgrading from FastIron 8.0.10, delete the following lines from the manifest text file.

   ```
   -DIRECTORY /ICX7750/Boot
   swz10105.bin

   -DIRECTORY /ICX7750/Images
   SWS08030d.bin
   SWR08030d.bin

   -DIRECTORY /ICX7750/MIBs
   SWS08030d.mib
   SWS08030d.mib

   -DIRECTORY /ICX7750/Signatures
   SWR08030dnss.sig
   SWR08030d.sig
   SWS08030dnss.sig
   SWS08030d.sig
   swz10105nss.sig
   swz10105.sig

   -DIRECTORY /ICX7750/Manuals
   ```

   What is shown is when there is an upgrade to software release 8.0.30d. Depending on the upgrade, these lines may differ. If that is the case, just delete any lines under and including the -DIRECTORY /ICX7750/xxx headings.
5. On the Brocade device, enter one of the following commands to copy the manifest file and the images from the TFTP server:
   - **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:

```
device# copy tftp system-manifest 10.70.42.172 stage/FI08040_Manifest.txt primary
```

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

6. After all the relevant images have been installed on the device, you are prompted to reboot the device to complete the upgrade process.
   a) Execute the **write memory** command.
   b) Execute the **reload** command.

   The specified images are loaded to all 802.1br control bridge and port extender units.

The following example downloads all boot and application images for FastIron 8.0.40 from the TFTP server to an ICX 7750-26Q Router.

```
ICX7750-26Q Router# copy tftp system-manifest 10.70.42.172 stage/FI08040_Manifest.txt all-images-secondary

You are about to download boot image and boot signature image as well, ARE YOU SURE?(enter 'y' or 'n'): y
ICX7750-26Q Router#Flash Memory Write (8192 bytes per dot)
DOWNLOADING MANIFEST FILE   Done.
ICX7750-26Q Router#Flash Memory Write (8192 bytes per dot)
Automatic copy to member units:  3

COPY ICX7750 SIGNATURE TFTP to Flash Done
 ICX7750-26Q Router#Load to buffer (8192 bytes per dot)
Automatic copy to member units:  3
...
SYNCING IMAGE TO FLASH. DO NOT SWITCH OVER OR POWER DOWN THE UNIT(8192 bytes per dot)...
...
Copy ICX7750 from TFTP to Flash Done.
ICX7750-26Q Router#Flash Memory Write (8192 bytes per dot)
Automatic copy to member units:  3
...
DOWNLOAD OF ICX7750 BOOT SIGNATURE  Done.
ICX7750-26Q Router#Load to buffer (8192 bytes per dot)
Automatic copy to member units:  3
...
SYNCING IMAGE TO FLASH. DO NOT SWITCH OVER OR POWER DOWN THE UNIT(8192 bytes per dot)...
...
ICX7750 Boot IMAGE COPY IS DONE
 ICX7750-26Q Router#Load to buffer (8192 bytes per dot)
Automatic copy to member units: 17 18
...
PLEASE WAIT. MEMBERS SYNCING IMAGE TO FLASH. DO NOT SWITCH OVER OR POWER DOWN THE UNIT... Done.
ICX7750-26Q Router#Load to buffer (8192 bytes per dot)
Automatic copy to member units: 17 18
...
PLEASE WAIT. MEMBERS SYNCING IMAGE TO FLASH. DO NOT SWITCH OVER OR POWER DOWN THE UNIT...
  Manifest image download is complete, please reload the system
```

The following example copies the binary image for the FastIron 8.0.40 manifest file to secondary flash from the TFTP server to an ICX 7750-26Q Router.

```
ICX7750-26Q Router# copy tftp system-manifest 10.70.42.172 stage/FI08040_Manifest.txt secondary
ICX7750-26Q Router# Flash Memory Write (8192 bytes per dot) .....
DOWNLOADING MANIFEST FILE   Done.
ICX7750-26Q Router#Flash Memory Write (8192 bytes per dot)
Automatic copy to member units:  3
...
COPY ICX7750 SIGNATURE TFTP to Flash Done
 ICX7750-26Q Router# Load to buffer (8192 bytes per dot)
Automatic copy to member units:  3
...
SYNCING IMAGE TO FLASH. DO NOT SWITCH OVER OR POWER DOWN THE UNIT(8192 bytes per dot)...
...
Copy ICX7750 from TFTP to Flash Done.
ICX7750-26Q Router#Load to buffer (8192 bytes per dot)
Automatic copy to member units: 17 18
...
PLEASE WAIT. MEMBERS SYNCING IMAGE TO FLASH. DO NOT SWITCH OVER OR POWER DOWN THE UNIT...
Copy ICX7450 from TFTP to Flash Done.

Manifest file upgrade done, please reload the system
```

Example of a manifest file upgrade

The following example downloads all boot and application images for FastIron 08.0.40 from the TFTP server.

```
device# copy tftp system-manifest 10.70.42.172 stage/FI08040_Manifest.txt all-images-secondary

You are about to download boot image and boot signature image as well, ARE YOU SURE?(enter 'y' or 'n'): y
device#Flash Memory Write (8192 bytes per dot)
DOWNLOADING MANIFEST FILE   Done.
device#Flash Memory Write (8192 bytes per dot)
Automatic copy to member units:  3

COPY ICX7750 SIGNATURE TFTP to Flash Done
 device#Load to buffer (8192 bytes per dot)
Automatic copy to member units:  3
...
SYNCING IMAGE TO FLASH. DO NOT SWITCH OVER OR POWER DOWN THE UNIT(8192 bytes per dot)...
...
Copy ICX7750 from TFTP to Flash Done.
device#Flash Memory Write (8192 bytes per dot)
Automatic copy to member units:  3
...
DOWNLOAD OF ICX7750 BOOT SIGNATURE  Done.
device#Load to buffer (8192 bytes per dot)
Automatic copy to member units:  3
...
SYNCING IMAGE TO FLASH. DO NOT SWITCH OVER OR POWER DOWN THE UNIT(8192 bytes per dot)...
...
ICX7750 Boot IMAGE COPY IS DONE
 device#Load to buffer (8192 bytes per dot)
Automatic copy to member units: 17 18
...
PLEASE WAIT. MEMBERS SYNCING IMAGE TO FLASH. DO NOT SWITCH OVER OR POWER DOWN THE UNIT... Done.
device#Load to buffer (8192 bytes per dot)
Automatic copy to member units: 17 18
...
PLEASE WAIT. MEMBERS SYNCING IMAGE TO FLASH. DO NOT SWITCH OVER OR POWER DOWN THE UNIT...
  Manifest image download is complete, please reload the system
```

Software recovery

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

```
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 01ffffc0 ...
Bad Magic Number
## Booting image at 01ffffc0 ...
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 01ffffc0 ...
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.

Recovering software

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 (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 enter:

   ```
   IP address 10.10.10.21 mask 255.255.255.0
   ```

4. Reboot the device.
5. When in boot mode, enter the **printenv** command to display details of the images available on the device memory. For example:

   ```
   ICX7450-boot> printenv
   baudrate=9600
   uboot=brocade/ICX7450/bootcode/spz10106b002
   Version:10.1.06T215 (May  15 2015 - 11:28:23)
   ```

   The path is to the boot image on the TFTP server.
6. Provide the IP address of the TFTP server that hosts a valid software image using the **setenv serverip** command. For example:

   ```
   ICX7450-boot> setenv uboot 10.10.10.21
   ```

7. 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:

   ```
   ICX7450-boot> setenv ipaddr 10.10.10.22
   ICX7450-boot> setenv gatewayip 10.10.10.1
   ICX7450-boot> setenv netmask 255.255.255.0
   ICX7450-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.

8. Enter the **printenv** command to verify the IP addresses that you configured for the device and the TFTP server. For example:

```
ICX7450-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=brocade/ICX7450/bootcode/spz10106b002
Version:10.1.06T215 (May  15 2015 - 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:

```
ICX7450-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:

```
ICX7450-boot> setenv image_name images/ICX/SPR08040.bin
```

11. Update the primary flash using the **update_primary** command. For example:

```
ICX7450-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 'SPR08040.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:

```
ICX7450-boot> boot_primary
Booting image from Primary
## Booting image at 00007fc0 ...
   Created:      2015-05-02  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.

Downgrade process

Before downgrading the software on the device, refer to Upgrade and Downgrade Considerations on page 11. In general, before a downgrade, keep these points in mind:

- IPv6 static routing - If you downgrade from FastIron 8.0.40 to a release that is covered by a premium license, there is no impact. If the earlier release is not covered by a premium license, any IPv6 static routing configuration is lost.
- SSHv2 RSA - Host key format may differ among FastIron software versions.
- Pre 8.0.10 releases - If the downgrade is to a version earlier than FastIron 8.0.10, software-based licensing is not supported.
- There are changes in behavior of:
  - Flexible authentication
  - Command line interface