



Warm Upgrade

The Warm Upgrade feature provides the capability for a Cisco IOS image to read and decompress another Cisco IOS image and then transfer control to this new image. This functionality reduces the downtime of a device during planned Cisco IOS software upgrades or downgrades. The Warm Upgrade feature is complementary with the [Warm Reload](#) feature introduced in Cisco IOS Release 12.3(2)T.

Feature History for the Warm Upgrade Feature

Release	Modification
12.3(11)T	This feature was introduced.

Finding Support Information for Platforms and Cisco IOS Software Images

Use Cisco Feature Navigator to find information about platform support and Cisco IOS software image support. Access Cisco Feature Navigator at <http://www.cisco.com/go/fn>. You must have an account on Cisco.com. If you do not have an account or have forgotten your username or password, click **Cancel** at the login dialog box and follow the instructions that appear.

Contents

- [Information About Warm Upgrade, page 1](#)
- [How to Reload a Cisco IOS Image Using the Warm Upgrade Functionality, page 2](#)
- [Configuration Examples for the Warm Upgrade Feature, page 4](#)
- [Additional References, page 5](#)
- [Command Reference, page 6](#)

Information About Warm Upgrade

To use the Warm Upgrade feature, you should understand the following concept:

- [Warm Upgrade Functionality, page 2](#)



Americas Headquarters:
Cisco Systems, Inc., 170 West Tasman Drive, San Jose, CA 95134-1706 USA

© 2007 Cisco Systems, Inc. All rights reserved.

Warm Upgrade Functionality

The Warm Upgrade feature provides the capability for a Cisco IOS image to read and decompress another Cisco IOS image and then transfer control to this new image. This functionality reduces the downtime of a device during planned Cisco IOS software upgrades or downgrades. To perform a warm upgrade, use the **reload warm file url** command. The Warm Upgrade feature is complementary with the [Warm Reload](#) feature introduced in Cisco IOS Release 12.3(2)T.

Prior to the Warm Upgrade feature, a Cisco IOS image transferred control to ROM monitor mode (ROMMON) to perform a Cisco IOS software upgrade or downgrade. ROMMON, along with the help of the boot loader image, carried out the required upgrade or downgrade procedures. While this process is in progress, the networking device is down. With the introduction of the Warm Upgrade feature, packet forwarding is able to continue while the new Cisco IOS image is read and decompressed. The device is down only when the current image is overwritten with the new image, and the new image loads and reconfigures the operating system.

If a warm upgrade operation fails, the current Cisco IOS image should continue to run unless it has been partly or fully overwritten. In this case, ROMMON is allowed to load any image that is configured.

**Note**

For cases where a Cisco IOS image is to be downgraded to an image that does not support the image verification functionality of the **reload** command, a warning message will be displayed before the warm upgrade operation is performed telling the user that the image does not have a digital signature.

How to Reload a Cisco IOS Image Using the Warm Upgrade Functionality

This section contains the following procedures:

- [Reloading a Cisco IOS Image Using the Warm Upgrade Functionality, page 2](#) (required)
- [Monitoring and Troubleshooting the Warm Upgrade Functionality, page 3](#) (optional)

Reloading a Cisco IOS Image Using the Warm Upgrade Functionality

Perform this task to reload a Cisco IOS image using the warm upgrade functionality.

Prerequisites

- The [Warm Reload](#) feature introduced in Cisco IOS Release 12.3(2)T must be enabled.
- The ability to upgrade or downgrade a Cisco IOS image using the Warm Upgrade feature assumes that the current Cisco IOS image supports the warm upgrade functionality. However, the new image to which the current image is being upgraded or downgraded does not need to support the warm upgrade functionality.

Restrictions

A software upgrade or downgrade using the warm upgrade functionality can only be performed if there is enough free memory in the system to accommodate a decompressed Cisco IOS image.

SUMMARY STEPS

1. **enable**
2. **reload** [/verify | /noverify] [warm [file url]] [in [hh:]mm | at hh:mm [month day | day month]] [cancel] [text]

DETAILED STEPS

	Command or Action	Purpose
Step 1	enable Example: Router> enable	Enables privileged EXEC mode. <ul style="list-style-type: none"> • Enter your password if prompted.
Step 2	reload [/verify /noverify] [warm [file url]] [in [hh:]mm at hh:mm [month day day month]] [cancel] [text] Example: Router> reload warm file flash:c3745-ipvoice-mz.12.3.11.T.bin	Reloads the operating system. <ul style="list-style-type: none"> • Use the reload warm file url command to reload the operating system with a new image whose location and name is specified by the <i>url</i> argument. The reload will be performed using the warm upgrade functionality. • You must issue the warm keyword if you do not want to override the warm reboot functionality when you reload the router.

Monitoring and Troubleshooting the Warm Upgrade Functionality

Perform this task to monitor and troubleshoot the warm upgrade functionality.

SUMMARY STEPS

1. **show warm-reboot**
2. **debug warm-reboot**

DETAILED STEPS

	Command or Action	Purpose
Step 1	<code>show warm-reboot</code>	Displays the statistics for attempted warm reboots.
	Example: Router> show warm-reboot	
Step 2	<code>debug warm-reboot</code>	Displays warm reboot debug information.
	Example: Router> debug warm-reboot	

Configuration Examples for the Warm Upgrade Feature

This section provides the following configuration example:

- [Reloading a Cisco IOS Image Using the Warm Upgrade Functionality: Example, page 4](#)

Reloading a Cisco IOS Image Using the Warm Upgrade Functionality: Example

The following example shows how to reload the operating system with a new image whose location and name is `tftp://9.1.0.1/c7200-p-mz.port`. The reload is performed using the warm upgrade functionality.

```
Router> reload warm file tftp://9.1.0.1/c7200-p-mz.port

Proceed with reload? [confirm]
Loading c7200-p-mz.port from 9.1.0.1 (via Ethernet5/0):!!!
[OK - 15323964 bytes]

Decompressing the image :### [OK]

02:37:42:%SYS-5-RELOAD:Reload requested by console. Reload Reason:Reload Command.
Restricted Rights Legend
.
.
.
Press RETURN to get started!

00:00:12:%LINK-3-UPDOWN:Interface Ethernet5/0, changed state to up
00:00:12:%LINK-3-UPDOWN:Interface Ethernet5/1, changed state to up
00:00:12:%LINK-3-UPDOWN:Interface Ethernet5/2, changed state to up
00:00:12:%LINK-3-UPDOWN:Interface Ethernet5/3, changed state to up
00:00:12:%LINK-3-UPDOWN:Interface FastEthernet6/0, changed state to up
00:00:12:%LINK-3-UPDOWN:Interface FastEthernet6/1, changed state to up
00:00:12:%SYS-5-CONFIG_I:Configured from memory by console
00:00:13:%SYS-5-RESTART:System restarted --
00:00:13:%SYS-6-BOOTTIME:Time taken to reboot after reload = 25 seconds
00:00:14:%LINEPROTO-5-UPDOWN:Line protocol on Interface Ethernet5/0, changed state to up
00:00:14:%LINEPROTO-5-UPDOWN:Line protocol on Interface Ethernet5/1, changed state to down
00:00:14:%LINEPROTO-5-UPDOWN:Line protocol on Interface Ethernet5/2, changed state to down
00:00:14:%LINEPROTO-5-UPDOWN:Line protocol on Interface Ethernet5/3, changed state to down
00:00:14:%LINEPROTO-5-UPDOWN:Line protocol on Interface FastEthernet6/0, changed state to
down
00:00:14:%LINEPROTO-5-UPDOWN:Line protocol on Interface FastEthernet6/1, changed state to
down
```

```
00:00:14:%LINEPROTO-5-UPDOWN:Line protocol on Interface Fddi4/0, changed state to down
00:00:14:%LINK-5-CHANGED:Interface Fddi4/0, changed state to administratively down
00:00:14:%LINK-5-CHANGED:Interface Ethernet5/1, changed state to administratively down
00:00:14:%LINK-5-CHANGED:Interface Ethernet5/2, changed state to administratively down
00:00:14:%LINK-5-CHANGED:Interface Ethernet5/3, changed state to administratively down
00:00:14:%LINK-5-CHANGED:Interface FastEthernet6/0, changed state to administratively down
00:00:14:%LINK-5-CHANGED:Interface FastEthernet6/1, changed state to administratively down
```

Additional References

The following sections provide references related to the Warm Upgrade feature.

Related Documents

Related Topic	Document Title
Additional information on rebooting your router	<i>The chapter “Rebooting” in the section “File Management” in the <i>Cisco IOS Configuration Fundamentals and Network Management Configuration Guide, Release 12.3</i></i>
Additional booting commands	<i>Cisco IOS Configuration Fundamentals and Network Management Command Reference, Release 12.3T</i>

Standards

Standards	Title
None	—

MIBs

MIBs	MIBs Link
None	To locate and download MIBs for selected platforms, Cisco IOS releases, and feature sets, use Cisco MIB Locator found at the following URL: http://www.cisco.com/go/mibs

RFCs

RFCs	Title
None	—

Technical Assistance

Description	Link
Technical Assistance Center (TAC) home page, containing 30,000 pages of searchable technical content, including links to products, technologies, solutions, technical tips, and tools. Registered Cisco.com users can log in from this page to access even more content.	http://www.cisco.com/public/support/tac/home.shtml

Command Reference

The following commands are introduced or modified in the feature or features documented in this module. For information about these commands, see the *Cisco IOS Configuration Fundamentals*

Command Reference at http://www.cisco.com/en/US/docs/ios/fundamentals/command/reference/cf_book.html. For information about all Cisco IOS commands, go to the Command Lookup Tool at <http://tools.cisco.com/Support/CLILookup> or to the *Cisco IOS Master Commands List*.

- **debug warm-reboot**
- **reload**

CCVP, the Cisco logo, and Welcome to the Human Network are trademarks of Cisco Systems, Inc.; Changing the Way We Work, Live, Play, and Learn is a service mark of Cisco Systems, Inc.; and Access Registrar, Aironet, Catalyst, CCDA, CCDP, CCIE, CCIP, CCNA, CCNP, CCSP, Cisco, the Cisco Certified Internetwork Expert logo, Cisco IOS, Cisco Press, Cisco Systems, Cisco Systems Capital, the Cisco Systems logo, Cisco Unity, Enterprise/Solver, EtherChannel, EtherFast, EtherSwitch, Fast Step, Follow Me Browsing, FormShare, GigaDrive, HomeLink, Internet Quotient, IOS, iPhone, IP/TV, iQ Expertise, the iQ logo, iQ Net Readiness Scorecard, iQuick Study, LightStream, Linksys, MeetingPlace, MGX, Networkers, Networking Academy, Network Registrar, PIX, ProConnect, ScriptShare, SMARTnet, StackWise, The Fastest Way to Increase Your Internet Quotient, and TransPath are registered trademarks of Cisco Systems, Inc. and/or its affiliates in the United States and certain other countries.

All other trademarks mentioned in this document or Website are the property of their respective owners. The use of the word partner does not imply a partnership relationship between Cisco and any other company. (0711R)

Any Internet Protocol (IP) addresses used in this document are not intended to be actual addresses. Any examples, command display output, and figures included in the document are shown for illustrative purposes only. Any use of actual IP addresses in illustrative content is unintentional and coincidental.

© 2007 Cisco Systems, Inc. All rights reserved.

