



Release Notes for Cisco IOS Release 15.2(7)E0s

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Cisco IOS Release 15.2(7)E0s runs on these platforms:

- Cisco 2500 Series Connected Grid Switches (CGS 2520)
- Cisco Connected Grid Ethernet Switch Module (CGR 2010 ESM)
- Cisco Embedded Service 2020 Series Switches (ESS 2020)
- Cisco Industrial Ethernet 2000 Series Switches (IE 2000)
- Cisco Industrial Ethernet 2000U Series Switches (IE 2000U)
- Cisco Industrial Ethernet 3000 Series Switches (IE 3000)
- Cisco Industrial Ethernet 3010 Series Switches (IE 3010)
- Cisco Industrial Ethernet 4000 Series Switches (IE 4000)
- Cisco Industrial Ethernet 4010 Series Switches (IE 4010)
- Cisco Industrial Ethernet 5000 Series Switches (IE 5000)

These release notes include important information about Cisco IOS Release 15.2(7)E0s and any limitations, restrictions, and caveats that apply to the release. Verify that these release notes are correct for your switch:

- If you are installing a new switch, see the Cisco IOS release label on the rear panel of your switch.
- If your switch is on, use the **show version** command. See [Finding the Software Version and Feature Set, page 5](#).
- If you are upgrading to a new release, see the software upgrade filename for the software version. See [Deciding Which Files to Use, page 5](#).

For a complete list of documentation for the platforms associated with this release, see [Related Documentation, page 12](#).

You can download the switch software from this site (registered Cisco.com users with a login password):

<http://software.cisco.com/download/navigator.html>

Organization

This document includes the following sections:

Conventions, page 2	Conventions used in this document.
New Features in Cisco IOS Release 15.2(7)E0s, page 3	New features supported for Releases 15.2(7)E0s.
System Requirements, page 4	System requirements for Releases 15.2(7)E0s.
Upgrading the Switch Software, page 5	Procedures for downloading software.
Caveats, page 10	Open caveats in Release 15.2(7)E0s.
Related Documentation, page 12	Updates to the IE switch product documentation.
Related Documentation, page 12	Links to the documentation for the hardware platforms associated with this release.
Documentation Updates, page 11	Updates to IE switch documentation.

Conventions

This document uses the following conventions.

Conventions	Indication
bold font	Commands and keywords and user-entered text appear in bold font .
<i>italic font</i>	Document titles, new or emphasized terms, and arguments for which you supply values are in <i>italic font</i> .
[]	Elements in square brackets are optional.
{x y z }	Required alternative keywords are grouped in braces and separated by vertical bars.
[x y z]	Optional alternative keywords are grouped in brackets and separated by vertical bars.
string	A nonquoted set of characters. Do not use quotation marks around the string or the string will include the quotation marks.
courier font	Terminal sessions and information the system displays appear in <code>courier font</code> .
< >	Nonprinting characters such as passwords are in angle brackets.
[]	Default responses to system prompts are in square brackets.
!, #	An exclamation point (!) or a pound sign (#) at the beginning of a line of code indicates a comment line.

Note: Means *reader take note*. Notes contain helpful suggestions or references to material not covered in the manual.

Caution: Means *reader be careful*. In this situation, you might perform an action that could result in equipment damage or loss of data.

Warning: IMPORTANT SAFETY INSTRUCTIONS

Means danger. You are in a situation that could cause bodily injury. Before you work on any equipment, be aware of the hazards involved with electrical circuitry and be familiar with standard practices for preventing accidents. Use the statement number provided at the end of each warning to locate its translation in the translated safety warnings that accompanied this device.

SAVE THESE INSTRUCTIONS

Regulatory: Provided for additional information and to comply with regulatory and customer requirements.

New Features in Cisco IOS Release 15.2(7)E0s

Table 1 lists new features added in Cisco IOS Release 15.2(7)E0s.

Table 1 New Feature Summary for Cisco IOS Release 15.2(7)E0s

Feature	Platform	Description	Related Documentation
Dynamic Routing Protocol Support-Horizontal Stacking Enhancement	IE 5000	IE 5000 now supports the following Dynamic Routing protocols when operating in Horizontal Stacking Mode: <ul style="list-style-type: none"> ■ Border Gateway Protocol (BGP) ■ Enhanced Interior Gateway Routing Protocol (EIGRP) ■ Policy Based Routing (PBR) ■ Protocol Independent Multicast (PIM) ■ Open Shortest Path First (OSPF) ■ Virtual Routing and Forwarding (VRF) 	Horizontal Stacking Software Configuration Guide for IE 5000 Switches
Media Redundancy Protocol (MRP) Automanager within a PROFINET Environment	IE 4010, IE 5000	IE4010 and IE5000 support MRP Automanager mode to elect a MRP node manager in a PROFINET environment.	Media Redundancy Protocol Configuration Guide for IE 2000, IE 4000, IE 4010, and IE 5000 Switches Device Manager Online Help
Media Redundancy Protocol (MRP) Automanager (CLI)	IE 4010	You can now use CLI commands to configure an IE 4010 as a Media Redundancy Automanager (MRA) within the MRP CLI mode.	Media Redundancy Protocol Configuration Guide for IE 2000, IE 4000, IE 4010, and IE 5000 Switches

System Requirements

Table 1 New Feature Summary for Cisco IOS Release 15.2(7)E0s (continued)

Feature	Platform	Description	Related Documentation
SNMP MIB to Monitor Alarm Contacts	IE 2000, IE 2000U, IE 4000, IE 4010, IE 5000	SNMP address string can get information status of dry contacts IN1 and IN2 in an IE switch.	SNMP MIB
Extend AAA RADIUS Server (TACACS+) to Manage Device Manager	IE 2000, IE 4000, IE 4010, IE 5000	Allows you to configure AAA from the Device Manager. Previously, you could only configure AAA using CLI.	Device Manager Online Help
Device Manager Localization	IE 2000, IE 2000U, IE 3000, IE 4000 (IOS), IE 4000 (IOx), IE 4010, IE 5000	Online help for the Device Manager for the new features in this release and those features previously introduced is available in the following languages: <ul style="list-style-type: none"> ■ Chinese (Traditional) (code: 2052) ■ Chinese (Simplified) (code: 1028) ■ Default: English (code: 1033) ■ French (code: 1036) ■ German (code: 1031) ■ Japanese (code: 1041) ■ Spanish (LATAM) (code: 9226) 	Device Manager Online Help

System Requirements

This section describes the following system requirements for Cisco IOS Release 15.2(7)E0s:

- [Express Setup Requirements, page 4](#)

Express Setup Requirements

This section summarizes the hardware and software requirements for the Windows platform.

For a listing of Express Setup documentation, see [Table 4 Methods for Assigning IP Information, page 9](#).

Hardware

- 1 gigahertz (GHz) or faster 32-bit (x86) or 64-bit (x64) processor
- 1 gigabyte (GB) RAM (32-bit) or 2 GB RAM (64-bit)
- 16 GB available hard disk space (32-bit) or 20 GB (64-bit)

Software

- PC with Windows 7, Windows 10, or Mac OS 10.6.x
- Web browser (Internet Explorer 10.0 or 11.0, or Firefox 48.x and above) with JavaScript enabled
- Straight-through or crossover Category 5 or 6 cable

Express Setup verifies the browser version when starting a session, and it does not require a plug-in.

Upgrading the Switch Software

These are the procedures for downloading software. Before downloading software, read these sections for important information:

- [Finding the Software Version and Feature Set, page 5](#)
- [Deciding Which Files to Use, page 5](#)
- [IOS/IOx Upgrade Considerations, page 6](#)
- [Archiving Software Images, page 6](#)
- [Upgrading a Switch by Using the CLI, page 7](#)
- [Installation Notes, page 9](#)

Finding the Software Version and Feature Set

The Cisco IOS image is stored as a bin file in a directory that is named with the Cisco IOS release. A subdirectory contains the files needed for web management. The image is stored on the compact flash memory card.

You can use the **show version** privileged EXEC command to see the software version that is running on your switch. The second line of the display shows the version.

You can also use the **dir filesystem:** privileged EXEC command to see the directory names of other software images stored in flash memory. For example, use the **dir flash:** command to display the images in the flash memory.

Deciding Which Files to Use

The upgrade procedures in these release notes describe how to perform the upgrade by using a combined tar file. This file contains the Cisco IOS image file and the files needed for the embedded device manager. You must use the combined tar file to upgrade the switch through Express Setup. To upgrade the switch through the command-line interface (CLI), use the tar file and the **archive download-sw** privileged EXEC command.

[Table 2](#) lists the filenames for this software release.

Note: If you download the IP services image and plan to use Layer 3 functionality, you must use the Switch Database Management (SDM) routing template. To determine the currently active template, enter the **show sdm prefer** privileged EXEC command. If necessary, enter the **sdm prefer** global configuration command to change the SDM template to a specific template. For example, if the switch uses Layer 3 routing, change the SDM template from the default to the routing template. You must reload the switch for the new template to take effect.

Note: Beginning with Cisco IOS Release 15.2(5)E, we **no longer release** the IE 3000 IP services image. The latest release for the IP services image on the IE 3000 is 15.2(4)EA1.

Table 2 Cisco IOS Software Image Files

File Name	Description
cgs2520-ipserviceslmk9-tar.152-7.E.tar	CGS 2520 IP services image file
cgs2520-lanbaselmk9-tar.152-7.E.tar	CGS 2520 LAN base image file
c2020-universalk9-tar.152-7.E.tar	ESS 2020 universal image file
ie2000-universalk9-tar.152-7.E.tar	IE 2000 universal image file
ie2000u-ipserviceslmk9-tar.152-7.E.tar	IE 2000U IP services image file

Table 2 Cisco IOS Software Image Files

File Name	Description
ie2000u-lanbaselmk9-tar.152-7.E.tar	IE 2000U LAN base image file
ie3010-ipservicesk9-tar.152-7.E.tar	IE 3010 IP services image file
ie3010-lanbasek9-tar.152-7.E.tar	IE 3010 LAN base image file
ies-lanbasek9-tar.152-7.E.tar	IE 3000 LAN base image file
grwicdes-ipserviceslmk9-tar.152-7.E.tar	ESM IP services image file
grwicdes-lanbaselmk9-tar.152-7.E.tar	ESM LAN base image file
ie4000-universalk9_iox-tar.152-7.1E.tar	IE 4000 Universal image file bundles Cisco IOx and IOS
ie4000-universalk9-tar.152-7.E.tar	IE 4000 Universal image file (Cisco IOS only)
ie4010-universalk9-tar.152-7.E.tar	IE 4010 Universal image file
ie5000-universalk9-tar.152-7.E.tar	IE 5000 Universal image file

IOS/IOx Upgrade Considerations

We recommend that you upgrade using the Cisco IOS and IOx bundle image to move to the higher version of software. Cisco IOS/IOx bundle images will always have a compatible combination of IOS and IOx.

Before upgrading, note the following Cisco IOS/IOx version compatibilities:

Table 3 Compatible Cisco IOS and IOx Versions

Cisco IOS Release	IOx Release	Compatible
15.2.7E	1.7	Yes
15.2.6E2	1.6	Yes
15.2.6E1	1.5	Yes
15.2.6E0	1.4	Yes
15.2.6E2(ED)	1.4	Yes
15.2.6E2(ED)	1.3	No
15.2.5E2a(ED)	1.3	Yes
15.2.5E2a(ED)	1.4	No

Archiving Software Images

Before upgrading your switch software, make sure that you archive copies of both your current Cisco IOS release and the Cisco IOS release to which you are upgrading. Keep these archived images until you have upgraded all devices in the network to the new Cisco IOS image and verified that the new Cisco IOS image works properly in your network.

Cisco routinely removes old Cisco IOS versions from Cisco.com. See *Product Bulletin 2863* for information: http://www.cisco.com/en/US/prod/collateral/iosswrel/ps8802/ps6969/ps1835/prod_bulletin0900aecd80281c0e.html

You can copy the bin software image file on the flash memory to the appropriate TFTP directory on a host by using the **copy flash: tftp:** privileged EXEC command.

Note: Although you can copy any file on the flash memory to the TFTP server, it is time consuming to copy all of the HTML files in the tar file. We recommend that you download the tar file from Cisco.com and archive it on an internal host in your network.

Upgrading the Switch Software

You can also configure the switch as a TFTP server to copy files from one switch to another without using an external TFTP server by using the **tftp-server** global configuration command.

Upgrading a Switch by Using the CLI

This procedure is for copying the combined tar file to the switch. You copy the file to the switch from a TFTP server and extract the files. You can download an image file and replace or keep the current image.

Note: Make sure that the compact flash card is in the switch before downloading the software.

To download software, follow these steps:

1. Use [Table 2 on page 5](#) to identify the file that you want to download.
2. Download the software image file. If you have a SMARTnet support contract, go to this URL, and log in to download the appropriate files:

<http://software.cisco.com/download/navigator.html>

For example, to download the image for an IE 2000 switch, select Products > Switches > Industrial Ethernet Switches > Cisco Industrial Ethernet 2000 Series Switches, then select your switch model. Select IOS Software for Software Type, then select the image you want to download.

3. Copy the image to the appropriate TFTP directory on the workstation, and make sure that the TFTP server is properly configured.

For more information, see the “Assigning the Switch IP Address and Default Gateway” chapter in the applicable document for your switch as listed in [Table 4](#).

4. Log into the switch through the console port, Telnet or SSH session.
5. (Optional) Ensure that you have IP connectivity to the TFTP server by entering this privileged EXEC command:

```
Switch# ping tftp-server-address
```

Note: You will enter the same *tftp-server-address* noted above in Step 6 below.

For more information about assigning an IP address and default gateway to the switch, see [Table 4](#).

6. Download the image file from the TFTP server to the switch.

If you are installing the same version of software that currently exists on the switch, overwrite the current image by entering this privileged EXEC command:

```
Switch# archive download-sw /overwrite tftp/reload tftp://location/directory/image-name.tar
```

The command above untars/unzips the file. The system prompts you when it completes successfully.

- The **/overwrite** option overwrites the software image in flash memory with the downloaded one.

If you specify the command without the **/overwrite** option, the download algorithm verifies that the new image is not the same as the one on the switch Flash device. If the images are the same, the download does not occur. If the images are different, the old image is deleted, and the new one is downloaded. If there is not enough space to install the new image and keep the current running image, the download process stops, and an error message displays.

- The **/reload** option reloads the system after downloading the image unless the configuration has been changed and not saved.
- For *// location*, specify the IP address of the TFTP server. or hostname.

Upgrading the Switch Software

- For */directory/image-name.tar*, specify the directory and the image to download. Directory and image names are case sensitive. The directory is for file organization and it is generally a *tftpboot/user-ID* path.

This example shows how to download an image from a TFTP server at 198.30.20.19 and to overwrite the image on the switch:

```
Switch# archive download-sw /overwrite tftp://198.30.20.19/image-name.tar
```

You can also download the image file from the TFTP server to the switch and keep the current image by replacing the **/overwrite** option with the **/leave-old-sw** option. If there is not enough space to install the new image and keep the current running image, the download process stops, and an error message displays.

Upgrading IOS and FPGA on the Ethernet Switch Module (ESM)

This procedure is for copying the combined tar file to the switch. You copy the file to the switch from a TFTP server and extract the files. You can download an image file and replace or keep the current image.

To download software, follow these steps:

1. Refer to [Deciding Which Files to Use, page 5](#) to identify the file that you want to download.
2. Download the software image file. If you have a SMARTnet support contract, go to the URL below and log in to download the appropriate files.

<http://software.cisco.com/download/navigator.html>

For example, to download the image for a Connected Grid 10-Port Ethernet Switch Module Interface Card, select Products > Cisco Interfaces and Modules > Connected Grid Modules > Connected Grid 10-Port Ethernet Switch Module Interface Card. Select IOS Software for Software Type, then select the image you want to download.

Copy the image to the appropriate TFTP directory on the workstation, and make sure that the TFTP server is properly configured. For more information, see the “Assigning the Switch IP Address and Default Gateway” chapter in the applicable document listed in [Table 4 Methods for Assigning IP Information, page 9](#).

3. Copy the image to the appropriate TFTP directory on the workstation, and make sure that the TFTP server is properly configured.
4. Log in to the switch through the console port or a Telnet session.
5. (Optional) Ensure that you IP connectivity to the TFTP server by entering this privileged EXEC command:

```
Switch# ping tftp-server-address
```

6. Download the image file from the TFTP server to the switch.

If you are installing the same version of software that currently exists on the switch, overwrite the current image by entering this privileged EXEC command:

```
Switch# archive download-sw /overwrite tftp: //location /directory /image-name.tar
```

The command above untars/unzips the file. The system prompts you when it completes successfully.

- The **/overwrite** option overwrites the software image in flash memory with the downloaded one.

If you specify the command without the **/overwrite** option, the download algorithm verifies that the new image is not the same as the one on the switch Flash device. If the images are the same, the download does not occur. If the images are different, the old image is deleted, and the new one is downloaded. If there is not enough space to install the new image and keep the current running image, the download process stops, and an error message displays.

- The **/reload** option reloads the system after downloading the image unless the configuration has been changed and not saved.

Upgrading the Switch Software

- For *// location*, specify the IP address of the TFTP server. or hostname.
- For */directory/image-name.tar*, specify the directory and the image to download. Directory and image names are case sensitive. The directory is for file organization and it is generally a *tftpboot/user-ID* path.

This example shows how to download an image from a TFTP server at 198.30.20.19 and to overwrite the image on the switch:

```
Switch# archive download-sw /overwrite tftp://198.30.20.19/image-name.tar
```

You can also download the image file from the TFTP server to the switch and keep the current image by replacing the **/overwrite** option with the **/leave-old-sw** option. If there is not enough space to install the new image and keep the current running image, the download process stops, and an error message displays.

7. After the download and the untar are complete, power cycle the CGR2010.

Installation Notes

You can assign IP information to your switch using the methods shown in [Table 4](#)

Table 4 Methods for Assigning IP Information

Method	Platform	Document
Express setup program	IE 2000	Cisco IE 2000 Switch Hardware Installation Guide
	IE 3000	Cisco IE 3000 Switch Getting Started Guide, Device Manager Online Help
	ESM	Connected Grid Ethernet Switch Module Interface Card Getting Started Guide
	IE 4000	Cisco IE 4000 Switch Hardware Installation Guide
	IE 4010	Cisco IE 4010 Switch Hardware Installation Guide
	IE 5000	Cisco IE 5000 Hardened Aggregator Hardware Installation Guide
CLI-based setup program	ESS 2020	Cisco Embedded Service 2020 Series Software Configuration Guide
	IE 2000	Cisco IE 2000 Switch Hardware Installation Guide
	IE 2000U	Cisco IE 2000U Switch Hardware Installation Guide
	IE 3000	Cisco IE 3000 Series Switch Hardware Installation Guide
	IE 3010	Cisco IE 3010 Switch Hardware Installation Guide
	CGS 2520	Cisco CGS 2520 Hardware Installation Guide
	ESM	Cisco CGS 2520 Hardware Installation Guide Note: The Cisco CGS 2520 Hardware Installation Guide serves as CLI-based Setup reference for the ESM.
	IE 4000	Cisco IE 4000 Switch Hardware Installation Guide
	IE4010	Cisco Industrial Ethernet 4000, 4010 and 5000 Switch Software Configuration Guide
	IE 5000	Cisco IE 5000 Hardened Aggregator Hardware Installation Guide

Caveats

Table 4 Methods for Assigning IP Information (continued)

Method	Platform	Document
DHCP-based autoconfiguration	ESS 2020	Cisco Embedded Service 2020 Series Software Configuration Guide
	IE 2000	Cisco IE 2000 Series Switch Software Configuration Guide
	IE 2000U	System Management Software Configuration Guide for Cisco IE 2000U and Connected Grid Switches
	IE 3000	Cisco IE 3000 Series Switch Software Configuration Guide
	IE 3010	Cisco IE 3010 Series Switch Software Configuration Guide
	CGS 2520	CGS 2520 Switch Software Configuration Guide
	ESM	Cisco Connected Grid Ethernet Switch Module Interface Card Software Configuration Guide
	IE 4000	Cisco Industrial Ethernet 4000 Series Switch Software Configuration Guide
	IE4010	Cisco Industrial Ethernet 4000, 4010 and 5000 Switch Software Configuration Guide
	IE 5000	Cisco IE 5000 Hardened Aggregator Hardware Installation Guide
Manually assigning an IP address	IE 2000	Cisco IE 2000 Series Switch Software Configuration Guide
	IE 2000U	System Management Software Configuration Guide for Cisco IE 2000U and Connected Grid Switches
	IE 3000	Cisco IE 3000 Series Switch Software Configuration Guide
	IE 3010	Cisco IE 3010 Series Switch Software Configuration Guide
	CGS 2520	CGS 2520 Switch Software Configuration Guide
	ESM	Cisco Connected Grid Ethernet Switch Module Interface Card Software Configuration Guide
	IE 4000	Cisco Industrial Ethernet 4000 Series Switch Software Configuration Guide
	IE4010	Cisco Industrial Ethernet 4000, 4010 and 5000 Switch Software Configuration Guide
	IE 5000	Cisco IE 5000 Hardened Aggregator Hardware Installation Guide

Caveats

- [Cisco Bug Search Tool](#), page 11
- [Documentation Updates](#), page 11
- [Documentation Updates](#), page 11

Open Caveats

Cisco Bug Search Tool

The Bug Search Tool (BST), which is the online successor to Bug Toolkit, is designed to improve the effectiveness in network risk management and device troubleshooting. The BST allows partners and customers to search for software bugs based on product, release, and keyword, and aggregates key data such as bug details, product, and version. The tool has a provision to filter bugs based on credentials to provide external and internal bug views for the search input.

To view the details of a caveat listed in this document:

1. Access the BST (use your Cisco user ID and password) at <https://tools.cisco.com/bugsearch/>.
2. Enter the bug ID in the Search For: field.

Open Caveats

Table 5 Open Caveats in Cisco IOS Release 15.2(7)E0s

Bug ID	Headline
CSCvn62526	Industrial Network Director: PNP Switch Config visible to unauthenticated attacker with local access

Resolved Caveats

Table 6 Resolved Caveats in Cisco IOS Release 15.2(7)E0s

Bug ID	Headline
CSCva38680	iox data ext2 file system corruption for reloads/power cycles during start up (IE4000)
CSCvp13767	PTP Sync fail in rep ring while doing shut/no shut (IE4000)
CSCvp31236	Device cannot be brought up on Fabric Site: Extended node releases DHCP Addr on IE4k/5k/c3560/CDB (IE4000, IE5000, Catalyst Digital Building Series Switch 3560)
CSCvp86114	IE 5k crashes continuously after attempting a image upgrade to CCO image (IE5000)
CSCvq11329	REP on port channel not working in 15.2(7)E (IE4000,IE4010, IE3000)
CSCvq34030	Need sync time between ios and iox when manually set IOS time or connect to ntp server (IE4000)

Documentation Updates

REP Negotiated: This feature is not officially supported in this release. However, REP Negotiated is documented in the Device Manager Online Help (OLH) for this release.

The following information is relevant to the Resilient Ethernet Protocol (REP) feature on all IE Switch platforms for all Cisco IOS software releases (CSCuv46039).

Do not change the REP Link Status Layer (LSL) age timer values (interface configuration command **rep lsl-age-timer value**) to any values other than the default for your switch platform. Configuring an aggressive **rep lsl-age-timer** value can result in an unstable REP ring and will jeopardize stability and performance of the system.

Related Documentation

Table 7 Related Documentation

Device or Feature	Related Documents
Cisco 2500 Series Connected Grid Switches	http://www.cisco.com/go/cgs2520
Cisco Embedded Service 2020 Series Switches (ESS 2020)	http://www.cisco.com/c/en/us/support/switches/embedded-service-2020-series-switches/tsd-products-support-series-home.html
Cisco Ethernet Switch Module (ESM) for CGR 2010	http://www.cisco.com/go/cgr2000
Cisco Industrial Ethernet 2000 Series Switches	http://www.cisco.com/go/ie2000
Cisco Industrial Ethernet 2000U Series Switches	http://www.cisco.com/go/ie2000u
Cisco Industrial Ethernet 3000 Series Switches	http://www.cisco.com/go/ie3000
Cisco Industrial Ethernet 3010 Series Switches	http://www.cisco.com/go/ie3010
Cisco Industrial Ethernet 4000 Series Switches	http://www.cisco.com/go/ie4000
Cisco Industrial Ethernet 4010 Series Switches	http://www.cisco.com/go/ie4010
Cisco Industrial Ethernet 5000 Series Switches	http://www.cisco.com/go/ie5000

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