



Release Notes for the Cisco IE 2000 Switch, Cisco IOS Release 15.0(2)EB

April 2013

These release notes include important information about Cisco IOS Release 15.0(2)EB, and any limitations, restrictions, and caveats that apply to it. Verify that these release notes are correct for your switch:

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

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

<http://www.cisco.com/cisco/web/download/index.html>

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System Requirements

- [Hardware Supported, page 2](#)
- [Express Setup Requirements, page 4](#)

Hardware Supported

Switch Models Supported

Table 1 *Cisco IE 2000 Switches Supported*

Switch Model	Description	Supported by Minimum Cisco IOS Release
Cisco IE-2000-4T-L	4 10/100BASE-T downlink ports and 2 10/100BASE-T uplink ports	Cisco IOS Release 15.0(1)EY ¹
Cisco IE-2000-4T-B	4 10/100BASE-T downlink ports and 2 10/100BASE-T uplink ports	Cisco IOS Release 15.0(1)EY
Cisco IE-2000-4T-G-L	4 10/100BASE-T downlink ports and 2 10/100/1000BASE-T uplink ports	Cisco IOS Release 15.0(1)EY
Cisco IE-2000-4T-G-B	4 10/100BASE-T downlink ports and 2 10/100/1000BASE-T uplink ports	Cisco IOS Release 15.0(1)EY
Cisco IE-2000-4TS-L	4 10/100BASE-T downlink ports and 2 100 Mb/s SFP (small form-factor pluggable) module uplink slots	Cisco IOS Release 15.0(1)EY
Cisco IE-2000-4TS-B	4 10/100BASE-T Ethernet ports and 2 100 Mb/s SFP module uplink slots	Cisco IOS Release 15.0(1)EY
Cisco IE-2000-4TS-G-L	4 10/100BASE-T downlink ports and 2 100/1000 Mb/s SFP module uplink slots	Cisco IOS Release 15.0(1)EY
Cisco IE-2000-4TS-G-B	4 10/100BASE-T downlink ports and 2 100/1000 Mb/s SFP module uplink slots	Cisco IOS Release 15.0(1)EY
Cisco IE-2000-8TC-L	8 10/100BASE-T downlink ports and 2 Fast Ethernet dual-purpose uplink ports	Cisco IOS Release 15.0(1)EY
Cisco IE-2000-16TC-L	16 10/100BASE-T downlink ports, 2 Fast Ethernet dual-purpose uplink ports, and 2 100 Mb/s SFP module uplink slots	Cisco IOS Release 15.0(1)EY
Cisco IE-2000-8TC-B	8 10/100BASE-T downlink ports and 2 Fast Ethernet dual-purpose uplink ports	Cisco IOS Release 15.0(1)EY
Cisco IE-2000-16TC-B	16 10/100BASE-T downlink ports, 2 Fast Ethernet dual-purpose uplink ports, and 2 100 Mb/s SFP module uplink slots	Cisco IOS Release 15.0(1)EY
Cisco IE-2000-8TC-G-L	8 10/100BASE-T downlink ports and 2 Gigabit Ethernet dual-purpose uplink ports	Cisco IOS Release 15.0(1)EY
Cisco IE-2000-16TC-G-L	16 10/100BASE-T downlink ports, 2 Gigabit Ethernet dual-purpose uplink ports, and 2 100 Mb/s SFP module uplink slots	Cisco IOS Release 15.0(1)EY

Table 1 **Cisco IE 2000 Switches Supported (continued)**

Switch Model	Description	Supported by Minimum Cisco IOS Release
Cisco IE-2000-8TC-G-B	8 10/100BASE-T downlink ports and 2 Gigabit Ethernet dual-purpose uplink ports	Cisco IOS Release 15.0(1)EY
Cisco IE-2000-8TC-G-E	8 10/100BASE-T downlink ports and 2 Gigabit Ethernet dual-purpose uplink ports Supports the IEEE-1588 standard for synchronizing clocks. Can enable NAT by license upgrade.	Cisco IOS Release 15.0(1)EY
Cisco IE-2000-16TC-G-E	16 10/100BASE-T downlink ports, 2 Gigabit Ethernet dual-purpose uplink ports, and 2 100Mb/s SFP module uplink ports Supports the IEEE-1588 standard for synchronizing clocks. Can enable NAT by license upgrade.	Cisco IOS Release 15.0(1)EY
Cisco IE-2000-16TC-G-X	16 10/100BASE-T downlink ports, 2 Gigabit Ethernet uplink ports, and 2 100 Mb/s SFP module uplink slots Supports the IEEE-1588 standard for synchronizing clocks. Can enable NAT by license upgrade.	Cisco IOS Release 15.0(1)EY
Cisco IE-2000-8TC-G-N	8 10/100BASE-T downlink ports, 2 Gigabit Ethernet dual-purpose uplink ports, supports the IEEE-1588 standard for synchronizing clocks and Network Address Translation (NAT)	Cisco IOS Release 15.0(2)EB
Cisco IE-2000-16TC-G-N	16 10/100BASE-T downlink ports, 2 Gigabit Ethernet dual-purpose uplink ports, 2 100Mb/s SFP module downlink slots, supports the IEEE-1588 standard for synchronizing clocks and Network Address Translation (NAT)	Cisco IOS Release 15.0(2)EB

1. For Profinet compliance, upgrade to Cisco IOS Release 15.0(1)EY2.

SFP Modules Supported

Table 2 *SFP Modules*

Switch Model	Description
Rugged and industrial SFP modules ¹	GLC-FE-100LX-RGD
	GLC-FE-100FX-RGD
	GLC-SX-MM-RGD ²
	GLC-LX-SM-RGD ²
	GLC-ZX-SM-RGD ²
Commercial SFP modules	GLC-SX-MM
	GLC-LH-SM
	GLC-BX-U ²
	GLC-BX-D ²
	CWDM-SFP ²
	DWDM-SFP ²
Extended temperature SFP modules	SFP-GE-S ²
	SFP-GE-L ²
	SFP-GE-Z ²
	GLC-EX-SMD
	GLC-LX-SMD
	GLC-FE-100FX
	GLC-FE-100LX
	GLC-FE-100EX
	GLC-FE-100ZX
	GLC-FE-100BX-U
	GLC-FE-100BX-D

1. The maximum operating temperature of the switch varies depending on the type of SFP module that you use. See the *Cisco IE 2000 Switch Hardware Installation Guide* for more information.

2. These SFP modules have digital optical monitoring (DOM) support.

Express Setup Requirements

Hardware

Table 3 *Minimum Hardware Requirements*

Processor Speed	DRAM	Number of Colors	Resolution	Font Size
233 MHz minimum ¹	512 MB ²	256	1024 x 768	Small

1. We recommend 1 GHz.

2. We recommend 1 GB DRAM.

Software

- PC with Windows 2000, XP, Vista, or Windows Server 2003
- Web browser (Internet Explorer 6.0, 7.0, or Firefox 1.5, 2.0, 3.0) 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 License

You can upgrade Cisco IOS software features through the Cisco Software Activation tool. It authorizes and enables the feature set on IE 2000 switch series. Based on the type of license, it allows you to enable certain features through the licensing upgrade or both licensing and software upgrade. In IE 2000 switches, to upgrade from LAN Lite to LAN Base you do not require new software releases. However, to upgrade from LAN Base to Enhanced LAN Base for NAT (Network Address Translation) you require both software and license upgrades. See *Software Activation Licensing Upgrade* for detailed steps :

http://www.cisco.com/en/US/docs/switches/lan/cisco_ie2000/software/release/15_0_2_eb/upgrade/guide/ie2000_ug.html

Upgrading the Switch Software

- [Finding the Software Version and Feature Set, page 5](#)
- [Deciding Which Files to Use, page 5](#)
- [Archiving Software Images, page 6](#)
- [Upgrading a Switch by Using the CLI, page 6](#)
- [Recovering from a Software Failure, page 7](#)

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 also can use the **dir filesystem:** privileged EXEC command to see the directory names of other software images that you might have stored in 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 Express Setup. You must use the combined tar file to upgrade the switch through Express Setup. To upgrade the switch through the CLI, use the tar file and the **archive download-sw** privileged EXEC command.

Table 4 Cisco IOS Software Image File

Filename	Description
ie2000-universalk9.tar	Cisco IE 2000 cryptographic Cisco IOS image file.

Archiving Software Images

Before upgrading your switch software, make sure that you have archived copies of the current Cisco IOS release and the Cisco IOS release to which you are upgrading. You should keep these archived images until you have upgraded all devices in the network to the new Cisco IOS image and until you have 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 more 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.

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. For more information about the **tftp-server** command, see the *Cisco IOS Configuration Fundamentals Command Reference*:

http://www.cisco.com/en/US/docs/ios/fundamentals/command/reference/cf_t1.html

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 inserted into the switch before downloading the software.

To download software, follow these steps:

- Step 1** Use [Table 4 on page 6](#) to identify the file that you want to download.
- Step 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://www.cisco.com/cisco/web/download/index.html>

To download the image for an IE 2000 switch, click **Switches > Industrial Ethernet Switches > Cisco IE 2000 Series Switches**, and then click on the Cisco IOS software for your specific switch model.

- Step 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 Appendix B of the software configuration guide for this release.

- Step 4** Log into the switch through the console port or a Telnet session.

- Step 5** (Optional) Check that you have IP connectivity to the TFTP server by entering this privileged EXEC command:

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

For more information about assigning an IP address and default gateway to the switch, see the software configuration guide for this release.

- Step 6** Download the image file from the TFTP server to the switch. If you are installing the same version of software that is currently on the switch, overwrite the current image by entering this privileged EXEC command:

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

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

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.

For */directory/image-name.tar*, specify the directory (optional) and the image to download. Directory and image names are case sensitive.

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.

Recovering from a Software Failure

For additional recovery procedures, see the “Troubleshooting” chapter in the software configuration guide for this release.

Installation Notes

You can assign IP information to your switch by using these methods:

- Express Setup program, as described in the switch getting started guide.
- CLI-based setup program, as described in the switch hardware installation guide.
- DHCP-based autoconfiguration, as described in the switch software configuration guide.
- Manual assignment of an IP address, as described in the switch software configuration guide.

New Software Features

Layer 2 Network Address Translation (L2 NAT)

Like the familiar NAT at Layer 3, L2 NAT translates addresses from one network to addresses that are usable in another network. When traffic is transmitted through the uplink ports of the Ethernet switch, L2 NAT translates the addresses from the inside network to addresses that are valid in the outside network. Likewise, when traffic that is received through the uplink ports, outside addresses are translated to inside addresses. Although IOS NAT is integrated with routing, L2 NAT is implemented as a “bump-in-the-wire” mechanism in which the switch examines the data packets and modifies the source and/or destination address.

You can configure L2 NAT on the two uplink ports of this switch. You can configure 128 L2 NAT instances, with up to 128 translation entries in each one. Only IPv4 addresses can be translated.

L2 NAT is included in the Enhanced LAN Base feature set, which may require a license upgrade and a software upgrade, depending on the model.

Restrictions for Configuring L2 NAT

- L2 NAT is included in the Enhanced LAN Base feature set, which may require a license upgrade and a software upgrade, depending on the model.
- You can configure L2 NAT on the two uplink ports of the switch.
- The downlink port can be VLAN, trunk, or L2channel.
- You can configure 128 L2 NAT instances on the switch.
- You can configure 128 translation entries.
- Up to 128 VLANs are allowed to have L2 NAT configuration.
- Only IPv4 addresses can be translated.
- L2 NAT applies only to unicast traffic. You can permit or allow untranslated unicast traffic, multicast traffic, and IGMP traffic.
- If you configure a translation for an L2 NAT host, do not configure it as a DHCP client.

Limitations and Restrictions

You should review this section before you begin working with the switch. These are known limitations that will not be fixed, and there is not always a workaround. Some features might not work as documented, and some features could be affected by recent changes to the switch hardware or software.

Cisco IOS Limitations

- [Ethernet, page 9](#)
- [IP, page 9](#)
- [QoS, page 9](#)

- [SPAN, page 9](#)
- [Trunking, page 10](#)
- [VLAN, page 10](#)

Ethernet

Traffic on EtherChannel ports is not perfectly load-balanced. Egress traffic on EtherChannel ports is distributed to member ports on the load-balance configuration and traffic characteristics such as a MAC or IP address. More than one traffic stream might map to the same member ports based on hashing results calculated by the ASIC.

If this situation occurs, uneven traffic distribution occurs on EtherChannel ports.

Changing the load-balance distribution method or changing the number of ports in the EtherChannel can resolve this problem. Use any of these workarounds to improve EtherChannel load balancing:

- For random source-ip and dest-ip traffic, configure load balance method as **src-dst-ip**.
- For incrementing source-ip traffic, configure load balance method as **src-ip**.
- For incrementing dest-ip traffic, configure load balance method as **dst-ip**.

IP

When the rate of received DHCP requests exceeds 2,000 packets per minute for a long time, the response time might be slow when you are using the console.

The workaround is to use rate limiting on DHCP traffic to prevent a denial of service attack from occurring. (CSCeb59166)

QoS

- Some switch queues are disabled if the buffer size or threshold level is set too low with the **mls qos queue-set output** global configuration command. The ratio of buffer size to threshold level should be greater than 10 to avoid disabling the queue.

The workaround is to choose compatible buffer sizes and threshold levels. (CSCea76893)

- When auto-QoS is enabled on the switch, priority queuing is not enabled. Instead, the switch uses shaped round robin (SRR) as the queuing method. The auto-QoS feature is designed on each platform based on the feature set and hardware limitations, and the queuing method supported on each platform might be different.

There is no workaround. (CSCee22591)

SPAN

- Cisco Discovery Protocol (CDP), VLAN Trunking Protocol (VTP), and Port Aggregation Protocol (PAgP) packets received from a SPAN source are not sent to the destination interfaces of a local SPAN session.

The workaround is to use the **monitor session** *session_number* **destination** {**interface** *interface-id* **encapsulation replicate**} global configuration command for local SPAN. (CSCed24036)

Trunking

- IP traffic with IP options set is sometimes leaked on a trunk port. For example, a trunk port is a member of an IP multicast group in VLAN X but is not a member in VLAN Y. If VLAN Y is the output interface for the multicast route entry assigned to the multicast group, and an interface in VLAN Y belongs to the same multicast group, the IP-option traffic received on an input VLAN interface other than one in VLAN Y is sent on the trunk port in VLAN Y. This is because the trunk port is forwarding in VLAN Y, even though the port has no group membership in VLAN Y.

There is no workaround. (CSCdz42909).

- For trunk ports or access ports configured with IEEE 802.1Q tagging, inconsistent statistics might appear in the **show interfaces counters** privileged EXEC command output. Valid IEEE 802.1Q frames of 64 to 66 bytes are correctly forwarded even though the port LED flashes amber, and the frames are not counted on the interface statistics.

There is no workaround. (CSCec35100).

VLAN

- When line rate traffic is passing through a dynamic port, and you enter the **switchport access vlan dynamic** interface configuration command for a range of ports, the VLANs might not be correctly assigned. One or more VLANs with a null ID appears in the MAC address table instead.

The workaround is to enter the **switchport access vlan dynamic** interface configuration command separately on each port. (CSCsi26392)

Important Notes

- [IPv4 Static Routing Notes, page 10](#)
- [61000-4-3 Standard Notes, page 10](#)
- [Express Setup Notes, page 11](#)

IPv4 Static Routing Notes

Cisco IE 2000 supports IPv4 static routing in the lanbase image. To access static routing commands you need to change the SDM template from the default template to lanbase-routing, followed by a switch reload sequence.

61000-4-3 Standard Notes

The following note is an update to the *Regulatory Compliance and Safety Information* (RCSI) guide. This note applies to the 61000-4-3 standard listed in the “EMC Interface Immunity” section of Table 1 of the guide.

**Note**

To meet 10V/m or 20V/m Radiated Immunity levels, shielded cables must be used on the uplink ports, G1/1 and G1/2.

This note applies to these SKUs:

- IE-2000-4T-G-L
- IE-2000-4T-G-B
- IE-2000-8TC-G-L
- IE-2000-8TC-G-B

Express Setup Notes

- This browser setting is recommended for speeding up the time required to display Express Setup from Microsoft Internet Explorer:
 1. Choose **Tools > Internet Options**.
 2. Click **Settings** in the Temporary Internet files area.
 3. From the Settings window, choose **Automatically**.
 4. Click **OK**.
 5. Click **OK** to exit the Internet Options window.
- The HTTP server interface must be enabled to display Express Setup. By default, the HTTP server is enabled on the switch. Use the **show running-config** privileged EXEC command to see if the HTTP server is enabled or disabled.

Beginning in privileged EXEC mode, follow these steps to configure the HTTP server interface:

	Command	Purpose
Step 1	configure terminal	Enters global configuration mode.
Step 2	ip http authentication {aaa enable local}	Configures the HTTP server interface for the type of authentication that you want to use. <ul style="list-style-type: none"> • aaa—Enables the authentication, authorization, and accounting feature. You must enter the aaa new-model interface configuration command for the aaa keyword to appear. • enable—Enables the password, which is the default method of HTTP server user authentication. • local—Specifies the local user database, as defined on the Cisco router or access server.
Step 3	end	Returns to privileged EXEC mode.
Step 4	show running-config	Verifies your entries.

- Express Setup uses the HTTP protocol (the default is port 80) and the default method of authentication (the enable password) to communicate with the switch through any of its Ethernet ports and to allow switch management from a standard web browser.

If you change the HTTP port, you must include the new port number when you enter the IP address in the browser **Location** or **Address** field (for example, `http://10.1.126.45:184` where 184 is the new HTTP port number). Write down the port number through which you are connected. Use care when changing the switch IP information.

If you are *not* using the default method of authentication (the enable password), you need to configure the HTTP server interface with the method of authentication used on the switch.

Beginning in privileged EXEC mode, follow these steps to configure the HTTP server interface:

	Command	Purpose
Step 1	configure terminal	Enters global configuration mode.
Step 2	ip http authentication {enable local tacacs}	Configures the HTTP server interface for the type of authentication that you want to use. <ul style="list-style-type: none"> • enable—Enables the password, which is the default method of HTTP server user authentication. • local—Specifies the local user database, as defined on the Cisco router or access server. • tacacs—Specifies the TACACS server.
Step 3	end	Returns to privileged EXEC mode.
Step 4	show running-config	Verifies your entries.

Open Caveats

- CSCue28976

Show l2nat statistics shows that total packets is less than the translated packets after running the traffic for few days.

There is no workaround.

Resolved Caveats

- CSCud10797

After reloading a IE2000-8TC-B switch, duplex full becomes duplex half on interface Fa1/9, F1/10. Similar issue exists with SKUs IE-2000-4TS-L, IE-2000-4TS-B, IE-2000-8T-L, and IE-2000-8TC-B.

The workaround is when the system is up and running, reconfigure the interface by entering the **no duplex full** command and followed by the **duplex full** command.

Documentation Updates

- [Updates to the Hardware Installation Guide, page 13](#)
- [Related Documentation, page 13](#)

Updates to the Hardware Installation Guide

These corrections are for the English version of the *Cisco IE 2000 Hardware Installation Guide* on Cisco.com. These corrections also apply to the French version of the hardware guide; however, this version has not yet been updated.

Switch Models

- The switch models Cisco IE-2000-8TC-G-N and Cisco IE-2000-16TC-G-N have been added to Table 1-1 in the “Switch Models” section.

Related Documentation

These documents provide complete information about the Cisco IE 2000 switches and are available at Cisco.com:

http://www.cisco.com/en/US/products/ps11245/tsd_products_support_series_home.html

- *Cisco IE 2000 Switch Software Configuration Guide*
- *Cisco IE 2000 Switch Command Reference*
- *Cisco IE 2000 Switch System Message Guide*
- *Cisco IE 2000 Switch Hardware Installation Guide*—available in English and French
- *Cisco IE 2000 Switch Getting Started Guide*—available in English, simplified Chinese, French, German, Italian, Japanese, and Spanish
- *Regulatory Compliance and Safety Information for the Cisco IE 2000 Switch*—available in English and French

For other information about related products, see these documents:

- Express Setup online help (available on the switch)

These SFP module installation notes are available from Cisco.com:

http://www.cisco.com/en/US/products/hw/modules/ps5455/prod_installation_guides_list.html

- *Cisco Small Form-Factor Pluggable Modules Installation Notes*

Compatibility matrix documents:

http://www.cisco.com/en/US/products/hw/modules/ps5455/products_device_support_tables_list.html

- Cisco 100-Megabit Ethernet SFP Modules Compatibility Matrix
- Cisco Gigabit Ethernet Transceiver Modules Compatibility Matrix

Obtaining Documentation, Obtaining Support, and Security Guidelines

For information on obtaining documentation, submitting a service request, and gathering additional information, see the monthly *What's New in Cisco Product Documentation*, which also lists all new and revised Cisco technical documentation, at:

<http://www.cisco.com/en/US/docs/general/whatsnew/whatsnew.html>

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