



Overview

The GigaStack GBIC (model WS-X3500-XL) adds port density and high-performance connectivity to supporting switches. When installed in a supporting switch, the GigaStack GBIC supports Gigabit connections in a cascaded stack or point-to-point configuration. The GigaStack GBIC autonegotiates the duplex setting of each port to maximize the bandwidth for your configuration.

Features

This section describes the GigaStack GBIC features:

- Half-duplex stacking using only one GBIC slot for each switch
Stack up to nine switches to form an independent backbone that can be managed with a single IP address. This stack gives the appearance of a single large switch for network management purposes. For this kind of connectivity, see the [“Example 1: Cascaded Stack Connection”](#) section on page 1-9.
- Full-duplex connectivity between two switches
You can also form a point-to-point link between two switches. The GigaStack GBIC supports one full-duplex link (in a point-to-point configuration) or up to eight half-duplex links (in a stack configuration) to other Gigabit Ethernet devices. For this kind of connectivity, see the [“Example 2: Point-to-Point Connection”](#) section on page 1-10.

- Support for redundant loop configurations in a GigaStack GBIC stack
For more information, see the [“Minimum IOS Release for Redundant Loop Configurations”](#) section on page 1-7 and the [“Cascaded Stack Connections with a Redundant Link”](#) section on page 2-12
- Support for IOS Release 12.0(5)XU or later for Catalyst 2900 XL and 3500 XL switches, support for Release 12.1(6)EA2 or later for Catalyst 2950 switches, and support for Release 12.1(4)EA1 or later for Catalyst 3550 multilayer switches
- Management through the Cisco IOS command-line interface (CLI) or the web-based Cluster Management Suite (CMS)
- Field-replaceable

GigaStack GBIC LEDs

Figure 1-1 shows the LED locations on the GigaStack GBIC, and Table 1-1 describes the LED colors and their meanings.

Figure 1-1 GigaStack GBIC LEDs and Ports

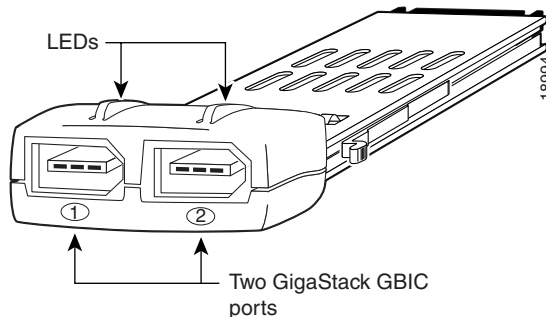


Table 1-1 GigaStack GBIC LEDs

Color	Meaning
Off	No link.
Green	Link present. This link occurs if there is connectivity with another network device and the GigaStack GBIC port.
Amber	Power-on self-test (POST) failure or use of an incorrect cable.
Flashing amber	Loop detection activated.

GBIC Module Slot LEDs

Figure 1-2 shows the GBIC module slot LED on the front of a supporting switch, and Figure 1-3 shows the GBIC LED location when the GigaStack GBIC is installed in the 1000BASE-X module.

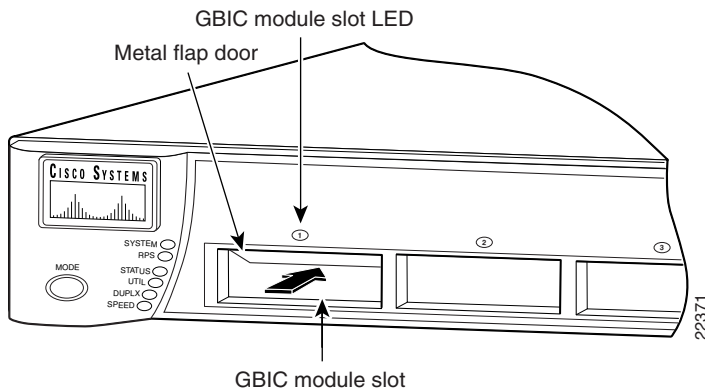
Figure 1-2 GBIC Module Slot LED Location on a Switch

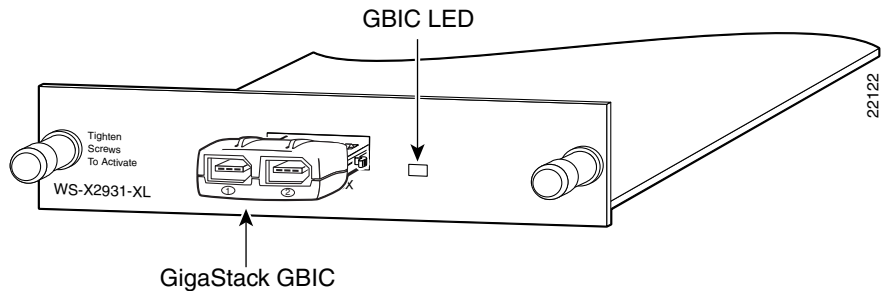
Figure 1-3 GBIC LED Location on a 1000BASE-X Module

Table 1-2 describes the switch and 1000BASE-X module GBIC slot LED colors and port status.

Table 1-2 Switch and 1000BASE-X Module GBIC Slot LEDs

Color	Meaning
Off	No link, or port was administratively shut down.
Green	Link present.
Flashing green	Activity. Port is transmitting or receiving data.
Alternating green-amber	Link fault. Error frames can affect connectivity, and errors such as excessive collisions, cyclic redundancy check (CRC) errors, and alignment and jabber errors are monitored for a link-fault indication.
Solid amber	Port is blocked by Spanning Tree Protocol (STP) and is not forwarding data. Note After a port is reconfigured, the port LED can remain amber for up to 30 seconds as STP checks the switch for possible loops.
Flashing amber	Port is blocked by STP and is sending or receiving packets.

Cabling Guidelines

The GigaStack GBIC uses the following Cisco proprietary cables. See [Figure 1-4](#) and [Table 1-3](#) for more information.

The maximum distance for a GBIC-to-GBIC connection is 1 meter. The GigaStack GBIC requires Cisco proprietary signaling and cabling. For more information about cabling, see [Appendix B, “Connectors and Cables.”](#)

Figure 1-4 GigaStack GBIC Cables

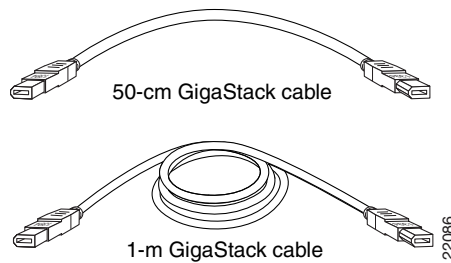


Table 1-3 GigaStack GBIC Cable Part Numbers

Part Number	Cable Length
CAB-GS-50CM	50 cm
CAB-GS-1M	1 m

The 50-cm cable comes with the GigaStack GBIC. You can order additional cables.



Caution

Do not use standard IEEE 1394 cables with the GigaStack GBIC. You must use one of the Cisco proprietary cables (CAB-GS-50CM or CAB-GS-1M). If you use any other cable, you will not have connectivity.



Caution

Do not use the GigaStack GBIC with standard IEEE 1394 equipment. You might damage the equipment or lose data.

Switches Supporting the GBIC

Refer to the online *GigaStack Gigabit Interface Converter Switch Compatibility Matrix* listed with the GBIC documentation on www.cisco.com for the most current list of products supporting the GBIC.



Caution

Installing the GBIC in or connecting it to an unauthorized device might cause damage to the GBIC, the other device, or both.

Table 1-4 lists the switches and the module supporting the GigaStack GBIC.

Table 1-4 Switches and Module Supporting the GigaStack GBIC

Switch Series or Module	Model Number	Description
WS-X2931-XL module for Catalyst 2900 series XL switches	WS-X2931-XL	1 1000BASE-X port ¹
Catalyst 2900 XL switches	Catalyst 2912MF XL	12 100BASE-FX ports and 2 module slots
	Catalyst 2924M XL	24 autosensing 10/100 Ethernet ports and 2 module slots
Catalyst 2950 switches	Catalyst 2950G-12-EI	12 autosensing 10/100 Ethernet ports and 2 GBIC module slots
	Catalyst 2950G-24-EI	24 autosensing 10/100 Ethernet ports and 2 GBIC module slots
	Catalyst 2950G-24-EI-DC	24 autosensing 10/100 Ethernet ports and 2 GBIC module slots with DC-input power
	Catalyst 2950G-48-EI	48 autosensing 10/100 Ethernet ports and 2 GBIC module slots

Switch Series or Module	Model Number	Description
Catalyst 3500 XL switches	Catalyst 3508G XL	8 GBIC module slots
	Catalyst 3512 XL	12 autosensing 10/100 Ethernet ports and 2 GBIC module slots
	Catalyst 3524 XL	24 autosensing 10/100 Ethernet ports and 2 GBIC module slots
	Catalyst 3524 PWR XL	24 autosensing 10/100 inline-power Ethernet ports and 2 GBIC module slots
	Catalyst 3548 XL	48 autosensing 10/100 Ethernet ports and 2 GBIC module slots
Catalyst 3550 switches	Catalyst 3550-12G	2 autosensing 10/100/1000 Ethernet ports and 10 GBIC module slots
	Catalyst 3550-12T	10 autosensing 10/100/1000 Ethernet ports and 2 GBIC module slots
	Catalyst 3550-24-SMI Catalyst 3550-24-EMI	24 autosensing 10/100 Ethernet ports and 2 GBIC module slots
	Catalyst 3550-48-SMI Catalyst 3550-48-EMI	48 autosensing 10/100 Ethernet ports and 2 GBIC module slots

1. The 1000BASE-X module provides one switched 1000-Mbps port in half-duplex, full-duplex, or autonegotiation mode for a GigaStack GBIC. The port supports the IEEE 802.3Z 1000BASE-X standard.

Minimum IOS Release for Redundant Loop Configurations

To ensure support for redundant loop configurations when using the GigaStack GBIC in a cascaded stack configuration, make sure that every switch in the stack is running at least the minimum IOS Release listed in [Table 1-5](#).

Table 1-5 Minimum IOS Release for Redundant Loop Configurations

Supported Switch	Minimum IOS Release
Modular 2900 XL switches	12.0(5)XU (April 2000)
2950 switches	12.1(6)EA2 (December 2000)
3500 XL switches	12.0(5)XU (April 2000)
3550 multilayer switches	12.1(4)EA1 (May 2001)

**Note**

All switches in a series must run the same software version. For example, if the stack includes only Catalyst 2900 series XL and 3500 series XL switches, they must run Release 12.0(5)XU or later. If the stack includes a mixture of Catalyst 2900 series XL, 3500 series XL, 2950, and 3550 switches, all the 2900 XL and 3500 XL switches must run Release 12.0(5)XW or later, all the Catalyst 2950 switches must run Release 12.1(6)EA2 or later, and all the Catalyst 3550 switches must run Release 12.1(4)EA1 or later.

For more information, see the [“Cascaded Stack Connections with a Redundant Link” section on page 2-12](#). For switch software upgrade information, refer to the release notes for your switch.

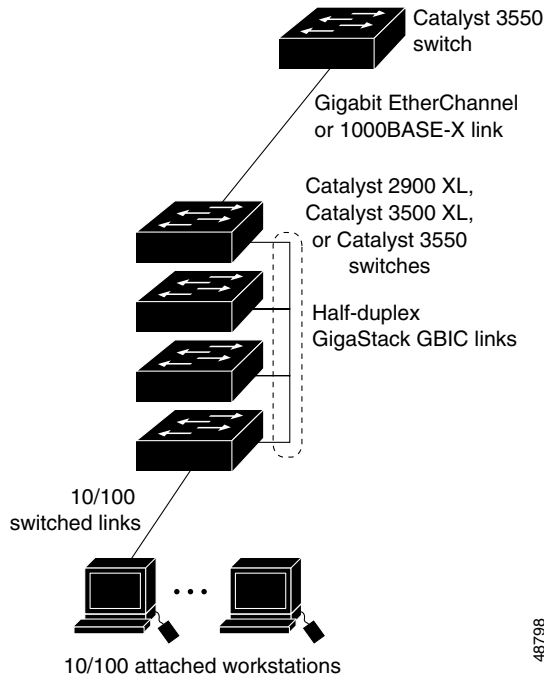
Deployment Examples

This section contains examples that use the GigaStack GBIC as a Gigabit uplink to aggregate traffic in a switched and shared network.

Example 1: Cascaded Stack Connection

Figure 1-5 shows the GigaStack GBIC cascaded in a half-duplex stack configuration.

Figure 1-5 *Cascaded Stack Connection*



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Example 2: Point-to-Point Connection

Figure 1-6 shows the 3500 XL switch aggregating traffic by using a GigaStack GBIC as a full-duplex, point-to-point uplink connection.

Figure 1-6 Point-to-Point Connection

