



# **Cisco Global Site Selector 4491 Hardware Installation Guide**

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# Preface

---

This guide is intended to help you install your Cisco Global Site Selector 4491 (GSS) and get it ready for operation. It describes how to prepare your site for installation, how to install the GSS in an equipment rack, and how to maintain and troubleshoot the GSS hardware.

This preface contains the following major sections:

- [Audience](#)
- [How to Use This Guide](#)
- [Related Documentation](#)
- [Symbols and Conventions](#)
- [Warning Definition](#)
- [Obtaining Documentation, Obtaining Support, and Security Guidelines](#)

# Audience

**Warning**

---

**Only trained and qualified personnel should be allowed to install, replace, or service this equipment.**

---

This guide is intended for the following trained and qualified service personnel who are responsible for installing and operating the GSS:

- System installer
- Hardware technician
- System operator

You should be familiar with networking equipment and cabling, and have a basic knowledge of electronic circuitry and wiring practices.

To complete the installation, including the software configuration for the GSS, you should be familiar with basic networking principles and configurations, especially web page protocols.

# How to Use This Guide

This section describes the chapters and contents in this guide.

<b>Chapter/Appendix</b>	<b>Description</b>
<a href="#">Chapter 1, Introduction</a>	Describes the physical properties and provides a functional overview of the GSS.
<a href="#">Chapter 2, Preparing for Installation</a>	Describes safety considerations and provides an overview of the installation and procedures you should perform before the actual installation.
<a href="#">Chapter 3, Installing the GSS</a>	Describes how to install the hardware and connect the external network interface cables.
<a href="#">Chapter 4, Troubleshooting the GSS Hardware</a>	Describes troubleshooting procedures for the hardware installation.
<a href="#">Chapter 5, Maintaining Your GSS</a>	Contains the procedures for maintaining your GSS in proper operating condition.
<a href="#">Appendix A, Specifications</a>	Lists the hardware specifications for the GSS.
<a href="#">Appendix B, Connecting a Modem to the GSS Console Port</a>	Provides information for configuring a dial-up modem and connecting it to the console port on the GSS.

## Related Documentation

In addition to this document, the GSS documentation set includes the following:

Document Title	Provides
<i>Regulatory Compliance and Safety Information for the Cisco Global Site Selector 4491</i>	Regulatory compliance and safety information for the GSS.
<i>Release Note for the Cisco Global Site Selector</i>	Information on operating considerations, caveats, and new CLI commands for the GSS software.
<i>Cisco Global Site Selector Getting Started Guide</i>	Information on getting your GSS setup, configured, and ready to perform global server load balancing.
<i>Cisco Global Site Selector Global Server Load-Balancing Configuration Guide</i>	Procedures on how to configure your GSS to perform global server load-balancing, such as configuring source address lists, domain lists, answers, answer groups, DNS sticky, network proximity, and DNS rules. This document also provides an overview of the GSS device and global server load-balancing as performed by the GSS.
<i>Cisco Global Site Selector Administration Guide</i>	Procedures necessary to properly set up, manage, and maintain your GSSM and individual GSS devices, including login security, software upgrades, GSSM database administration, and logging.
<i>Cisco Global Site Selector Command Reference</i>	An alphabetical list of all GSS command-line interface (CLI) commands including syntax, options, and related commands. This document also describes how to use the CLI interface.

# Symbols and Conventions

Graphical user interface elements use the following conventions:

- **Bold text** indicates a command in a paragraph.
- `Courier` text indicates text that appears in a command line, including the CLI prompt.
- **`Courier bold text`** indicates commands and text you enter in a command line.
- *Italic text* indicates the first occurrence of a new term, book title, and emphasized text.

Lists use the following conventions:

1. A numbered list indicates that the order of the list items is important.
  - a. An alphabetical list indicates that the order of the secondary list items is important.
- A bulleted list indicates that the order of the list topics is unimportant.
  - An indented list indicates that the order of the list subtopics is unimportant.

Notes, cautionary statements, and safety warnings use these conventions:



---

**Note**

Means *reader take note*. Notes contain helpful suggestions or references to materials not contained in this manual.

---



---

**Caution**

Means *reader be careful*. You are capable of doing something that might result in equipment damage or loss of data.

---

# Warning Definition



Warning

## IMPORTANT SAFETY INSTRUCTIONS

This warning symbol 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

Waarschuwing

## BELANGRIJKE VEILIGHEIDSINSTRUCTIES

Dit waarschuwingssymbool betekent gevaar. U verkeert in een situatie die lichamelijk letsel kan veroorzaken. Voordat u aan enige apparatuur gaat werken, dient u zich bewust te zijn van de bij elektrische schakelingen betrokken risico's en dient u op de hoogte te zijn van de standaard praktijken om ongelukken te voorkomen. Gebruik het nummer van de verklaring onderaan de waarschuwing als u een vertaling van de waarschuwing die bij het apparaat wordt geleverd, wilt raadplegen.

## BEWAAR DEZE INSTRUCTIES

Varoitus

## TÄRKEITÄ TURVALLISUUSOHJEITA

Tämä varoitusmerkki merkitsee vaaraa. Tilanne voi aiheuttaa ruumiillisia vammoja. Ennen kuin käsittelet laitteistoa, huomioi sähköpiirien käsittelemiseen liittyvät riskit ja tutustu onnettomuuksien yleisiin ehkäisytapoihin. Turvallisuusvaroitusten käännökset löytyvät laitteen mukana toimitettujen käännettyjen turvallisuusvaroitusten joukosta varoitusten lopussa näkyvien lausuntonumeroiden avulla.

## SÄILYTÄ NÄMÄ OHJEET

**Attention      IMPORTANTES INFORMATIONS DE SÉCURITÉ**

**Ce symbole d'avertissement indique un danger. Vous vous trouvez dans une situation pouvant entraîner des blessures ou des dommages corporels. Avant de travailler sur un équipement, soyez conscient des dangers liés aux circuits électriques et familiarisez-vous avec les procédures couramment utilisées pour éviter les accidents. Pour prendre connaissance des traductions des avertissements figurant dans les consignes de sécurité traduites qui accompagnent cet appareil, référez-vous au numéro de l'instruction situé à la fin de chaque avertissement.**

**CONSERVEZ CES INFORMATIONS****Warnung      WICHTIGE SICHERHEITSHINWEISE**

**Dieses Warnsymbol bedeutet Gefahr. Sie befinden sich in einer Situation, die zu Verletzungen führen kann. Machen Sie sich vor der Arbeit mit Geräten mit den Gefahren elektrischer Schaltungen und den üblichen Verfahren zur Vorbeugung vor Unfällen vertraut. Suchen Sie mit der am Ende jeder Warnung angegebenen Anweisungsnummer nach der jeweiligen Übersetzung in den übersetzten Sicherheitshinweisen, die zusammen mit diesem Gerät ausgeliefert wurden.**

**BEWAHREN SIE DIESE HINWEISE GUT AUF.****Avvertenza      IMPORTANTI ISTRUZIONI SULLA SICUREZZA**

**Questo simbolo di avvertenza indica un pericolo. La situazione potrebbe causare infortuni alle persone. Prima di intervenire su qualsiasi apparecchiatura, occorre essere al corrente dei pericoli relativi ai circuiti elettrici e conoscere le procedure standard per la prevenzione di incidenti. Utilizzare il numero di istruzione presente alla fine di ciascuna avvertenza per individuare le traduzioni delle avvertenze riportate in questo documento.**

**CONSERVARE QUESTE ISTRUZIONI**

**Advarsel VIKTIGE SIKKERHETSINSTRUKSJONER**

**Dette advarselssymbolet betyr fare. Du er i en situasjon som kan føre til skade på person. Før du begynner å arbeide med noe av utstyret, må du være oppmerksom på farene forbundet med elektriske kretser, og kjenne til standardprosedyrer for å forhindre ulykker. Bruk nummeret i slutten av hver advarsel for å finne oversettelsen i de oversatte sikkerhetsadvarslene som fulgte med denne enheten.**

**TA VARE PÅ DISSE INSTRUKSJONENE****Aviso INSTRUÇÕES IMPORTANTES DE SEGURANÇA**

**Este símbolo de aviso significa perigo. Você está em uma situação que poderá ser causadora de lesões corporais. Antes de iniciar a utilização de qualquer equipamento, tenha conhecimento dos perigos envolvidos no manuseio de circuitos elétricos e familiarize-se com as práticas habituais de prevenção de acidentes. Utilize o número da instrução fornecido ao final de cada aviso para localizar sua tradução nos avisos de segurança traduzidos que acompanham este dispositivo.**

**GUARDE ESTAS INSTRUÇÕES****¡Advertencia! INSTRUCCIONES IMPORTANTES DE SEGURIDAD**

**Este símbolo de aviso indica peligro. Existe riesgo para su integridad física. Antes de manipular cualquier equipo, considere los riesgos de la corriente eléctrica y familiarícese con los procedimientos estándar de prevención de accidentes. Al final de cada advertencia encontrará el número que le ayudará a encontrar el texto traducido en el apartado de traducciones que acompaña a este dispositivo.**

**GUARDE ESTAS INSTRUCCIONES**

**Varning! VIKTIGA SÄKERHETSANVISNINGAR**

Denna varningssignal signalerar fara. Du befinner dig i en situation som kan leda till personskada. Innan du utför arbete på någon utrustning måste du vara medveten om farorna med elkretsar och känna till vanliga förfaranden för att förebygga olyckor. Använd det nummer som finns i slutet av varje varning för att hitta dess översättning i de översatta säkerhetsvarningar som medföljer denna anordning.

**SPARA DESSA ANVISNINGAR****Figyelem FONTOS BIZTONSÁGI ELOÍRÁSOK**

Ez a figyelmeztető jel veszélyre utal. Sérülésveszélyt rejtő helyzetben van. Mielőtt bármely berendezésen munkát végezte, legyen figyelemmel az elektromos áramkörök okozta kockázatokra, és ismerkedjen meg a szokásos balesetvédelmi eljárásokkal. A kiadványban szereplő figyelmeztetések fordítása a készülékhez mellékelt biztonsági figyelmeztetések között található; a fordítás az egyes figyelmeztetések végén látható szám alapján kereshető meg.

**ORIZZE MEG EZEKET AZ UTASÍTÁSOKAT!****Предупреждение ВАЖНЫЕ ИНСТРУКЦИИ ПО СОБЛЮДЕНИЮ ТЕХНИКИ БЕЗОПАСНОСТИ**

Этот символ предупреждения обозначает опасность. То есть имеет место ситуация, в которой следует опасаться телесных повреждений. Перед эксплуатацией оборудования выясните, каким опасностям может подвергаться пользователь при использовании электрических цепей, и ознакомьтесь с правилами техники безопасности для предотвращения возможных несчастных случаев. Воспользуйтесь номером заявления, приведенным в конце каждого предупреждения, чтобы найти его переведенный вариант в переводе предупреждений по безопасности, прилагаемом к данному устройству.

**СОХРАНИТЕ ЭТИ ИНСТРУКЦИИ**

**警告** 重要的安全性说明

此警告符号代表危险。您正处于可能受到严重伤害的工作环境中。在您使用设备开始工作之前，必须充分意识到触电的危险，并熟练掌握防止事故发生的标准工作程序。请根据每项警告结尾提供的声明号码来找到此设备的安全性警告说明的翻译文本。

请保存这些安全性说明

**警告** 安全上の重要な注意事項

「危険」の意味です。人身事故を予防するための注意事項が記述されています。装置の取り扱い作業を行うときは、電気回路の危険性に注意し、一般的な事故防止策に留意してください。警告の各国語版は、各注意事項の番号を基に、装置に付属の「Translated Safety Warnings」を参照してください。

これらの注意事項を保管しておいてください。

---

## Obtaining Documentation, Obtaining Support, and Security Guidelines

For information on obtaining documentation, obtaining support, providing documentation feedback, security guidelines, and also recommended aliases and general Cisco documents, 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>



# Introduction

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This chapter provides a basic functional overview of the Cisco Global Site Selector 4491 (GSS) and describes the hardware, major components, and front and rear panel indicators and controls.

This chapter contains the following major sections:

- [Introduction](#)
- [System Hardware Features](#)
- [Ports and Connectors](#)

## Introduction

The GSS is a networking product that provides site selection services that are critical for disaster recovery deployments involving Internet and intranet data centers. The GSS globally load balances traffic between geographically distributed data centers managed by other server load balancers (SLBs), such as:

- Cisco CSS 11500, CSS 11000, or CSS 11150
- Cisco Content Switching Module (CSM) for the Catalyst 6500 series switches
- Cisco LocalDirector
- Cisco IOS SLB

The GSS is the cornerstone of disaster recovery in such distributed deployments and enables businesses to confidently deploy global Internet and intranet applications with the knowledge that users will be quickly routed to standby data centers should problems occur.

The GSS is deployed at strategic locations within your network. The GSS performs two major functions when deployed with other SLBs by:

- Taking an active role in the domain name server (DNS) infrastructure, connecting clients to SLBs that support the requested website.
- Continuously monitoring the load and availability of SLBs in its network, selecting the SLB that is most able to answer each client request.

By off-loading DNS resolution from traditional DNS servers, the GSS optimizes global site selection and increases DNS responsiveness. The GSS increases the fault tolerance and scalability of large websites and data centers through its monitoring of load and availability.

## System Hardware Features

The GSS is designed for AC-input power and has a single AC-input power supply. The GSS includes:

- An integrated dual-port Ethernet controller that provides an interface for connecting to 10-Mbps, 100-Mbps, or 1000-Mbps networks.
- Two 10BASE-T/100BASE-TX/1000BASE-TX Ethernet ports with RJ-45 receptacles.

Both Ethernet ports support autonegotiate, full-duplex, or half-duplex operation on an Ethernet LAN.

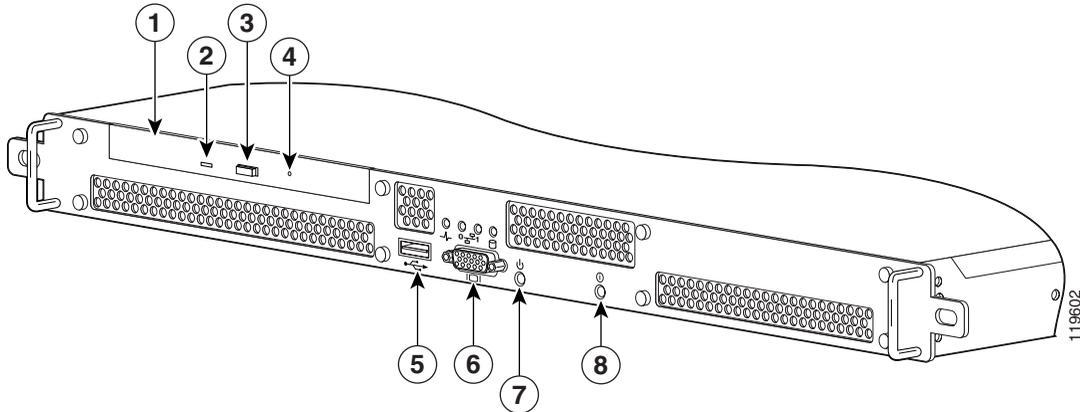
This section includes the following topics:

- [Front Panel Features](#)
- [Rear Panel Features](#)

## Front Panel Features

The GSS front panel contains LED indicators, a power button, and a CD-ROM drive. [Figure 1-1](#) illustrates the GSS front panel.

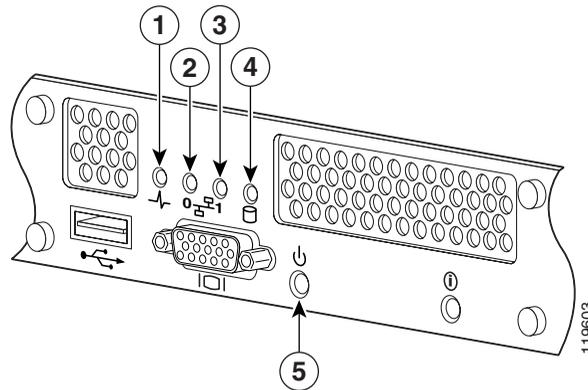
**Figure 1-1 Front Panel View**



<b>1</b>	CD-ROM drive	<b>5</b>	USB port (not supported)
<b>2</b>	CD-ROM indicator	<b>6</b>	VGA port (not supported)
<b>3</b>	CD-ROM eject button	<b>7</b>	Power button with built-in power indicator. The power button turns power on or off. To turn chassis power off, press and hold this switch for approximately four seconds.
<b>4</b>	CD-ROM emergency eject button	<b>8</b>	System ID button. The System ID button allows you to identify the GSS when it is installed in a single rack with multiple GSS devices. The LED illuminates on the rear panel of the active GSS. <ul style="list-style-type: none"> <li>• Press the front System ID button to activate the blue LED on the rear panel of the GSS.</li> <li>• Press the rear System ID button to turn off the LED on the rear panel.</li> </ul>

Figure 1-2 shows the LED indicators on the front panel of the GSS. Table 1-1 describes their function.

**Figure 1-2 LED Indicators**



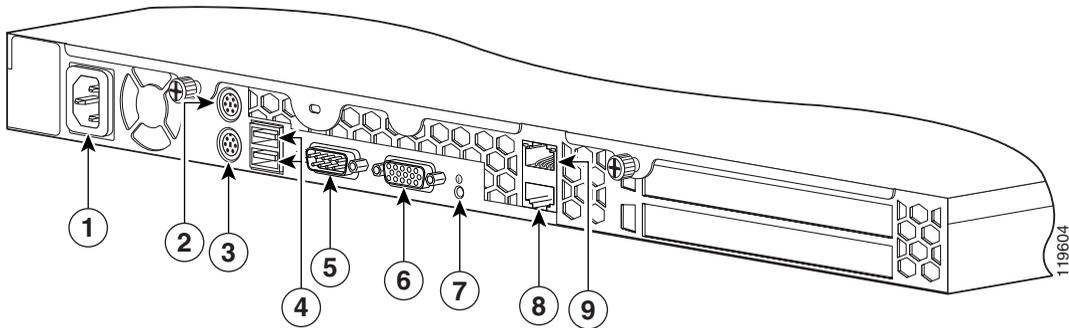
**Table 1-1 Front Panel LED Indicators**

	Indicator	Color	State	Indicates
1	Power Spike	Blue	On	Normal operation
			Blinking	A power surge has occurred
2	Ethernet 0 Link	Green	On	Ethernet 0 is connected to a network
	Ethernet 0 Activity	Green	Blinking	An active link connection on the 10/100/1000BASE-T interface for Ethernet port 0
3	Ethernet 1 Link	Green	On	Ethernet 1 is connected to a network
	Ethernet 1 Activity	Green	Blinking	An active link connection on the 10/100/1000BASE-T interface for Ethernet port 1
4	Hard Drive Activity	Green	Blinking	The hard drive is in use
5	Power	Green	On	The GSS is on
			Blinking	The GSS is in standby mode

## Rear Panel Features

The rear panel contains the AC power receptacle, Ethernet connectors, and the console/serial connector. [Figure 1-3](#) illustrates the rear panel ports and connectors.

**Figure 1-3** Rear Panel View



1	AC power receptacle	6	VGA port (not supported)
2	PS/2 mouse port (not supported)	7	System ID button/System status LED
3	PS/2 keyboard port (not supported)	8	RJ-45 Ethernet 1 connector with 10/100/1000-Mbit/s operation
4	USB ports (not supported)	9	RJ-45 Ethernet 0 connector with 10/100/1000-Mbit/s operation and status LEDs
5	Console/serial connector (see <a href="#">Figure 1-4</a> )		

# Ports and Connectors

The GSS supports the following port connectors on the rear of the chassis:

- [Console Port](#)
- [Ethernet Connectors](#)



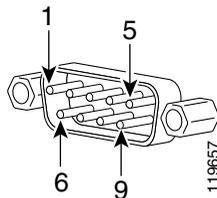
**To avoid electric shock, do not connect safety extra-low voltage (SELV) circuits to telephone-network voltage (TNV) circuits. LAN ports contain SELV circuits, and WAN ports contain TNV circuits. Some LAN and WAN ports both use RJ-45 connectors. Use caution when connecting cables.**

## Console Port

The GSS has one standard RS-232 serial port located on the rear panel that operates as the console port. The integrated serial port uses a 9-pin male D-shell connector. [Figure 1-4](#) shows the pin number assignments for the 9-pin port.

Refer to [Table 1-3](#) for the console port connector pinouts.

**Figure 1-4 Console Port Connector Pin Numbers**



**Table 1-2 Console Port Connector Pinouts**

Pin	Signal	I/O	Definition
1	DCD	I	Data carrier detect
2	SIN	I	Serial input
3	SOUT	O	Serial output
4	DTR	O	Data terminal ready
5	GND	N/A	Signal ground
6	DSR	I	Data set ready
7	RTS	O	Request to send
8	CTS	I	Clear to send
9	RI	I	Ring indicator
Shell	N/A	N/A	Chassis ground

The console port operates at the settings outlined in [Table 1-3](#). These settings are not user-configurable.

**Table 1-3 GSS Console Port Settings**

Parameters	Settings
Baud	9600
Data Bits	8
Parity	None
Stop Bits	1
Terminal Type	VT100/ANSI
Flow Control	None

## Ethernet Connectors

The GSS has two integrated 10/100/1000–megabit-per-second (Mbps) Ethernet connectors. The Ethernet controller provides an interface for connecting to 10-Mbps, 100-Mbps, or 1000-Mbps networks and supports autonegotiate, full-duplex, or half-duplex operation on an Ethernet LAN.

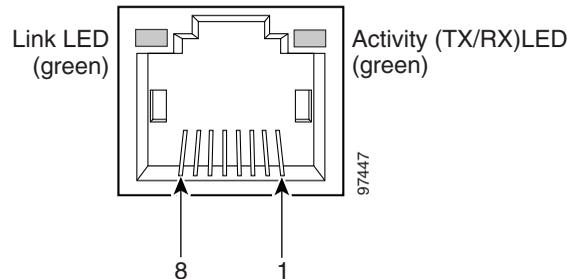
To access the Ethernet port, connect a Category 3, 4, or 5 unshielded twisted-pair (UTP) cable to the RJ-45 connector on the back of the chassis.


**Note**

The 100BASE-TX/1000BASE-TX Ethernet standard requires that you use standard four twisted-pair Category 5e cable at lengths up to 328.08 ft. (100 m).

Figure 1-5 illustrates the pin number assignments for the Ethernet 0 RJ-45 port.

**Figure 1-5 Ethernet Port 0 Pin Numbers**





## Preparing for Installation

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This chapter contains important safety information you should review before working with the GSS. Use the following guidelines to ensure your own personal safety and to help protect your GSS from potential damage.

Read the *Regulatory Compliance and Safety Information for the Cisco Global Site Selector 4491* document before you prepare the GSS for installation. This document is included in the GSS accessory kit.

This chapter contains the following major sections:

- [Safety](#)
- [Preparing Your Site for Installation](#)
- [Precautions for Rack-Mounting](#)
- [Precautions for Products with Modems, Telecommunications, or Local Area Network Options](#)
- [Required Tools and Equipment](#)

# Safety

This section provides safety information for installing the GSS. It includes the following topics:

- [Warnings and Cautions](#)
- [General Precautions](#)
- [Maintaining Safety with Electricity](#)
- [Protecting Against Electrostatic Discharge](#)

## Warnings and Cautions

Read the installation instructions in this document before you connect the GSS to its power source. Failure to read and follow these guidelines may lead to an unsuccessful installation and possibly damage the GSS and components.

You should observe the following safety guidelines when working with any equipment that connects to electrical power or telephone wiring. They can help you avoid injuring yourself or damaging the GSS.



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**Note**

The English warnings in this document are followed by a statement number. To see the translations of a warning into other languages, look up its statement number in the *Regulatory Compliance and Safety Information for the Cisco Global Site Selector 4491*.

---

The following warnings and cautions are provided to help you prevent injury to yourself or damage to the devices:



Warning

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### IMPORTANT SAFETY INSTRUCTIONS

**This warning symbol 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.** Statement 1071

---

### SAVE THESE INSTRUCTIONS



Warning

**The safety cover is an integral part of the product. Do not operate the unit without the safety cover installed. Operating the unit without the cover in place will invalidate the safety approvals and pose a risk of fire and electrical hazards.** Statement 117



Warning

**This equipment must be grounded. Never defeat the ground conductor or operate the equipment in the absence of a suitably installed ground conductor. Contact the appropriate electrical inspection authority or an electrician if you are uncertain that suitable grounding is available.** Statement 1024



Warning

**Before working on a chassis or working near power supplies, unplug the power cord on AC units; disconnect the power at the circuit breaker on DC units.** Statement 12



Warning

**Before opening the chassis, disconnect the telephone-network cables to avoid contact with telephone-network voltages.** Statement 1041

**Warning**

**This unit might have more than one power cord. To reduce the risk of electrical shock, disconnect all power supply cords before servicing the unit.** Statement 106

**Warning**

**This product requires short-circuit (overcurrent) protection, to be provided as part of the building installation. Install only in accordance with national and local wiring regulations.** Statement 1045

**Warning**

**This equipment is intended to be grounded to comply with emission and immunity requirements. Ensure that the switch functional ground lug is connected to earth ground during normal use.** Statement 1064

**Warning**

**Blank faceplates and cover panels serve three important functions: they prevent exposure to hazardous voltages and currents inside the chassis; they contain electromagnetic interference (EMI) that might disrupt other equipment; and they direct the flow of cooling air through the chassis. Do not operate the system unless all cards, faceplates, front covers, and rear covers are in place.** Statement 1029

**Warning**

**Do not work on the system or connect or disconnect cables during periods of lightning activity.** Statement 1001.

**Warning**

**The power supply circuitry for the equipment can constitute an energy hazard. Before you install or replace the equipment, remove all jewelry (including rings, necklaces, and watches). Metal objects can come into contact with exposed power supply wiring or circuitry inside the DSLAM equipment. This could cause the metal objects to heat up and cause serious burns or weld the metal object to the equipment.** Statement 207



**Warning**

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**Ultimate disposal of this product should be handled according to all national laws and regulations.** Statement 1040

---



**Warning**

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**Before working on a system that has an On/Off switch, turn OFF the power and unplug the power cord.** Statement 1

---



**Warning**

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**Read the installation instructions before you connect the system to its power source.** Statement 1004

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**Warning**

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**There is the danger of explosion if the battery is replaced incorrectly. Replace the battery only with the same or equivalent type recommended by the manufacturer. Dispose of used batteries according to the manufacturer's instructions.** Statement 1015

---

## General Precautions

Observe the following general precautions when using and working with your GSS:

- Keep your GSS components away from radiators and heat sources, and do not block cooling vents.
- Do not spill food or liquids on your GSS components, and never operate the product in a wet environment. If the GSS gets wet, see [Chapter 4, Troubleshooting the GSS Hardware](#) or contact the Cisco Technical Assistance Center. For instructions on contacting the Technical Assistance Center, see the [Preface](#).
- Do not push any objects into the openings of your GSS components. Doing so can cause fire or electric shock by shorting out interior components.
- Position cables and power cables carefully; route all cables and the power cable and plug so that they cannot be stepped on or tripped over. Be sure that nothing rests on your GSS cables or the power cable.
- Do not modify power cables or plugs. Consult a licensed electrician or your power company for site modifications. Always follow your local/national wiring rules.
- To help avoid possible damage to the system board, wait 5 seconds after turning off the GSS before removing a component from the system board or disconnecting a peripheral device from the GSS.

## Maintaining Safety with Electricity

Follow these guidelines when working on equipment powered by electricity:

- If any of the following conditions occur contact the Cisco Technical Assistance Center:
  - The power cable or plug is damaged.
  - An object has fallen into the product.
  - The product has been exposed to water.
  - The product has been dropped or damaged.
  - The product does not operate correctly when you follow the operating instructions.

- Use the correct external power source. Operate the product only from the type of power source indicated on the electrical ratings label. If you are not sure of the type of power source required, consult the Cisco Technical Assistance Center or a local power company.
- Use only approved power cable(s). You have been provided with a power cable for your GSS that is intended for its use (approved for use in your country, based on the shipping location). Should you have to purchase a power cable, ensure that it is rated for the product and for the voltage and current marked on the product's electrical ratings label. The voltage and current rating of the cable should be greater than the ratings marked on the product.
- To help prevent electric shock, plug the GSS, components, and peripheral power cables into properly grounded electrical outlets. These cables are equipped with three-prong plugs to help ensure proper grounding. Do not use adapter plugs or remove the grounding prong from a cable.
- Observe power strip ratings. Make sure that the total ampere rating of all products plugged into the power strip does not exceed 80% of the rating.
- To help protect your GSS and components from sudden, transient increases and decreases in electrical power, use a surge suppressor, line conditioner, or uninterruptible power supply (UPS).
- Do not modify power cables or plugs. Consult a licensed electrician or your power company for site modifications. Always follow your local and national wiring rules.

## Protecting Against Electrostatic Discharge

Static electricity can harm delicate components inside your computer. To prevent static damage, discharge static electricity from your body before you touch any of your computer's electronic components, such as the microprocessor. You can do so by touching an unpainted metal surface on the computer chassis.

As you continue to work inside the computer, periodically touch an unpainted metal surface to remove any static charge your body may have accumulated.

You can also take the following steps to prevent damage from electrostatic discharge (ESD):

- When unpacking a static-sensitive component from its shipping carton, do not remove the component from the antistatic packing material until you are ready to install the component in your computer. Just before unwrapping the antistatic packaging, be sure to discharge static electricity from your body.
- When transporting a sensitive component, first place it in an antistatic container or packaging.
- Handle all sensitive components in a static-safe area. If possible, use antistatic floor pads and workbench pads.

## Preparing Your Site for Installation

This section describes the requirements your site must meet for safe installation and operation of your GSS. Before you select an installation site for the GSS, read the electrical, environmental, and physical requirements as described in [Appendix A, Specifications](#). Ensure that your site is properly prepared before beginning installation.

This section includes the following requirements:

- [Environmental](#)
- [Choosing a Site for Installation](#)
- [Ensuring Overcurrent Protection](#)
- [Grounding the GSS](#)
- [Creating a Safe Environment](#)
- [AC Power](#)
- [Cabling](#)

## Environmental

When planning your site layout and equipment locations, remember the precautions described in this section to help avoid equipment failures and reduce the possibility of environmentally caused shutdowns. If you are experiencing shutdowns or unusually high errors with your existing equipment, these precautions will help you isolate the cause of failures and prevent future problems.

Use the following precautions when planning the operating environment for your GSS.

- Always follow the ESD-prevention procedures described in the “[Protecting Against Electrostatic Discharge](#)” section to avoid damage to equipment. Damage from static discharge can cause immediate or intermittent equipment failure.
- Make sure that the chassis cover is secure. The chassis allows cooling air to flow effectively within it. An open chassis allows air leaks, which could interrupt and redirect the flow of cooling air from internal components.
- Electrical equipment generates heat. Ambient air temperature might not be adequate to cool equipment to acceptable operating temperatures without adequate circulation. Make sure that the room in which you operate has adequate air circulation.

## Choosing a Site for Installation



### Warning

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**This unit is intended for installation in restricted access areas. A restricted access area is where access can only be gained by service personnel through the use of a special tool, lock and key, or other means of security, and is controlled by the authority responsible for the location.**

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- Choose a site with a dry, clean, well-ventilated and air-conditioned area.
- Choose a site that maintains an ambient temperature of 10° to 35°C (50° to 95°F).

## Ensuring Overcurrent Protection

The GSS relies on the protective devices in the building installation for protection against short-circuit, overcurrent, and earth (grounding) fault. Ensure that the protective devices in the building installation are properly rated to protect the GSS, and that they comply with national and local codes.

## Grounding the GSS



Warning

---

**Never defeat the ground conductor or operate the equipment in the absence of a suitably installed ground conductor. Contact the appropriate electrical inspection authority or an electrician if you are uncertain that suitable grounding is available.**

---

## Creating a Safe Environment

Follow these guidelines to create a safe operating environment:

- Keep tools and chassis components off the floor and away from foot traffic.
- Clear the area of possible hazards, such as moist floors, ungrounded power extension cables, and missing safety grounds.
- Keep the area around the chassis free from dust and foreign conductive material (such as metal flakes from nearby construction activity).

## AC Power

Ensure that the plug-socket combination is accessible at all times, because it serves as the main disconnecting device. Refer to [Appendix A, Specifications](#), for the GSS power requirements.



Warning

---

**This product requires short-circuit (overcurrent) protection, to be provided as part of the building installation. Install only in accordance with national and local wiring regulations.**

---

## Cabling

Use the cables in the accessory kit to connect the GSS console port to a console or computer that is running a console program. In addition to using the console cable, use the provided standard Ethernet cable to connect the GSS to your network. Refer to [Chapter 1, Introduction](#), for information on cable requirements.

## Precautions for Rack-Mounting



### Warning

---

**To prevent bodily injury when mounting or servicing this unit in a rack, you must take special precautions to ensure that the system remains stable. The following guidelines are provided to ensure your safety:**

---

Observe the following precautions for rack stability and safety. Also refer to the rack installation documentation accompanying the rack for specific warnings and caution statements and procedures.



### Note

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Component refers to any server, storage system, or appliance, and to various peripherals or supporting hardware.

---

- Do not move large racks by yourself. Due to the height and weight of the rack, a minimum of two people are needed to accomplish this task.
- Ensure that the rack is level and stable before extending a component from the rack.
- Do not overload the AC supply branch circuit that provides power to the rack. The total rack load should not exceed 80% of the branch circuit rating.
- Ensure that proper airflow is provided to components in the rack.
- Do not step or stand on any system or component when servicing other systems and components in a rack.
- This unit should be mounted at the bottom of the rack if it is the only unit in the rack.

- When mounting this unit in a partially filled rack, load the rack from the bottom to the top with the heaviest component at the bottom of the rack.
- If the rack is provided with stabilizing devices, install the stabilizers before mounting or servicing the unit in the rack.

## Precautions for Products with Modems, Telecommunications, or Local Area Network Options

Observe the following guidelines when working with these components:

- Do not connect or use a modem or telephone during a lightning storm. There may be a risk of electrical shock from lightning.
- Never connect or use a modem or telephone in a wet environment.
- Do not plug a modem or telephone cable into the Ethernet connector.
- Disconnect the modem cable before opening a product enclosure, touching or installing internal components, or touching an uninsulated modem cable or jack.
- Do not use a telephone line to report a gas leak while you are in the vicinity of the leak.

## Required Tools and Equipment

You need the following tools and equipment to install the GSS:

- Number 2 Phillips screwdriver
- Tape measure and level
- Antistatic mat or antistatic foam
- ESD grounding strap with an alligator termination clip



## Installing the GSS

---

This chapter explains how to install a GSS in an equipment rack, or on a table or workbench. This chapter also provides instructions for connecting cables, AC power, and for booting the GSS.



### Warning

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**Read the installation instructions before connecting the GSS to the power source.**

---

This chapter contains the following major sections:

- [Unpacking and Inspecting the GSS](#)
- [Installing Your GSS](#)
- [Connecting Cables](#)
- [Connecting AC Power](#)
- [Booting the GSS](#)
- [Establishing a Serial Console Connection](#)
- [Checking the Front Panel LEDs](#)
- [Removing or Replacing a GSS](#)

Before you begin the installation, be sure you have read:

- [Chapter 2, Preparing for Installation](#)
- *Regulatory Compliance and Safety Information for the Cisco Global Site Selector 4491*

# Unpacking and Inspecting the GSS

The GSS shipment contains the following items:

- One RJ-45 to female 25-pin sub-d connector
- Two RJ-45 to female 9-pin sub-d connectors
- One RJ-45 console cable
- One four-post rack mount kit
- One two-post rack mount kit
- Four rubber feet
- Cisco Product Documentation CD-ROM and Warranty Package
- *Cisco Global Site Selector 4491 Hardware Installation Guide*
- *Regulatory Compliance and Safety Information for the Cisco Global Site Selector 4491*

The GSS is shipped in a protective shipping carton. It is shipped as a self-contained chassis; no components can be added or removed.

Follow these steps to unpack the GSS:

1. Remove the GSS accessories from the shipping carton. Save the packing materials in case you need to repack the GSS later.
2. Check the configuration of the GSS and the accessories against the items listed on the packing slip. Report any discrepancies as described in [“If the Product is Damaged”](#).
3. Before installing the GSS, review the information outlined in [Chapter 2, Preparing for Installation](#).

## If the Product is Damaged

If any portion of the unit or component is damaged in transit, forward an immediate request to the delivering carrier to perform an inspection of the product and to prepare a damage report. Save the container and all packing materials until the contents are verified.

Concurrently, report the nature and extent of the damage to Customer Service. Report the problem or deficiency to Customer Service along with the model number and serial number. Upon receipt of this information, you will be provided with service instructions, or a Return Material Authorization (RMA) number and shipping information. To obtain assistance, refer to the “Preface”.

## Installing Your GSS

Place the GSS in the desired location. You can mount it in a rack for your convenience, or place it on a solid, stable surface. If you do not plan to install the GSS in an equipment rack, proceed to the “[Installing the GSS on a Workbench or Tabletop](#)” section.

Racks are marked in vertical increments of 1.75 inches (4.44 cm). Each increment is referred to as a rack unit (RU). A 1-RU device is 1.75 inches (4.44 cm) tall.



### Warning

---

**To prevent bodily injury when mounting or servicing this unit in a rack, you must take special precautions to ensure that the GSS remains stable. The following guidelines are provided to ensure your safety:**

**This unit should be mounted at the bottom of the rack if it is the only unit in the rack.**

**When mounting this unit in a partially filled rack, load the rack from the bottom to the top with the heaviest component at the bottom of the rack.**

**If the rack is provided with stabilizing devices, install the stabilizers before mounting or servicing the unit in the rack.** Statement 1006

---

This section contains the following procedures:

- [Installing the GSS in a Four-Post Rack](#)
- [Attaching a Two-Post Rack Bracket to the GSS](#)
- [Installing the GSS on a Workbench or Tabletop](#)

## Installing the GSS in a Four-Post Rack

This section provides instructions for installing the GSS in a four-post rack. The rack must be properly secured to the floor, ceiling, or upper wall, and where applicable, to adjacent racks. The rack should be secured using floor and wall fasteners and bracing as specified by industry standards.

Before installing the GSS in a rack, be sure you have read [Chapter 2, Preparing for Installation](#), to familiarize yourself with the proper site and environmental conditions. Failure to read and follow these guidelines may lead to an unsuccessful installation and possible damage to the GSS and its components. Perform the steps below when installing and servicing the GSS.

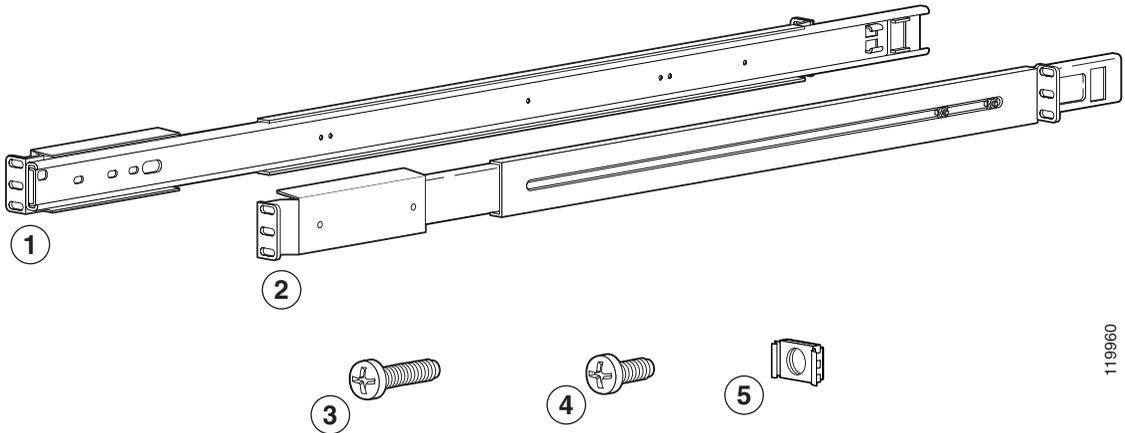
When installing and servicing the GSS:

- Disconnect all power and external cables before installing the GSS.
- Install the GSS in compliance with your local and national electrical codes:
  - United States: National Fire Protection Association (NFPA) 70; United States National Electrical Code.
  - Canada: Canadian Electrical Code, Part, I, CSA C22.1.
  - Other countries: If local and national electrical codes are not available, see IEC 364, Part 1 through Part 7.
- Do not work alone under potentially hazardous conditions.
- Do not perform any action that creates a potential hazard to people or makes the equipment unsafe.
- Do not attempt to install the GSS in a rack that has not been securely anchored in place. Damage to the GSS and personal injury may result.
- Due to the size and weight of the GSS, never attempt to install it by yourself.

Refer to [Chapter 2, Preparing for Installation](#), the “[Precautions for Rack-Mounting](#)” section for additional safety information on rack installation.

The GSS can be installed in a system 1U rack. [Figure 3-1](#) illustrates the four-post rack rail components. [Table 3-1](#) describes each four-post rack rail component.

**Figure 3-1 Rack Rail Components**



**Table 3-1 Four-Post Rack Components**

<b>1</b>	Left side telescopic rail	<b>4</b>	Round head screws (6)
<b>2</b>	Right side telescopic rail	<b>5</b>	Cage nuts (6)
<b>3</b>	Round head screws with washer (9)		

The procedure to install the GSS into a four-post rack is divided into two parts:

- [Attaching the Telescopic Rails to the Rack Assembly](#)
- [Inserting the GSS into the Rack](#)

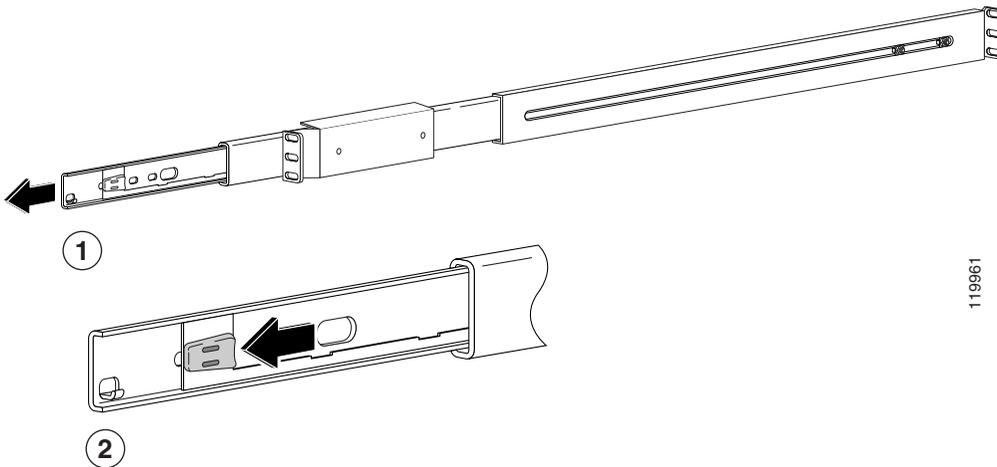
To install the GSS in a four-post rack by using a two-post rack bracket, see the [“Attaching a Two-Post Rack Bracket to the GSS”](#) section.

## Attaching the Telescopic Rails to the Rack Assembly

To attach the telescopic rails to the four-post rack assembly:

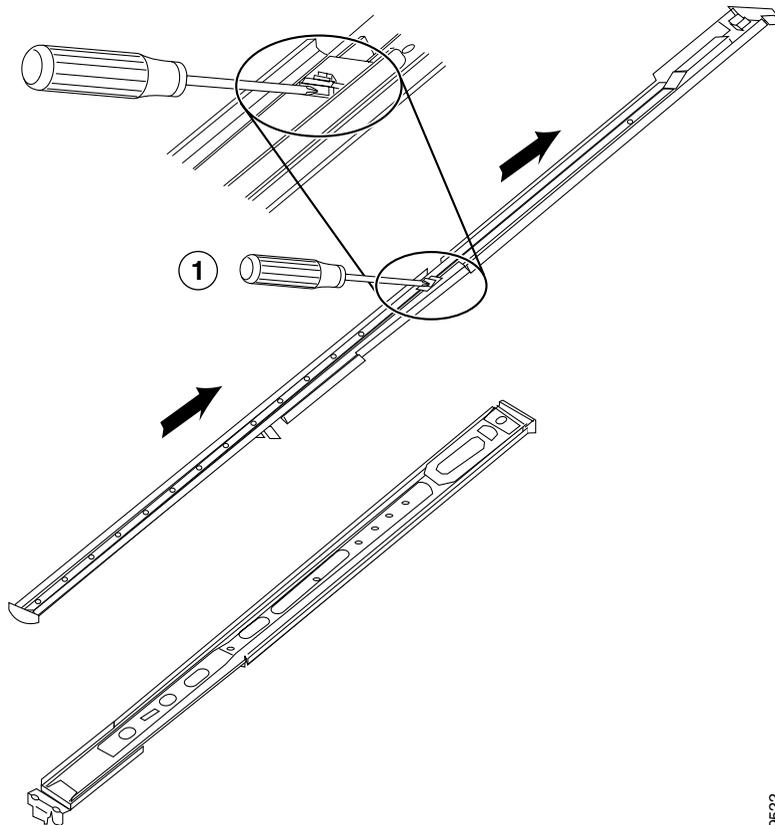
1. Extend the rail (1) as far as it will go, as shown in [Figure 3-2](#).
2. Press the green spring plate (2) on the extended telescopic rail and remove the inner rail. Set the rail aside for attachment to the GSS (see the [“Inserting the GSS into the Rack”](#) section).

**Figure 3-2** Removing the Inner Server Rail



- Using a screwdriver (1), gently press the button labelled “Push” and move the middle section of the outer telescopic rail to its end position, as shown in [Figure 3-3](#).

**Figure 3-3** Telescoping the Rail



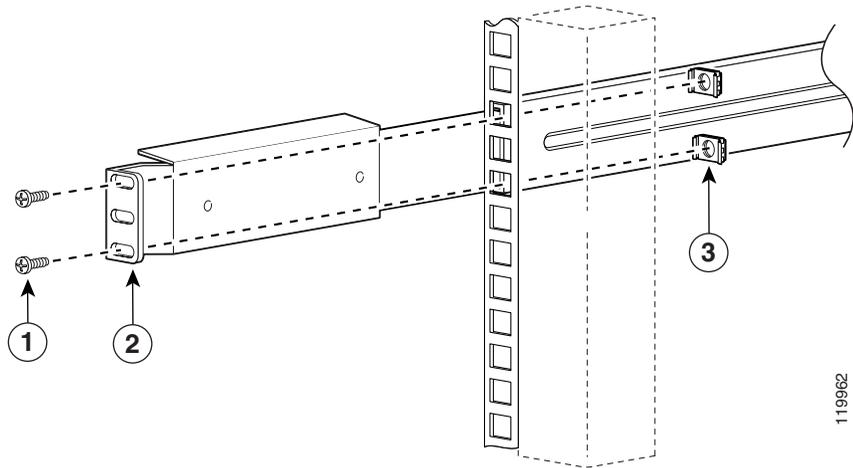
99522

- Select a location in the rack to mount the GSS and attach the front end of the right outer telescopic rail to the right side of the rack, as show in [Figure 3-4](#).

**Note**

Racks that contain tapped mounting holes do not require the cage nuts (3) shown in [Figure 3-4](#).

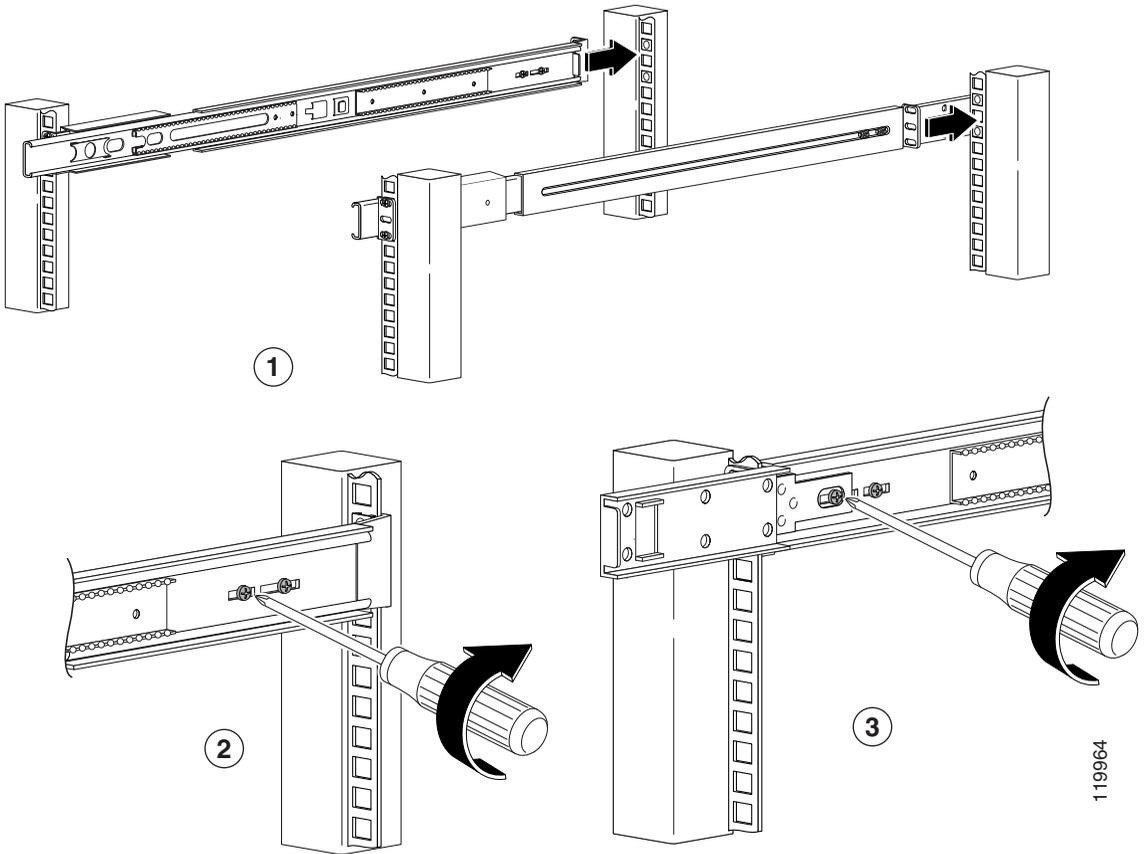
**Figure 3-4 Attaching Front Rail to the Right Side of the Rack**



<b>1</b>	Round head screw and washer	<b>3</b>	Cage nut
<b>2</b>	Right outer telescopic rail—front		

- Extend the middle rail from the front of the rack to have free access to the two adjustment screws located at the rear of the outer telescopic rail ([Figure 3-5](#)). Loosen the two adjustment screws to leave some play when attaching the back end of the outer telescopic rail to the rack, then push the middle rail back into its original position. After the rail is attached to the rack, you can tighten the two adjustment screws.

Figure 3-5 Telescopic Rail Adjustment Screws



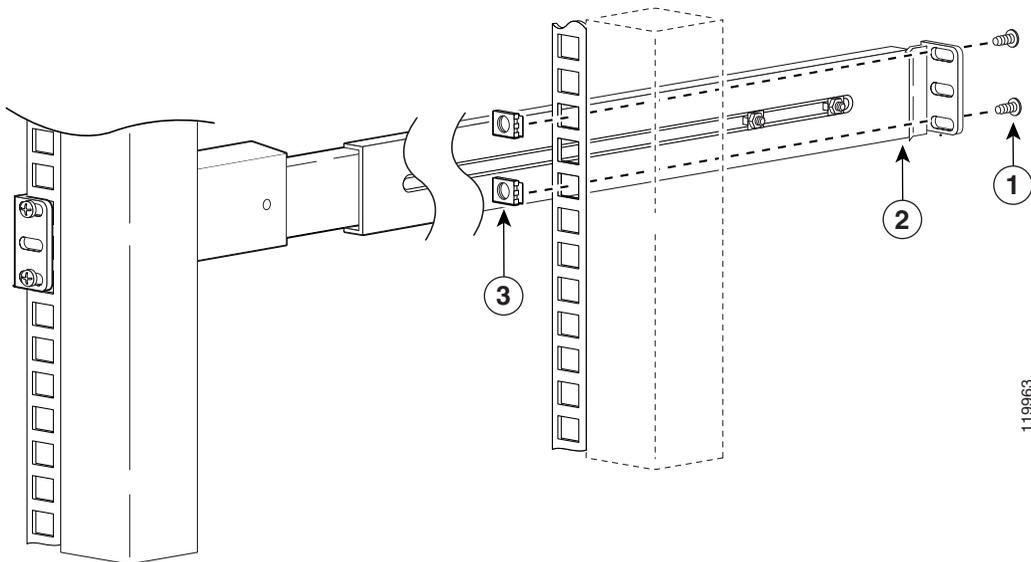
1	Right and left rails	3	Right rail adjustment screws
2	Left rail adjustment screws		

6. Position and align the back end of the outer telescopic rail with the right side of the rack. Ensure that the back end of the rail is aligned with the front end and that it is flush with the rack post.
7. Attach the back end of the rail to the right side of the rack, as shown in [Figure 3-6](#).



**Note** Racks that contain tapped mounting holes do not require the cage nuts (3) shown in [Figure 3-6](#).

**Figure 3-6 Attaching Back Rail to the Right Side of the Rack**



1	Round head screw and washer	3	Cage nut
2	Right outer telescopic rail—rear		

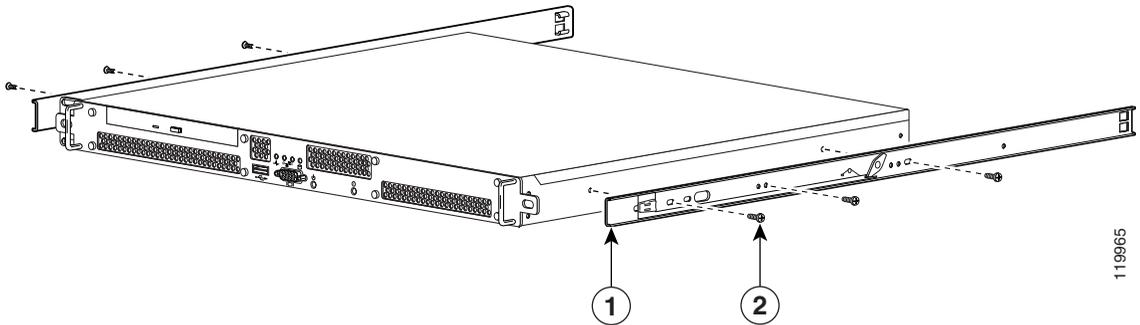
8. Repeat steps 1 through 7 with the left side rail and rack assembly.
9. Tighten the two adjustment screws located at the rear of the two outer telescopic rails (see [Figure 3-5](#)).

## Inserting the GSS into the Rack

To insert the GSS into the four-post rack:

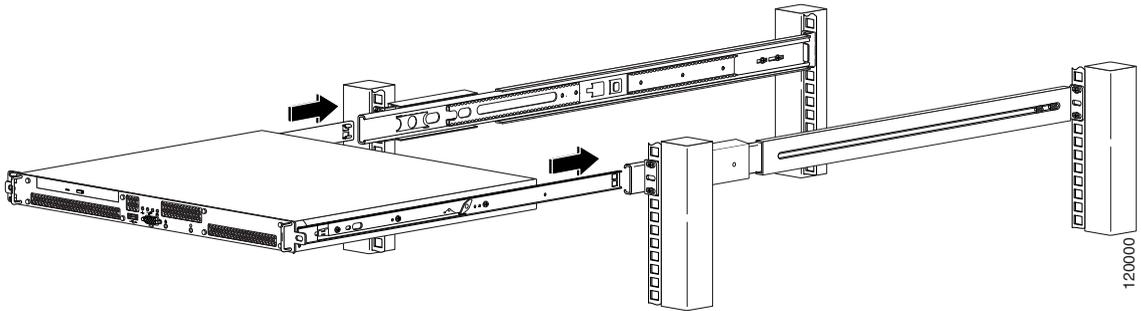
1. Secure the inner rail (1) to GSS using three round head screws (2), as shown in [Figure 3-7](#). Repeat this step for the other rail.

**Figure 3-7** Attaching GSS to Right Rail



2. Insert the GSS and inner rail into the two outer telescopic rails, as shown in [Figure 3-8](#).

**Figure 3-8** Sliding the GSS into the Four-post Rack



3. Slide the GSS and inner rails backward and forward in the two outer telescopic rail two or three times until the GSS seats properly in the rack.

## Attaching a Two-Post Rack Bracket to the GSS

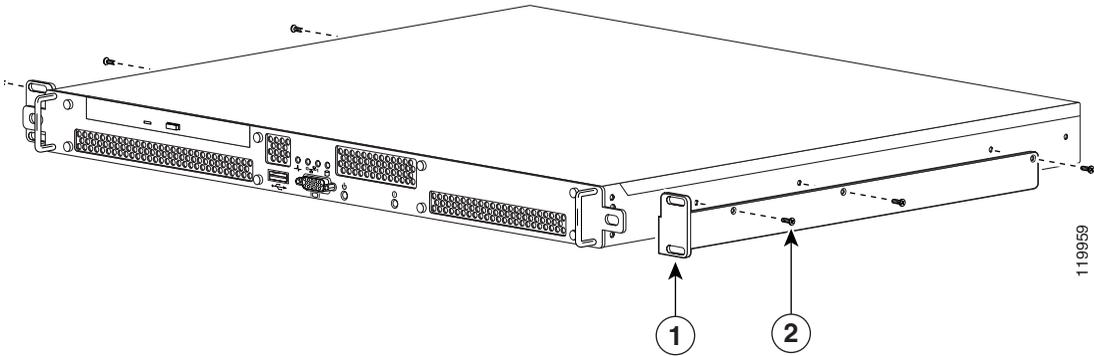
You may install the GSS in either a four-post rack or a two-post rack by using the two-post rack bracket included in the accessory kit.

To attach a two-post rack bracket to the GSS:

1. Place the right-hand bracket on the right side of the GSS as shown in [Figure 3-9](#). Align the bracket with the three screw holes in the GSS and use three round head screws to secure the bracket.

Repeat this step to attach the other bracket to the GSS.

**Figure 3-9 Attaching the Right Bracket to the Right Side of the GSS**



<b>1</b>	Bracket	<b>2</b>	Round head screws (6)
----------	---------	----------	-----------------------

2. Select a location in the rack to mount the GSS, then position the GSS and brackets in the rack.
3. Align the right side bracket on the GSS to the front of the rack, then insert and tighten the two round head retaining screws to secure the GSS to the rack. Repeat this step to secure the left side bracket to the rack.

## Installing the GSS on a Workbench or Tabletop

When you install a GSS on a workbench or tabletop, ensure that the surface is clean and in a secure location and that you have complied with the following requirements:

- The chassis should be installed off the floor. Dust that accumulates on the floor is drawn into the interior of the chassis by the cooling fans. Excessive dust inside the GSS can cause overtemperature conditions and component failures.
- There must be approximately 19 inches (48.26 cm) of clearance at the front and rear of the chassis for accessing network cables and equipment.
- The GSS must receive adequate ventilation.

Follow these steps to install the GSS on a workbench or tabletop:

1. Remove any debris and dust from the tabletop or workbench, as well as from the surrounding area. Ensure that your path between the GSS and its new location is unobstructed.
2. Place one rubber foot in each corner on the bottom of the GSS. The rubber feet have an adhesive backing. Peel the protective tape off the adhesive and adhere the feet to the bottom of a clean chassis surface.
3. Place the chassis on the tabletop or workbench.
4. Ensure that no exhaust air from other equipment will be drawn into the chassis. Also, ensure that there is adequate clearance at the front and rear of the chassis.

# Connecting Cables



## Warning

**Do not work on the GSS or connect or disconnect cables during periods of lightning activity.**

To connect network and console cables to your GSS 4491:

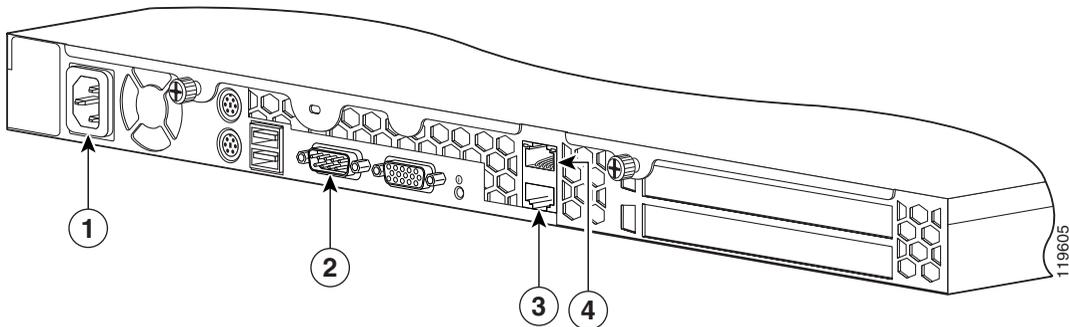
1. For network connections, connect a Category 3, 4, or 5 unshielded twisted-pair (UTP) cable to the Ethernet 0 or Ethernet 1 connector on the GSS back panel (Figure 3-10).



## Note

The 100BASE-TX/1000BASE-TX Ethernet standard requires that you use standard four twisted-pair Category 5e cable at lengths up to 328.08 ft. (100 m).

**Figure 3-10 GSS Back Panel Ports and Connectors**



1	AC power receptacle	3	RJ-45 Ethernet 1 connector with 10/100/1000-Mbit/s operation
2	Console/serial connector	4	RJ-45 Ethernet 0 connector with 10/100/1000-Mbit/s operation

2. Connect the other end of the network cable to a hub or switch in your network.
3. For console connections, plug the cable into the console port on the GSS back panel.
4. Connect the other end of the console cable to a console or a communications server.

## Connecting AC Power



### Warning

---

**This equipment must be grounded. Never defeat the ground conductor or operate the equipment in the absence of a suitably installed ground conductor. Contact the appropriate electrical inspection authority or an electrician if you are uncertain that suitable grounding is available.** Statement 1024

---

To connect AC power to your GSS:

1. Ensure that you have reviewed the safety information outlined in [Chapter 2, Preparing for Installation](#).
2. Plug the AC power cord into the power cord receptacle at the rear of the GSS (see [Figure 3-10](#)).
3. Connect the other end of the power cord to a power source.
4. Power up all externally-connected devices.
5. Press the power control button on the front of the GSS.

# Booting the GSS

When you power up the GSS, the boot process:

- Performs hardware initialization and power-on self tests
- Initializes the BIOS
- Initializes the Linux boot manager, LILO (Linux Loader)
- Boots the GSS image (kernel and software)
- Displays the startup banner and splash screen for strong encryption
- Prompts you to log in to the GSS



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**Note**

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During power-up, the green power LED on the front of the GSS is on.

---

At this point, you are ready to use the GSS. Refer to the:

- *Cisco Global Site Selector Getting Started Guide* for details on setting up and configuring the GSS device
- *Cisco Global Site Selector Administration Guide* for procedures to properly manage and maintain your GSSM and GSS devices
- *Cisco Global Site Selector Global Server Load-Balancing Configuration Guide* for procedures to configure your GSS devices to perform global server load balancing

If you are booting the GSS for the first time and it boots without a startup-configuration file, a setup script automatically runs to guide you through the process of initially configuring the GSS. Refer to the *Cisco Global Site Selector Getting Started Guide* for details about using the setup script.

# Establishing a Serial Console Connection

Before you configure the GSS, you should establish a serial console connection to it. This requires a PC, two DB-9 to RJ-45 adapters (provided), an RJ-45 cable (provided), and terminal emulation communication software (Hyper Terminal or equivalent). You may also use a serial concentrator connection, if desired.

To establish a serial console connection:

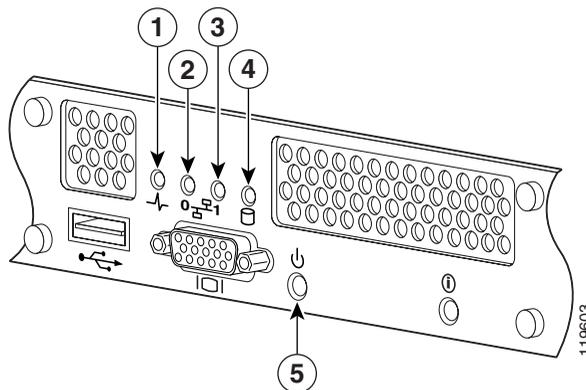
1. Connect a console to the serial console port on the rear panel:
  - a. Attach a DB-9 to RJ-45 adapter to the serial port of the console.
  - b. Attach a DB-9 to RJ-45 adapter to the serial port of the GSS. For the location of the serial port, see [Figure 3-10](#).
  - c. Use an RJ-45 cable to connect the console to the GSS.
2. If you have not already done so, power up the GSS as described in the “[Booting the GSS](#)” section.
3. Open your terminal emulation application on your PC to access the GSS CLI. The following procedure uses HyperTerminal for Windows:
  - a. Launch HyperTerminal. The Connection Description window appears.
  - b. Enter a name for your session in the Name field.
  - c. Click **OK**. The Connect To window appears.
  - d. From the drop-down list, choose the COM port to which the device is connected.
  - e. Click **OK**. The Port Properties window appears.
  - f. Set the port properties:
    - Baud Rate = 9600
    - Data Bits = 8
    - Flow Control = none
    - Parity = none
    - Stop Bits = 1
  - g. Click **OK** to connect.
  - h. Press **Enter** to display the CLI prompt.

4. Once you create a session, choose **Save As** from the File menu to save the connection description. Saving the connection description has the following two advantages:
  - The next time you launch HyperTerminal, the session is listed as an option under **Start > Programs > Accessories > HyperTerminal > Name\_of\_session**. This option lets you reach the CLI prompt directly without repeating the configuration steps.
  - You can connect your cable to a different device without configuring a new HyperTerminal session. If you use this option, ensure that you connect to the same port on the new device as was configured in the saved HyperTerminal session. Otherwise, a blank screen appears without a prompt.

## Checking the Front Panel LEDs

When the GSS is up and running, observe the front panel LEDs to monitor GSS operating status. [Figure 3-11](#) shows the location of front panel LEDs, and [Table 3-2](#) describes their function.

**Figure 3-11** GSS 4491 Front Panel LEDs



**Table 3-2 Front Panel LED Indicators**

	Indicator	Color	State	Indicates
1	Power Spike	Blue	On	Normal operation
			Blinking	A power surge has occurred
2	Ethernet 0 Link	Green	On	Ethernet 0 is connected to a network
	Ethernet 0 Activity	Green	Blinking	An active link connection on the 10/100/1000BASE-T interface for Ethernet port 0
3	Ethernet 1 Link	Green	On	Ethernet 1 is connected to a network
	Ethernet 1 Activity	Green	Blinking	An active link connection on the 10/100/1000BASE-T interface for Ethernet port 1
4	Hard Drive Activity	Green	Blinking	The hard drive is in use
5	Power	Green	On	The GSS is on
			Blinking	The GSS is in standby mode

## Removing or Replacing a GSS



**Warning**

**Before working on a GSS, turn OFF the power and unplug the power cord.**



**Warning**

**Ultimate disposal of this product should be handled according to all national laws and regulations.**

Before physically removing or replacing a GSS, use the primary GSSM GUI to logically remove the GSS from the network. You may need to logically remove a GSS from your network when you:

- Move a GSS device between GSS networks
- Remove or replace a GSS or standby GSSM
- Send the GSS or standby GSSM out for repair or replacement

For details about using the primary GSSM GUI to logically remove a GSS device or the standby GSSM from the GSS network, refer to Chapter 1, Managing GSS Devices from the GUI, in the *Cisco Global Site Selector Administration Guide*.

**Note**

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Do not logically remove the primary GSSM from the GSS network. If you need to physically take the primary GSSM offline for either maintenance or repair, temporarily switch the roles of the primary and standby GSSMs as outlined in the *Cisco Global Site Selector Administration Guide*.

---

To physically remove a GSS from your network:

1. Power down the GSS by pressing the power button on the front panel of the GSS.
2. Disconnect the power cords and network cables.
3. Physically remove the chassis from the rack.

To physically replace a GSS, install the new GSS and configure it using the same configuration parameters (such as IP address) that you used for the removed GSS. Refer to the *Cisco Global Site Selector Getting Started Guide* for details.





# Troubleshooting the GSS Hardware

---

If your GSS is not working as expected, begin troubleshooting using the procedures in this chapter. This chapter guides you through some initial checks and procedures that can solve basic GSS problems.

This chapter contains the following major sections:

- [Checking the Basics](#)
- [Checking Connections](#)

## Checking the Basics

To solve some basic GSS problems, follow these steps:

1. Was an alert message issued by the GSS software?
  - *Yes*. Check the component named in the alert message.
  - *No*. Go to step 2.

2. Visually inspect the GSS. Is the GSS wet or damaged?
  - *Yes*. Liquid spills, splashes, and excessive humidity can cause damage to the GSS. If a GSS gets wet, contact your service representative for instructions. Refer to the [Preface](#)  
  
If the GSS was dropped or damaged while being moved, you should check it to see if it functions properly. If an external device attached to the GSS is dropped or damaged, contact your service representative for instructions. Refer to the [Preface](#).
  - *No*. Go to step 3.
3. Perform the steps in the “[Checking Connections](#)” section.  
Is the problem resolved?
  - *Yes*. The power to the GSS was faulty, or the connections were loose. You have fixed the problem.
  - *No*. Go to step 4.
4. Did the GSS complete the boot routine?
  - *Yes*. The GSS configuration information was correct.
  - *No*. Call your service representative. Refer to the [Preface](#).

## Checking Connections

Loose, incorrect, or improperly connected cables are the most likely source of problems for the GSS or other external equipment. A quick check of all the cable connections can solve most problems. Refer to [Chapter 1, Introduction](#), for the location of the front panel controls and indicators and for the location of back panel connections on the GSS.

To check all the connections:

1. Power down the GSS. Disconnect all the power cables from their electrical outlets.

2. If the GSS is connected to a power strip or power distribution unit, turn the power strip off and then on again.

Is the power strip receiving power?

- *Yes*. Go to step 5.
- *No*. Go to step 3.

3. Plug the power strip into another electrical outlet.

Is the power strip receiving power?

- *Yes*. The original electrical outlet probably does not function. Use a different electrical outlet.
- *No*. Go to step 4.

4. Connect a GSS that you know works into the electrical outlet.

Does the GSS receive power?

- *Yes*. The power strip is probably not functioning properly. Use another power strip.
- *No*. Go to step 5.

5. Reconnect the GSS to the electrical outlet or power strip.

Make sure that all connections fit tightly together. Ensure that the Ethernet and Console cables are correct for use with the GSS (refer to [Chapter 1, Introduction](#)).

6. Power up the GSS.

Is the problem resolved?

- *Yes*. The connections were loose. You have fixed the problem.
- *No*. Call your service representative. Refer to the [Preface](#).





## Maintaining Your GSS

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Proper use of preventive maintenance procedures can keep the GSS in top operating condition and minimize the need for time-consuming service procedures. This chapter contains maintenance procedures that you should perform regularly.

This chapter includes the following major sections:

- [Maintaining Your Site Environment](#)
- [Using Power Protection Devices](#)

## Maintaining Your Site Environment

An exhaust fan in the power supply cools the power supply and GSS by drawing air in through various openings and blowing it out the back panel. However, the fan may also draw dust and other particles into the GSS, causing contaminant buildup, which results in an increase in the GSS's internal temperature and interferes with the operation of various GSS components.

To avoid these conditions, we recommend keeping your work environment clean to reduce the amount of dust and dirt around the GSS, thereby reducing the amount of contaminants drawn into it by the power supply fan.

This section discusses various environmental factors that can adversely affect GSS performance and longevity. It covers:

- [Temperature](#)
- [Humidity](#)
- [Altitude](#)
- [Dust and Particles](#)
- [Corrosion](#)
- [Electrostatic Discharge](#)
- [Electromagnetic and Radio Frequency Interference](#)
- [Magnetism](#)
- [Power Source Interruptions](#)

## Temperature

Temperature extremes can cause a variety of problems, including premature aging and failure of chips or mechanical failure of devices. Extreme temperature fluctuations can cause chips to become loose in their sockets and cause expansion and contraction of disk drive platters, resulting in read or write data errors.

To minimize the negative effects of temperature on GSS performance, follow these guidelines:

- Ensure that the GSS is operated in an environment no colder than 32°F (0°C) or hotter than 104°F (40°C).
- Ensure that the GSS has adequate ventilation. Do not place it within a closed-in wall unit or on top of cloth, which can act as insulation. Do not place it in direct sunlight. Do not place it next to a heat source of any kind, including heating vents during winter.

Adequate ventilation is particularly important at high altitudes. GSS performance may not be optimum when operating at high temperatures as well as high altitudes.

- Ensure that all slots and openings on the GSS remain unobstructed, especially the fan vent on the back of the GSS.
- Clean the GSS at regular intervals to avoid any buildup of dust and debris, which can cause it to overheat.
- If the GSS has been exposed to abnormally cold temperatures, allow a 2-hour warm-up period to bring it up to normal operating temperature before turning it on. Failure to do so may cause damage to internal components, particularly the hard disk drive.

## Humidity

High-humidity conditions can cause moisture in the GSS. This moisture can cause corrosion of internal components and degradation of properties such as electrical resistance, thermal conductivity, physical strength, and size. Extreme moisture buildup inside the GSS can result in electrical shorts, which can cause serious damage.

Each GSS is rated to operate at 8 to 80 percent relative humidity, with a humidity gradation of 10 percent per hour. Buildings in which climate is controlled by air conditioning in the warmer months and by heat during the colder months usually maintain an acceptable level of humidity for the GSS. However, if a GSS is located in an unusually humid location, use a dehumidifier to maintain the humidity within an acceptable range.

## Altitude

Operating a GSS at high altitude (low pressure) reduces the efficiency of forced and convection cooling and can result in electrical problems related to arcing and corona effects. This condition can also cause sealed components with internal pressure, such as electrolytic capacitors, to fail or perform at reduced efficiency.

## Dust and Particles

A clean operating environment can greatly negate the effects of dust and other particles, which act as insulators and interfere with the operation of mechanical components. Also, in addition to regular cleaning, follow these guidelines to deter contamination of the GSS equipment:

- Do not permit smoking anywhere near the GSS
- Do not permit food or drink near the GSS
- Use dust covers when the GSS is not in use
- Close windows and outside doors to keep out airborne particles

## Corrosion

The oil from a person's fingers or prolonged exposure to high temperature or humidity can corrode the gold-plated edge connectors and pin connectors on various devices in the GSS. This corrosion on GSS connectors is a gradual process that can eventually lead to intermittent failures of electrical circuits.

To prevent corrosion, avoid touching contacts on boards and cards. Protecting the GSS from corrosive elements is especially important in moist and salty environments, which tend to promote corrosion. Also, as a further deterrent to corrosion, the GSS should not be used in extreme temperatures, as explained in the [“Temperature”](#) section.

## Electrostatic Discharge

Electrostatic discharge (ESD) results from the buildup of static electricity on the human body and certain other objects. Static electricity is often produced by simple movements such as walking across a carpet. ESD is a discharge of a static electrical charge that occurs when a person whose body contains such a charge touches a component in the GSS, especially chips, and causes the component to fail.

ESD is a problem particularly in dry environments where the relative humidity is below 50 percent.

To reduce the effects of ESD, observe the following guidelines:

- Wear a grounding wrist strap. If a grounding wrist strap is unavailable, touch an unpainted metal surface on the chassis periodically to neutralize any static charge.
- Keep components in their antistatic packaging until they are installed.
- Avoid wearing clothing made of wool or synthetic materials.

## Electromagnetic and Radio Frequency Interference

Electromagnetic interference (EMI) and radio frequency interference (RFI) can adversely affect devices such as radio and television (TV) receivers operating near the GSS. Radio frequencies emanating from the GSS can also interfere with cordless and low-power telephones. Conversely, RFI from high-power telephones can cause spurious characters to appear on a monitor screen.

RFI is defined as any EMI with a frequency above 10 kHz. This type of interference can travel from the GSS to other devices through the power cable and power source or through the air like transmitted radio waves. The Federal Communications Commission (FCC) publishes specific regulations to limit the amount of EMI and RFI emitted by computing equipment. Each GSS meets these FCC regulations.

To reduce the possibility of EMI and RFI, follow these guidelines:

- Operate the GSS only with its cover installed.
- Ensure that the screws on all peripheral cable connectors are securely fastened to their corresponding connectors on the back of the GSS.
- Always use shielded cables with metal connector shells for attaching peripherals to the GSS.

## Magnetism

Because they store data magnetically, hard disk drives are extremely susceptible to the effects of magnetism. Do not store hard disk drives near magnetic sources such as:

- Monitors
- TV sets
- Printers
- Telephones with real bells
- Fluorescent lights

## Power Source Interruptions

The GSS is especially sensitive to variations in voltage supplied by the AC power source. Overvoltage, undervoltage, and transients (or spikes) can erase data from memory or even cause components to fail. To protect against these types of problems, always properly ground power cables. Use one or both of the following methods:

- Use one of the power protection devices described in the [“Using Power Protection Devices”](#) section.
- Place the GSS on a dedicated power circuit (rather than sharing a circuit with other heavy electrical equipment). In general, do not allow the GSS to share a circuit with any of the following equipment:
  - Copier machines
  - Air conditioners
  - Vacuum cleaners
  - Space heaters
  - Power tools
  - Teletype machines

- Adding machines
- Laser printers
- Facsimile machines
- Any other motorized equipment

In addition to these appliances, the greatest threats to the GSS power supply are surges or blackouts caused by electrical storms. Whenever possible, turn off the GSS and any peripherals and unplug them from their power sources during thunderstorms.

If a blackout occurs—even a temporary one—while the GSS is turned on, turn it off immediately and disconnect it from the electrical outlet. Leaving the GSS on may cause problems when the power is restored; all other appliances left on in the area can create large voltage spikes that can damage the GSS.

## Using Power Protection Devices

A number of devices are available that protect against power problems such as power surges, transients, and power failures. The following subsections describe some of these devices.

### Surge Protectors

Surge protectors are available in a variety of types and usually provide a level of protection commensurate with the cost of the device. Surge protectors prevent voltage spikes, such as those caused during an electrical storm, from entering a GSS through the electrical outlet. Surge protectors, however, do not offer protection against brownouts, which occur when the voltage drops more than 20 percent below the normal AC line voltage level.

## Line Conditioners

Line conditioners go beyond the overvoltage protection of surge protectors. Line conditioners keep a GSS's AC power source voltage at a fairly constant level and therefore can handle brownouts. Because of this added protection, line conditioners cost more than surge protectors—up to several hundred dollars. However, these devices cannot protect against a complete loss of power.

## Uninterruptible Power Supplies

Uninterruptible power supply (UPS) systems offer the most complete protection against variations in power because they use battery power to keep the GSS running when AC power is lost. The battery is charged by the AC power while it is available, so once AC power is lost, the battery can provide power to the GSS for a limited amount of time—from 15 minutes to an hour or so—depending on the UPS system.

Surge protectors should be used with all UPS systems, and the UPS system should be Underwriters Laboratories (UL) safety-approved.



# Specifications

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This appendix contains the following sections that list specifications for the Cisco GSS 4491:

- [Electrical Specifications](#)
- [Environmental Specifications](#)
- [Physical Specifications](#)
- [Port Specifications](#)

## Electrical Specifications

[Table A-1](#) describes the GSS AC electrical specifications.

**Table A-1 AC Electrical Specifications**

<b>AC Specification</b>	<b>Operational</b>
Input Voltage (V)	100 to 240 VAC
Input Voltage (F)	50 to 60 Hz
Current Draw	3.5 Amps
Power Consumption	385 Watts
Heat Dissipation	1314 BTU/hr

# Environmental Specifications

Table A-2 describes the GSS environmental specifications.

**Table A-2 Environmental Specifications**

Specification	Operational	Non-operational
Temperature	10 to 40° C	-20° to 60° C
Humidity	90% at 40° C (non-condensing)	90% at 60° C (non-condensing)
Shock	31 G sinewave	71 G sine, 20 G square
Vibration	0.25 Grms from 3 to 500 Hz	0.5 Grms from 3 to 200 Hz
Acoustic Noise	50 dBa (maximum)	Not applicable



**Note**

G is the unit of acceleration due to gravity, where 1 G equals 32.17 ft/sec<sup>2</sup> (9.81 m/sec<sup>2</sup>).

Grms is the root mean square value of acceleration.

# Physical Specifications

Table A-3 describes the GSS physical specifications.

**Table A-3 Physical Specifications**

Description	Specification
Chassis Dimensions (H x W x D)	1.69 in x 16.50 in x 23.23 in (43 mm x 419 mm x 590 mm)
Chassis Shipping Weight	40.0 lbs. (18.2 kg)
Chassis Weight	30.8 lbs. (14 kg)

# Port Specifications

Table A-4 describes the GSS port specifications.

**Table A-4 Port Specifications**

Description	Specification
Ports	<ul style="list-style-type: none"><li>• 1000BASE-TX, 100BASE-TX, 10BASE-T (dual) Ethernet ports</li><li>• Console port</li></ul>





## Connecting a Modem to the GSS Console Port

---

This appendix explains how to configure a dial-up modem and connect it to the console port on the GSS. Connecting a modem to the GSS allows you to remotely perform the same GSS console operations as you would locally. The GSS supports the following modems:

- 3Com (US Robotics) Courier Model 3453 Modem
- 3Com OfficeConnect Model 3294 Modem
- 3Com (US Robotics) Sportster Model 5686 Modem
- MultiTech Model MT5634ZBA Modem

This appendix includes the following sections:

- [Configuring a Modem](#)
- [Cabling a Modem to the GSS](#)

# Configuring a Modem

You must configure the modem before you can connect it to the GSS. You can connect the modem to a terminal or a PC using a terminal emulation program, such as Hyperterminal. If you connect the modem to the COM port on a PC, you need the following cable and connectors:

- RJ-45-to-RJ-45 rolled cable
- RJ-45-to-DB-25 modem adapter
- DB-9-to-RJ-45 terminal adapter

Figure B-1 shows the pin number assignments for the 9-pin, male D-shell console port connector on the back of the GSS. These pin number assignments conform to the industry standard.

**Figure B-1** Console Port Connector Pin Numbers

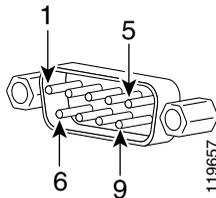


Table B-1 connector pinouts for the GSS console port.

**Table B-1 Console Port Connector Pinouts**

Pin	Signal	I/O	Definition
1	DCD	I	Data carrier detect
2	SIN	I	Serial input
3	SOUT	O	Serial output
4	DTR	O	Data terminal ready
5	GND	N/A	Signal ground
6	DSR	I	Data set ready
7	RTS	O	Request to send
8	CTS	I	Clear to send
9	RI	I	Ring indicator
<b>Shell</b>	N/A	N/A	Chassis ground

You configure the modem by entering commands from the Attention (AT) command set and, if applicable, setting the configuration switches on the modem. Although the process to configure the modem may vary from one modem to another, configure your modem so that its resulting behavior is as follows:

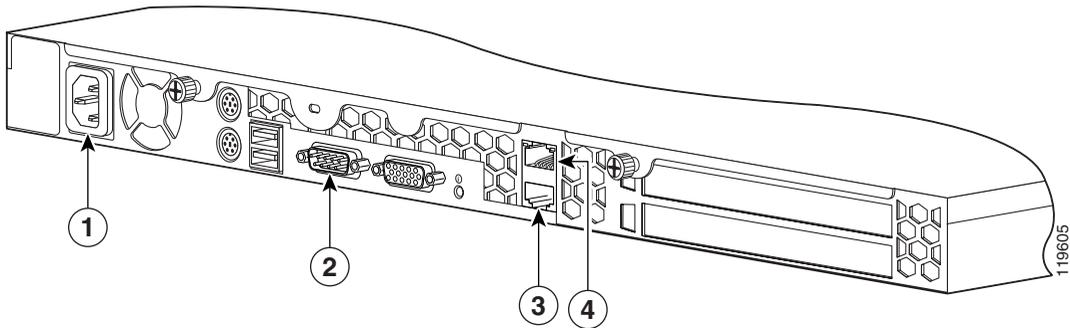
- Answers a call on the first ring
- Disables both hardware and software flow control mechanisms
- Ignores modem control signals DTR and RTS
- Suppresses echoing of command mode input
- Disables recognition of AT commands

# Cabling a Modem to the GSS

After you configure the modem, perform the following steps to connect a modem to the GSS:

1. Unplug the flat rolled RJ-45-to-RJ-45 cable from the terminal adapter on the PC and connect the cable to the console port on the GSS (Figure B-2).

**Figure B-2 Rear Panel Ports and Connectors**



1	AC power receptacle	3	RJ-45 Ethernet 1 connector with 10/100/1000-Mbit/s operation
2	Console/serial connector	4	RJ-45 Ethernet 0 connector with 10/100/1000-Mbit/s operation

2. Ensure that the settings on the remote console match the GSS default settings specified in [Table B-2](#).

**Table B-2 Console Port Default Settings**

Parameters	Default Settings
Baud	9600
Data Bits	8
Parity	None
Stop Bits	1
Terminal Type	VT100/ANSI
Flow Control	None



**Note**

When you remotely log in to the GSS through a modem, ensure that you log out before disconnecting from the session. Use the **exec-timeout** *timeout* command to set the maximum amount of time that the console session can be idle on the GSS before it logs out. By default, the timeout is 150 minutes.

■ **Cabling a Modem to the GSS**



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