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CONTENTS

Preface ix

- Document Objectives ix
- Audience x
- Document Organization x
- Document Conventions xi
- Related Documentation xv
- Obtaining Documentation xv
  - World Wide Web xv
  - Documentation CD-ROM xv
  - Ordering Documentation xvi
  - Documentation Feedback xvi
- Obtaining Technical Assistance xvii
  - Cisco.com xvii
  - Technical Assistance Center xvii
    - Cisco TAC Web Site xviii
    - Cisco TAC Escalation Center xix

Introducing the Global Site Selector 4480 1-1

- Introduction 1-1
- System Hardware Features 1-2
  - Ports, Receptacles, and LEDs 1-4
  - Cables and Connectors 1-6
    - Console Cable 1-6
    - Network Cables 1-7
- Specifications 1-9

Regulatory Compliance 1-10
Class A Warning Statements 1-10
Japan VCCI 1-10
Taiwan BSMI 1-11
Hungary Class A Warning Notice 1-11

Preparing to Install the Global Site Selector 4480 2-1
Safety Warnings 2-1
Safety Guidelines 2-3
General Precautions 2-3
Protecting Against Electrostatic Discharge 2-5

Installing the Global Site Selector 4480 3-1
Tools and Parts Required 3-2
Installing a Global Site Selector 4480 Unit 3-2
Attaching the Mounting Brackets 3-3
Rack-Mounting the Chassis 3-5
Installing the Chassis on a Tabletop 3-6
Attaching a System Ground Connection 3-7
Connecting Cables 3-10
Connecting Power and Booting the System 3-12
Checking the LEDs 3-13

Troubleshooting the System Hardware 4-1
Checking the Basics 4-1
Checking Connections and Switches 4-2
Observing Trouble Indicators and LEDs 4-4

INDEX

Preface

This preface describes who should read the *Cisco Global Site Selector 4480 Hardware Installation Guide*, how it is organized, and its document conventions.

This preface contains the following sections:

- Document Objectives, page ix
- Audience, page x
- Document Organization, page x
- Document Conventions, page xi
- Related Documentation, page xv
- Obtaining Documentation, page xv
- Obtaining Technical Assistance, page xvii

Document Objectives

This installation guide explains how to prepare your site for installation, how to install a Global Site Selector 4480 (GSS-4480-K9) in an equipment rack, and how to maintain and troubleshoot the system hardware. After completing the hardware installation procedures covered in this guide, you will then use the appropriate companion publications to configure your system. (See the "Related Documentation" section on page xv.)

Audience

To use this hardware publication, you should be familiar with internetworking equipment and cabling, and have a basic knowledge of electronic circuitry and wiring practices.

To complete the installation, including the software configuration for the Global Site Selector, you should be familiar with basic networking principles and router configuration, especially web page protocols.

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

Document Organization

This guide includes the following chapters:

Chapter	Title	Description
Chapter 1	Introducing the Global Site Selector 4480	Describes the physical properties and provides a functional overview of the Cisco Global Site Selector 4480.
Chapter 2	Preparing to Install the Global Site Selector 4480	Describes safety considerations and gives an overview of the installation and procedures you should perform *before* the actual installation.
Chapter 3	Installing the Global Site Selector 4480	Describes installing the hardware and connecting the external network interface cables.
Chapter 4	Troubleshooting the System Hardware	Describes troubleshooting procedures for the hardware installation.

Document Conventions

Command descriptions use the following conventions:

boldface font	Commands and keywords are in **boldface**.
italic font	Variables for which you supply values are in *italics*.
[ ]	Elements in square brackets are optional.
{**x** | **y** | **z**}	Alternative keywords are grouped in braces and separated by vertical bars.
[**x** | **y** | **z**]	Optional alternative keywords are grouped in brackets and separated by vertical bars.
string	A nonquoted set of characters. Do not use quotation marks around the string, or the string will include the quotation marks.

Screen examples use the following conventions:

`screen` font	Terminal sessions and information the system displays are in `screen` font.
`boldface screen` font	Information you must enter is in **`boldface screen`** font.
`italic screen` font	Variables for which you supply values are in *`italic screen`* font.
^	The symbol ^ represents the key labeled Control—for example, the key combination ^D in a screen display means hold down the Control key while you press the D key.
< >	Nonprinting characters, such as passwords, are in angle brackets.
[ ]	Default responses to system prompts are in square brackets.
!, #	An exclamation point (!) or a pound sign (#) at the beginning of a line of code indicates a comment line.

Graphical user interface elements use the following conventions:

boldface font	Button names are in **boldface** font.
italic font	Directories and filenames are in *italic font.*

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 **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. To see translations of the warnings that appear in this publication, refer to the Regulatory Compliance and Safety Information document that accompanied this device.**

Waarschuwing **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 standaard maatregelen om ongelukken te voorkomen. Voor vertalingen van de waarschuwingen die in deze publicatie verschijnen, kunt u het document Regulatory Compliance and Safety Information (Informatie over naleving van veiligheids- en andere voorschriften) raadplegen dat bij dit toestel is ingesloten.**

Varoitus **Tämä varoitusmerkki merkitsee vaaraa. Olet tilanteessa, joka voi johtaa ruumiinvammaan. Ennen kuin työskentelet minkään laitteiston parissa, ota selvää sähkökytkentöihin liittyvistä vaaroista ja tavanomaisista onnettomuuksien ehkäisykeinoista. Tässä julkaisussa esiintyvien varoitusten käännökset löydät laitteen mukana olevasta *Regulatory Compliance and Safety Information* -kirjasesta (määräysten noudattaminen ja tietoa turvallisuudesta).**

Attention **Ce symbole d'avertissement indique un danger. Vous vous trouvez dans une situation pouvant causer des blessures ou des dommages corporels. Avant de travailler sur un équipement, soyez conscient des dangers posés par les circuits électriques et familiarisez-vous avec les procédures couramment utilisées pour éviter les accidents. Pour prendre connaissance des traductions d'avertissements figurant dans cette publication, consultez le document *Regulatory Compliance and Safety Information* (Conformité aux règlements et consignes de sécurité) qui accompagne cet appareil.**

Warnung **Dieses Warnsymbol bedeutet Gefahr. Sie befinden sich in einer Situation, die zu einer Körperverletzung führen könnte. Bevor Sie mit der Arbeit an irgendeinem Gerät beginnen, seien Sie sich der mit elektrischen Stromkreisen verbundenen Gefahren und der Standardpraktiken zur Vermeidung von Unfällen bewußt. Übersetzungen der in dieser Veröffentlichung enthaltenen Warnhinweise finden Sie im Dokument *Regulatory Compliance and Safety Information* (Informationen zu behördlichen Vorschriften und Sicherheit), das zusammen mit diesem Gerät geliefert wurde.**

Avvertenza **Questo simbolo di avvertenza indica un pericolo. La situazione potrebbe causare infortuni alle persone. Prima di lavorare su qualsiasi apparecchiatura, occorre conoscere i pericoli relativi ai circuiti elettrici ed essere al corrente delle pratiche standard per la prevenzione di incidenti. La traduzione delle avvertenze riportate in questa pubblicazione si trova nel documento *Regulatory Compliance and Safety Information* (Conformità alle norme e informazioni sulla sicurezza) che accompagna questo dispositivo.**

Advarsel **Dette varselsymbolet betyr fare. Du befinner deg i en situasjon som kan føre til personskade. Før du utfører arbeid på utstyr, må du vare oppmerksom på de faremomentene som elektriske kretser innebærer, samt gjøre deg kjent med vanlig praksis når det gjelder å unngå ulykker. Hvis du vil se oversettelser av de advarslene som finnes i denne publikasjonen, kan du se i dokumentet *Regulatory Compliance and Safety Information* (Overholdelse av forskrifter og sikkerhetsinformasjon) som ble levert med denne enheten.**

Aviso **Este símbolo de aviso indica perigo. Encontra-se numa situação que lhe poderá causar danos físicos. Antes de começar a trabalhar com qualquer equipamento, familiarize-se com os perigos relacionados com circuitos eléctricos, e com quaisquer práticas comuns que possam prevenir possíveis acidentes. Para ver as traduções dos avisos que constam desta publicação, consulte o documento *Regulatory Compliance and Safety Information* (Informação de Segurança e Disposições Reguladoras) que acompanha este dispositivo.**

¡Advertencia! **Este símbolo de aviso significa peligro. Existe riesgo para su integridad física. Antes de manipular cualquier equipo, considerar los riesgos que entraña la corriente eléctrica y familiarizarse con los procedimientos estándar de prevención de accidentes. Para ver una traducción de las advertencias que aparecen en esta publicación, consultar el documento titulado *Regulatory Compliance and Safety Information* (Información sobre seguridad y conformidad con las disposiciones reglamentarias) que se acompaña con este dispositivo.**

Varning! **Denna varningssymbol 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 vanligt förfarande för att förebygga skador. Se förklaringar av de varningar som förkommer i denna publikation i dokumentet *Regulatory Compliance and Safety Information* (Efterrättelse av föreskrifter och säkerhetsinformation), vilket medföljer denna anordning.**

Related Documentation

For additional information, refer to the following documentation:

- *Regulatory Compliance and Safety Information for the Cisco Content Networking Product Series*
- *Cisco Global Site Selector Configuration Guide*
- *Cisco Global Site Selector Command Reference*
- *Release Notes for the Cisco Global Site Selector Version 1.0*

Obtaining Documentation

The following sections explain how to obtain documentation from Cisco Systems.

World Wide Web

You can access the most current Cisco documentation on the World Wide Web at the following URL:

http://www.cisco.com

Translated documentation is available at the following URL:

http://www.cisco.com/public/countries_languages.shtml

Documentation CD-ROM

Cisco documentation and additional literature are available in a Cisco Documentation CD-ROM package, which is shipped with your product. The Documentation CD-ROM is updated monthly and may be more current than printed documentation. The CD-ROM package is available as a single unit or through an annual subscription.

Ordering Documentation

Cisco documentation is available in the following ways:

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  http://www.cisco.com/cgi-bin/order/order_root.pl

- Registered Cisco.com users can order the Documentation CD-ROM through the online Subscription Store:

  http://www.cisco.com/go/subscription

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Obtaining Technical Assistance

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You can self-register on Cisco.com to obtain customized information and service. To access Cisco.com, go to the following URL:

http://www.cisco.com

Technical Assistance Center

The Cisco TAC is available to all customers who need technical assistance with a Cisco product, technology, or solution. Two types of support are available through the Cisco TAC: the Cisco TAC Web Site and the Cisco TAC Escalation Center.

Inquiries to Cisco TAC are categorized according to the urgency of the issue:

- Priority level 4 (P4)—You need information or assistance concerning Cisco product capabilities, product installation, or basic product configuration.
- Priority level 3 (P3)—Your network performance is degraded. Network functionality is noticeably impaired, but most business operations continue.
- Priority level 2 (P2)—Your production network is severely degraded, affecting significant aspects of business operations. No workaround is available.
- Priority level 1 (P1)—Your production network is down, and a critical impact to business operations will occur if service is not restored quickly. No workaround is available.

Which Cisco TAC resource you choose is based on the priority of the problem and the conditions of service contracts, when applicable.

Cisco TAC Web Site

The Cisco TAC Web Site allows you to resolve P3 and P4 issues yourself, saving both cost and time. The site provides around-the-clock access to online tools, knowledge bases, and software. To access the Cisco TAC Web Site, go to the following URL:

http://www.cisco.com/tac

All customers, partners, and resellers who have a valid Cisco services contract have complete access to the technical support resources on the Cisco TAC Web Site. The Cisco TAC Web Site requires a Cisco.com login ID and password. If you have a valid service contract but do not have a login ID or password, go to the following URL to register:

http://www.cisco.com/register/

If you cannot resolve your technical issues by using the Cisco TAC Web Site, and you are a Cisco.com registered user, you can open a case online by using the TAC Case Open tool at the following URL:

http://www.cisco.com/tac/caseopen

If you have Internet access, it is recommended that you open P3 and P4 cases through the Cisco TAC Web Site.

Cisco TAC Escalation Center

The Cisco TAC Escalation Center addresses issues that are classified as priority level 1 or priority level 2; these classifications are assigned when severe network degradation significantly impacts business operations. When you contact the TAC Escalation Center with a P1 or P2 problem, a Cisco TAC engineer will automatically open a case.

To obtain a directory of toll-free Cisco TAC telephone numbers for your country, go to the following URL:

http://www.cisco.com/warp/public/687/Directory/DirTAC.shtml

Before calling, please check with your network operations center to determine the level of Cisco support services to which your company is entitled; for example, SMARTnet, SMARTnet Onsite, or Network Supported Accounts (NSA). In addition, please have available your service agreement number and your product serial number.

Introducing the Global Site Selector 4480

This chapter provides a basic functional overview of the Global Site Selector 4480 and describes the Global Site Selector 4480 hardware, major components, and front and back panel indicators and controls.

This chapter contains the following sections:

- Introduction, page 1-1
- System Hardware Features, page 1-2
- Specifications, page 1-9
- Regulatory Compliance, page 1-10
- Class A Warning Statements, page 1-10

Introduction

Cisco Global Site Selectors (GSSs) are networking products that provide 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 Content Services Switches and Cisco Content Switching Modules, IOS-SLBs, and Cisco Local Directors. 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 Global Site Selector 4480 (GSS-4480-K9) is deployed at strategic locations within your network. The GSS performs two major functions when deployed with other SLBs:

- It takes an active role in the DNS infrastructure, connecting clients to SLBs that support the requested Web site.
- It continuously monitors the load and availability of SLBs in its network, selecting the SLB that is most able to answer each client request.

By off-loading domain name server (DNS) resolution from traditional DNS servers, the GSS optimizes global site selection and increases DNS responsiveness. And through its monitoring of load and availability the GSS increases the fault tolerance and scalability of large Web sites and data centers.

System Hardware Features

The Global Site Selector 4480 is configured for AC-input power. The default factory configuration comes with one power supply installed. The Content Router 4480 has one internal 36-gigabyte (GB) Ultra2 LVD SCSI hard drive. For network connections, the Global Site Selector 4480 has two 10/100BASE-T Ethernet/Fast Ethernet ports with RJ-45 receptacles. Port Ethernet 0 supports autodetect speed mode and full-duplex operation.

Table 1-1 lists the storage and memory specifications for the Content Router 4480.

Table 1-1 Storage and Memory Specifications

Specification	Description
Internal hard disk storage	1 36-GB Ultra2 LVD SCSI hard drive
Memory	1-GB SDRAM

Figure 1-1 shows the Global Site Selector 4480 front panel. Figure 1-2 shows the rear panel with one AC power supply.

Figure 1-1 Global Site Selector 4480—Front Panel

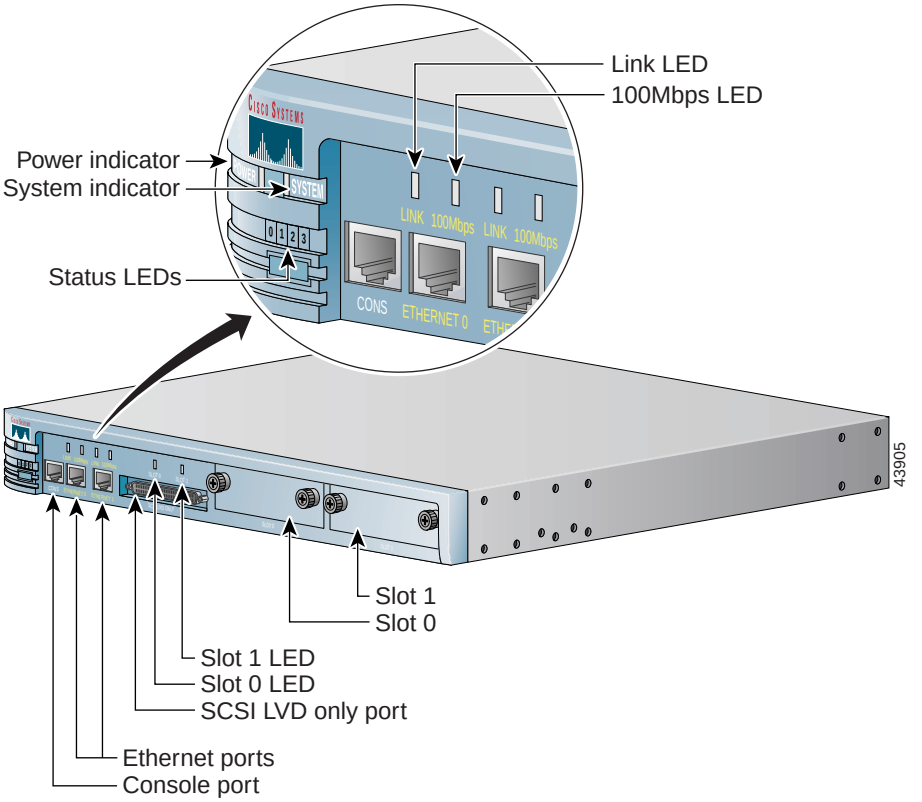
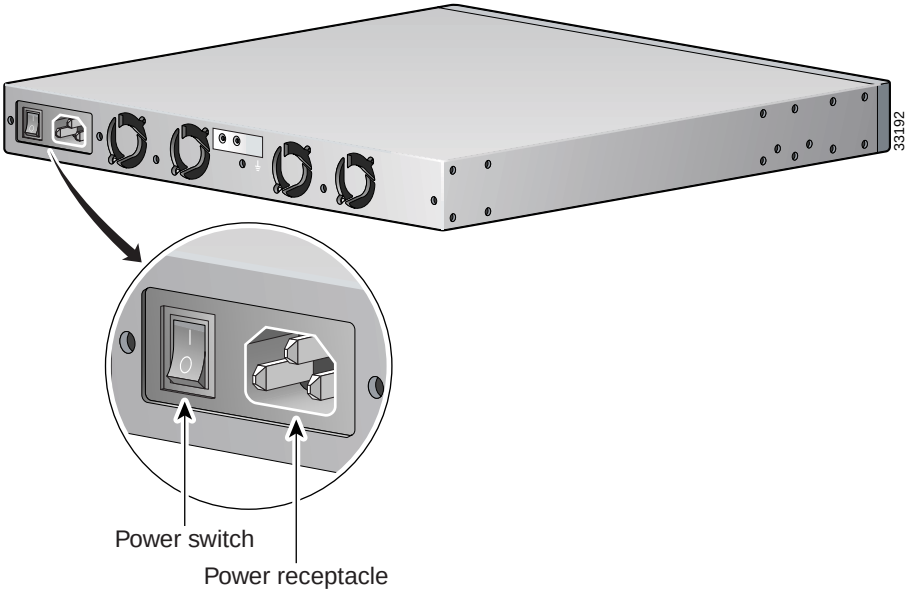


Figure 1-2 Global Site Selector 4480—Back Panel



Ports, Receptacles, and LEDs

Table 1-2 describes the front and back panel ports and receptacles. (See the front panel in Figure 1-1 and the back panel in Figure 1-2.)

Table 1-2 Ports and Receptacles

Item	Description
Front Panel	
CONS port	This serial port connects to a console.
ETHERNET 0 port	The Ethernet cable connects to this port.
ETHERNET 1 port	This port is currently not supported.
SCSI LVD only port	This port is not supported on the GSS-4480.

Table 1-2 Ports and Receptacles (continued)

Item	Description
Slot 0	Bay for hard drive 0.
Slot 1	Bay not used.
Back Panel	
Power receptacle	The power cord connects to this plug.
Power switch	This switch toggles between on and off, even though the switch always returns to its initial position after you press it. A power light on the front panel, when lit, indicates that the power is on.

Warning **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.**

Table 1-3 describes the LEDs on the front panel.

Table 1-3 LEDs

Indicator	Color	State	Description
Power	Green	On	Power is flowing to the Global Site Selector.
System	Green	On	The network connection is active (packets are being sent or received).
LINK	Green	On	The Global Site Selector is connected to the network.
100 Mbps	Green	On	The connection is a 100BASE-TX (Fast Ethernet) connection.
Slot 0	Green	On	Slot 0 is active.
Slot 1	Green	On	Slot 1 is active.

Table 1-3 LEDs (continued)

Indicator	Color	State	Description
Status 0 1 2 3 LEDs	Green	Steady	In a steady display, the state of each LED is constant. (See Table 3-1 for the meanings of steady-state LED variations.)
		Rolling	Reboot has begun. In a rolling display, the four LEDs give the appearance of a light that repeatedly moves from left to right.

Cables and Connectors

This section describes the cables and connectors that connect your Global Site Selector 4480 to a terminal and to the external network.

Console Cable

The Global Site Selector 4480 comes with a console cable kit that includes the following cable and adapters:

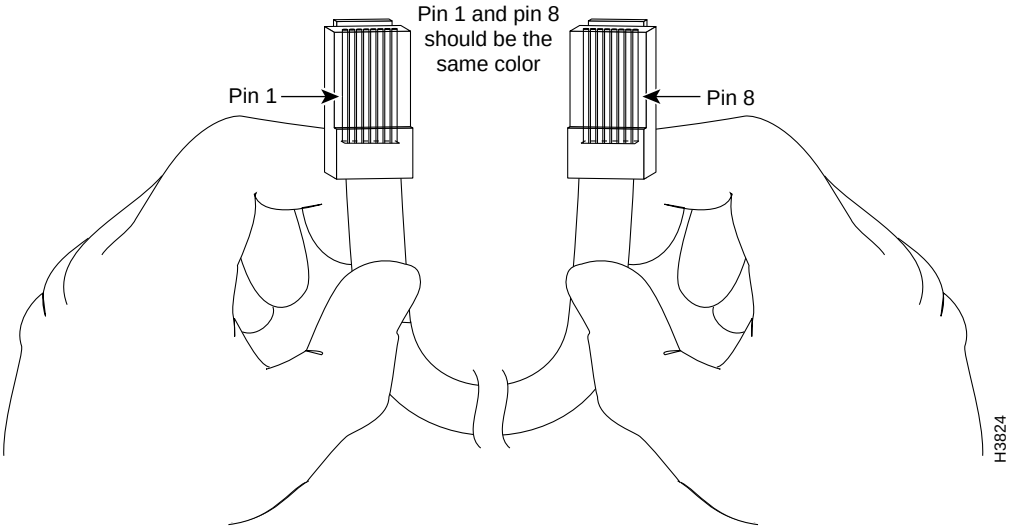
- One RJ-45 to RJ-45 rollover cable
- Two RJ-45 to DB-9 adapters

Use the rollover cable to connect the Global Site Selector 4480 console port to the COM port of an ASCII terminal or a PC running terminal emulation software. The console port on the Global Site Selector 4480 is configured as data terminal equipment (DTE) and uses an RJ-45 connector.

By attaching an RJ-45 to DB-9 adapter to the rollover cable, you create an RJ-45 to DB-9 null modem cable.

You can identify a rollover cable by comparing the two modular ends of the cable, as shown in Figure 1-3. Holding the cable ends in your hands side by side with the tab at the back, the wire connected to the pin on the outside of the left connector (pin 1) should be the same color as the pin on the outside of the right connector (pin 8).

Figure 1-3 Identifying a Rollover Cable



Network Cables

An Ethernet cable is required to connect the Global Site Selector 4480 to your network. To connect the Global Site Selector 4480 to your network, you must use one of the following types of cables:

- Unshielded twisted-pair (UTP) straight-through cable with RJ-45 connectors to connect the Global Site Selector 4480 to a Medium Dependent Interface-crossover (MDI-X) port
- RJ-45 to RJ-45 crossover cable to connect the Global Site Selector 4480 to another
  MDI port

Note The Ethernet ports on the Global Site Selector 4480 are MDI.

Use a Category 5 UTP cable to connect to a 100BASE-T network.

Ethernet Cable Pinouts

The following pinout information for common cable configurations can assist you in purchasing or building replacement cables.

Table 1-4 shows the pinout for a straight-through 100BASE-T cable.

Table 1-4 Straight-Through 100BASE-T Cable Pinout

RJ-45 Pin	Signal	RJ-45 Pin
1	TX+	1
2	TX–	2
3	RX+	3
4	—	4
5	—	5
6	RX–	6
7		7
8		8

Table 1-5 shows the pinout for a crossover 100BASE-T cable.

Table 1-5 Crossover 100BASE-T Cable Pinout

RJ-45 Pin	Signal	RJ-45 Pin
1	TX+	3
2	TX–	6
3	RX+	1
4		4
5		5
6	RX–	2
7		7
8		8

Specifications

Table 1-6 lists hardware specifications for the Global Site Selector 4480 hardware.

Table 1-6 Specifications

Specification	Description
Dimensions	Height: 1.72 in. (4.37 cm) Width: 17.5 in. (44.45 cm) Depth: 14.13 in. (35.8 cm)
Weight	12.5 lb (5.7 kg)
AC power	• Universal input: 100–127 VAC 200–240 VAC • Frequency: 50–60 Hz • Maximum power: 130W • Current: 120 VAC input with PFC (power factor correction), 1.0A 230 VAC input with PFC 0.5A
Maximum station-to-station cabling distances	10/100BASE-TX Ethernet, Category 5 UTP: 328 ft (100 m)
Placement	Rack-mounted, mid, front, or back (standard 19-in. [48.26-cm] and 23-in. [58.42-cm] racks)
Temperature	Operating: 32 to 104°F (0 to 40°C) Nonoperating: –13 to 158°F (–25 to 70°C)
Humidity (operating)	5 to 95%, noncondensing
Altitude (operating)	6500 ft (2000 m) at 104°F (40°C)
Shock (operating)	5 G at 11 ms duration, half sine shock pulse

Regulatory Compliance

Table 1-7 lists regulatory compliance for the Global Site Selector 4480.

Table 1-7 Regulatory Compliance

Item	Description
Compliance	CE Marking
Safety	UL 1950 CSA-C22.2 No. 950 EN 60950 IEC 60950
EMC	FCC Part 15 (CFR 47) Class A ICES-003 Class A EN 55022 Class A CISPR22 Class A AS/NZ 3548 Class A VCCI Class A EN 55024

Class A Warning Statements

Japan VCCI

This is a Class A product based on the standard of the Voluntary Control Council for Interference by Information Technology Equipment (VCCI). If this equipment is used in a domestic environment, radio disturbance may arise. When such trouble occurs, the user may be required to take corrective actions.

この装置は，情報処理装置等電波障害自主規制協議会（ＶＣＣＩ）の基準に基づくクラスＡ情報技術装置です。この装置を家庭環境で使用すると電波妨害を引き起こすことがあります。この場合には使用者が適切な対策を講ずるよう要求されることがあります。

Taiwan BSMI

This is a Class A product. In a domestic environment this product may cause radio interference in which case the user may be required to take adequate measures.

這是甲類資訊產品，在居住環境中使用時，可能會造成射頻干擾，
在這種情況下，使用者會被要求採取某些適當的對策。

Hungary Class A Warning Notice

This equipment is a Class A product and should be used and installed properly according to the Hungarian EMC Class A requirements (MSZ EN 55022). Class A equipment is derived for typical commercial establishments for which special conditions of installation and protection distance are used.

Warning **Figyelmeztetés a felhasználói kézikönyv számára:**
Ez a berendezés “A” osztályú termék, felhasználására és üzembe helyezésére a magyar EMC “A” osztályú követelményeknek (MSZ EN 55022) megfeleloen kerülhet sor, illetve ezen “A” osztályú berendezések csak megfelelo kereskedelmi forrásból származhatnak, amelyek biztosítják a megfelelo speciális üzembe helyezési körülményeket és biztonságos üzemelési távolságok alkalmazását.

CHAPTER 2

Preparing to Install the Global Site Selector 4480

This chapter contains important safety information that you should know before working with the Global Site Selector 4480. Use the following guidelines to ensure your own personal safety and to help protect your Global Site Selector 4480 from potential damage.

Read the *Regulatory Compliance and Safety Information for the Cisco Content Networking Product Series* document and the *Site Preparation and Safety Guide* that came with your Global Site Selector 4480 before you begin the installation.

Safety Warnings

Before you install the Global Site Selector 4480, observe the following safety warnings.

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

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

Warning **Before working on a system that has an on/off switch, turn OFF the power and unplug the power cord.**

Warning **The device is designed to work with TN power systems.**

Warning **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.**

Warning **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.**

Warning **This product relies on the building's installation for short-circuit (overcurrent) protection. Ensure that a fuse or circuit breaker no larger than 120 VAC, 15A U.S. (240 VAC, 10A international) is used on the phase conductors (all current-carrying conductors).**

Warning **This equipment is intended to be grounded. Ensure that the host is connected to earth ground during normal use.**

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

Warning **Before working on equipment that is connected to power lines, remove jewelry (including rings, necklaces, and watches). Metal objects will heat up when connected to power and ground and can cause serious burns or weld the metal object to the terminals.**

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

Safety Guidelines

To reduce the risk of bodily injury, electrical shock, fire, and damage to the equipment, observe the following precautions.

General Precautions

Observe the following general precautions for using and working with your system:

- Observe and follow service markings. Do not service any Cisco product except as explained in your system documentation. Opening or removing covers that are marked with the triangular symbol with a lightning bolt may expose you to electrical shock. Components inside these compartments should be serviced only by an authorized service technician.
- If any of the following conditions occur, unplug the product from the electrical outlet and replace the part or contact your authorized service provider:
  - The power cable, extension cord, 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.

- Keep your system components away from radiators and heat sources. Also, do not block cooling vents.
- Do not spill food or liquids on your system components, and never operate the product in a wet environment.
- Do not push any objects into the openings of your system components. Doing so can cause fire or electric shock by shorting out interior components.
- Use the product only with other Cisco-approved equipment.
- Allow the product to cool before removing covers or touching internal components.
- 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 your service representative or local power company.
- Use only approved power cables. If you have not been provided with a power cable for your Global Site Selector 4480 or for any AC-powered option intended for your system, purchase a power cable that is approved for use in your country. The power cable must be 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 system 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. If you must use an extension cord, use a three-wire cord with properly grounded plugs.
- Observe extension cord and power strip ratings. Make sure that the total ampere rating of all products plugged into the extension cord or power strip does not exceed 80 percent of the extension cord or power strip ampere ratings limit.
- Do not use appliance or voltage converters or kits sold for appliances with your product.
- To help protect your system components from sudden, transient increases and decreases in electrical power, use a surge suppressor, line conditioner, or uninterruptible power supply (UPS).

- Position cables and power cords carefully; route cables and the power cord and plug so that they cannot be stepped on or tripped over. Be sure that nothing rests on your system components' cables or power cord.
- Do not modify power cables or plugs. Consult a licensed electrician or your power company for site modifications. Always follow your local or national wiring rules.

Protecting Against Electrostatic Discharge

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

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 system. 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.

CHAPTER 3

Installing the Global Site Selector 4480

This chapter explains how to install a Global Site Selector 4480 in an equipment rack. It also provides general instructions for installing a Global Site Selector 4480 on a table or workbench. This chapter contains the following sections:

- Tools and Parts Required, page 3-2
- Installing a Global Site Selector 4480 Unit, page 3-2
- Attaching a System Ground Connection, page 3-7
- Connecting Cables, page 3-10
- Connecting Power and Booting the System, page 3-12
- Checking the LEDs, page 3-13

Before you begin the installation, read the *Regulatory Compliance and Safety Information for the Cisco Content Networking Product Series* document and the *Site Preparation and Safety Guide* that shipped with your chassis.

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

Tools and Parts Required

A rack-mount and cable-management kit is included in your shipping container accessory box. The rack-mount brackets in the kit are suitable for mounting Global Site Selector 4480 units in 19-inch (48.26-cm) or 23-inch (58.42-cm), four-post or two-post telco equipment racks.

You need the following parts and tools to install a Global Site Selector 4480 in a rack:

- Phillips screwdriver
- One rack-mount kit, which includes:
  - Two rack-mount brackets
  - Four 12-24 x 0.50-inch (12.7-mm) flat-head Phillips rack screws
  - Four 18-8 x 0.37-inch (9.4-mm) flat-head Phillips bracket screws for 19-inch (48.3-cm) racks
  - Four 8 x 0.375-inch (9.5-mm) round-head Phillips bracket screws for 23-inch (58.4-cm) racks
  - One cable holder and screw (installation optional)
  - Four self-adhesive feet (for optional tabletop installation)
- One power cable
- Documentation

Installing a Global Site Selector 4480 Unit

Place the unit 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 Global Site Selector 4480 in an equipment rack, proceed to the "Installing the Chassis on a Tabletop" section on page 3-6.

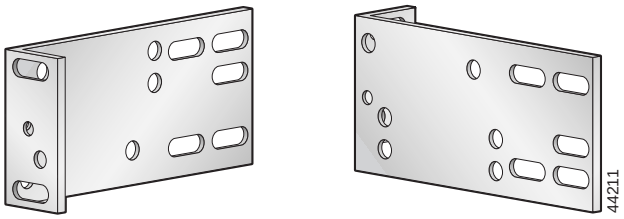
Warning **To prevent bodily injury when mounting or servicing this unit in a rack, you must take special precautions to ensure that the system remains stable. The following guidelines are provided to ensure your safety:**

- 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.

Attaching the Mounting Brackets

The chassis mounts to two rack posts with brackets that attach to either the front, mid, or rear sides of the chassis. The brackets for 19-inch (48.26-cm) and 23-inch (58.42-cm) racks are the same; however, they are mounted differently on the chassis. (See Figure 3-1.) Brackets for a 19-inch (48.26-cm) equipment rack require four rack screws in each bracket, and brackets for a 23-inch (58.42-cm) equipment rack require two screws in each bracket.

Figure 3-1 Rack-Mount Brackets



Orientation for 19-inch rack Orientation for 23- or 24-inch rack

Figure 3-2, Figure 3-3, and Figure 3-4 show the three bracket mounting positions on the chassis. The brackets are oriented for a 19-inch (48.26-cm) equipment rack.

Figure 3-2 Bracket Position for Front Mount

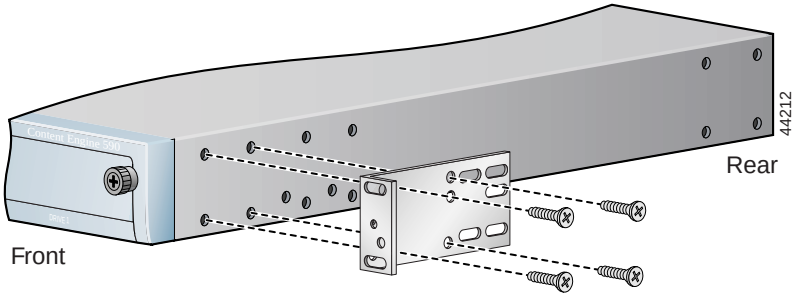


Figure 3-3 Bracket Position for Mid Mount

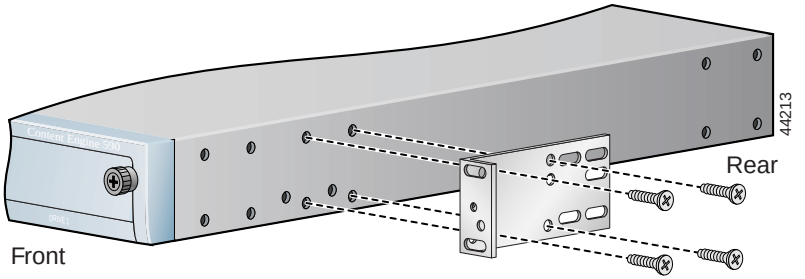
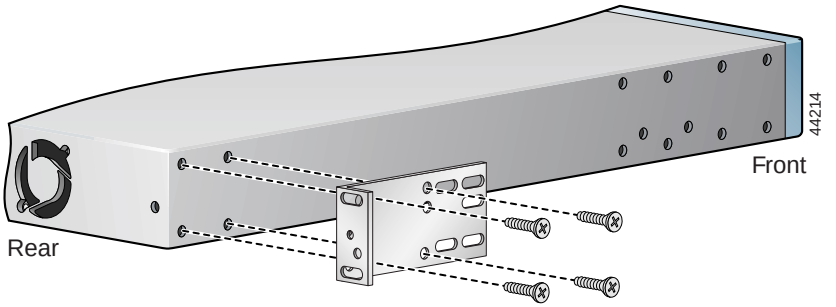


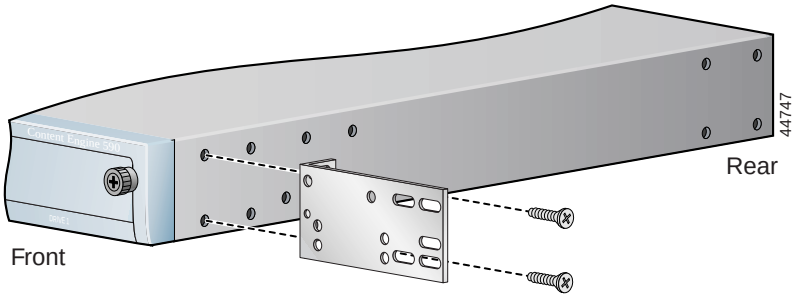
Figure 3-4 Bracket Position for Rear Mount



Note For a rear mount, the rear of the chassis is turned to face the front of the rack.

Figure 3-5 shows the bracket orientation for a front mount in a 23-inch (58.42-cm) equipment rack.

Figure 3-5 Bracket Orientation for a 23-Inch (58.42-cm) Rack



Rack-Mounting the Chassis

After you secure the brackets to the chassis, rack-mount the chassis by securing the brackets to two posts or mounting strips in the rack. (See Figure 3-6.) You need two people to install the chassis in the rack—one person to hold the chassis and one person to secure it to the rack.

Figure 3-6 Installing the Chassis in the Rack

Note: The second bracket attaches to the other side of the chassis.

The inlet and exhaust ports for cooling air are located in the front and rear of the chassis, respectively; therefore, multiple Global Site Selectors can be stacked with little or no vertical clearance.

Installing the Chassis on a Tabletop

When you install a Global Site Selector 4480 on a workbench or tabletop, ensure that the surface is clean and in a safe location and that you have considered the following:

- 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 Global Site Selector 4480 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 or equipment.
- The Global Site Selector 4480 will receive adequate ventilation (it is not being installed in an enclosed cabinet where ventilation is inadequate).

Follow these steps to install the Global Site Selector 4480 on a workbench or tabletop:

Step 1 Remove any debris and dust from the tabletop or workbench, as well as from the surrounding area. Also make sure that your path between the Global Site Selector 4480 and its new location is unobstructed.

Step 2 Attach the rubber feet to the bottom of the chassis. The rubber feet have an adhesive backing. Peel the protective tape off the adhesive and stick the feet to the bottom of a clean chassis surface. Place one foot in each corner.

Step 3 Place the chassis on the tabletop or workbench.

Step 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.

Attaching a System Ground Connection

Before you connect power or turn on power to your Global Site Selector 4480, we strongly recommend that you provide an adequate chassis ground (earth) connection for your chassis. Grounding receptacles are provided on each chassis.

Warning **When installing the unit, the ground connection must always be made first and disconnected last.**

To ensure the chassis grounding connection that you provide is adequate, you will need the following parts and tools:

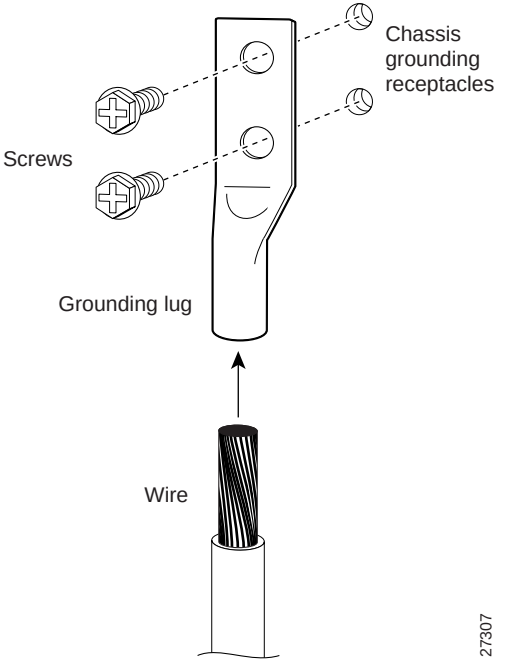
- One grounding lug—Must have two M3.5 screw holes that have a 0.63-inch (16.002-mm) spacing between them, and a wire receptacle large enough to accept a 6-American Wire Gauge (AWG) multistrand, copper wire.
- Two slotted hexhead M3.5 x 7-mm thread-forming machine screws.
- One grounding wire—6-AWG, 0.162-inch (4.115-mm) diameter, with approximately 0.108 inch (2.743 mm) of insulation, for a total wire diameter of approximately 0.27 inch (6.858 mm). The length of the wire depends on your chassis location and site environment. This wire is not available from Cisco Systems; it is available from any commercial cable vendor.
- Flat-blade screwdriver.
- Crimping tool large enough to accommodate the diameter of the wire receptacle on your grounding lug.
- Wire stripper.

To attach the grounding lug to the chassis grounding receptacles on your Content Router 4480, use the following procedure:

Step 1 Use the wire stripper to strip one end of the 6-AWG wire approximately 0.75 inch (19.05 mm).

Step 2 Insert the 6-AWG wire into the wire receptacle on the grounding lug. (See Figure 3-7.)

Figure 3-7 Attaching the Ground Wire to the Grounding Lug

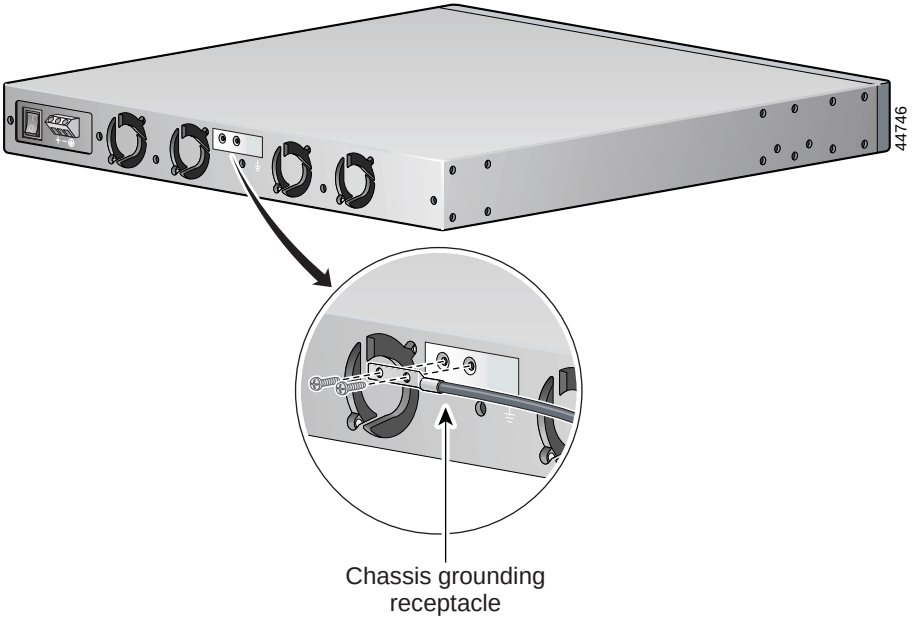


Step 3 Use the crimping tool to carefully crimp the wire receptacle around the wire; this step is required to ensure a proper mechanical connection.

Step 4 Insert the two screws through the holes in the grounding lug. (See Figure 3-7.) Ensure that the grounding lug does not interfere with other Global Site Selector 4480 hardware.

Step 5 Locate the chassis grounding receptacles on your Global Site Selector 4480 chassis. (See Figure 3-8.)

Figure 3-8 Attaching the Grounding Lug to the Chassis Grounding Receptacle



Step 6 Use the flat-blade screwdriver to carefully tighten the screws until the grounding lug is held firmly to the chassis. Do not overtighten the screws.

Step 7 Connect the opposite end of the grounding wire to the appropriate grounding point at your site to ensure an adequate chassis ground.

Connecting Cables

Follow these steps to connect network and console cables to your Global Site Selector 4480.

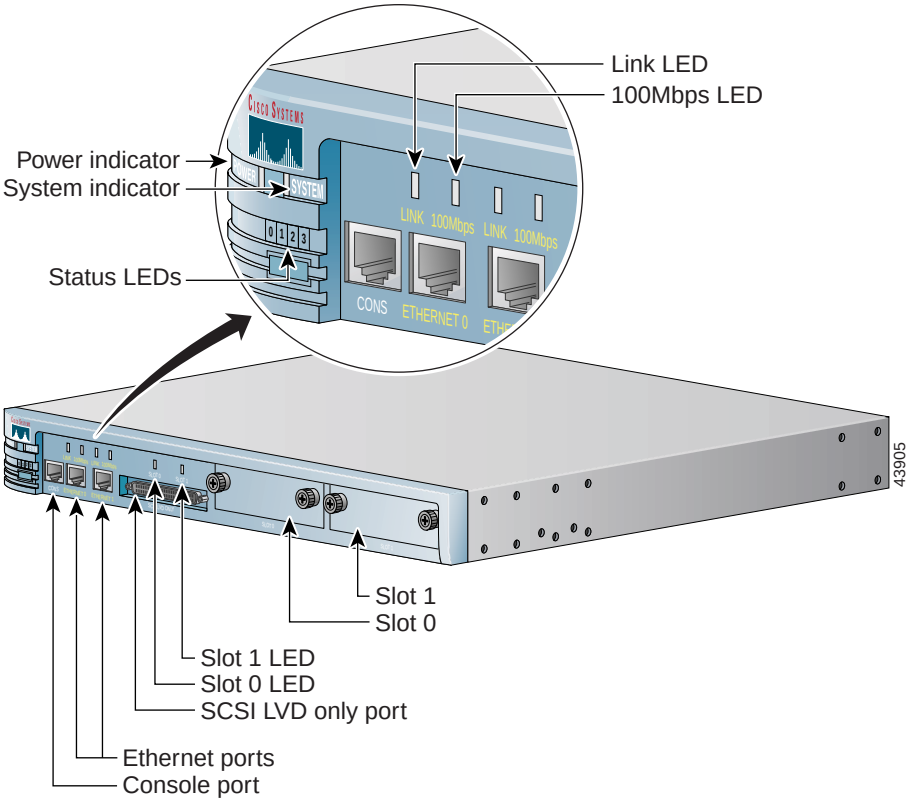
Step 1 For network connections, insert a Category 5 UTP cable into Ethernet port 0 on the Global Site Selector 4480 front panel. (See Figure 3-9.)

Step 2 Connect the other end of the network cable to a hub or switch in your network.

Step 3 For console connections, plug the Cisco-supplied serial cable into the console port on the Global Site Selector 4480 front panel. (See Figure 3-9.)

Step 4 Connect the other end of the console cable to a console or a communications server.

Figure 3-9 Global Site Selector 4480—Front Panel

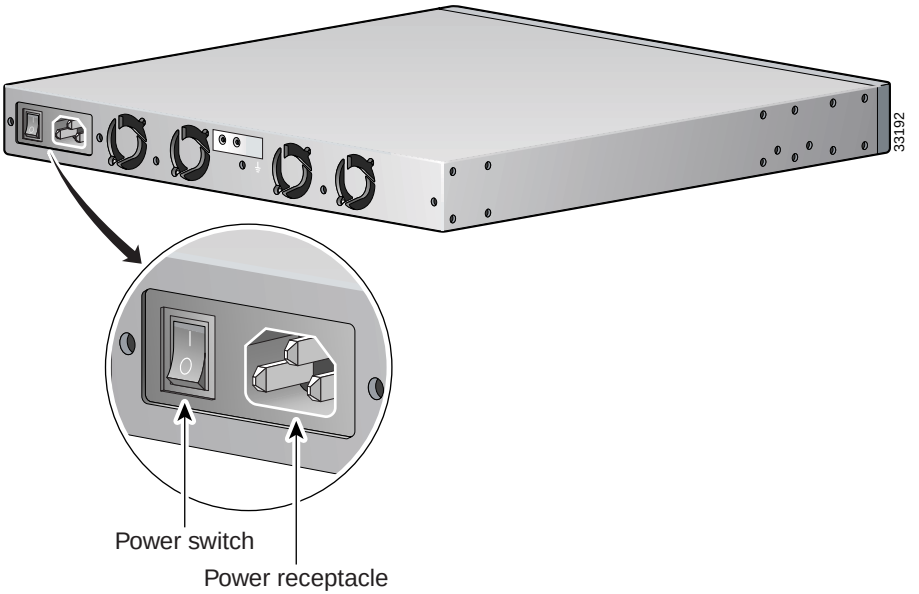


Connecting Power and Booting the System

Follow these steps to connect power to your system.

Step 1 Plug the AC power cord into the power cord receptacle at the rear of the Global Site Selector 4480. (See Figure 3-10.)

Figure 3-10 Global Site Selector 4480—Back Panel



Step 2 Connect the other end of the power cord to your site power source.

Step 3 To power on the Global Site Selector 4480, press the power switch. This switch toggles between on and off, even though the switch always returns to its initial position after you press it. A power light on the front panel, when lit, indicates that the power is on.

The Global Site Selector 4480 should begin booting. Once the operating system boots, you are ready to initialize the basic software configuration. (Refer to the software configuration guide that shipped with your system.)

Checking the LEDs

When the Global Site Selector 4480 is up and running, observe the front panel status 0 1 2 3 LEDs (see Figure 1-1 and Table 1-3) to verify that your system is operating properly. Table 3-1 describes the LED sequence for normal operation.

Table 3-1 Operational Status LEDs

0 1 2 3 LEDs	Appearance	Meaning
o o o o[1]	Steady	Normal operation
o * * *[2]	Steady	An exception has occurred (software or hardware failure)
* * * *	Steady	A panic has occurred (software failure)
- - - -[3]	Rolling	Reboot has begun

1. o = LED is off.
2. * = LED is on.
3. - - - = rolling display.

CHAPTER 4

Troubleshooting the System Hardware

If your system 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 system problems.

This chapter contains the following sections:

- Checking the Basics, page 4-1
- Checking Connections and Switches, page 4-2
- Observing Trouble Indicators and LEDs, page 4-4

Checking the Basics

The following procedure leads you through the checks necessary to solve some basic system problems:

Step 1 Was an alert message issued by the system software?

Yes. Check the component named in the alert message.

No. Go to Step 2.

Step 2 Visually inspect the chassis. Is the system wet or damaged?

Yes. Liquid spills, splashes, and excessive humidity can cause damage to the system. If an external device such as an external drive gets wet, contact your service representative for instructions. (See the "Obtaining Technical Assistance" section on page xvii.)

If the chassis was dropped or damaged while being moved, you should check the system to see if it functions properly. If an external device attached to the system is dropped or damaged, contact your service representative for instructions. (See the "Obtaining Technical Assistance" section on page xvii.)

No. Go to Step 3.

Step 3 Perform the steps in the "Checking Connections and Switches" section on page 4-2.

Is the problem resolved?

Yes. The power to the system was faulty, or the connections to the system were loose. You have fixed the problem.

No. Go to Step 4.

Step 4 Verify the settings in the System Setup program. For details, see the software configuration guide that shipped with your system.

Did the system complete the boot routine?

Yes. The system configuration information was incorrect. You have fixed the problem.

No. Call your service representative. (See the "Obtaining Technical Assistance" section on page xvii.)

Checking Connections and Switches

Improperly set switches and controls and loose or improperly connected cables are the most likely source of problems for the chassis or other external equipment. A quick check of all the switches, controls, and cable connections can easily solve these problems. (See Figure 1-1 for the location of front-panel controls and indicators. See Figure 1-2 for the location of back-panel connections on the system.)

To check all the connections and switches, perform the following steps:

Step 1 Power off the system, including any attached peripherals such as external drives. Disconnect all the power cables from their electrical outlets.

Step 2 If the system 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.

Step 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.

Step 4 Plug a system that you know works into the electrical outlet.

Does the system receive power?

Yes. The power strip is probably not functioning properly. Use another power strip.

No. Go to Step 5.

Step 5 Reconnect the system to the electrical outlet or power strip.

Make sure that all connections fit tightly together.

Step 6 Power on the system.

Is the problem resolved?

Yes. The connections were loose. You have fixed the problem.

No. Call your service representative. (See the "Obtaining Technical Assistance" section on page xvii.)

Observing Trouble Indicators and LEDs

Operational status LEDs on the front panel indicate normal system operation as well as hardware and software problems. For more information, see the "Checking the LEDs" section on page 3-13.

When front panel LEDs indicate system problems, contact your service representative for further assistance. (See the "Obtaining Technical Assistance" section on page xvii.)

Follow these steps in observing the trouble indicators:

Step 1 Are LEDs 0 1 2 3 off?

Yes. The system is operating with no problems.

No. Go to Step 2.

Step 2 Is LED 0 off and are LEDs 1 2 3 on with a steady appearance?

Yes. A software or hardware failure has occurred.

No. Go to Step 3.

Step 3 Are LEDs 0 1 2 3 on with a steady appearance?

Yes. A software failure has occurred.

No. Go to Step 4.

Step 4 Are LEDs 0 1 2 3 on with a rolling display?

Yes. The system is rebooting.

Numerics

0123 LEDs
  description 1-6, 3-13
  troubleshooting 4-4
100BASE-T cables
  pinouts (table) 1-8
100 Mbps LEDs
  description 1-5

A

AC-input power supplies
  figure 1-4, 3-12
  specifications 1-9
altitude
  specifications 1-9

B

back panel
  figure 1-4
booting
  Content Router 3-12
brackets
  attaching 3-3 to 3-5
  figure 3-3

C

cables
  connecting 3-10
  pinouts 1-8
  specifications 1-7
  types 1-6 to 1-7
  warning 1-5, 2-2
cabling distances
  maximum 1-9
Category 5 UTP cables
  description 1-7
cautions
  description of xii
Class A warnings 1-10
connecting
  cables 3-10
  power cords 3-12
connections
  troubleshooting 4-2
console
  connecting to port 3-10

console cables
description 1-6
console ports
description (table) 1-4
Content Services Switch 1-1
Content Switching Module 1-1
conventions
document xi
crossover cables
pinouts (table) 1-8
CSM
See Content Switching Module
CSS
See Content Services Switch
current
VAC-input specifications 1-9

D

data centers 1-1
dimensions
specifications 1-9
disaster recovery 1-1
documentation
audience x
conventions xi

E

electrostatic discharge
See ESD
ESD
preventing damage 2-5
Ethernet cables
description 1-7
pinouts 1-8
Ethernet connections 3-10
Ethernet ports
description (table) 1-4
note 1-7

F

front panel
figure 1-3, 3-11
ports and receptacles 1-4

G

Global Site Selector 4480
back panel 3-12
booting 3-12
Class A warnings 1-10
description 1-2
front panel 1-3, 3-11
installing 3-2

major functions 1-2
overview 1-1
regulatory compliance (table) 1-10
specifications 1-2, 1-9
Global Site Selector 4480-K9
See Global Site Selector 4480
ground connections
attaching 3-7
figure 3-9
grounding lugs
description 3-7
figure 3-8
GSS-4480-K9
See Global Site Selector 4480

H

hardware
figure 1-3 to 1-4, 3-11, 3-12
specifications 1-9
troubleshooting 4-1
humidity
specifications 1-9

I

installing
chassis grounding 3-7
in racks 3-3 to 3-5
on tabletops 3-6
warnings 2-1
IOS 1-1

L

LEDs
checking 3-13
description (table) 1-5
figure 1-3
troubleshooting 3-13, 4-4
LINK LEDs
description 1-5
figure 1-3
Local Director 1-1
lugs
grounding parts needed 3-7

M

MDI ports
note 1-7
MDI-X ports
connecting to 1-7
Medium Dependent Interface
See MDI
Medium Dependent Interface-crossover
See MDI-X
memory

specifications 1-2
mounting brackets
attaching 3-3 to 3-4
figure 3-3

N

network cables
connecting 3-10
description 1-7

O

operating system
booting 3-12

P

pinouts
Ethernet cables 1-8
ports
connecting 3-10
console
connecting 3-10
description 1-4
power indicators
description 1-5
power receptacles
description 1-5
figure 3-12
power supplies
connecting 3-12
figure 1-4
on and off switches 1-5
receptacles 1-5
troubleshooting 4-2
warning 1-5
power switches
description 1-5

R

rack-mount brackets
attaching 3-3 to 3-5
figure 3-3
rack-mounting
chassis 3-5
receptacles
power 1-5
rollover cable
identifying 1-6

S

safety
general precautions 2-3
SCSI LVD only port
description 1-4

SELV circuits
warning 1-5
server load balancers 1-1
shock
specifications 1-9
SLB
See server load balancer
slot LEDs
description (table) 1-5
slots
description (table) 1-5
specifications
hardware 1-9
status LEDs
description 1-6, 3-13
troubleshooting 4-4
storage
specifications 1-2
straight-through cables
pinouts (table) 1-8
switches
troubleshooting 4-2
system indicators
description 1-5
figure 1-3

T

tabletop installation
procedure 3-6
temperature
specifications 1-9
TNV circuits
warning 1-5
tools
for attaching ground connections 3-7
for rack-mounting 3-2
troubleshooting
basic checks 4-1
connections 4-2
LEDs 4-4
switches 4-2
system hardware 4-1

W

warnings
cables 2-2
Class A 1-10
description of xii
installation 2-1 to 2-3
ports 1-5
weight
specifications 1-9