Preparing for the Installation

Before you install the Cisco Remote-PHY solution, consider the following:

- Power and cabling requirements that must be in place at your installation sites
- Equipment required to install the Cisco Remote-PHY solution
- Environmental conditions your installation site must meet to maintain normal operation

Note Do not unpack the equipment until you are ready to install it. Keep the equipment in the shipping container to prevent accidental damage until you determine an installation site.

This section provides information on:

General Safety Guidelines

When you install a component, observe all caution and warning statements mentioned in this section.

The following guidelines will help ensure your safety and protect the equipment. However, these guidelines may not cover all potentially hazardous situations you may encounter during system installation, *so be alert*.

- Install your product in compliance with the national and local electrical codes. In the United States, this means the National Fire Protection Association (NFPA) 70, United States National Electrical Code. In Canada, Canadian Electrical Code, part I, CC22.1. In other countries, International Electrotechnical Commission (IEC) 364, part 1 through part 7.
- Review the safety warnings listed in the regulatory compliance and safety documentation before installing, configuring, or performing maintenance on the product.
- Disconnect power at the source before you install or remove a chassis.
- Do not attempt to lift an object you might find too heavy to lift safely.
- Keep the equipment area clear and as dust free as possible during and after installation.
- Keep tools and equipment components away from walk areas.
- Do not wear loose clothing, jewelry (including rings and chains), or other items that could get caught in the equipment.
- Use the product in accordance with its marked electrical ratings and product usage instructions.

Warning **Only trained and qualified personnel should be allowed to install, replace, or service this equipment.** Statement 1030.

Electrical Equipment Guidelines

- Before beginning any procedures requiring access to the chassis interior, locate the emergency power-off switch for the room in which you are working.
- Disconnect all power and external cables before moving a chassis.
- Do not work alone in potentially hazardous conditions.
- Never assume that power has been disconnected from a circuit; always check.
- Do not perform any action that creates a potential hazard to people or makes the equipment unsafe.
- Carefully examine your work area for possible hazards such as moist floors, ungrounded power extension cables, and missing safety grounds.

Preventing Electrostatic Discharge Damage

Electrostatic discharge (ESD) damage occurs when electronic cards or components are improperly handled, and can result in complete or intermittent failures. All line cards consist of a printed circuit card that is fixed in a metal carrier. Electromagnetic interference (EMI) shielding and connectors are integral components of the carrier. Although the metal carrier helps to protect the cards from ESD, use an antistatic strap each time you handle the modules. Handle the carriers by the edges only; never touch the cards or connector pins.

Caution Always tighten the captive installation screws on all system components when you are installing them. These screws prevent accidental removal of the module, provide proper grounding for the system, and help to ensure that the line card connectors are properly seated in the backplane. Captive screws should be torqued to 6-8 in-lbs to ensure proper grounding and mechanical support. Never use cordless or corded drills to tighten screws; power screwdrivers and hand tools are acceptable.

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 components. As you continue to work on your system, periodically touch an unpainted metal surface on the computer chassis.

The following guidelines can prevent ESD damage:

- Always use an ESD-preventive wrist or ankle strap and ensure that it makes good skin contact. Before removing a card from the chassis, connect the equipment end of the strap to the ESD plug at the bottom of the chassis below the power entry modules. Ensure that the chassis or rack or both have a grounding cable installed.
- Handle line cards by the faceplate and carrier edges only; avoid touching the card components or any connector pins.
- When removing a card, place the removed module component-side-up on an antistatic surface or in a static-shielding bag. If the module will be returned to the factory, immediately place it in a static-shielding bag.
- Avoid contact between the modules and clothing. The wrist-strap protects the card from ESD voltages on the body only; ESD voltages on clothing can still cause damage.
- When transporting a sensitive component, first place it an antistatic container or packaging.
- Handle all sensitive components in a static-safe area. If possible, use antistatic floor pads and workbench pads.

Caution For safety, periodically check the resistance value of the antistatic strap. The measurement should be between 1 and 10 megohms.

Site Requirements

This section provides information about environmental, power, cabling, and mounting requirements. Ensure that you have met all of these requirements before you install your product.

Environmental Requirements for the Cisco GS7000 Node

The table below lists the operating and non-operating environmental site requirements. The ranges listed are those within which the equipment continues to operate; however, a measurement that is approaching the minimum or maximum of a range indicates a potential problem. You can maintain normal operation by anticipating and correcting environmental anomalies before they approach a maximum operating range.

Table 1: Specifications for Operating and Non-operating Environments for the Cisco GS7000 Node

Specification	Value
Operating Temperature range	-40 to 140°F (-40 to 60°C)
Relative humidity range	5 to 95%

Environmental Requirements for the Cisco CCAP RF Line Card

The table below lists the operating and non-operating environmental site requirements. The ranges listed are those within which the equipment continues to operate; however, a measurement that is approaching the minimum or maximum of a range indicates a potential problem. You can maintain normal operation by anticipating and correcting environmental anomalies before they approach a maximum operating range.

Table 2: Specifications for Operating and Non-operating Environments for the Cisco CCAP RF Line Card

Specification	Minimum
Power Consumption	211W
Thermal Heat Dissipation	211W
Mean Time Between Failure (MTBF)	360,870 hours
Temperature Range	Operating: 41 to 104°F (5 to 40°C)
	Non-operating: -4 to 149°F (-20 to 65°C)
Relative Humidity	Operating: 10 to 90% non-condensing
	Non-operating: 10 to 90%
Operating Altitude	-196 to 13,123 ft. (-60 to 4000 m)

Power Guidelines

Important If this equipment is a Class I equipment, it must be grounded.

- If this equipment plugs into an outlet, the outlet must be near this equipment, and must be easily accessible.
- Connect this equipment only to the power sources that are identified on the equipment-rating label, which is normally located close to the power inlet connector.

- This equipment may have two power sources. Be sure to disconnect all power sources before working on this equipment.
- If this equipment does not have a main power switch, the power cord connector serves as the disconnect device.
- Always disconnect the plug or the connector to disconnect a cable. Do not pull the cable itself.

Laser Safety Guidelines for the Cisco GS7000 Node

- Do not stare into an unmated fiber or at any mirror-like surface that could reflect light emitted from an unterminated fiber.
- Do not view an activated fiber with optical instruments such as eye loupes, magnifiers, or microscopes.
- Use safety-approved optical fibers to maintain compliance with applicable laser safety requirements.

Warning **This equipment is a Class 1 laser product.** Statement 1008

Warning **Invisible laser radiation present. Avoid direct exposure to the laser light source.** Statement 1016

Warning **Invisible laser radiation may be emitted from disconnected fibers or connectors. Do not stare into beams or view directly with optical instruments.** Statement 1051

Mounting Considerations for the Cisco GS7000 Node

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 **Avoid personal injury and damage to this equipment. An unstable mounting surface may cause this equipment to fall.**

The Cisco GS7000 node supports two types of mounting. Consider the following guidelines for mounting the Cisco GS7000 node:

Wall-Mounting Guidelines for the Cisco GS7000 Node

The Cisco GS7000 node can be mounted on a concrete, brick, wood, or metal wall, or in a cabinet. Before you wall-mount the Cisco GS7000 node, consider the following guidelines:

- Be aware of the size and weight of the equipment. A fully loaded Cisco GS7000 node weighs over 26 lbs (11.8 kg). Ensure that the mounting location has a stable, flat surface, and can safely support the maximum weight of the equipment.
- Ensure that the installation site meets the ventilation requirements given in the data sheet to avoid the possibility of equipment overheating.
- Ensure that the installation site and operating environment is compatible with the International Protection (IP) rating specified in the data sheet.
- Ensure that proper handling and lifting techniques are employed when working in confined spaces with heavy equipment.

Strand-Mounting Guidelines for the Cisco GS7000 Node

Before you strand-mount the Cisco GS7000 node, consider the following guidelines:

- Be aware of the size and weight of the equipment while strand-mounting. A fully loaded Cisco GS7000 node weighs over 26 lbs (11.8 kg). Ensure that the strand can safely support the maximum weight of the equipment.
- Ensure that proper handling and lifting techniques are employed when working in confined spaces with heavy equipment.
- Ensure the ground area below the installation site is clear of personnel before hoisting the equipment. If possible, block the walkway below the hoisting area to prevent pedestrian traffic during hoisting.

Tools for Installation

Tools for the Cisco GS7000 Node Installation

You need the following tools to install and cable the Cisco GS7000 node:

- Torque wrench capable of 5 to 12 ft-lbs (6.8 to 16.3 Nm)
- 4-inch to 6-inch extension for torque wrench
- 1/8-inch slot screwdriver for the F-connectors
- 1/2-inch socket for the strand clamp bolts
- #2 Phillips-head screwdriver for the grounding screw
- Heavy-duty wire cutters or snips for cutting the cable
- Deburring tool for filing the rough edges

Tools for the Cisco CCAP RF Line Card Installation

You need the following tools to install and cable the Cisco CCAP RF line card:

- T-10 Torx driver tool
- 1/4-inch flathead screwdriver
- Blank Cisco cBR-8 slot cover (if required)
- ESD-preventive wrist strap
- Antistatic surface, such as a mat or antistatic bag

Torque Specifications for the Cisco GS7000 Node

The table below provides the torque specifications for the fasteners used with the Cisco GS7000 Node.

Fastener	Torque Specification	Illustration
Strand clamp mounting bracket bolts	5 ft-lb to 8 ft-lb (6.8 Nm to 10.8 Nm)	
Housing closure bolts	5 ft-lb to 12 ft-lb (6.8 Nm to 16.3 Nm)	
5/8" port plugs	6.7 ft-lb (9 Nm)	
PG11-to-5/8" adapter	4.63 ft-lb (6.25 Nm)	
RJ-45 port PG16 plug	5.55 ft-lb (7.5 Nm)	
Power port PG11 gland	Plastic: 3 ft-lb (4 Nm) Metal: 4.63 ft-lb (6.25 Nm)	
RJ-45 port PG16 gland	Plastic: 4.44 ft-lb (6 Nm) Metal: 5.5 ft-lb (7.5 Nm)	

Fastener	Torque Specification	Illustration
PG11 F-connector	4.63 ft-lb (6.25 Nm)	
5/8" F-connector	6.7 ft-lb (9 Nm)	

Unpacking the Equipment

Before You Begin

Read the safety guidelines and review the electrical safety and ESD-preventive guidelines.

Caution Ensure that you are properly grounded with an ESD-preventive wrist strap.

Procedure

Step 1 Open the shipping box.

Step 2 Remove the equipment from the box.

Step 3 Place the equipment on an antistatic surface.