Installation Safety and Site Preparation

This chapter contains safety and site preparation information.

Note We recommend that you read this entire chapter before installing the IR8140H router.

These topics are discussed:

Safety Recommendations

To ensure general safety, follow these guidelines:

- Keep the chassis area clear and dust free during and after installation.
- Keep tools and chassis components away from walk areas.
- Do not wear loose clothing that could get caught in the chassis. Fasten your tie or scarf and roll up your sleeves.
- Wear safety glasses when working under conditions that might be hazardous to your eyes.
- Do not perform any action that creates a hazard to people or makes the equipment unsafe.

Safety with Electricity

Follow these guidelines when working on equipment powered by electricity:

- Read all warnings in Safety Warnings, on page 2.

- Locate the emergency power-off switch for your installation location. If an electrical accident occurs, you can quickly turn off the power.
- Disconnect all power before doing the following:
  - Installing or removing a chassis
  - Working near power supplies
- Look carefully for possible hazards in your work area, such as moist floors, ungrounded power extension cables, frayed power cords, and missing safety grounds.
- Do not work alone if hazardous conditions exist.
- Never assume that power is disconnected from a circuit. Always check.
- Never open the enclosure of the router's internal power supply.
- If an electrical accident occurs, proceed as follows:
  - Use caution; do not become a victim yourself.
  - Turn off power to the device.
  - If possible, send another person to get medical aid. Otherwise, assess the victim’s condition and then call for help.
  - Determine if the person needs rescue breathing or external cardiac compressions; then take appropriate action.

Preventing Electrostatic Discharge Damage

Electrostatic discharge (ESD) can damage equipment and impair electrical circuitry. It can occur if electronic printed circuit cards are improperly handled and can cause complete or intermittent failures. Always follow ESD-prevention procedures when removing and replacing modules:

- Ensure that the router chassis is electrically connected to earth ground.
- Wear an ESD-preventive wrist strap, ensuring that it makes good skin contact. Connect the clip to an unpainted surface of the chassis frame to channel unwanted ESD voltages safely to ground. To guard against ESD damage and shocks, the wrist strap and cord must operate effectively.
- If no wrist strap is available, ground yourself by touching a metal part of the chassis.

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Caution For the safety of your equipment, periodically check the resistance value of the antistatic strap. It should be between 1 and 10 megohms (Mohm).

Safety Warnings

This section contains important safety warnings for the installation and use of the router.

Translated versions of all safety warnings are available in the safety warnings document that ships with your router, and is available on Cisco.com.

Warning **Statement 1071—**Warning Definition

IMPORTANT SAFETY INSTRUCTIONS

Before you work on any equipment, be aware of the hazards involved with electrical circuitry and be familiar with standard practices for preventing accidents. Read the installation instructions before using, installing, or connecting the system to the power source. Use the statement number at the beginning of each warning statement to locate its translation in the translated safety warnings for this device.

SAVE THESE INSTRUCTIONS

Warning **Statement 1005—**Circuit Breaker

This product relies on the building's installation for short-circuit (overcurrent) protection. To reduce risk of electric shock or fire, ensure that the protective device is rated not greater than:

Warning **Statement 1008—**Class 1 Laser Product

This product is a Class 1 laser product.

Warning **Statement 1017—**Restricted Area

This unit is intended for installation in restricted access areas. Only skilled, instructed, or qualified personnel can access a restricted access area.

Warning **Statement 1024—**Ground Conductor

This equipment must be grounded. To reduce the risk of electric shock, 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.

Warning **Statement 1051—**Laser Radiation

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

Warning **Statement 1074—**Comply with Local and National Electrical Codes

To reduce risk of electric shock or fire, installation of the equipment must comply with local and national electrical codes.

Warning **Statement 1255—**Laser Compliance Statement

Pluggable optical modules comply with IEC 60825-1 Ed. 3 and 21 CFR 1040.10 and 1040.11 with or without exception for conformance with IEC 60825-1 Ed. 3 as described in Laser Notice No. 56, dated May 8, 2019.

Warning **Statement 2012—**Voluntary Control Council for Interference (VCCI) Class A Warning for Japan

This is a Class A product based on the standard of the VCCI Council. If this equipment is used in a domestic environment, radio interference may occur, in which case, you may be required to take corrective actions.

Warning **Statement 4011—**National Communications Commission (NCC) Warning

Without permission granted by the NCC, no company, enterprise, or user is allowed to change the frequency, enhance the transmitting power, or alter the original characteristic or performance of an approved low-power radio-frequency device. Low-power radio-frequency devices must not influence aircraft security or interfere with legal communications (conformance to legal communications means that radio communications are operated in compliance with the Telecommunications Management Act). If this happens, the user must cease operation immediately until there is no longer any interference. Low-power radio-frequency devices must *not* be impacted by nearby legal communications or ISM radio wave-radiated devices.

警告 **聲明 4011**，國家通信委員會警告

取得審驗證明之低功率射頻器材，非經核准，公司、商號或使用者均不得擅自變更頻率、加大功率或變更原設計之特性及功能。低功率射頻器材之使用不得影響飛航安全及干擾合法通信；經發現有干擾現象時，應立即停用，並改善至無干擾時方得繼續使用。前述合法通信，指依電信管理法規定作業之無線電通信。低功率射頻器材須忍受合法通信或工業、科學及醫療用電波輻射性電機設備之干擾。

Warning **Statement 9001—**Product Disposal

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

Brazil Regulatory Information

English Translation

This equipment is not entitled to the protection from harmful interference and may not cause interference with duly authorized systems.

Portuguese Translation

Este equipamento não tem direito à proteção contra interferência prejudicial e não pode causar interferência em sistemas devidamente autorizados.

Site Requirements

This section describes the requirements your site must meet for safe installation and operation of your router. Ensure that the site is properly prepared before beginning installation. If you are experiencing shutdowns or unusually high errors with your existing equipment, this section can also help you isolate the cause of failures and prevent future problems.

Pole-Top Installation Requirements

The pole-top installation steps (see Mounting the Router) require that the router mounting and installation locations, usually at the top of a power or other utility pole, have the following connections available for basic router installation:

- AC power connection, as described in Power Guidelines and Requirements, on page 7.
- Ethernet connection, as described in Ethernet Connections, on page 8.

Environmental Requirements

The location of your router is an important consideration for proper operation. Equipment placed too close together, inadequate ventilation, and inaccessible panels can cause malfunctions and shutdowns, and can make maintenance difficult. Plan for access to both the power supply-side and cable-side panels of the router.

If you are currently experiencing shutdowns, or an unusually high number of errors with your existing equipment, these precautions and recommendations may help you isolate the cause of failure and prevent future problems:

- Always follow the ESD-prevention procedures described in Preventing Electrostatic Discharge Damage, on page 2 to avoid damage to equipment. Damage from static discharge can cause immediate or intermittent equipment failure.
- Ensure that all the empty module slots have blank panels installed and that all the ports are sealed.
- When other equipment is installed on or connected to the router, try operating the router by itself, if possible. Power off other equipment (such as USB devices and installed third-party modules) to allow the router under test to have a maximum cooling air and clean power.

FCC Safety Compliance Statements

Class A Notice for FCC

Modifying the equipment without Cisco's authorization may result in the equipment no longer complying with FCC requirements for Class A digital devices. In that event, your right to use the equipment may be limited by FCC regulations, and you may be required to correct any interference to radio or television communications at your own expense.

This equipment has been tested and found to comply with the limits for a Class A digital device, pursuant to Part 15 of the FCC Rules. Operation is subject to the following two conditions:

1. This device may not cause harmful interference, and
2. This device must accept any interference received, including interference that may cause undesired operation.

The FCC, with its action in ET Docket 9608, has adopted a safety standard for human exposure to RF electromagnetic energy emitted by FCC-certified equipment. When used with approved Cisco antennas, Cisco products meet the uncontrolled environmental limits found in OET 65 Subpart C and ANSI C95.1 2019. Proper operation of this radio device according to the instructions in this publication results in user exposure substantially below the FCC recommended limits.

The antenna(s) used for this device may be located with or operating in conjunction with the following devices only:

1. Two or more modular transmitters with FCC ID: N7NEM7455, only one (1) of which may transmit simultaneously with other transmitters types.
2. Two or more modular transmitters with FCC ID: N7NWP7610, only one (1) of which may transmit simultaneously with all other transmitters types.
3. Two or more modular transmitters with FCC ID: RI7LM960, only one (1) of which may transmit simultaneously with other transmitters types.
4. Two or more modular transmitters with FCC ID: LDK-CGMOFDM, only one (1) of which may transmit simultaneously with other transmitters types.

To ensure RF exposure compliance, installers must be provided with antenna installation and transmitter operating conditions described in this document and in the antenna installation documentation.

FCC Class A warnings

The following information is for FCC compliance of Class A devices:

This equipment has been tested and found to comply with the limits for a Class A digital device, pursuant to part 15 of the FCC rules. These limits are designed to provide reasonable protection against harmful interference when the equipment is operated in a commercial environment. This equipment generates, uses, and can radiate radio-frequency energy and, if not installed and used in accordance with the instruction manual, may cause harmful interference to radio communications. Operation of this equipment in a residential area is likely to cause harmful interference, in which case users will be required to correct the interference at their own expense.

FCC Radiation Exposure Statement

This equipment complies with FCC radiation exposure limits set forth for an uncontrolled environment. This equipment should be installed and operated with minimum distance 20cm between the radiator and your body.

This device contains licence-exempt transmitter(s)/receiver(s) that comply with Innovation, Science and Economic Development Canada's licence-exempt RSS(s). Operation is subject to the following two conditions:

1. 1. This device may not cause interference.
2. 2. This device must accept any interference, including interference that may cause undesired operation of the device.

L'émetteur/récepteur exempt de licence contenu dans le présent appareil est conforme aux CNR d'Innovation, Sciences et Développement économique Canada applicables aux appareils radio exempts de licence. L'exploitation est autorisée aux deux conditions suivantes:

1. 1. L'appareil ne doit pas produire de brouillage;
2. 2. L'appareil doit accepter tout brouillage radioélectrique subi, même si le brouillage est susceptible d'en compromettre le fonctionnement.

Important ISED Radiation Exposure Statement:

This equipment complies with ISED RSS-102 radiation exposure limits set forth for an uncontrolled environment. This equipment should be installed and operated with minimum distance 30cm between the radiator & your body.

Cet équipement est conforme aux limites d'exposition aux rayonnements ISED établies pour un environnement non contrôlé. Cet équipement doit être installé et utilisé avec un minimum de 30cm de distance entre la source de rayonnement et votre corps

Le module émetteur peut ne pas être coïmplanté avec un autre émetteur ou antenne.

CAN ICES-3 (A)/NMB-3(A)

The Country Code Selection feature is disabled for products marketed in the US/Canada.

Power Guidelines and Requirements

- Check the power at your site to ensure that you are receiving power that is free of spikes and noise.
- Install a power conditioner, if necessary.
- Confirm that the AC input power supply has a 110 VAC nominal 1.0 A rms or 220 VAC nominal 0.5 A rms output-sourcing capability.

Preparing for Network Connections

When setting up your router, consider distance limitations and potential electromagnetic interference (EMI) as defined by the applicable local and international regulations.

Network connection considerations are provided for several types of network interfaces and are described in the following sections.

Ethernet Connections

The IEEE has established Ethernet as standard IEEE 802.3. The router supports the following Ethernet implementations:

- 1000BASE-X: 1000 Mb/s full-duplex transmission over a fiber optics cable.
- 100BASE-X: 100 Mb/s full-duplex transmission over a fiber optics cable.
- 10/100/1000Base-T: 10/100/1000 Mb/s Copper Port.