

Prepare for Installation

Before you install the router, you must prepare your site for installation.

Note The images in this chapter are only for representational purposes, unless specified otherwise. The chassis' actual appearance and size may vary.

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



- General Precautions, on page 2
- Compliance and Safety Information, on page 2
- Laser Safety, on page 3
- Energy Hazard, on page 4
- Preventing Electrostatic Discharge Damage, on page 4
- Cautions and regulatory compliance statements for NEBS, on page 5
- Power supply considerations, on page 6
- Site Planning Checklist, on page 8
- Environmental Requirements, on page 8
- Temperature, on page 9
- Dust and Particles, on page 10
- Air Quality, on page 10
- Corrosion, on page 11

- Airflow Guidelines, on page 12
- Site Power Guidelines, on page 14
- Site Cabling Guidelines, on page 15
- Tools and Equipment, on page 17
- Prepare Your Location , on page 17
- Prepare Yourself , on page 19
- Prepare Rack for Router Installation, on page 19
- Unpack the Cisco 8010 Large and Medium Density Routers, on page 20

General Precautions

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

- Keep your system components away from radiators and heat sources, and 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.
- Position system cables and power supply cable carefully. Route system cables, the power supply cable, and plug so that they are not stepped on or tripped over. Be sure that nothing else rests on your system component cables or power cable.
- 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.
- If you turn off your system, wait at least 30 seconds before turning it on again to avoid damage to the system components.

Compliance and Safety Information

The Cisco 8000 Series Routers are designed to meet the regulatory compliance and safety approval requirements. For detailed safety information, see *Regulatory Compliance and Safety Information—Cisco 8010 Series Routers*.



Note **Statement 1089—**Instructed and Skilled Person Definitions

An instructed person is someone who has been instructed and trained by a skilled person and takes the necessary precautions when working with equipment.

A skilled person or qualified personnel is someone who has training or experience in the equipment technology and understands potential hazards when working with equipment.



Warning **Statement 9001—**Product Disposal

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



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 1090—**Installation by a Skilled Person

Only a skilled person should be allowed to install, replace, or service this equipment. See statement 1089 for the definition of a skilled person.



Warning **Statement 1091—**Installation by an Instructed Person or Skilled Person

Only an instructed person or skilled person should be allowed to install, replace, or service this equipment. See statement 1089 for the definition of an instructed person or skilled person.



Warning **Statement 1029—**Blank Faceplates and Cover Panels

Blank faceplates and cover panels serve three important functions: they reduce the risk of electric shock and fire, 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.

Laser Safety



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 1055—**Class 1/1M Laser

Invisible laser radiation is present. Do not expose to users of telescopic optics. This applies to Class 1/1M laser products.



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.

Energy Hazard

The switches can be configured for a DC power source. Do not touch terminals while they are live. Observe the following warning to prevent injury.

Warning **Statement 1086—**Replace Cover on Power Terminals

Hazardous voltage or energy may be present on power terminals. To reduce the risk of electric shock, make sure the power terminal cover is in place when the power terminal is not being serviced. Be sure uninsulated conductors are not accessible when the cover is in place.

Preventing Electrostatic Discharge Damage

Many switch components can be damaged by static electricity. Not exercising the proper electrostatic discharge (ESD) precautions can result in intermittent or complete component failures. To minimize the potential for ESD damage, always use an ESD-preventive antistatic wrist strap (or ankle strap) and ensure that it makes adequate skin contact.

Note Check the resistance value of the ESD-preventive strap periodically. The measurement should be 1–10 megohms.

Before you perform any of the procedures in this guide, attach an ESD-preventive strap to your wrist and connect the leash to the chassis.

Cautions and regulatory compliance statements for NEBS

The NEBS-GR-1089-CORE regulatory compliance statements and requirements are discussed in this section.

Note **Statement 7001—**ESD Mitigation

This equipment may be ESD sensitive. Always use an ESD ankle or wrist strap before handling equipment. Connect the equipment end of the ESD strap to an unfinished surface of the equipment chassis or to the ESD jack on the equipment if provided.

Warning **Statement 7003—**Shielded Cable Requirements for Intrabuilding Lightning Surge

The intrabuilding port(s) of the equipment or subassembly, which is the management Ethernet port, must use shielded intrabuilding cabling/wiring that is grounded at both ends.

Warning **Statement 7005—**Intrabuilding Lightning Surge and AC Power Fault

The intrabuilding port(s) of the equipment or subassembly, which is the management Ethernet port, must not be metallically connected to interfaces that connect to the OSP or its wiring. These interfaces are designed for use as intrabuilding interfaces only (Type 2 or Type 4 ports as described in GR-1089-CORE) and require isolation from the exposed OSP cabling. The addition of Primary Protectors is not sufficient protection in order to connect these interfaces metallically to OSP wiring.

Warning **Statement 7011—**Surge Protection Device Requirements for GR-1089 Antenna Ports

Protect equipment antenna ports, that are classified as Type 6 according to GR-1089-CORE, with lightning surge protectors that are rated at a minimum of 600 V peak surge of 1.2/50 uS duration.

Connecting a Cable to the GNSS Antenna Interface

- GNSS modules have built-in ESD protections on all pins, including the RF-input pin. However, additional surge protection is required if an outdoor antenna is being connected. The Lightning Protector must be able to provide a low clamping voltage (less than 600V).
- A lightning protection must be mounted at the place where the antenna cable enters the building. The primary lightning protection must be capable of conducting all potentially dangerous electrical energy to PE (Protective Earth).
- Surge arrestors should support DC-pass and suitable for the GPS frequency range as per the constellation used with low attenuation.

Warning **Statement 7012—**Equipment Interfacing with AC Power Ports

Connect this equipment to AC mains that are provided with a surge protective device (SPD) at the service equipment that complies with NFPA 70, the National Electrical Code (NEC).

Note **Statement 7013—**Equipment Grounding Systems—Common Bonding Network (CBN)

This equipment is suitable for installations using the CBN.

Note **Statement 7016—**Battery Return Conductor

The battery return conductor of this equipment shall be treated as (DC-I).

Note **Statement 7018—**System Recover Time

The equipment is designed to boot up in less than 30 minutes provided the neighboring devices are fully operational.

Note **Statement 8015—**Installation Location Network Telecommunications Facilities

This equipment is suitable for installation in network telecommunications facilities.

Note **Statement 8016—**Installation Location Where the National Electric Code (NEC) Applies

This equipment is suitable for installation in locations where the NEC applies.

Power supply considerations

Check the power at your site to ensure that you are receiving clean power (free of spikes and noise). If necessary, install a power conditioner.

Power Connection Guidelines

This section provides guidelines for connecting the device power supplies to the site power source.

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.

Guidelines for DC-Powered Systems

Basic guidelines for DC-powered systems include the following:

- Each chassis power supply has its own dedicated input power source. The source must comply with the safety extra-low voltage (SELV) requirements in the UL 60950-1, UL 62368-1, CSA 60950-1, CSA 62368-1, EN 60950-1, EN 62368-1, IEC 60950-1, and IEC 62368-1 standards.
- Protect the circuit by a dedicated two-pole DC circuit breaker. Ensure that the circuit breaker is sized according to the power supply input rating and local or national code requirements.
- The circuit breaker is considered as the disconnect device and is easily accessible.
- The system ground is the power supply and chassis ground.
- Use the grounding lug to attach a wrist strap for ESD protection during servicing.
- Do not connect the DC return wire to the system frame or to the system-grounding equipment.
- Ensure that the DC return is grounded at the source side.
- Ensure that each power feed of the equipment is connected to different power sources.

Guidelines for AC-Powered Systems

Basic guidelines for AC-powered systems include the following:

- Each chassis power supply has its own dedicated branch circuit.
- Ensure that the circuit breaker is sized according to the power supply input rating and local or national code requirements.
- The AC power receptacles that are used to plug in the chassis must be the grounding type. The grounding conductors that connect to the receptacles must connect to protective earth ground at the service equipment.

Prevent Power Loss

Use the following guidelines to prevent power loss to the device:

- To prevent input power loss, ensure that the maximum load on each circuit supplying the power is within the current ratings of the wiring and breakers.
- In some systems, you can use an UPS to protect against power failures at your site. Avoid UPS types that use ferroresonant technology. These UPS types can become unstable with systems such as the device, which can have substantial current-draw fluctuations due to bursty data traffic patterns.

Determining power requirements is useful for planning the power distribution system to support the device.

Site Planning Checklist

Use the following checklist to perform and account for all the site planning tasks described in this chapter:

- The site meets the environmental requirements.
- The site's air conditioning system can compensate for the heat dissipation of the router.
- The floor space that the router occupies can support the weight of the system.
- Electrical service to the site complies with the requirements.
- The electrical circuit servicing the router complies with the requirements.
- Consideration has been given to the console port wiring and limitations of the cabling involved, according to TIA/EIA-232F.
- The router Ethernet cabling distances are within the prescribed limitations.
- The equipment rack in which you plan to install the router complies with prescribed requirements.
- Factors that have been carefully considered when selecting the location of the rack:
  - safety,
  - ease of maintenance, and
  - proper airflow.

Environmental Requirements

Cisco 8011-32Y8L2H2FH Router

- Temperature must be maintained within –5°C to +55°C. The maximum and minimum operating temperatures are supported at 1800m.
- The operating climate, as defined by GR-63-CORE, is between:
  - –5°C to +55°C (+23°F to +131°F) at 1800m
  - 5% and 85% RH
  - Airborne particulate concentration level < 20 micro grams per meter cube
  - Altitude: 0 to 4000 meters

For more information on Environmental properties and Regulatory standards, see the Cisco 8010 Series Large Density Routers Data Sheet.

Cisco 8011-12G12X4Y-A and Cisco 8011-12G12X4Y-D Routers

- For outside plant installation (cell site cabinet, hut, and so on), equipment must be protected against airborne contaminants, dust, moisture, insects, pests, corrosive gases, polluted air, or other reactive elements.
- Sealed equipment chamber with air-conditioning or a heat exchanger is recommended for OSP deployments.
- The equipment chamber must comply with the temperature and clearance requirements.

  Examples of such cabinets include IP65/IP66 cabinets with heat exchanger complying with Telcordia GR487.
- Temperature must be maintained within:
  - Cisco 8011-12G12X4Y-A: –20°C to +65°C (–4°F to +149°F) at MSL
  - Cisco 8011-12G12X4Y-D: –40°C to +65°C (–40°F to +149°F) at MSL

  The maximum and minimum operating temperatures are supported at Mean Sea Level (MSL).
- Cisco 8011-12G12X4Y-A: The equipment shall be placed inside an enclosure (that is protected from direct outside weather and environmental stresses by the enclosure), and where the operating climate is between:
  - –20°C to +65°C (–4°F to +149°F)
  - 5% and 85% RH
  - Airborne particulate concentration level < 20 micro grams per meter cube
  - Altitude: 0 to 4000 meters

  Cisco 8011-12G12X4Y-A is non-complaint to GR3108 Class 2.
- Cisco 8011-12G12X4Y-D: The equipment shall be placed inside an enclosure (that is protected from direct outside weather and environmental stresses by the enclosure), and where the operating climate, as defined by GR3108 Class 2, is between:
  - –40°C to +65°C (–40°F to +149°F)
  - 5% and 85% RH
  - Airborne particulate concentration level < 20 micro grams per meter cube
  - Altitude: 0 to 4000 meters

Temperature

Temperature extremes may cause a system to operate at reduced efficiency and cause various problems, including premature aging and failure of chips, and failure of mechanical devices. Extreme temperature fluctuations may also cause chips to become loose in their sockets.

Observe these guidelines:

- Ensure that the chassis has adequate ventilation.

- Do not place the chassis within a closed-in wall unit or on top of cloth, which can act as thermal insulation.
- Do not place the chassis where it receives direct sunlight, particularly in the afternoon.
- Do not place the chassis next to a heat source of any kind, including heating vents.
- Adequate ventilation is important at high altitudes. Make sure that all the slots and openings on the system remain unobstructed, especially the fan vent on the chassis.
- Clean the installation site at regular intervals to avoid the buildup of dust and debris, which may cause a system to overheat.



Note Failure to observe these guidelines may damage the internal components of the chassis.

Dust and Particles

Fans cool power supplies and system components by drawing in room-temperature air and exhausting heated air out through various openings in the chassis. However, fans also ingest dust and other particles, causing contaminant buildup in the system and increased internal chassis temperature. A clean operating environment can greatly reduce the negative effects of dust and other particles, which act as insulators and interfere with the mechanical components in the system.

PM2.5 and PM10 are some of the commonly available air quality parameters to indicate dust concentration levels. Periodically check dust concentration levels and provide required protection to improve air quality around the equipment.

Air Quality

Dust is everywhere and often invisible to the naked eye. It consists of fine particles in the air that originate from various sources, such as soil dust lifted by weather, from volcanic eruptions, or pollution. Dust at an installation site may contain small amounts of textile, paper fibers, or minerals from outdoor soil. It may also contain natural contaminants, such as chlorine from the marine environment and industrial contaminants such as sulfur. Ionized dust and debris are dangerous and get attracted to electronic equipment.

The accumulation of dust and debris on electronic equipment has the following adverse effects:

- It increases the operating temperature of the equipment. According to the Arrhenius effect, an increase in the operating temperature leads to a decrease in reliability and life of the equipment.
- The moisture and corrosive elements that are present in the dust can corrode the electronic or mechanical components and cause premature board failure.

These adverse effects are further accelerated by the presence of fans in the data networking equipment that ingest dust and other particles into the equipment. Higher the volume of air that is generated by the fans for cooling, the higher the quantity of dust and particulates that get deposited and trapped inside the equipment.

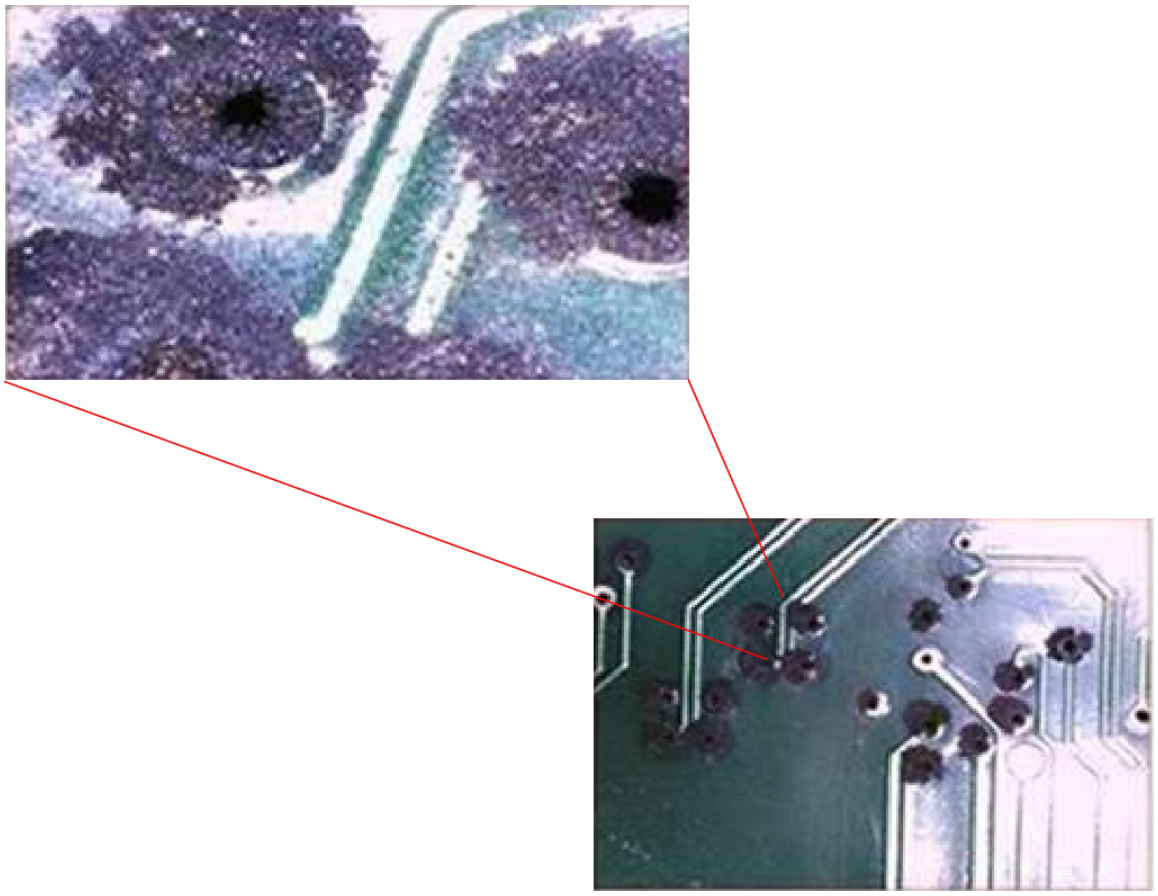
Corrosion

Corrosion is a chemical reaction that occurs between electronic components, gases, and humidity, which results in metal deterioration. Corrosion attacks edge connectors, pin connectors, IC plug-in sockets, wire wraps, and all other metal components. Depending on the type and concentration level of the corrosive gases, performance degradation of the components occurs either rapidly or over a period of time. It also leads to blocked currents, brittle connection points, and overheated electrical systems. Corrosion by-products from insulating layers on circuits and causes electronic failure, short circuits, pitting, and metal loss.

A type of corrosion known as creep corrosion, that primarily affects PCBA (Printed Circuit Board Assembly) occurs when the PCBA is subjected to a harsh, and sulfur-rich (hydrogen sulfide) end-use environment over a prolonged period of time. The corrosion begins on certain exposed metals, such as copper and silver, and then creeps along the remaining metal surface either causing electrical short circuits or creating holes. Creep corrosion also occurs on electronic components such as resistors and PCBs.

Note To prevent corrosion, remove or minimize the presence of dust and particulates at the installation site by following the guidelines mentioned in ANSI 71-04-2013 regulations.

Figure 1: PCB with Corrosion on its Metal Contacts



Airflow Guidelines

Cool air is circulated through the router by fans that are located along the rear side of the router. The internal fans maintain acceptable operating temperatures for the internal components by drawing in cool air through the vents, and circulating the air through the router.

To ensure adequate airflow, we recommended that you always maintain this minimum clearance distance for the router:

- Front clearance:
  - Cisco 8011-4G24Y4H-I—5.5 inches (14 centimeters)
  - Cisco 8011-32Y8L2H2FH—5.5 inches (14 centimeters)
  - Cisco 8011-12G12X4Y—5 inches (12.7 centimeters)
- Rear clearance:
  - Cisco 8011-4G24Y4H-I—2 inches (5.08 centimeters)
  - Cisco 8011-32Y8L2H2FH—9.8 inches (25 centimeters)

Note This clearance is required to replace PSUs.

  - Cisco 8011-12G12X4Y—0.5 inches (1.27 centimeters)

Figure 2: Cisco 8011-4G24Y4H-I Router Airflow is from Front to Back

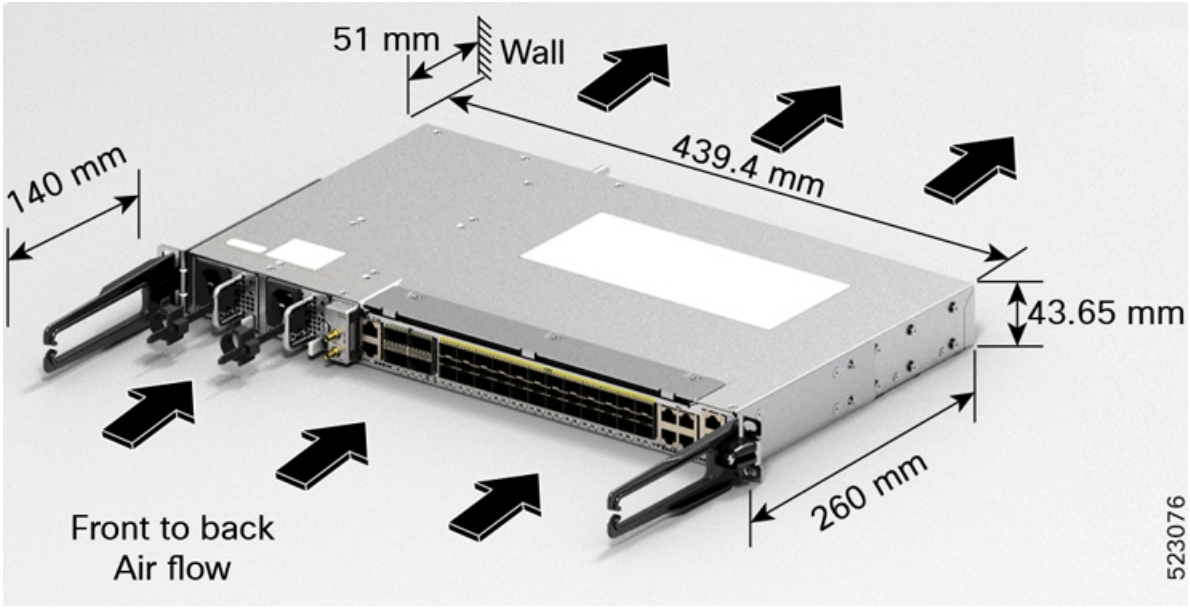


Figure 3: Cisco 8011-32Y8L2H2FH Router Airflow is from Front to Back

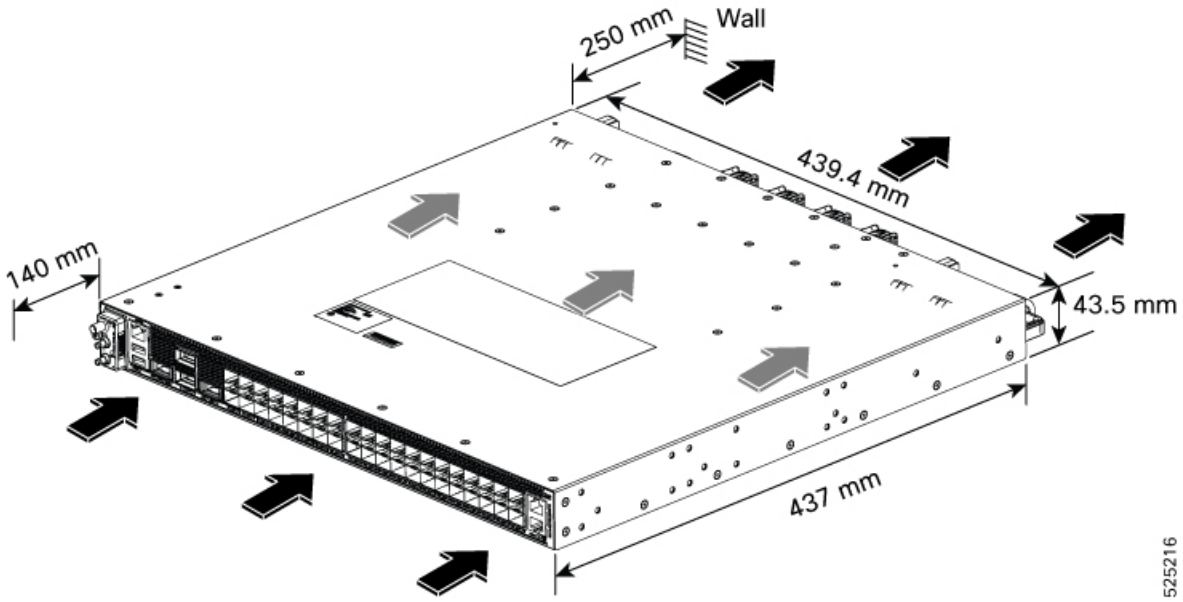
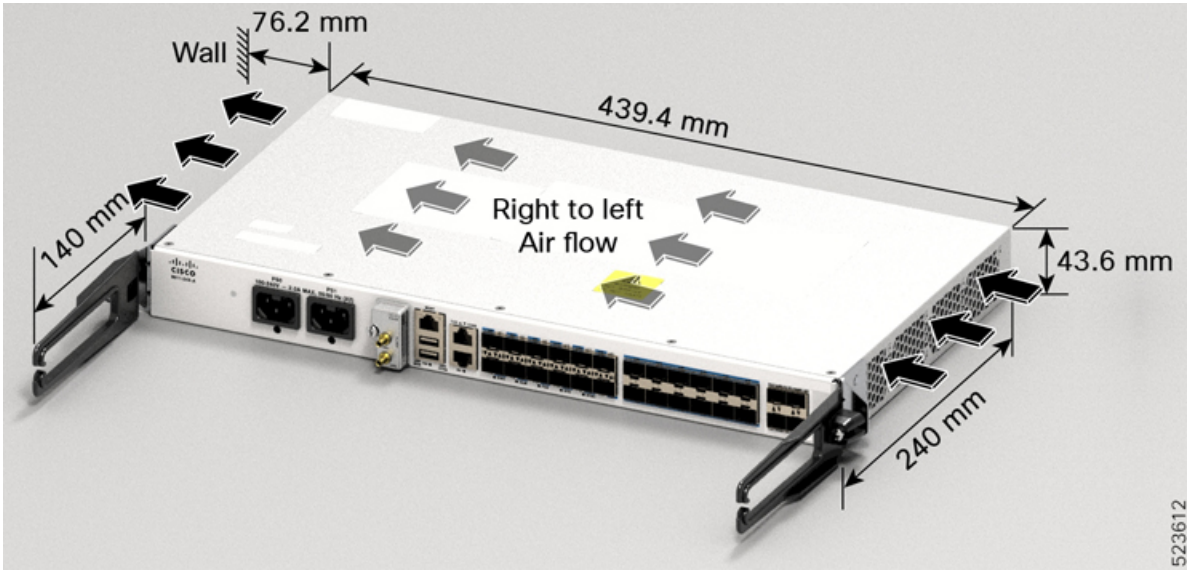


Figure 4: Cisco 8011-12G12X4Y Router Airflow is from Right to Left



Note these points:

- When installing the router in a back-to-back position with another device, ensure that there's a minimum of 3.9 inches (10 centimeters) airflow clearance between the two devices.
- If airflow through the equipment rack and the routers that occupy it's blocked or restricted, or if the ambient air being drawn into the rack is too warm, an overtemperature condition may occur within the rack and the routers that occupy it.

- The site must be as dust-free as possible. Dust tends to clog the router fans, reducing the flow of cooling air through the equipment rack and the routers that occupy it, thereby increasing the risk of an overtemperature condition.
- Enclosed racks must have adequate ventilation. Ensure that the rack isn't congested because each router generates heat. An enclosed rack must have louvered sides and a fan to provide cooling air. The equipment generates heat near the bottom of the rack, which can be drawn upward into the intake ports of the equipment above.
- When mounting a router in an open rack, ensure that the rack frame doesn't block the exhaust fans.
- When rack-installed equipment fails, especially equipment in an enclosed rack, try operating the equipment by itself, if possible. Power off all the other equipment in the rack (and in adjacent racks) to give the router maximum cooling air and clean power.
- Avoid installing the router in a location in which the router air intake vents may draw in the exhaust air from adjacent equipment. Consider how the air flows through the router; the airflow direction is front to back, with ambient air drawn in from the vents located on the front panel of the router.

Site Power Guidelines

The chassis has specific power and electrical wiring requirements. Adhering to these requirements ensures the reliable operation of the system. Follow these precautions and recommendations when planning your site power for the chassis:

- The redundant power option provides a second, identical power supply to ensure uninterrupted power supply.
- Connect each power supply to a separate input power source. Otherwise, it results in a total power failure to the system due to a fault in the external wiring or a tripped circuit breaker.
- To prevent loss of input power, ensure that the maximum load on each circuit is within the current ratings of the wiring and the breakers.
- Circuit breaker specifications—a maximum of 20A (North America) and 16A (Europe) for AC power feed.
- Check the power at your site before installation, and periodically after installation, to ensure that you are receiving clean power. If necessary, install a power conditioner.
- Provide proper grounding to avoid personal injury and damage to the equipment due to power surges or lightning striking power lines. The chassis ground must be attached to a central office or other interior ground system.



Note The chassis installation must comply with all the applicable codes, and is approved for use with only copper conductors. The ground bond-fastening hardware must be compatible and preclude loosening, deterioration, and electrochemical corrosion of hardware and joined material. Attachment of the chassis ground to a central office or other interior ground system must be made with a 6-AWG gauge wire copper ground conductor.

Caution The AC PSU requires external surge protection devices for installations where electrical surges higher than 2KV common mode and 2KV differential mode are expected. Failure to do so can result in permanent damage to the product.

The DC PSU requires external surge protection devices for installations where electrical surges higher than 2KV common mode and 1KV differential mode are expected. Failure to do so can result in permanent damage to the product.

Electrical Circuit Requirements

Each router requires a dedicated electrical circuit. If you equip the router with dual-power feeds, provide a separate circuit for each power supply to avoid compromising the power redundancy feature.

The routers can be powered by a DC source. Ensure that equipment grounding is present and observe the power-strip ratings. Make sure that the total ampere rating of all the products plugged into the power strip does not exceed 80% of the rating.

Site Cabling Guidelines

These are the guidelines for wiring and cabling at your site:

- When preparing your site for network connections to the router, consider:
  - the type of cable required for each component, and the cable limitations.

    Possible cable types are fiber, thick or thin coaxial, foil twisted-pair, or unshielded twisted-pair cabling.
  - the distance limitations for signaling, ElectroMagnetic Interference (EMI), and connector compatibility.
  - any additional interface equipment you need, such as transceivers, hubs, switches, modems, Channel Service Units (CSU), or Data Service Units (DSU).
- Before you install the router, keep all the additional external equipments and cables handy. For information about ordering these equipments and cables, contact a Cisco customer service representative.
- The extent of your network and the distances between the network interface connections depend, in part, on the following factors:
  - Signal type
  - Signal speed
  - Transmission medium
- The distance and rate limits referenced in the following sections are the IEEE-recommended maximum speeds and distances for signaling purposes. Use this information as a guideline when planning your network connections *prior to* installing the router.

- If wires exceed the recommended distances, or if wires pass between buildings, give special consideration to the effect of a lightning strike in your vicinity. The electromagnetic pulse caused by lightning or other high-energy phenomena can easily couple enough energy into unshielded conductors to destroy electronic devices. If you have had problems of this sort in the past, you may want to consult experts in electrical surge suppression and shielding.

Asynchronous Terminal Connections

The router provides a console port to connect a terminal or computer for local console access. The router supports RS-232 asynchronous data with distance recommendations specified in the EIA-232 standard.

Interference Considerations

When wires are run for any significant distance, there is a risk that stray signals will be induced on the wires as interference. If interference signals are strong, they may cause data errors or damage to the equipment.

The following sections describe the sources of interference and how to minimize their effects on the router system.

Electromagnetic Interference

All the equipment powered by AC current can propagate electrical energy that can cause EMI and possibly affect the operation of other equipment. The typical sources of EMI are equipment power cords and power service cables from electric utility companies.

Strong EMI can destroy the signal drivers and receivers in the router and even create an electrical hazard by causing power surges through the power lines into installed equipment. These problems are rare, but could be catastrophic.

To resolve these problems, you need specialized knowledge and equipment that could consume substantial time and money. However, you can ensure that you have a properly grounded and shielded electrical environment, paying special attention to the need for electrical surge suppression.

Radio Frequency Interference

When electromagnetic fields act over a long distance, Radio Frequency Interference (RFI) may be propagated. Building wiring can often act as an antenna, receiving the RFI signals and creating more EMI on the wiring.

If you use twisted-pair cable in your plant wiring with a good distribution of grounding conductors, the plant wiring is unlikely to emit radio interference. If you exceed the recommended distances, use a high-quality twisted-pair cable with one ground conductor for each data signal.

Lightning and AC Power Fault Interference

If signal wires exceed the recommended cabling distances, or if signal wires pass between buildings, you should consider the effect that a lightning strike in your vicinity might have on the router.

The Electromagnetic Pulse (EMP) generated by lightning or other high-energy phenomena can couple enough energy into unshielded conductors to damage or destroy electronic equipment. If you have previously experienced such problems, you should consult with RFI and EMI experts to ensure that you have adequate electrical surge suppression and shielding of signal cables in your router operating environment.

Tools and Equipment

You need the following tools and equipment to install and upgrade the router and its components:

- ESD-preventive cord and wrist strap
- Antistatic mat or antistatic foam
- Number 1 and Number 2 Phillips-head screwdrivers
- #12-24 pan-head screws to secure the router to the equipment rack
- Cables for connecting to the network ports (depending on the configuration)
- Ethernet hub, switch, or PC with a network interface card for connecting to the Ethernet ports
- Console terminal (an ASCII terminal or a PC running terminal emulation software) that is configured for 115200 baud, 8 data bits, no parity, no flow control, and 1stop bit
- Console cable for connecting to the console port
- Ratcheting torque screwdriver with a Phillips head that exerts up to 20-pound force per square inch (in-lb) or 0.02-kilograms force per square millimeter (kgf/mm2) of pressure
- Crimping tool as specified by the ground lug manufacturer
- Wire-stripping tools for stripping both 6-AWG and 14-AWG wires
- Tape measure and level

Prepare Your Location

This section illustrates how the building that houses the chassis must be properly grounded to the earth ground.

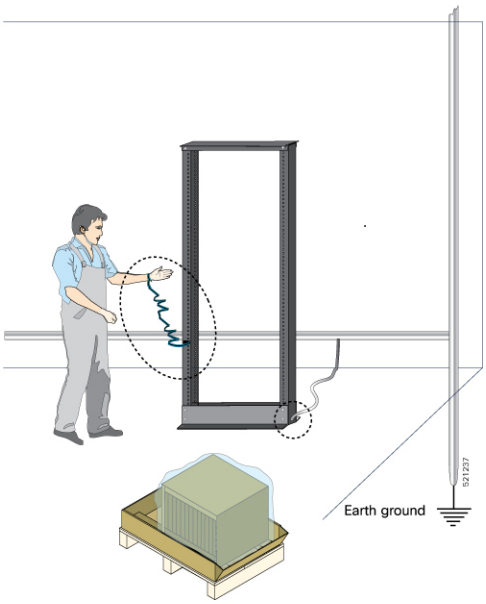
Figure 5: Building with Rack Room Connected to Earth Ground

Prepare Yourself

This section illustrates how to prepare yourself before removing the chassis from the sealed antistatic bag. The figures show how to wear the ESD strap around the wrist and how to connect the other end of the strap to the ground. ESD wrist straps are the primary means of controlling static charge on personnel.

Note: These images are for only representation purposes. The chassis' actual appearance and size would vary.

Figure 6: Wearing the ESD Strap



Prepare Rack for Router Installation

Install the chassis into a two-post standard rack with standard horizontal mounting rails. Before you mount the chassis into the rack, we recommend that you do the following:

Procedure

Step 1 Place the rack where you plan to install the chassis. Ensure that the rack is grounded to earth.

Step 2 Secure the rack to the floor.

To bolt the rack to the floor, a floor bolt kit (also called an anchor embedment kit) is required. For information on bolting the rack to the floor, consult a company that specializes in floor mounting kits (such as Hilti; see Hilti.com for details). Make sure that floor mounting bolts are accessible, especially if an annual retorquing of bolts is required.

Unpack the Cisco 8010 Large and Medium Density Routers

Ensure that there is sufficient room around the chassis pallet for unpacking.

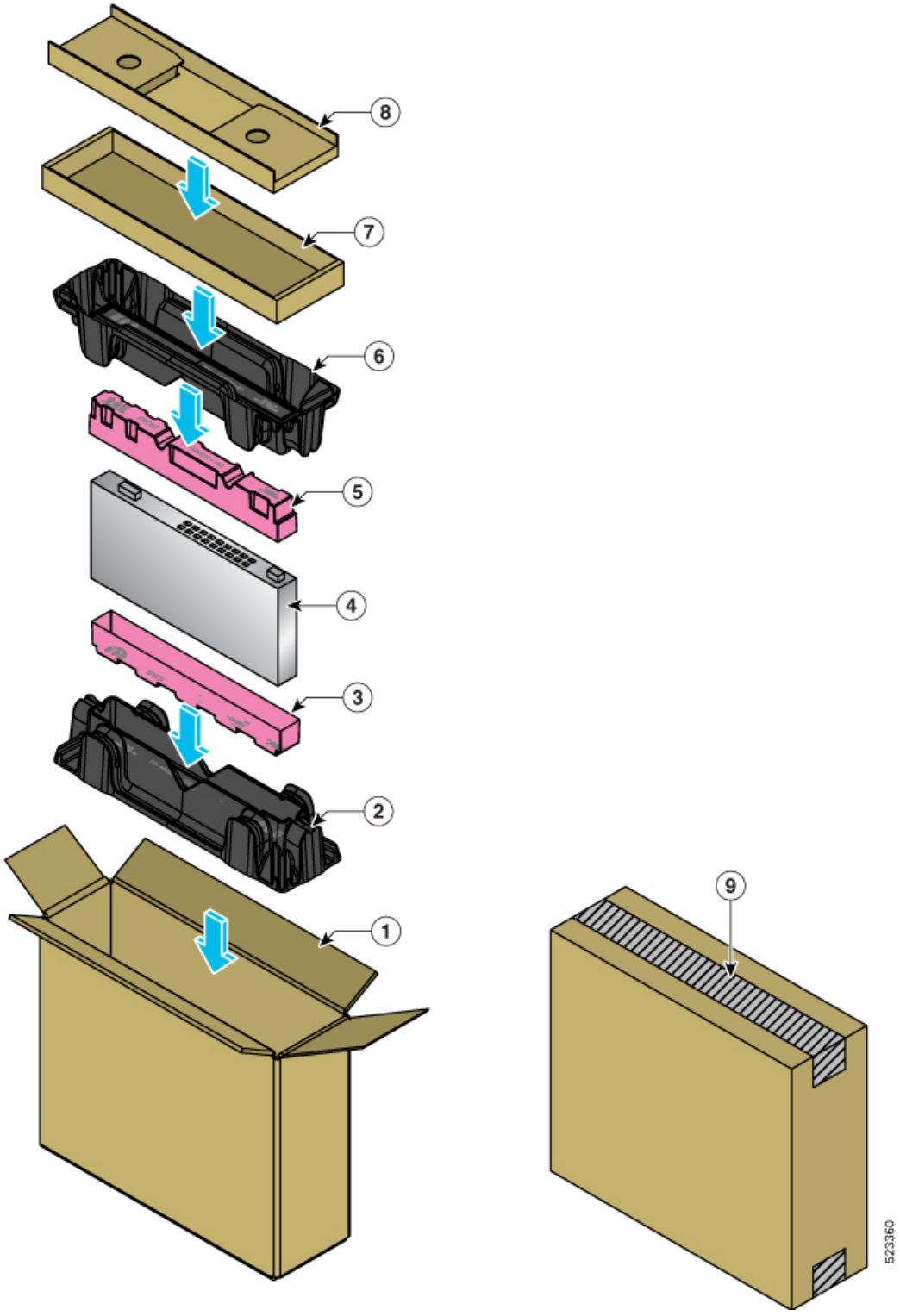
1. Remove the accessory tray and the packing material.
2. Carefully set the packing material aside.

Tip Be sure to save the packaging in case you need to return any of the components products.

Note These images are for only representation purposes. The chassis' actual appearance and size would vary.

Cisco 8011-4G24Y4H-I Router

Figure 7: Unpacking the Cisco 8011-4G24Y4H-I Router



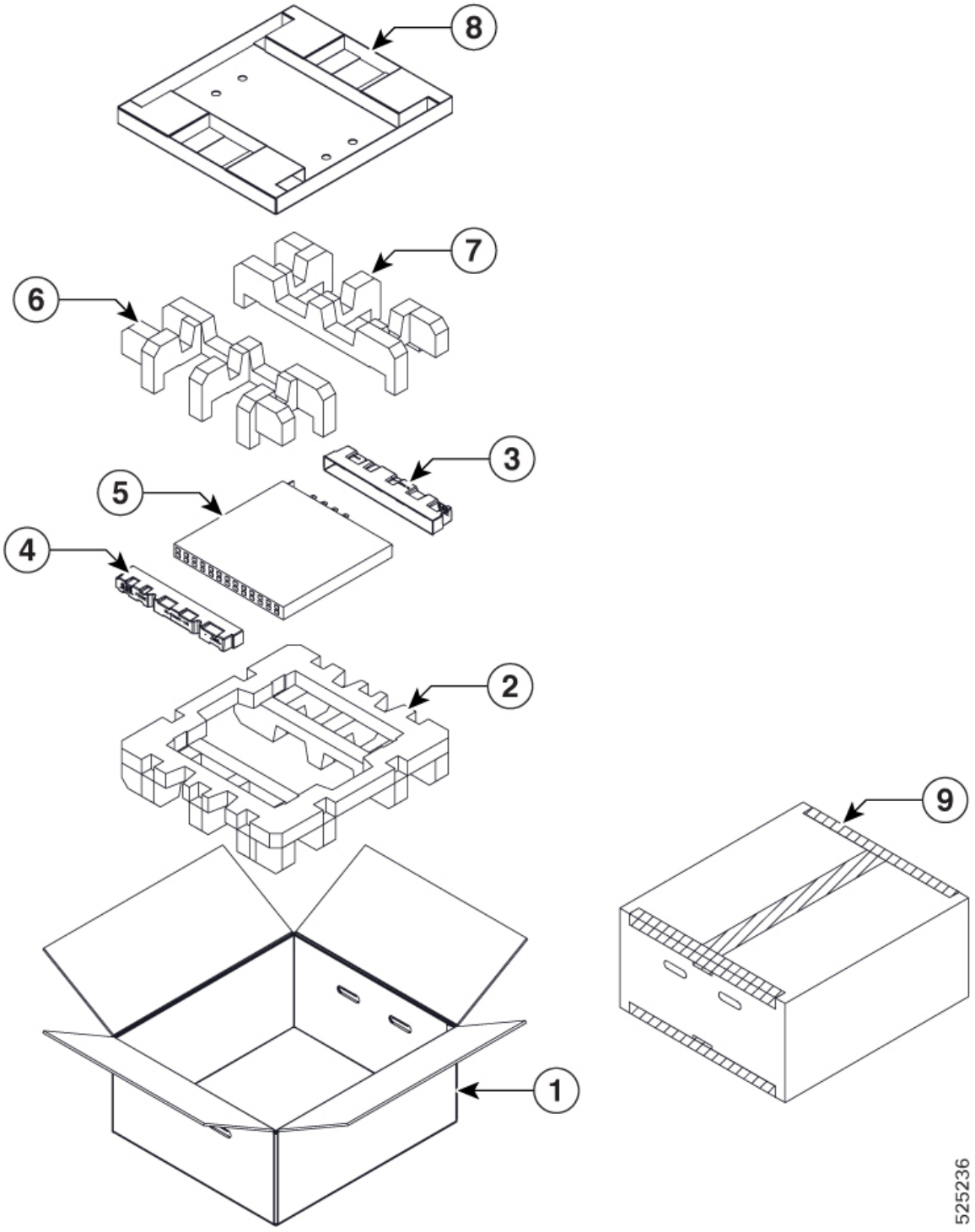
1	Regular Slotted Container (shipping box)	2, 6	Foam end caps
3, 5	Corrugated caps	4	Front end of the product
7	Accessory tray	8	Corrugated insert
9	Carton sealing tape		

Table 1: Accessories Kit for Cisco 8011-4G24Y4H-I Router

19- inch Rack Mount Brackets	23- inch Rack Mount Brackets	ETSI Rack Mount Brackets	Wall Mount Brackets	Desktop Brackets	Cable Management Brackets
RCKMT-19-V1	RCKMT-23-V1	RCKMT-ETSI-V1	53-101650-01	NA	CBL-BRKT-V1

Cisco 8011-32Y8L2H2FH Router

Figure 8: Unpacking the Cisco 8011-32Y8L2H2FH Router



1	Regular slotted container (shipping box)	2	Bottom foam cap

3	Rear thermofoam-end cap	4	Front thermofoam-end cap
5	Top view of the product	6, 7	Top foam caps
8	Accessory tray	9	Carton sealing tape

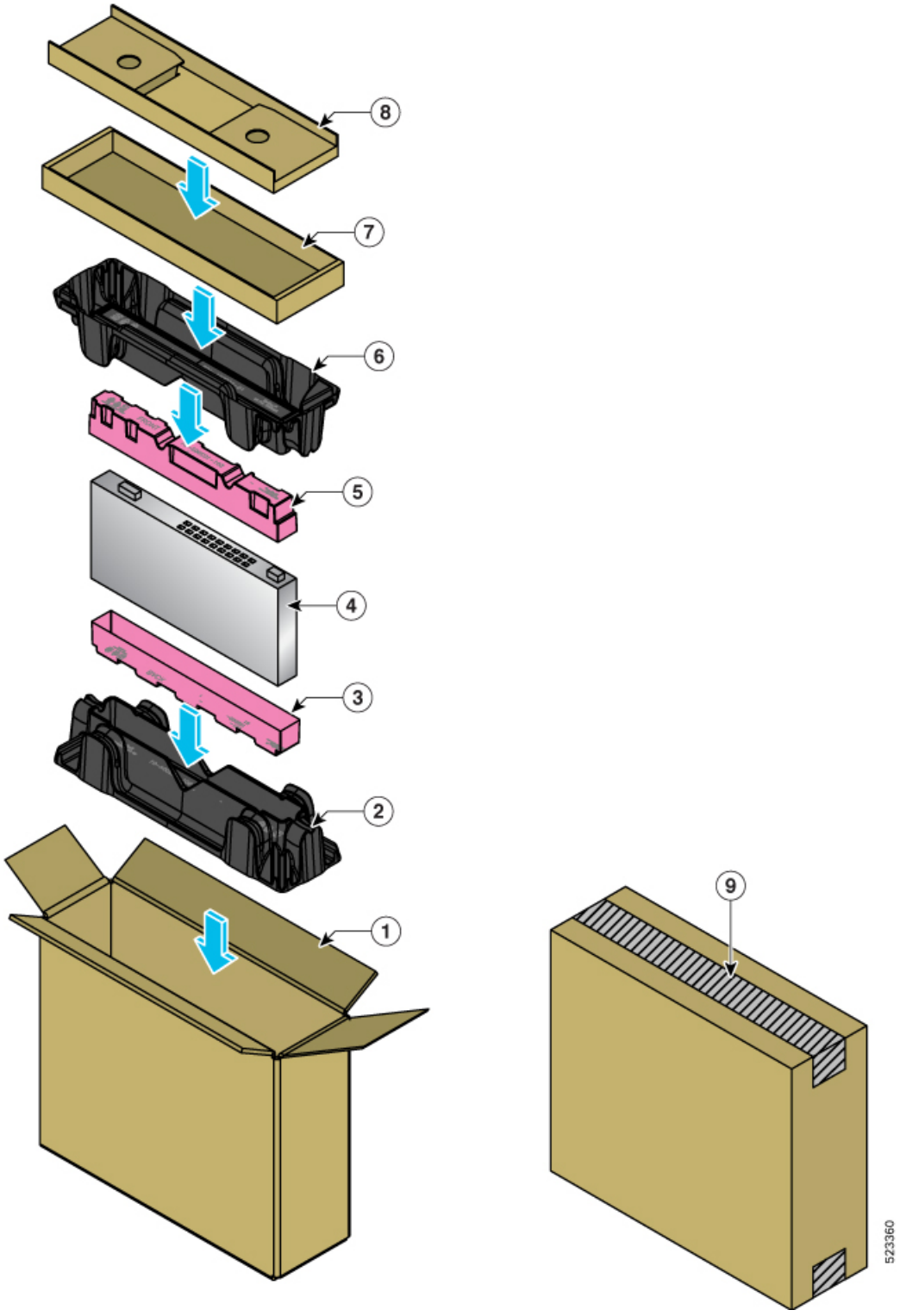
Table 2: Accessories Kit for Cisco 8011-32Y8L2H2FH Router

19- inch Rack Mount Brackets	23- inch Rack Mount Brackets	ETSI Rack Mount Brackets	Desktop Brackets	Cable Management Brackets
RCKMT-19-KIT1 (2-post variant)	RCKMT-23-KIT1 (2-post variant)	RCKMT-ETSI-KIT1 (2-post variant)	NA	CBL-BRKT-V2
RCKMT-19-KIT2 (4-post variant)	RCKMT-23-KIT2 (4-post variant)	RCKMT-ETSI-KIT2 (4-post variant)	NA	NA

Caution If the product is not in use, store the router in the initial packaged condition or in an ESD PE sealed bag with silica gel.

Cisco 8011-12G12X4Y Router

Figure 9: Unpacking the Cisco 8011-12G12X4Y Router



1	Regular Slotted Container (shipping box)	2, 6	Foam end caps
3, 5	Corrugated caps	4	Front end of the product
7	Accessory tray	8	Corrugated insert
9	Carton sealing tape		

Table 3: Accessories Kit for 8010 Router

19- inch Rack Mount Brackets	23- inch Rack Mount Brackets	ETSI Rack Mount Brackets	Wall Mount Brackets	Desktop Brackets	Cable Management Brackets
RCKMT-19-A RCKMT-19-D	RCKMT-23-A RCKMT-23-D	RCKMT-ETSI-A RCKMT-ETSI-D	NA	NA	CBL-BRKT-V1