



## **CTP1000 Series Circuit to Packet Platforms**

# **Hardware Guide**

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*CTP1000 Series Circuit to Packet Platforms Hardware Guide*

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## Chapter 1

# CTP1000 Series Platform Overview

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- CTP1002 Platform on page 3
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## Introducing CTP Platforms

---

Juniper Networks CTP Series Circuit to Packet platforms provide advanced technology and features required to reliably transport legacy time-division multiplexing (TDM) and other circuit-based applications across next-generation IP networks. CTP platforms create an IP packet flow from a serial data or analog voice connection at one end and provide the necessary processing to re-create the serial bit stream or analog signal from the received packet flow at the other end.

CTP platforms provide compact and lightweight chassis, high port density, and multiple Ethernet interfaces. Each CTP platform runs the CTP operating system (CTPOS) and can be managed by the Juniper Networks CTPView Network Management System, a secure, Web-based management tool for provisioning, managing, running diagnostics, monitoring, and reporting on all CTP devices and circuits in the network.

## CTP1002 Platform

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The Juniper Networks CTP1002 Circuit to Packet platform is a 1-U high, half-rack wide chassis designed for tabletop or shelf installation. It can also be installed in a rack with the supplied rack-mounting kit. The CTP1002 platform does not have any removable interface modules or cooling fans, but does use a removable Type II CompactFlash card. It is available in an AC-powered version only. See Figure 1 on page 3.

**Figure 1: CTP1002 Chassis (Front View)**

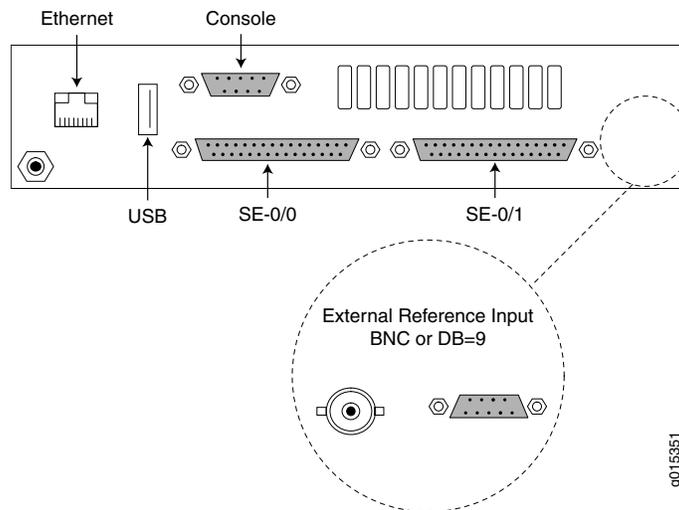


The front panel comprises the following components (see Figure 1 on page 3):

- Power LED—Green when power is connected and the power switch is set to the ON position.
- HDD LED—Red when the drive is in use.
- Front power switch—Set to ON position when **1** is briefly pressed. Set to OFF when **1** is pressed for four or more seconds.
- Removable flash drive—The device must be powered off when you insert or remove the flash drive.

The rear panel comprises the following components (see Figure 2 on page 4):

**Figure 2: CTP1002 Chassis (Rear View)**



- Power input from the external 12-VDC power supply.
- Port 0 and port 1 DB-25 connectors—DB-25 connectors are used for terminating EIA530, RS-232, V.35, 4WTO, and T1 circuits.

The DB-25 port connector pinout is the same as the quad cables used on the larger CTP platforms. See “CTP1000 Interface Module 100-to-25-Pin Cable Pinouts” on page 25 to find pinout information for this connector.

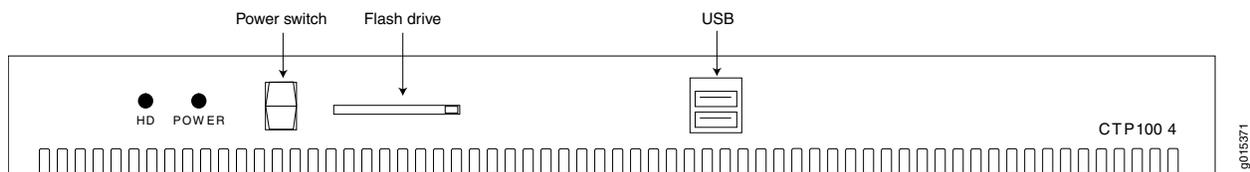
- COM 2 console connection—Provides an asynchronous TTY connection for local configuration of the CTP platform. See “CTP1000 Console Cable Pinouts” on page 29 to find pinout information for this connector.
- Fast Ethernet connector—Provides the 100-Mbps Ethernet connection to the IP network by means of a local Ethernet switch or router.
- USB port.

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- CTP1004 Platform on page 5
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## CTP1004 Platform

The CTP1004 platform is a 1-U high, full-rack wide chassis designed for tabletop or shelf installation. It can also be installed in a rack with the supplied rack-mounting kit. The CTP1004 device does not have any removable interface modules, but does use a removable Type II CompactFlash card and is available in both AC-powered and DC-powered versions. It has multiple cooling fans, and airflow is front to back. See Figure 3 on page 5, Figure 4 on page 6, and Figure 5 on page 6.

**Figure 3: CTP1004 Platform (AC and DC Version, Front View)**



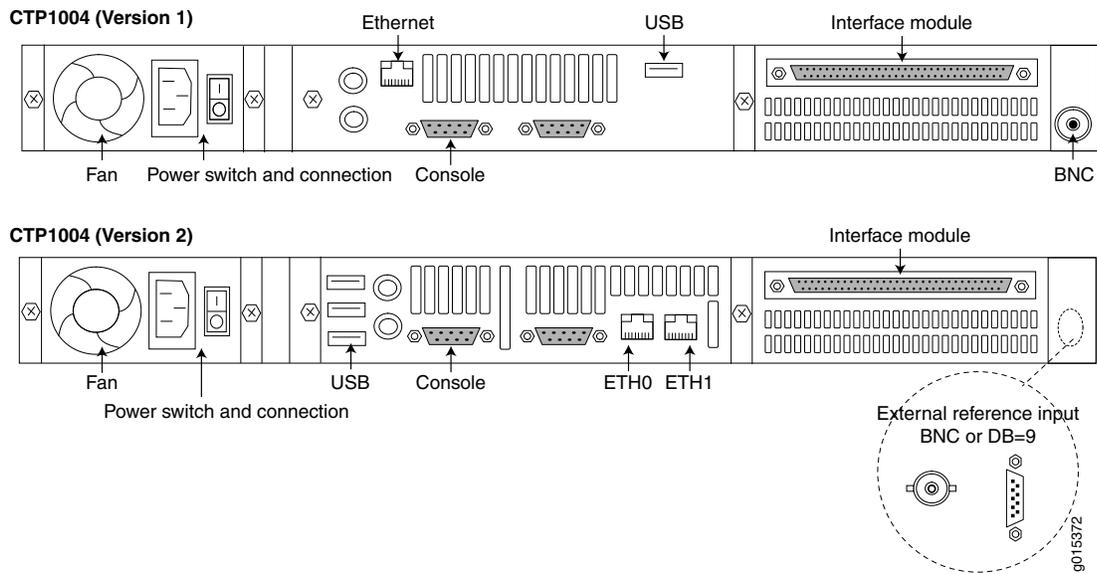
The front panel comprises the following components (see Figure 3 on page 5):

- Power LED—Green when power is connected and the power switch is set to the ON position.
- HDD LED—Red when the flash card is in use.
- Front power switch—Set to ON position when 1 is briefly pressed. Set to OFF when 1 is pressed for four or more seconds.
- Removable flash card—The device must be powered off when you insert or remove the flash card.
- USB ports.

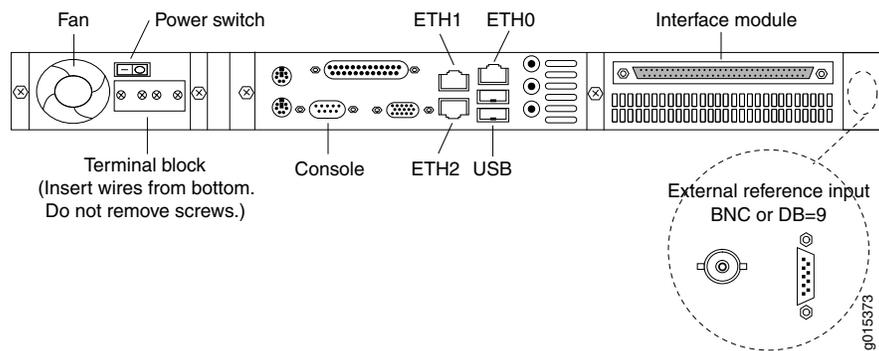
The rear panel comprises the following components (see Figure 4 on page 6 and Figure 5 on page 6):

- Power supply—Uses a standard IEC power cord for the AC version. Uses a 18-AWG fork terminal connector for the DC version. There is no power redundancy for the DC version.
- Ethernet connection—Provides the 100-Mbps Ethernet connection to the IP network by means of a local Ethernet switch or router.
- Console connection—Provides an asynchronous TTY connection for locally configuring the CTP device. See “CTP1000 Console Cable Pinouts” on page 29 to find pinout information for this connector.
- Interface connector—Features a 100-pin connector providing four serial interfaces when used with the CTP quad cable. See “CTP1000 Interface Module 100-to-25-Pin Cable Pinouts” on page 25 to find pinout information for this connector.
- USB ports.

**Figure 4: CTP1004 Platform (AC Version, Rear View)**

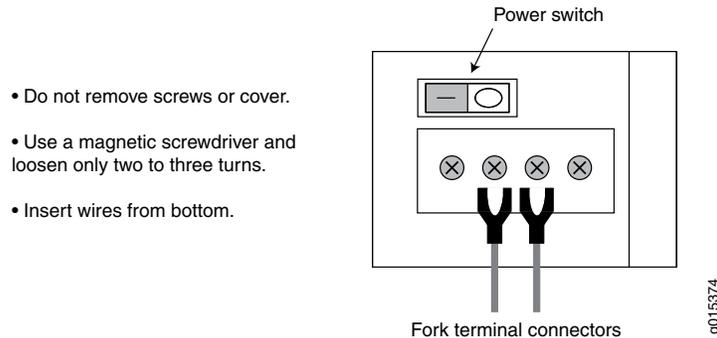


**Figure 5: CTP1004 Platform (DC Version, Rear View)**



**NOTE:** Do not remove the screws or the protective cover for the DC power terminal when cabling for power (see Figure 6 on page 7). Use a magnetic screwdriver to loosen the two inner screws two to three turns.

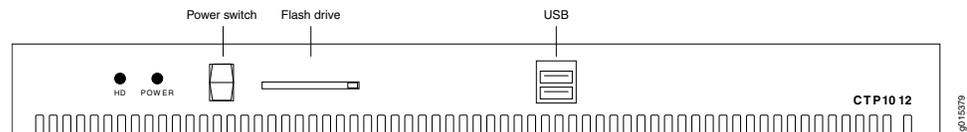
Slide the fork terminal connectors up through the bottom of the protective cover. If you install the wires from the top, they will block the power switch.

**Figure 6: Wiring a CTP1004 Platform (DC Version)**

- Related Topics**
- CTP1002 Platform on page 3
  - CTP1012 Platform on page 7

## CTP1012 Platform

The CTP1012 platform is a 1-U high, full-rack wide chassis designed for tabletop or shelf installation. It can also be installed in a rack with the supplied rack-mounting kit. The CTP1012 device does not have any removable interface modules, but does use a removable Type II CompactFlash card and is available in an AC-powered version. It has multiple cooling fans, and airflow is front to back. See Figure 7 on page 7 and Figure 8 on page 8.

**Figure 7: CTP1012 Platform (AC Version, Front View)**

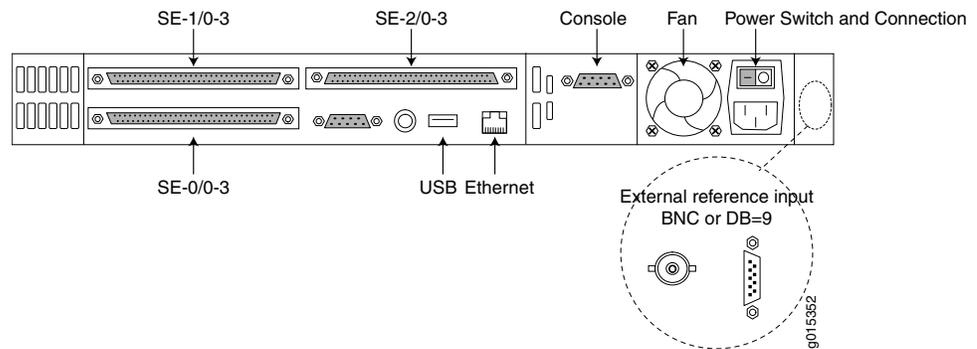
The front panel comprises the following components (see Figure 7 on page 7):

- Power LED—Green when power is connected and the power switch is set to the ON position.
- HDD LED—Red when the flash card is in use.
- Front power switch—Set to ON position when 1 is briefly pressed. Set to OFF when 1 is pressed for four or more seconds.
- Removable flash card—The device must be powered off when you insert or remove the flash card.
- USB ports.

The rear panel comprises the following components (See Figure 8 on page 8):

- Power supply—Uses a standard IEC power cord.
- Ethernet connection—Provides the 100-Mbps Ethernet connection to the IP network by means of a local Ethernet switch or router.
- Console connection—Provides an asynchronous TTY connection for locally configuring the CTP device. See “CTP1000 Console Cable Pinouts” on page 29 to find pinout information for this connector.
- Interface connector—Features a 100-pin connector providing four serial interfaces when used with the CTP quad cable. See “CTP1000 Interface Module 100-to-25-Pin Cable Pinouts” on page 25 to find pinout information for this connector.
- USB ports.

**Figure 8: CTP1012 Platform (AC Version, Rear View)**



- Related Topics**
- CTP1002 Platform on page 3
  - CTP1004 Platform on page 5

## **Part 2**

# **Planning**

- System Specifications on page 11
- Planning and Preparing the Site on page 19
- Equipment Rack Requirements on page 21
- Cable and Pinout Specifications on page 25



## Chapter 2

# System Specifications

- CTP1002 Platform Specifications and Certification on page 11
- CTP1004 Platform Specifications and Certification on page 14
- CTP1012 Platform Specifications and Certification on page 15

### CTP1002 Platform Specifications and Certification

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**Table 1: CTP1002 Platform Specifications**

Category	Specification
<b>Weight</b>	
Chassis only	6 lb (2.72 kg)
<b>Dimensions</b>	
Chassis only	1.75 in. (4.44 cm) high
	8.0 in. (20.32 cm) wide
	12.5 in. (31.75 cm) deep

---

#### Environmental Requirements

**Table 1: CTP1002 Platform Specifications** *(continued)*

<b>Category</b>	<b>Specification</b>
Ambient operating temperature	32 to 104° F (0 to 40° C)
Ambient operating humidity	5% to 90% (noncondensing)
<b>DC Input</b>	N/A

**Table 1: CTP1002 Platform Specifications (continued)**

Category	Specification
<b>AC Input</b>	
Power required	100–240 VAC
AC line frequency	50–60 Hz
Nominal current (115V amps)	< 1.0
Power	100 W
<b>Space Requirements</b>	
	3 ft. (90 cm) behind device or rack.
	Do not block air vents on the front or back of the device.
<b>Airflow</b>	
	CTP 1002 is fanless.
<b>Safety Agency Certification</b>	
	<ul style="list-style-type: none"> <li>■ AS/NZS 60950:2000 Safety of Information Technology Equipment</li> <li>■ CAN/CSA-C22.2, No. 60950-1–03, First Edition, Information Technology Equipment - Safety - Part 1: General Requirements</li> <li>■ EN60825-1, Safety of Laser Products - Part 1: Equipment Class, Requirements, and User's Guide (2001)</li> <li>■ EN 60950-1:2001, First Edition, Information Technology Equipment - Safety - Part 1: General Requirements</li> <li>■ IEC 60950-1(2001-10) Ed. 1.0 Information Technology Equipment - Safety - Part 1: General Requirements</li> <li>■ Low Voltage Directive (2006/95/EC)</li> <li>■ UL 60950-1, First Edition, Information Technology Equipment - Safety - Part 1: General Requirements</li> </ul>
<b>Electromagnetic Emissions Agency Certification</b>	
	<ul style="list-style-type: none"> <li>■ AS/NZS CISPR 22:2004</li> <li>■ EMC Directive (89/336/EEC)</li> <li>■ EN 300 132–2 (Narrowband and Wideband)</li> <li>■ EN55022 Class A (CISPR-22 Class A)</li> <li>■ EN55024, Annex C for WAN Equipment Performance Criteria A, B, and C</li> <li>■ EN 61000-4-2, EN 61000-4-3, EN 61000-4-4, EN 61000-4-6</li> <li>■ ETSI 300-386, Telecommunication Network Equipment; ElectroMagnetic Compatibility (EMC) requirements</li> <li>■ IECS-03 Issue 3 Class A</li> <li>■ FCC Part 15 Class A</li> <li>■ VCCI (Voluntary Control Council for Interference by Information Technology Equipment)</li> </ul>
<b>Related Topics</b>	
	<ul style="list-style-type: none"> <li>■ CTP1004 Platform Specifications and Certification on page 14</li> <li>■ CTP1012 Platform Specifications and Certification on page 15</li> </ul>

## CTP1004 Platform Specifications and Certification

**Table 2: CTP1004 Platform Specifications**

Category	Specification
<b>Weight</b>	
Chassis only	12 lb (5.44 kg)
<b>Dimensions</b>	
Chassis only	1.75 in. (4.44 cm) high
	17.25 in. (43.81 cm) wide
	13.9 in. (35.30 cm) deep
<b>Environmental Requirements</b>	
Ambient operating temperature	32° to 104° F (0° to 40° C)
Ambient operating humidity	5% to 90% (noncondensing)
<b>DC Input</b>	
Voltage	-40 to -72 VDC
Current	1 A @ -48 VDC
Power	48 W
Redundancy (input power)	2 independent line feeds
<b>AC Input</b>	
Power required	100–132 VAC
	200–240 VAC
AC line frequency	50–60 Hz
Nominal current (115V amps)	1.5
Power	150 W
<b>Space Requirements</b>	
	<ul style="list-style-type: none"> <li>■ 3 feet (90 cm) behind device or rack.</li> <li>■ Do not block air vents on the front or back of the router.</li> </ul>
<b>Airflow</b>	
	<ul style="list-style-type: none"> <li>■ Air intake occurs from the front of the device.</li> <li>■ Air is exhausted out the back side of the device.</li> </ul>

**Table 2: CTP1004 Platform Specifications (continued)**

Category	Specification
<b>Safety Agency Certification</b>	<ul style="list-style-type: none"> <li>■ AS/NZS 60950:2000 Safety of Information Technology Equipment</li> <li>■ CAN/CSA-C22.2, No. 60950-1-03, First Edition, Information Technology Equipment - Safety - Part 1: General Requirements</li> <li>■ EN60825-1, Safety of Laser Products - Part 1: Equipment Class, Requirements, and User's Guide (2001)</li> <li>■ EN 60950-1:2001, First Edition, Information Technology Equipment - Safety - Part 1: General Requirements</li> <li>■ IEC 60950-1(2001-10) Ed. 1.0 Information Technology Equipment - Safety - Part 1: General Requirements</li> <li>■ Low Voltage Directive (2006/95/EC)</li> <li>■ UL 60950-1, First Edition, Information Technology Equipment - Safety - Part 1: General Requirements</li> </ul>
<b>Electromagnetic Emissions Agency Certification</b>	<ul style="list-style-type: none"> <li>■ AS/NZS CISPR 22:2004</li> <li>■ EMC Directive (89/336/EEC)</li> <li>■ EN 300 132-2 (Narrowband and Wideband)</li> <li>■ EN55022 Class A (CISPR-22 Class A)</li> <li>■ EN55024, Annex C for WAN Equipment Performance Criteria A, B, and C</li> <li>■ EN 61000-4-2, EN 61000-4-3, EN 61000-4-4, EN 61000-4-6</li> <li>■ ETSI 300-386, Telecommunication Network Equipment; ElectroMagnetic Compatibility (EMC) requirements</li> <li>■ FCC Part 15 Class A</li> <li>■ IECS-03 Issue 3 Class A</li> <li>■ VCCI (Voluntary Control Council for Interference by Information Technology Equipment)</li> </ul>
<b>Related Topics</b>	<ul style="list-style-type: none"> <li>■ CTP1002 Platform Specifications and Certification on page 11</li> <li>■ CTP1012 Platform Specifications and Certification on page 15</li> </ul>

## CTP1012 Platform Specifications and Certification

**Table 3: CTP1012 Platform Specifications**

Category	Specification
<b>Weight</b>	
Chassis only	14 lb (6.35 kg)
<b>Dimensions</b>	
Chassis only	1.75 in. (4.44 cm) high
	17.25 in. (43.81 cm) wide
	17.25 in. (43.81 cm) wide

**Table 3: CTP1012 Platform Specifications (continued)**

Category	Specification
<b>Environmental Requirements</b>	
Ambient operating temperature	32° to 104° F (0° to 40° C)
Ambient operating humidity	5% to 90% (noncondensing)
<b>DC Input</b>	
	N/A
<b>AC Input</b>	
Power required	100–132 VAC 100–240 VAC
AC line frequency	50–60 Hz
Nominal current (115V amps)	1.5
Power	150 W
<b>Space Requirements</b>	
	3 ft. (90 cm) behind device or rack. Do not block air vents on the front or back of the device.
<b>Airflow</b>	
	Air intake occurs from the front of the device. Air is exhausted out the back of the device.
<b>Safety Agency Certification</b>	
	<ul style="list-style-type: none"> <li>■ AS/NZS 60950:2000 Safety of Information Technology Equipment</li> <li>■ CAN/CSA-C22.2, No. 60950-1–03, First Edition, Information Technology Equipment - Safety - Part 1: General Requirements</li> <li>■ EN60825-1, Safety of Laser Products - Part 1: Equipment Class, Requirements, and User's Guide (2001)</li> <li>■ EN 60950-1:2001, First Edition, Information Technology Equipment - Safety - Part 1: General Requirements</li> <li>■ IEC 60950-1(2001-10) Ed. 1.0 Information Technology Equipment - Safety - Part 1: General Requirements</li> <li>■ Low Voltage Directive (2006/95/EC)</li> <li>■ UL 60950-1, First Edition, Information Technology Equipment - Safety - Part 1: General Requirements</li> </ul>

**Table 3: CTP1012 Platform Specifications (continued)**

Category	Specification
<b>Electromagnetic Emissions Agency Certification</b>	<ul style="list-style-type: none"> <li>■ AS/NZS CISPR 22:2004</li> <li>■ EMC Directive (89/336/EEC)</li> <li>■ EN 300 132–2 (Narrowband and Wideband)</li> <li>■ EN55022 Class A (CISPR-22 Class A)</li> <li>■ EN55024, Annex C for WAN Equipment Performance Criteria A, B, and C</li> <li>■ EN 61000-4-2, EN 61000-4-3, EN 61000-4-4, EN 61000-4-6</li> <li>■ ETSI 300-386, Telecommunication Network Equipment; ElectroMagnetic Compatibility (EMC) requirements</li> <li>■ IECS-03 Issue 3 Class A</li> <li>■ FCC Part 15 Class A</li> <li>■ VCCI (Voluntary Control Council for Interference by Information Technology Equipment)</li> </ul>
<b>Related Topics</b>	<ul style="list-style-type: none"> <li>■ CTP1002 Platform Specifications and Certification on page 11</li> <li>■ CTP1004 Platform Specifications and Certification on page 14</li> </ul>



## Chapter 3

# Planning and Preparing the Site

- Before You Install a CTP Platform on page 19
- CTP1000 Environmental Requirements on page 19

### Before You Install a CTP Platform

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Before you install a Juniper Networks CTP Circuit to Packet platform:

- Verify that the electrical supply meets all power requirements. See the system specifications for the applicable CTP model.
- Verify that the site meets all environment specifications. Refer to the environmental requirements and the system specifications for the applicable CTP model.
- Verify that the cables you plan to use meet the specifications, and review the cabling recommendations.
- Verify the operation of all telephone circuits, digital services, and T1 facilities required for installation.
- Ensure that all IP requirements are met, such as IP addresses, subnet masks, and any specific routing protocol information.

### CTP1000 Environmental Requirements

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See one of the following topics for complete environmental specifications:

- CTP1002 Platform Specifications and Certification on page 11
- CTP1004 Platform Specifications and Certification on page 14
- CTP1012 Platform Specifications and Certification on page 15

Choose a location for the device that is dry, relatively dust free, well ventilated, and air conditioned. If you install equipment in a rack, be sure that the floor is capable of supporting the combined weight of the rack and the installed equipment. Place the device in a location with sufficient access to power and network cables.

Like other network devices, the device generates a significant amount of heat. You must provide a balanced environment so that the device performs properly and safely. See the individual system specifications for acceptable ranges of temperature and humidity.

Be sure to allow enough space around the device for adequate ventilation. Inadequate ventilation can cause the device to overheat.



**CAUTION:** Do not block the air vents on the device. Otherwise, the device might overheat.

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**Related Topics** ■ Before You Install a CTP Platform on page 19

## Chapter 4

# Equipment Rack Requirements

- CTP1000 Rack Requirements on page 21
- CTP1000 Mechanical Requirements on page 21
- CTP1000 Space Requirements on page 22
- CTP1000 Rack Installation on page 22
- CTP Cabling Recommendations on page 22

### CTP1000 Rack Requirements

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When allocating equipment rack space, consider the following:

- Type of equipment racks recommended for the system
- Number of equipment racks required to hold your current system configuration
- Future expansion

Make sure that your distribution rack meets basic mechanical and space requirements and complies with conventional standards. In the United States, use *EIA-310-D Cabinets, Racks, Panels, and Associated Equipment, September 1992*.

- Related Topics**
- CTP1000 Mechanical Requirements on page 21
  - CTP1000 Space Requirements on page 22
  - CTP1000 Rack Installation on page 22

### CTP1000 Mechanical Requirements

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Follow these mechanical requirements for your rack:

- Select from the following rack options:
  - Two-post rack—A freestanding enclosed cabinet with two mounting posts in the front
  - Telco-type rack—Two adjacent mounting posts that you must secure to the floor or an overhead structure

- Four-post rack—A freestanding open rack, either open or closed
- The rack must have at least two mounting posts.
- The distance between the mounting holes in the two posts must be 18.31 in.  $\pm$  .063 in., as specified in the EIA-310-D document.
- An optional mounting kit is available for midchassis mounting. Contact your Juniper Networks sales representative for more information.

- Related Topics**
- CTP1000 Rack Requirements on page 21
  - CTP1000 Space Requirements on page 22
  - CTP1000 Rack Installation on page 22

## CTP1000 Space Requirements

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If you use an enclosed rack for the device, ensure that there is a minimum of 3 in. of clearance between the inner side wall and the system. This clearance space ensures adequate air flow.

- Related Topics**
- CTP1000 Mechanical Requirements on page 21
  - CTP1000 Rack Requirements on page 21
  - CTP1000 Rack Installation on page 22

## CTP1000 Rack Installation

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To confirm proper equipment rack installation, verify the following:

- Racks are installed and electrically grounded according to manufacturer instructions.
- Equipment racks are anchored to the floor and, when possible, anchored to the ceiling as well.
- Equipment rack installations comply with applicable local, state, and national codes.

- Related Topics**
- CTP1000 Mechanical Requirements on page 21
  - CTP1000 Rack Requirements on page 21
  - CTP1000 Space Requirements on page 22

## CTP Cabling Recommendations

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We suggest that you comply with the following recommendations:

- Ensure that cable distance and rate limits meet IEEE-recommended maximum speeds and distances for signaling purposes. For information about attenuation and power loss in optical fiber cables see:
  - ANSI T1.646a-1997 Telecommunications – Broadband ISDN - Physical Layer Specification for User-Network Interfaces Including DS1/ATM (1997)
  - ANSI T1.646-1995 Telecommunications – Broadband ISDN - Physical Layer Specification for User-Network Interfaces Including DS1/ATM (1995)
- Ensure that power cables deliver sufficient power to the device.
- Attach laser fiber connectors only to Class 1 laser devices in accordance with IEC 60825-1, Safety of Laser Products - Part 1.
- Route cables so that they do not restrict ventilation or airflow.
- Route cables so that modules and field-replaceable units are easily accessible.
- Route cables in a logical direction to prevent loss of connectivity to other equipment in the rack, associated equipment in adjacent racks, or to the backbone network.
- Consider using cable-management brackets to keep network cables untangled and orderly and to prevent cables from hindering access to other slots.

For additional cable recommendations, consult the document *GR-63-CORE: Network Equipment Building System (NEBS) Requirements: Physical Protection, Issue 2, April 2002*.



## Chapter 5

# Cable and Pinout Specifications

- CTP1000 Interface Module 100-to-25-Pin Cable Pinouts on page 25
- CTP1000 Console Cable Pinouts on page 29
- CTP Fast Ethernet and Power Cables on page 29

### CTP1000 Interface Module 100-to-25-Pin Cable Pinouts

The CTP1004 and CTP1012 devices provide 100-pin connectors for external serial interface connections. The CTP1004 has one connector, and the CTP1012 has three 100-pin connectors. This 100-pin output is on a quad cable (a Revision B or later cable ordered separately) with the other end split into four standard DB-25 connectors, labeled P0, P1, P2, and P3, connected to the serial interface. These port numbers correspond to the port-numbering scheme implemented in the software configuration.

The pinouts for these connections have different configurations for EIA-530, RS-232, voice, and T1 interface signals.

- EIA-530 Connector Interface Signal Pinouts on page 25
- RS-232 Connector Interface Signal Pinouts on page 26
- Voice Interface Signal Pinouts on page 27
- T1 Interface Signal Pinouts on page 28

#### ***EIA-530 Connector Interface Signal Pinouts***

Table 4 on page 25 lists the EIA-530 interface signal pinouts for the 25-pin connector.

**Table 4: EIA-530 Connector Interface Signals**

DB-25 Pin	To/From CTP	Description	Circuit
1	—	Shield	—
2	To	Transmitted data—A	BA
3	From	Received data—A	BB
4	To	Request to send—A	CA
5	From	Clear to send—A	CB

**Table 4: EIA-530 Connector Interface Signals** (continued)

DB-25 Pin	To/From CTP	Description	Circuit
6	From	Data set ready—A	CC
7	—	Signal ground	Ground
8	From	Data carrier detect—A	CF
9	From	Receive signal element timing—B	DD
10	From	Data carrier detect—B	CF
11	To	Transmit signal element timing—B (DTE)	DA
12	From	Transmit signal element timing—B (DCE)	DB
13	From	Clear to send—B	CB
14	To	Clear to send—B	BA
15	From	Transmit signal element timing—A (DCE)	DB
16	From	Received data—B	BB
17	From	Receive signal element timing—A	DD
18	To	Local loopback	LL
19	To	Request to send—B	CA
20	To	Data terminal ready—A	CD
21	To	Remote loopback	RL
22	From	Data set ready—B	CC
23	To	Data terminal ready—B	CD
24	To	Transmit signal element timing—A (DTE)	DA
25	—	Test mode	TM

**RS-232 Connector Interface Signal Pinouts**

Table 5 on page 26 lists the RS-232 interface signal pinouts for the 25-pin connector.

**Table 5: RS-232 Connector Interface Signals**

DB-25 Pin	To/From CTP	Description	Circuit
1	—	Shield	—
2	To	Transmitted data—A	BA

**Table 5: RS-232 Connector Interface Signals** (continued)

DB-25 Pin	To/From CTP	Description	Circuit
3	From	Received data—A	BB
4	To	Request to send—A	CA
5	From	Clear to send—A	CB
6	From	Data set ready—A	CC
7	—	Signal ground	Ground
8	From	Data carrier detect—A	CF
15	From	Transmit signal element timing—A (DCE)	DB
17	From	Receive signal element timing—A	DD
20	To	Data terminal ready—A	CD
22	From	Data set ready—B	CC
24	To	Transmit signal element timing—A (DTE)	DA

### Voice Interface Signal Pinouts

Table 6 on page 27 lists the voice interface signal pinouts for the 25-pin connector.

**Table 6: Voice Interface Signals**

DB-25 Pin	To/From CTP	Description	Circuit
1	—	Shield	—
2	To	Channel 0 voice RX—A	Channel 0
3	From	Channel 0 voice TX—A	Channel 0
4	To	Channel 1 voice signaling input A	Channel 1
5	From	Channel 1 voice signaling output A	Channel 1
6	From	Channel 0 voice signaling output A	Channel 0
9	From	Channel 1 voice TX—A	Channel 1
11	To	Channel 1 voice RX—B	Channel 1
13	From	Channel 1 voice signaling output—B	Channel 1
14	To	Channel 0 voice RX—B	Channel 0
16	From	Channel 0 voice TX—B	Channel 0

**Table 6: Voice Interface Signals** (continued)

DB-25 Pin	To/From CTP	Description	Circuit
17	From	Channel 1 voice TX—B	Channel 1
19	To	Channel 1 voice signaling input—B	Channel 1
20	To	Channel 0 voice signaling input—A	Channel 0
22	From	Channel 0 voice signaling output—B	Channel 0
23	To	Channel 0 voice signaling input—B	Channel 0
24	To	Channel 1 voice RX—A	Channel 1

### T1 Interface Signal Pinouts

Table 7 on page 28 lists the T1 interface signal pinouts for the 25-pin connector.

**Table 7: T1 Interface Signals**

DB-25 Pin	To/From CTP	Description
1	—	Shield
2	To	Transmitted data—A
3	From	Received data—A
7	—	Signal ground
14	To	Transmitted data—B
16	From	Received data—B

**Related Topics** ■ CTP Fast Ethernet and Power Cables on page 29

## CTP1000 Console Cable Pinouts

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A console is connected to the CTP1002, CTP1004, and CTP1012 devices with a DB-9 crossover cable. The console connections are configured to the following parameters:

- Speed: 9600 bps
- Data bits: 8
- Stop bits: 1
- Flow control: Xon/Xoff
- Parity: none

Table 8 on page 29 lists console cable pinouts for CTP1000 devices.

**Table 8: CTP1000 Series Console Cable Pinouts**

CTP DB-9 Pin	Console DB-9 Pin
2 RCV	3 XMT
3 XMT	2 RCV
4 DTR	6 DSR
5 GND	5 GND
6 DSR	4 DTR
7 RTS	8 CTS
8 CTS	7 RTS
9 RNG	—

**Related Topics** ■ CTP Fast Ethernet and Power Cables on page 29

## CTP Fast Ethernet and Power Cables

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- Fast Ethernet Cables on page 30
- DC Power Cables on page 30

### ***Fast Ethernet Cables***

The Ethernet connection is a standard RJ-45 connector. Typically, a straight-through cable is used to connect to a switch, and a crossover cable is used to connect to a router.

### ***DC Power Cables***

For CTP chassis with DC power options, we recommend 18-AWG power cables.

## **Part 3**

# **Safety**

- General Safety Guidelines on page 33
- Hardware Compliance on page 35



## Chapter 6

# General Safety Guidelines

- CTP Safety Guidelines and Warnings on page 33

### CTP Safety Guidelines and Warnings

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For your safety, before installing the device, review all safety warnings in this section.



**WARNING:** The recommended maximum ambient temperature is 40°C (104° F). For safe operation take into consideration the internal temperature within the rack.

---



**WARNING:** Install equipment in the rack from the bottom upward. Doing this helps maintain the stability of the rack and reduces the chance of the rack tipping over.

---



**WARNING:** Do not insert any metal object, such as a screwdriver, into an open slot or the backplane. Doing so can cause electric shock and serious burns.

---



**WARNING:** For the larger CTP series devices, three people are required to install the device in a rack: two to lift the device into position and one to screw it to the rack.

---



**WARNING:** Connect the device or rack to ground (earth), and ensure that a reliable grounding path is maintained in the rack.

---



**WARNING:** Do not work on the device or connect or disconnect cables during lightning activity.

---



**WARNING:** Be sure that circuit breakers for the power source are in the OFF position before attaching power cables.

---



**WARNING:** Before servicing the device, turn off the power.

---



**WARNING:** Remove jewelry (including rings, necklaces, and watches) before working on equipment that is connected to power lines. Metal objects heat up when connected to power and ground and can cause serious burns or become welded to the terminals.

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**CAUTION:** Evaluate the overall loading of the branch circuit before you install any equipment into a rack.

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- Related Topics**
- Federal Communications Commission (FCC) Statement on page 37
  - FCC Requirements for Consumer Products on page 37
  - Food and Drug Administration, Center for Devices and Radiological Health on page 38
  - Compliance with Canadian Regulations on page 38
  - Before You Install a CTP Platform on page 19

## Chapter 7

# Hardware Compliance

- Declaration of Conformity for CTP1000 Platforms on page 35
- Federal Communications Commission (FCC) Statement on page 37
- FCC Requirements for Consumer Products on page 37
- Food and Drug Administration, Center for Devices and Radiological Health on page 38
- Compliance with Canadian Regulations on page 38

### **Declaration of Conformity for CTP1000 Platforms**

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Figure 9 on page 36 shows the declaration of conformity for the CTP1000 platforms.

**Figure 9: CTP1000 Platforms Declaration of Conformity**



## Declaration of Conformity

Juniper Networks, Inc.  
10 Technology Park Drive  
Westford, MA 01886 USA

declares that under our sole responsibility the product(s)

**Circuit-to-Packet Network Device**  
**Models CTP1002, CTP1004, CTP1012**

are in conformity with the provisions of the following EC Directives, including all amendments,  
and with national legislation implementing these directives:

**Low Voltage Directive 73/23/EEC**  
**EMC Directive 89/336/EEC**

and that the following harmonized standards have been applied

EN 60950-1:2001+A11  
EN 60825-1:1994+A1+A2

EN 55024:1998 +A1 + A2  
EN 55022:1998+A1(2000)+A2(2003) Class A

A handwritten signature in black ink that reads "Susanne Delisle".

Place  
Westford, MA, USA

Signature  
Susanne Delisle

Date  
07/19/2007

- Related Topics**
- CTP1002 Platform Specifications and Certification on page 11
  - CTP1004 Platform Specifications and Certification on page 14

- CTP1012 Platform Specifications and Certification on page 15

## Federal Communications Commission (FCC) Statement

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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 the user will be required to correct the interference at their own expense.

This equipment is designed for use with properly shielded and terminated cables. Refer to the installation sections of this manual before operation.

Reference: CFR 47, Part 15J, Sect 15.105 April 18, 1989

**Caution:** Changes or modifications to this equipment not expressly approved by the party responsible for compliance could void the user's authority to operate the equipment.

- Related Topics**
- FCC Requirements for Consumer Products on page 37
  - Food and Drug Administration, Center for Devices and Radiological Health on page 38
  - Compliance with Canadian Regulations on page 38

## FCC Requirements for Consumer Products

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This equipment complies with FCC rules, Part 68. On the back side of this equipment is a label that contains, among other information, the FCC Registration Number and Ringer Equivalence Number (REN) for this equipment. If requested, provide this information to your telephone company.

If this equipment causes harm to the telephone network, the telephone company may discontinue your service temporarily. If possible, they will notify you in advance. But if advance notice is not practical, you will be notified as soon as possible. You will be advised of your right to file a complaint with the FCC.

Your telephone company may make changes in its facilities, equipment, operations, or procedures that could affect the proper operation of your equipment. If they do, you will be given advance notice to give you an opportunity to maintain uninterrupted service.

If you experience trouble with this equipment, please contact the manufacturer for warranty/repair information. The telephone company may ask that you disconnect

this equipment from the network until the problem has been corrected or until you are sure that the equipment is not malfunctioning.

- Related Topics**
- Federal Communications Commission (FCC) Statement on page 37
  - Food and Drug Administration, Center for Devices and Radiological Health on page 38
  - Compliance with Canadian Regulations on page 38

## **Food and Drug Administration, Center for Devices and Radiological Health**

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This equipment complies with 21 CFR 1040.10 and 1040.11 for the safe use of lasers.

- Related Topics**
- Federal Communications Commission (FCC) Statement on page 37
  - FCC Requirements for Consumer Products on page 37
  - Compliance with Canadian Regulations on page 38

## **Compliance with Canadian Regulations**

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- Industry Canada Notice on page 38
- Canadian Department of Communications Explanatory Notes on page 40

### **Industry Canada Notice**

- Industry Canada Notice CS-03 on page 38
- Avis CS-03 d'Industrie Canada on page 39

### **Industry Canada Notice CS-03**

The Industry Canada label identifies certified equipment. This certification means that the equipment meets certain telecommunications network protective, operation and safety requirements as prescribed in the appropriate Terminal Equipment Technical Requirements document(s). The Department does not guarantee that the equipment will operate to the user's satisfaction. Before installing this equipment, users should ensure that it is permissible to be connected to the facilities of the local telecommunications company. The equipment must also be installed using an acceptable method of connection. The customer should be aware that compliance with the above conditions may not prevent degradation of service in some situations.

Repairs to certified equipment should be coordinated by a representative designated by the supplier. Any repairs or alterations made by the user to this equipment, or equipment malfunctions, may give the telecommunications company cause to request the user to disconnect the equipment.

Users should ensure for their own protection that the electrical ground connections of the power utility, telephone lines and internal metallic water pipe system, if present, are connected together. This precaution may be particularly important in rural areas.

**Caution:** Users should not attempt to make such connections themselves, but should contact the appropriate electric inspection authority, or electrician, as appropriate.

**Notice:** The Ringer Equivalence Number (REN) assigned to each terminal device provides an indication of the maximum number of terminals allowed to be connected to a telephone interface. The termination on an interface may consist of any combination of devices subject only to the requirement that the sum of the Ringer Equivalence Numbers of all the devices does not exceed 5.

### ***Avis CS-03 d'Industrie Canada***

L'étiquette du ministère des Communications du Canada indique que l'appareillage est certifié, c'est-à-dire qu'il respecte certaines exigences de sécurité et de fonctionnement visant les réseaux de télécommunications. Le ministère ne garantit pas que l'appareillage fonctionnera à la satisfaction de l'utilisateur. Avant d'installer l'appareillage, s'assurer qu'il peut être branché aux installations du service de télécommunications local. L'appareillage doit aussi être raccordé selon des méthodes acceptées. Le client doit toutefois prendre note qu'une telle installation n'assure pas un service parfait en tout temps.

Les réparations de l'appareillage certifié devraient être confiées à un service d'entretien canadien désigné par le fournisseur. En cas de réparation ou de modification effectuées par l'utilisateur ou de mauvais fonctionnement de l'appareillage, le service de télécommunications peut demander le débranchement de l'appareillage.

Pour leur propre sécurité, les utilisateurs devraient s'assurer que les mises à la terre des lignes de distribution d'électricité, des lignes téléphoniques et de la tuyauterie métallique interne sont raccordées ensemble. Cette mesure de sécurité est particulièrement importante en milieu rural.

**Attention:** Les utilisateurs ne doivent pas procéder à ces raccordements eux-mêmes mais doivent plutôt faire appel aux pouvoirs de réglementation en cause ou à un électricien, selon le cas.

**Avis:** Veuillez prendre note que pour tout appareillage supportant des lignes de type "loopstart," l'indice d'équivalence de la sonnerie (IES) assigné à chaque dispositif terminal indique le nombre maximal de terminaux qui peuvent être raccordés à une interface. La terminaison d'une interface téléphonique peut consister en une combinaison de quelques dispositifs, à la seule condition que la somme d'indices d'équivalence de la sonnerie de tous les dispositifs n'excède pas 5. Le REN figure sur l'étiquette "FCC Rules Part 68" située sur le support du module ou à l'arrière de l'unité.

### **Canadian Department of Communications Explanatory Notes**

- DOC Explanatory Notes: Equipment Attachment Limitations on page 40
- Notes explicatives du ministère des Communications: limites visant les accessoires on page 40

#### ***DOC Explanatory Notes: Equipment Attachment Limitations***

The Canadian Department of Communications label identifies certified equipment. This certification meets certain telecommunication network protective, operational and safety requirements. The department does not guarantee that the equipment will operate to the users satisfaction.

Before installing the equipment, users should ensure that it is permissible to be connected to the facilities of the local telecommunications company. The equipment must also be installed using an acceptable method of connection. In some cases, the company's inside wiring associated with a single line individual service may be extended by means of a certified connector assembly (telephone extension cord). The customer should be aware that compliance with the above condition may not prevent degradation of service in some situations.

Repairs to certified equipment should be made by an authorized Canadian maintenance facility designated by the supplier. Any repairs or alterations made by the user to this equipment, or equipment malfunctions, may give the telecommunications company cause to request the user to disconnect the equipment.

Users should ensure for their own protection that the electrical ground connections of the power utility, telephone lines and internal metallic water pipe system, if present, are connected together. This precaution may be particularly important in rural areas.

**Caution:** Users should not attempt to make such connections themselves, but should contact the appropriate electrical inspection authority, or electrician, as appropriate.

#### ***Notes explicatives du ministère des Communications: limites visant les accessoires***

L'étiquette du ministère des Communications du Canada indique que l'appareillage est certifié, c'est-à-dire qu'il respecte certaines exigences de sécurité et de fonctionnement visant les réseaux de télécommunications. Le ministère ne garantit pas que l'appareillage fonctionnera à la satisfaction de l'utilisateur.

Avant d'installer l'appareillage, s'assurer qu'il peut être branché aux installations du service de télécommunications local. L'appareillage doit aussi être raccordé selon des méthodes acceptées. Dans certains cas, le câblage interne du service de télécommunications utilisé pour une ligne individuelle peut être allongé au moyen d'un connecteur certifié (prolongateur téléphonique). Le client doit toutefois prendre note qu'une telle installation n'assure pas un service parfait en tout temps.

Les réparations de l'appareillage certifié devraient être confiées à un service d'entretien canadien désigné par le fournisseur. En cas de réparation ou de modification effectuées par l'utilisateur ou de mauvais fonctionnement de

l'appareillage, le service de télécommunications peut demander le débranchement de l'appareillage.

Pour leur propre sécurité, les utilisateurs devraient s'assurer que les mises à la terre des lignes de distribution d'électricité, des lignes téléphoniques et de la tuyauterie métallique interne sont raccordées ensemble. Cette mesure de sécurité est particulièrement importante en milieu rural.

**Attention:** Les utilisateurs ne doivent pas procéder à ces raccordements eux-mêmes mais doivent plutôt faire appel aux pouvoirs de réglementation en cause ou à un électricien, selon le cas.

- Related Topics**
- Federal Communications Commission (FCC) Statement on page 37
  - FCC Requirements for Consumer Products on page 37
  - Food and Drug Administration, Center for Devices and Radiological Health on page 38



## **Part 4**

# **Installation**

- Unpacking and Inspecting the CTP Platform on page 45
- Installing the Chassis on page 49
- Cabling on page 51
- Powering On on page 53



## Chapter 8

# Unpacking and Inspecting the CTP Platform

- Before You Unpack the CTP Platform on page 45
- Unpacking the CTP Device on page 45
- Inspecting Platform Components and Accessories on page 46
- If You Detect or Suspect Damage on page 46
- Contacting Juniper Networks on page 47

## Before You Unpack the CTP Platform

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Before you begin unpacking the device, be sure you have the following tools:

- No. 2 Phillips screwdriver
- Utility knife
- Mechanical lift, or at least two people to assist in lifting

### Related Topics

- Unpacking the CTP Device on page 45
- Inspecting Platform Components and Accessories on page 46
- If You Detect or Suspect Damage on page 46
- Contacting Juniper Networks on page 47

## Unpacking the CTP Device

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Depending on the device, it may be delivered boxed, bolted, and strapped to a skid. For your convenience, we recommend that you unpack the device in the location where you want to install it.



**WARNING:** For the larger CTP series devices, three people are required to install the device in a rack: two to lift the device into position and one to screw it to the rack.

---

To unpack the device:

1. Cut the two straps that secure the carton to the skid, open the carton from the top, and remove the box of accessories that sits on top of the device.
2. Unlock the four plastic clips that hold the box to the skid by squeezing them in their center and pulling out, and then lift the carton off the device.
3. Remove the three screws that attach each of the two L-brackets to the device.
4. To avoid scratching the device when removing it from the skid, detach one of the L-brackets from the skid by removing the three screws.

- Related Topics**
- Before You Unpack the CTP Platform on page 45
  - Inspecting Platform Components and Accessories on page 46
  - If You Detect or Suspect Damage on page 46
  - Contacting Juniper Networks on page 47

## Inspecting Platform Components and Accessories

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After you remove the equipment from the shipping containers:

- Confirm the contents of each container.
- Inspect all external surfaces and external connectors for visible signs of damage.
- Inspect all accessories shipped with each unit.
- Document any damage noted during your inspection.
- Confirm that the platform has the correct number and type of modules for your ordered configuration.

- Related Topics**
- Before You Unpack the CTP Platform on page 45
  - Unpacking the CTP Device on page 45
  - If You Detect or Suspect Damage on page 46
  - Contacting Juniper Networks on page 47

## If You Detect or Suspect Damage

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If you detect or suspect damage to any equipment:

- Contact the shipper responsible for delivery, and formally report the damage.
- Contact your Juniper Networks sales representative or reseller.

- Related Topics**
- Before You Unpack the CTP Platform on page 45
  - Unpacking the CTP Device on page 45
  - Inspecting Platform Components and Accessories on page 46
  - Contacting Juniper Networks on page 47

## Contacting Juniper Networks

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Please contact Juniper Networks at 1-888-314-JTAC (from the United States, Canada, or Mexico) or 1-408-745-9500 (from elsewhere), or contact your sales representative if you have any questions or concerns. See “Contacting Customer Support” on page 75 for complete contact information.

- Related Topics**
- Before You Unpack the CTP Platform on page 45
  - Unpacking the CTP Device on page 45
  - Inspecting Platform Components and Accessories on page 46
  - If You Detect or Suspect Damage on page 46



## Chapter 9

# Installing the Chassis

- Before You Install the CTP1000 Platform on page 49
- Installing the CTP1000 Platform in Freestanding Mode on page 49
- Installing the CTP1000 Platform in a Rack on page 50

### Before You Install the CTP1000 Platform

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Before installing the platform:

- Refer to the platform specifications for the particular CTP model or series.
- Have a plan for installing the device that takes into consideration future expansion.
- Have the tools and accessories needed to complete the installation.
- Read and understand the clearance requirements for the front and back of the chassis for cable routing and other unit access. See “CTP1000 Environmental Requirements” on page 19 for more information.
- Read and understand the clearance requirements for the top and bottom of the chassis to ensure adequate ventilation.
- Prepare the equipment racks by measuring and marking space for each device and plenum you plan to install.

- Related Topics**
- Installing the CTP1000 Platform in Freestanding Mode on page 49
  - Installing the CTP1000 Platform in a Rack on page 50

### Installing the CTP1000 Platform in Freestanding Mode

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When installing the device on a table top or in any other freestanding mode, be sure to leave enough space around the device for adequate ventilation. Position the chassis with easy access to the connections that it needs for power, local communications, and remote communications.



**WARNING:** At least two people are required to lift the device. Three people are required for the heavier CTP platforms.

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**CAUTION:** To prevent electrostatic damage to the device and its components, make sure that persons handling the device wear an antistatic device.

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- Related Topics**
- Before You Install the CTP1000 Platform on page 49
  - Installing the CTP1000 Platform in a Rack on page 50
  - Cabling the CTP1000 Platform Overview on page 51

## Installing the CTP1000 Platform in a Rack

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To install the CTP platform in a rack, you need:

- Phillips screwdriver
- Four 10-32 x 3/8 Phillips screws for each device to be installed

Follow these guidelines:

1. Following your installation plan, use a tape measure and marking pen to measure and mark space on each equipment rack for each platform component. For horizontal spacing, follow Network Equipment Building System (NEBS) requirements.
2. With one person standing on the left side of the device and another standing on the right side, lift the device into the rack.
3. Position the device in its designated location in the equipment rack. Make sure the holes of the mounting brackets align evenly with the holes of the equipment rack on both sides.
4. Starting at the bottom of the device, secure the device in the equipment rack by using the 10-32 x 3/8 Phillips screws. Have a third person do this for the larger and heavier CTP chassis.
5. Connect the necessary cables. (See “Cabling the CTP1000 Platform Overview” on page 51 for instructions about installing the cables.)

- Related Topics**
- Before You Install the CTP1000 Platform on page 49
  - Installing the CTP1000 Platform in Freestanding Mode on page 49
  - Cabling the CTP1000 Platform Overview on page 51

## Chapter 10

# Cabling

- Cabling the CTP1000 Platform Overview on page 51
- Required Tools, Wires, and Cables for the CTP1000 Platform on page 51
- CTP Fast Ethernet and Power Cables on page 52

### **Cabling the CTP1000 Platform Overview**

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Cabling the CTP platform requires the following main tasks:

1. Familiarize yourself with the module ports, and ensure that you have the cables and wires needed to complete each cabling procedure.
2. Read and understand all safety warnings. (See “CTP Safety Guidelines and Warnings” on page 33.)
3. Connect timing ports.
4. Connect grounding wires to the chassis.
5. Connect the power cables from the power source to the power supply.
6. Connect the interface modules to their appropriate network interface.

- Related Topics**
- CTP Cabling Recommendations on page 22
  - Required Tools, Wires, and Cables for the CTP1000 Platform on page 51
  - Setting Up Management Access on the CTP1000 Platform on page 59
  - CTP1000 Console Port Setup on page 59

### **Required Tools, Wires, and Cables for the CTP1000 Platform**

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Cabling your device takes only a few minutes. You need the following items and the cables listed in Table 9 on page 52 for proper installation:

- 1/8-inch flathead screwdriver
- 3/8-inch wrench or 3/8-inch nut-driver
- No. 2 Phillips screwdriver

- Ground wires—We recommend a minimum of 18-AWG ground wire for AC and DC-powered versions, if applicable.
- Two #10 keps nuts (supplied) to connect the ground (earth) wire to the ground terminal.
- Power module wiring—We recommend a minimum of 18-AWG wire for the device with a dual stud terminal lug with 5/8-inch spacing.

Consider the distance from the connection point and the configuration of the device when determining the size of wire used.

**Table 9: Required Cables**

Connection	Port and Cable Used
Management connection between the processor module and the LAN	One 10/100Base-T Ethernet management port with an RJ-45 connector.
Management connection between the processor module and a management console	One RS-232 port with a DB-9 connector for VT100 management access.
Direct connections to interface modules	Cables vary depending on module.

- Related Topics**
- Cabling the CTP1000 Platform Overview on page 51

## CTP Fast Ethernet and Power Cables

- Fast Ethernet Cables on page 52
- DC Power Cables on page 52

### **Fast Ethernet Cables**

The Ethernet connection is a standard RJ-45 connector. Typically, a straight-through cable is used to connect to a switch, and a crossover cable is used to connect to a router.

### **DC Power Cables**

For CTP chassis with DC power options, we recommend 18-AWG power cables.

## Chapter 11

# Powering On

- Before You Power On the CTP1000 Platform on page 53
- Powering On the CTP1000 Platform on page 53
- Powering Off the CTP Platform on page 56

### Before You Power On the CTP1000 Platform

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Before powering on the device, make sure you complete the following tasks. See the appropriate sections for information about these tasks.



**WARNING:** Be sure the power source is turned off and the device is turned off before you perform the installation tasks.

- Installing a CTP Interface Module, Processor Module, or Clock Module
- Cabling the CTP Platform for DC Power
- Setting Up Management Access on the CTP1000 Platform on page 59

- Related Topics**
- Powering On the CTP1000 Platform on page 53
  - Powering Off the CTP Platform on page 56

### Powering On the CTP1000 Platform

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**NOTE:** In this procedure we assume that the device is already connected to a power source. If using a DC power supply, see Cabling the CTP Platform for DC Power.

For specifications on the electrical requirements for the device, see one of the following topics:

- CTP1002 Platform Specifications and Certification on page 11
- CTP1004 Platform Specifications and Certification on page 14
- CTP1012 Platform Specifications and Certification on page 15



**CAUTION:** Evaluate the overall loading of the branch circuit before you install any equipment into a rack.

---

To power on the device:

1. Verify that the power source is operational.
2. Inspect all grounding and power connections to the device chassis.
3. Confirm that all cable connections are secure.
4. Switch any available power switches to ON.
5. Monitor LEDs to verify that the device is booting properly.

The device goes through a boot process. When a prompt appears on the system console, the device is ready to be configured. If the system is new, the device boots to a first boot script. If the system is already operational, it boots to a login prompt.

The series of login prompts requires the following settings:

1. Default username (ctp) and password (ctp). (We recommend that you change the root password after entering the default.)
2. Supported protocol or protocols—(0) IPv4 only, (1) IPv6 only, or (2) IPv4 and IPv6. Enter the appropriate number value.
3. Default interface—From the list of available devices, such as eth0 and eth1 (or more), enter the one to be the default.
4. Hostname of the device.
5. IP address of the interface—Enter the IP address of the selected interface, or accept the loopback address (127.0.0.1) by default.
6. Netmask of the IP address—Enter the netmask (such as 255.255.255.128), or accept 255.255.255.0 as the default.
7. Gateway IP address—Enter the IP address of the gateway, or accept the local address (127.0.0.1) as the default.
8. Maximum transmission unit (MTU)—Enter the MTU in bytes, or accept 1500 bytes as the default.
9. Static routes added to the default interface, if any.
10. Date and time GMT (more precisely, UTC)—Enter these separately in digits for the month, day, hour, and minutes in Coordinated Universal Time (UTC), or accept the internal settings.

The device goes into startup mode.

For example:

```
...
***** Setting up the root password *****
Changing root's password!
Changing password for user root.
```

```

New password:
Retype new password:
BAD PASSWORD: it is too short
passwd: all authentication tokens updated successfully.
***** Setting up the network *****
Configure supported protocols:
0) IPv4 Only
1) IPv6 Only
2) IPv4 and IPv6
Please select your option (rtn for 0):

There are 4 ethernet devices available for use. The default device
is the device through which the default gateway can be accessed.

Ctp circuits can run over any ethernet device, default or not.
A default device must be configured, other devices may be configured
and enabled, or disabled. Here is a list of the available devices
and their descriptions:

    eth0: 10/100/1000 Copper (front)
    eth1: 10/100/1000 Copper (back)
    eth2: 1000 Fiber (left)
    eth3: 1000 Fiber (right)

What device would you like to make the IPV4 default device? (rtn for eth0): eth1
OK, eth1 (10/100/1000 Copper (back)) will be configured as IPV4 default device.

Please input the hostname (return for (none)): nova_54

==== Configuration for eth1 (default device):
Please input the ip (return for 127.0.0.1): 172.25.61.54
Please input the netmask (return for 255.255.255.0): 255.255.255.128
Please input the gateway (return for 127.0.0.1): 172.25.61.1
Please input the mtu in bytes (return for 1500):

Add route to interface eth1 [n]

=====
=== OS Security level set to LOW ===
=====

***** Setting up date/time *****
Setting the date (GMT). Please input the year [2008-2020] (return for 2010):

Setting the date (GMT). Please input the month [1-12] (return for 01):

Setting the date (GMT). Please input the day [1-31] (return for 11):

Setting the date (GMT). Please input the hour [0-23] (return for 20):

Setting the date (GMT). Please input the minute [0-59] (return for 22):

INIT: Entering runlevel: 3
Entering non-interactive startup
...

```

During initial power-on, the components of the platform run boot code, go through a series of self-diagnostic tests, and synchronize with each other.

When the tests are complete, use the LEDs on each module to determine the status of the device. Observe the module LEDs on the front or rear components.

- Related Topics**
- Before You Power On the CTP1000 Platform on page 53
  - Powering Off the CTP Platform on page 56

## Powering Off the CTP Platform

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Before you power off the device, enter the **halt** command to temporarily suspend the device's operation.



**CAUTION:** If you do not use the **halt** command before removing or powering down the device, the device's CompactFlash card might become corrupted.

---

## **Part 5**

# **Configuration**

- Accessing the CTP1000 Platform on page 59



## Chapter 12

# Accessing the CTP1000 Platform

- Setting Up Management Access on the CTP1000 Platform on page 59
- CTP1000 Console Port Setup on page 59
- Using HyperTerminal with the CTP1000 Platform on page 60
- Connecting Directly to the CTP1000 Platform on page 60
- CTP1000 Platform SSH Setup on page 61

## Setting Up Management Access on the CTP1000 Platform

---

Before you power on the device, you must set up a management console. You use the console to communicate with the device during the power-on process, to set an IP address, and to manage the system using the command-line interface (CLI).

You can monitor and manage the system through either of these methods:

- Console terminal—Connect a console (PC, Macintosh, or UNIX workstation) directly to the device's RS-232 serial port.
- Remote console—Connect 10/100Base-T to an Ethernet port, and run SSH from a remote console.

For initial access to the system, you need to physically connect your console directly to the device's RS-232 port. Through this connection you use the CLI to set an IP address on the device. After you configure the IP address, you can access the device remotely (for example, through SSH).

- Related Topics**
- CTP1000 Console Port Setup on page 59
  - Using HyperTerminal with the CTP1000 Platform on page 60
  - Connecting Directly to the CTP1000 Platform on page 60
  - CTP1000 Platform SSH Setup on page 61

## CTP1000 Console Port Setup

---

You can connect a console terminal (PC, Macintosh, or UNIX workstation) through the RS-232 terminal port. When you connect a console directly to the device, you can configure the device without an IP address.

To communicate with the device, you must have a terminal emulation program running on your PC or Macintosh. You can use any terminal emulation program, such as HyperTerminal. A UNIX workstation can use the emulator TIP.

- Related Topics** ■ Setting Up Management Access on the CTP1000 Platform on page 59

## Using HyperTerminal with the CTP1000 Platform

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If your console uses a version of Microsoft Windows (such as Windows XP or Windows NT 4.0) that supports the HyperTerminal application, you can access the device through HyperTerminal.

1. Click the **Start** button and select **Programs, Accessories, Communications, and HyperTerminal**.
2. In the HyperTerminal window, select **HyperTerminal**.
3. In the Connection Description dialog box, enter a name for your device in the Name field.
4. Select any icon to represent your terminal emulation, and click **OK**.
5. In the Connect To dialog box, in the Connect using field, select the appropriate COM port to use (for example, **COM1**), and click **OK**.
6. In the COM1 Properties dialog box, select the following settings:
  - Bits per second: 9600
  - Data bits: 8
  - Parity: None
  - Stop bits: 1
  - Flow control: Xon/Xoff
7. Click **OK**.

- Related Topics** ■ Setting Up Management Access on the CTP1000 Platform on page 59
- CTP1000 Console Port Setup on page 59
  - Connecting Directly to the CTP1000 Platform on page 60
  - CTP1000 Platform SSH Setup on page 61

## Connecting Directly to the CTP1000 Platform

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When you connect a console directly to the device, use the **COM 2** port on the RJ-45 connector. To do this, you must use the special DB-9 adapter with a straight-through RJ-45 cable. Direct access through the **COM 2** serial port enables you to monitor the device while it boots.

To connect a console directly to the device:

1. Connect the female DB-9 connector to the COM 2 port on the device's RTM.
2. Connect the crossover adapter connector to your PC's serial port.
3. Power on the device.

When you power on the device, the CLI appears on your console's screen. You can begin configuration. .

- Related Topics**
- Setting Up Management Access on the CTP1000 Platform on page 59
  - CTP1000 Console Port Setup on page 59
  - Using HyperTerminal with the CTP1000 Platform on page 60
  - CTP1000 Platform SSH Setup on page 61

## CTP1000 Platform SSH Setup

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When you have configured an IP address for the CTP1000 device, you can run SSH from a host to access the device through its Ethernet port. To connect the Ethernet port to the network:

1. Connect an Ethernet RJ-45 cable to one of the two Ethernet ports on the rear panel of the CTP1000 chassis.
2. Connect the other end of the cable to the appropriate Ethernet network for an out-of-band connection.



**CAUTION:** Do not change the IP address for the Ethernet interface that you are using to communicate with the device. If you change the address, you will lose the SSH session.

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- Related Topics**
- Setting Up Management Access on the CTP1000 Platform on page 59
  - CTP1000 Console Port Setup on page 59
  - Using HyperTerminal with the CTP1000 Platform on page 60
  - Connecting Directly to the CTP1000 Platform on page 60



## **Part 6**

# **Maintenance**

- Maintaining Components on page 65
- Product Reclamation and Recycling on page 67
- Packing and Returning Hardware on page 69



## Chapter 13

# Maintaining Components

- Cleaning the CTP Platform on page 65
- Required Tools for Maintaining the CTP Platform on page 65
- Storing CTP Modules and Other Components on page 66

## Cleaning the CTP Platform

---

Dust is attracted to the area where the air intake vents are located. Clean the area with a dry cloth every few weeks to prevent excessive accumulation of dust. This cleaning helps to maintain the efficiency of the cooling system and to prevent damage to electronic components.



**WARNING:** Do not insert any metal object, such as a screwdriver, or place your hand into an open slot or the backplane when the device is on. Remove jewelry (including rings, necklaces, and watches) before working on equipment that is connected to power lines. These actions prevent electric shock and serious burns.



**CAUTION:** When cleaning the device, wear an antistatic wrist strap connected to an ESD grounding jack. This action helps to protect modules from damage by electrostatic discharge.

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- Related Topics**
- Required Tools for Maintaining the CTP Platform on page 65
  - Storing CTP Modules and Other Components on page 66

## Required Tools for Maintaining the CTP Platform

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You need the following tools and other items to replace platform components:

- Flathead and Phillips screwdrivers
- Insulated adjustable wrench
- Antistatic wrist strap

- Antistatic bags (or other protective packaging to hold components)
- Plastic boots or other protective covers for fiber-optic connectors

- Related Topics**
- Storing CTP Modules and Other Components on page 66
  - Cleaning the CTP Platform on page 65

## Storing CTP Modules and Other Components

---

Retain the packaging in which a module or other component was shipped, and use this packaging to store the item. Modules are shipped in antistatic bags and protective packaging. Components, such as transceivers and CompactFlash cards, are shipped in antistatic plastic containers within an antistatic padded box.



**CAUTION:** Failure to store electronic modules and components correctly can lead to damage of these items.

---

Follow these guidelines for storing modules and other components:

- Store each module in a separate antistatic bag.
- Store other components in an antistatic plastic container. Some of these containers can accommodate several components in separate compartments.
- Do not store multiple modules or other components in an antistatic bag or container where they can touch other items.
- (Optional) Store the item in its antistatic bag or container within the protective packaging or padded box that the item was shipped in.

- Related Topics**
- Required Tools for Maintaining the CTP Platform on page 65
  - Cleaning the CTP Platform on page 65

## Chapter 14

# Product Reclamation and Recycling

- Product Reclamation and Recycling Program on page 67

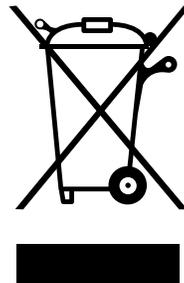
### Product Reclamation and Recycling Program

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Juniper Networks is committed to environmentally responsible behavior. As part of this commitment, we continually work to comply with environmental standards such as the European Union's *Waste Electrical and Electronic Equipment* (WEEE) Directive and *Restriction of Hazardous Substances* (RoHS) Directive.

These directives and other similar regulations from countries outside the European Union regulate electronic waste management and the reduction or elimination of specific hazardous materials in electronic products. The WEEE Directive requires electrical and electronics manufacturers to provide mechanisms for the recycling and reuse of their products. The RoHS Directive restricts the use of certain substances that are commonly found in electronic products today. Restricted substances include heavy metals, including lead, and polybrominated materials. The RoHS Directive, with some exemptions, applies to all electrical and electronic equipment.

In accordance with Article 11(2) of Directive 2002/96/EC (WEEE), products put on the market after 13 August 2005 are marked with the following symbol or include it in their documentation: a crossed-out wheeled waste bin with a bar beneath.



Juniper Networks provides recycling support for our equipment worldwide to comply with the WEEE Directive. For recycling information, go to <http://www.juniper.net/environmental>, and indicate the type of Juniper Networks equipment that you wish to dispose of and the country where it is currently located, or contact your Juniper Networks account representative.

Products returned through our reclamation process are recycled, recovered, or disposed of in a responsible manner. Our packaging is designed to be recycled and should be handled in accordance with your local recycling policies.

- Related Topics**
- Return Procedure on page 69
  - Returning CTP Products for Repair or Replacement on page 69

## Chapter 15

# Packing and Returning Hardware

- Return Procedure on page 69
- Returning CTP Products for Repair or Replacement on page 69

## Return Procedure

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When you need to return a component:

1. Determine the part number and serial number of the component. For instructions, see “Locating CTP Component Serial Numbers” on page 75.
2. Obtain a Return Materials Authorization (RMA) number from the Juniper Networks Technical Assistance Center (JTAC). See “Information You Might Need to Supply to JTAC” on page 76.

Provide the following information in your e-mail message or during the telephone call:

- Part number and serial number of component
- Your name, organization name, telephone number, and fax number
- The shipping address for the replacement component, including contact name and phone number
- Description of the failure

The support representative validates your request and issues an RMA number for return of the component.

3. Pack the device or component for shipment, performing the procedure described in “Returning CTP Products for Repair or Replacement” on page 69.

- Related Topics**
- Returning CTP Products for Repair or Replacement on page 69
  - Contacting Customer Support on page 75

## Returning CTP Products for Repair or Replacement

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In the event of a hardware failure, please contact Juniper Networks to obtain a Return Material Authorization (RMA) number. This number is necessary to ensure proper

tracking and handling of returned material at the factory. Do not return any hardware until you have received an RMA. Juniper Networks reserves the right to refuse shipments that do not have an RMA. Refused shipments are returned to the shipper through collect freight.

If possible, use the original shipping crate, pallet, and packing materials in which the chassis was originally shipped. If these materials are unavailable, use comparable shipping material, or contact your Juniper Networks representative for information about approved packaging material.

See the customer support Web page for complete repair and return policies and procedures.

To pack the chassis for shipment:

1. Ground yourself by using an antistatic wrist strap or other device.
2. Issue the proper shutdown commands to halt your system.
3. Switch all power switches to the OFF position.
4. Remove all cables from the chassis.
5. Remove all major components from the chassis, including interface modules, processor modules, RTMs, and fan trays.
6. Remove the chassis from the rack and bolt it to the shipping pallet.
7. Cover the chassis with an ESD bag and place packing foam on top of and around the chassis.
8. Place the crate cover over the chassis and fasten the cover to the pallet.

- Related Topics**
- Contacting Customer Support on page 75
  - Return Procedure on page 69
  - Locating CTP Component Serial Numbers on page 75
  - Information You Might Need to Supply to JTAC on page 76

## **Part 7**

# **Troubleshooting**

- Troubleshooting Power Failures on page 73
- Contacting Customer Support on page 75



## Chapter 16

# Troubleshooting Power Failures

- CTP Platform Does Not Power On on page 73
- CTP Platform Shuts Down on page 73

### CTP Platform Does Not Power On

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- Problem**
- Device is not receiving power.
  - Module's power supply has malfunctioned.
  - Power source cannot handle system load.

- Solution**
1. Verify that all power connections are correct.
  2. Verify that the power supply is delivering the correct voltage, current, and wattage to the device. See the system specifications for your particular CTP platform.
  3. If the platform still does not operate, contact the Juniper Networks Technical Assistance Center (JTAC).

- Related Topics**
- CTP Platform Shuts Down on page 73

### CTP Platform Shuts Down

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- Problem**
- Temperature is too high.
  - Power is lost.

- Solution**
1. Verify that power connections are properly attached.
  2. Verify that device is receiving power.
  3. Look to see whether or not the LEDs are lit.
  4. Run diagnostics using the CLI.
  5. If the device does not reset, contact JTAC.

**Related Topics** ■ CTP Platform Does Not Power On on page 73

## Chapter 17

# Contacting Customer Support

- Contacting Customer Support on page 75
- Locating CTP Component Serial Numbers on page 75
- Information You Might Need to Supply to JTAC on page 76

## Contacting Customer Support

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See the Juniper Networks Web site for complete customer service information:

- <http://www.juniper.net/support/guidelines.html>

For your convenience, we provide multiple options for requesting and receiving technical support from the Juniper Networks Technical Assistance Center (JTAC):

- By the Web using Juniper Networks, Inc. Case Manager:

<https://www.juniper.net/cm/index.jsp>

- By telephone:

From the US, Canada, and Mexico at 1-888-314-JTAC

From all other locations at 408-745-9500

### Related Topics

- Return Procedure on page 69
- Locating CTP Component Serial Numbers on page 75
- Information You Might Need to Supply to JTAC on page 76
- Returning CTP Products for Repair or Replacement on page 69

## Locating CTP Component Serial Numbers

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Before contacting Juniper Networks to request a Return Materials Authorization (RMA), you must find the serial number on the chassis or component.

Serial numbers are located on the modules. ID labels are usually applied near the ejector.

- Related Topics**
- Contacting Customer Support on page 75
  - Return Procedure on page 69
  - Information You Might Need to Supply to JTAC on page 76
  - Returning CTP Products for Repair or Replacement on page 69

## Information You Might Need to Supply to JTAC

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When requesting technical support from JTAC by phone, be prepared to provide the following information:

- Priority level
- Indication of what activity was being performed on the device when the problem occurred
- Problem detail and configuration data

When a new request for technical support is submitted, the JTAC engineer:

1. Opens a case and assigns a number.
2. Begins troubleshooting, diagnostics, and problem replication (if appropriate).
3. Provides you with periodic updates on problem status and escalates the problem as appropriate according to escalation management guidelines.
4. Closes the case when you agree that the problem has been resolved.

- Related Topics**
- Contacting Customer Support on page 75
  - Return Procedure on page 69
  - Locating CTP Component Serial Numbers on page 75
  - Returning CTP Products for Repair or Replacement on page 69

## **Part 8**

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