Juniper Networks CTP150 Circuit to Packet Platform

Hardware Guide

Juniper Networks CTP150 Circuit to Packet Platform Hardware Guide

The information in this document is current as of the date listed in the revision history.

END USER LICENSE AGREEMENT

READ THIS END USER LICENSE AGREEMENT ("AGREEMENT") BEFORE DOWNLOADING, INSTALLING, OR USING THE SOFTWARE. BY DOWNLOADING, INSTALLING, OR USING THE SOFTWARE OR OTHERWISE EXPRESSING YOUR AGREEMENT TO THE TERMS CONTAINED HEREIN, YOU (AS CUSTOMER OR IF YOU ARE NOT THE CUSTOMER, AS A REPRESENTATIVE/AGENT AUTHORIZED TO BIND THE CUSTOMER) CONSENT TO BE BOUND BY THIS AGREEMENT. IF YOU DO NOT OR CANNOT AGREE TO THE TERMS CONTAINED HEREIN, THEN (A) DO NOT DOWNLOAD, INSTALL, OR USE THE SOFTWARE, AND (B) YOU MAY CONTACT JUNIPER NETWORKS REGARDING LICENSE TERMS.

1. **The Parties.** The parties to this Agreement are (i) Juniper Networks, Inc. (if the Customer's principal office is located in the Americas) or Juniper Networks (Cayman) Limited (if the Customer's principal office is located outside the Americas) (such applicable entity being referred to herein as "Juniper"), and (ii) the person or organization that originally purchased from Juniper or an authorized Juniper reseller the applicable license(s) for use of the Software ("Customer") (collectively, the "Parties").

2. **The Software.** In this Agreement, "Software" means the program modules and features of the Juniper or Juniper-supplied software, for which Customer has paid the applicable license or support fees to Juniper or an authorized Juniper reseller, or which was embedded by Juniper in equipment which Customer purchased from Juniper or an authorized Juniper reseller. "Software" also includes updates, upgrades and new releases of such software. "Embedded Software" means Software which Juniper has embedded in or loaded onto the Juniper equipment and any updates, upgrades, additions or replacements which are subsequently embedded in or loaded onto the equipment.

3. **License Grant.** Subject to payment of the applicable fees and the limitations and restrictions set forth herein, Juniper grants to Customer a non-exclusive and non-transferable license, without right to sublicense, to use the Software, in executable form only, subject to the following use restrictions:

a. Customer shall use Embedded Software solely as embedded in, and for execution on, Juniper equipment originally purchased by Customer from Juniper or an authorized Juniper reseller.

b. Customer shall use the Software on a single hardware chassis having a single processing unit, or as many chassis or processing units for which Customer has paid the applicable license fees; provided, however, with respect to the Steel-Belted Radius or Odyssey Access Client software only, Customer shall use such Software on a single computer containing a single physical random access memory space and containing any number of processors. Use of the Steel-Belted Radius or IMS AAA software on multiple computers or virtual machines (e.g., Solaris zones) requires multiple licenses, regardless of whether such computers or virtualizations are physically contained on a single chassis.

c. Product purchase documents, paper or electronic user documentation, and/or the particular licenses purchased by Customer may specify limits to Customer's use of the Software. Such limits may restrict use to a maximum number of seats, registered endpoints, concurrent users, sessions, calls, connections, subscribers, clusters, nodes, realms, devices, links, ports or transactions, or require the purchase of separate licenses to use particular features, functionalities, services, applications, operations, or capabilities, or provide throughput, performance, configuration, bandwidth, interface, processing, temporal, or geographical limits. In addition, such limits may restrict the use of the Software to managing certain kinds of networks or require the Software to be used only in conjunction with other specific Software. Customer's use of the Software shall be subject to all such limitations and purchase of all applicable licenses.

d. For any trial copy of the Software, Customer's right to use the Software expires 30 days after download, installation or use of the Software. Customer may operate the Software after the 30-day trial period only if Customer pays for a license to do so. Customer may not extend or create an additional trial period by re-installing the Software after the 30-day trial period.

e. The Global Enterprise Edition of the Steel-Belted Radius software may be used by Customer only to manage access to Customer's enterprise network. Specifically, service provider customers are expressly prohibited from using the Global Enterprise Edition of the Steel-Belted Radius software to support any commercial network access services.

The foregoing license is not transferable or assignable by Customer. No license is granted herein to any user who did not originally purchase the applicable license(s) for the Software from Juniper or an authorized Juniper reseller.

4. **Use Prohibitions.** Notwithstanding the foregoing, the license provided herein does not permit the Customer to, and Customer agrees not to and shall not: (a) modify, unbundle, reverse engineer, or create derivative works based on the Software; (b) make unauthorized copies of the Software (except as necessary for backup purposes); (c) rent, sell, transfer, or grant any rights in and to any copy of the Software, in any form, to any third party; (d) remove any proprietary notices, labels, or marks on or in any copy of the Software or any product in which the Software is embedded; (e) distribute any copy of the Software to any third party, including as may be embedded in Juniper equipment sold in the secondhand market; (f) use any 'locked' or key-restricted feature, function, service, application, operation, or capability without first purchasing the applicable license(s) and obtaining a valid key from Juniper, even if such feature, function, service, application, operation, or capability is enabled without a key; (g) distribute any key for the Software provided by Juniper to any third party; (h) use the

Software in any manner that extends or is broader than the uses purchased by Customer from Juniper or an authorized Juniper reseller; (i) use Embedded Software on non-Juniper equipment; (j) use Embedded Software (or make it available for use) on Juniper equipment that the Customer did not originally purchase from Juniper or an authorized Juniper reseller; (k) disclose the results of testing or benchmarking of the Software to any third party without the prior written consent of Juniper; or (l) use the Software in any manner other than as expressly provided herein.

5.   **Audit.** Customer shall maintain accurate records as necessary to verify compliance with this Agreement. Upon request by Juniper, Customer shall furnish such records to Juniper and certify its compliance with this Agreement.

6.   **Confidentiality.** The Parties agree that aspects of the Software and associated documentation are the confidential property of Juniper. As such, Customer shall exercise all reasonable commercial efforts to maintain the Software and associated documentation in confidence, which at a minimum includes restricting access to the Software to Customer employees and contractors having a need to use the Software for Customer's internal business purposes.

7.   **Ownership.** Juniper and Juniper's licensors, respectively, retain ownership of all right, title, and interest (including copyright) in and to the Software, associated documentation, and all copies of the Software. Nothing in this Agreement constitutes a transfer or conveyance of any right, title, or interest in the Software or associated documentation, or a sale of the Software, associated documentation, or copies of the Software.

8.   **Warranty, Limitation of Liability, Disclaimer of Warranty.** The warranty applicable to the Software shall be as set forth in the warranty statement that accompanies the Software (the "Warranty Statement"). Nothing in this Agreement shall give rise to any obligation to support the Software. Support services may be purchased separately. Any such support shall be governed by a separate, written support services agreement. TO THE MAXIMUM EXTENT PERMITTED BY LAW, JUNIPER SHALL NOT BE LIABLE FOR ANY LOST PROFITS, LOSS OF DATA, OR COSTS OR PROCUREMENT OF SUBSTITUTE GOODS OR SERVICES, OR FOR ANY SPECIAL, INDIRECT, OR CONSEQUENTIAL DAMAGES ARISING OUT OF THIS AGREEMENT, THE SOFTWARE, OR ANY JUNIPER OR JUNIPER-SUPPLIED SOFTWARE. IN NO EVENT SHALL JUNIPER BE LIABLE FOR DAMAGES ARISING FROM UNAUTHORIZED OR IMPROPER USE OF ANY JUNIPER OR JUNIPER-SUPPLIED SOFTWARE. EXCEPT AS EXPRESSLY PROVIDED IN THE WARRANTY STATEMENT TO THE EXTENT PERMITTED BY LAW, JUNIPER DISCLAIMS ANY AND ALL WARRANTIES IN AND TO THE SOFTWARE (WHETHER EXPRESS, IMPLIED, STATUTORY, OR OTHERWISE), INCLUDING ANY IMPLIED WARRANTY OF MERCHANTABILITY, FITNESS FOR A PARTICULAR PURPOSE, OR NONINFRINGEMENT. IN NO EVENT DOES JUNIPER WARRANT THAT THE SOFTWARE, OR ANY EQUIPMENT OR NETWORK RUNNING THE SOFTWARE, WILL OPERATE WITHOUT ERROR OR INTERRUPTION, OR WILL BE FREE OF VULNERABILITY TO INTRUSION OR ATTACK. In no event shall Juniper's or its suppliers' or licensors' liability to Customer, whether in contract, tort (including negligence), breach of warranty, or otherwise, exceed the price paid by Customer for the Software that gave rise to the claim, or if the Software is embedded in another Juniper product, the price paid by Customer for such other product. Customer acknowledges and agrees that Juniper has set its prices and entered into this Agreement in reliance upon the disclaimers of warranty and the limitations of liability set forth herein, that the same reflect an allocation of risk between the Parties (including the risk that a contract remedy may fail of its essential purpose and cause consequential loss), and that the same form an essential basis of the bargain between the Parties.

9.   **Termination.** Any breach of this Agreement or failure by Customer to pay any applicable fees due shall result in automatic termination of the license granted herein. Upon such termination, Customer shall destroy or return to Juniper all copies of the Software and related documentation in Customer's possession or control.

10.   **Taxes.** All license fees payable under this agreement are exclusive of tax. Customer shall be responsible for paying Taxes arising from the purchase of the license, or importation or use of the Software. If applicable, valid exemption documentation for each taxing jurisdiction shall be provided to Juniper prior to invoicing, and Customer shall promptly notify Juniper if their exemption is revoked or modified. All payments made by Customer shall be net of any applicable withholding tax. Customer will provide reasonable assistance to Juniper in connection with such withholding taxes by promptly: providing Juniper with valid tax receipts and other required documentation showing Customer's payment of any withholding taxes; completing appropriate applications that would reduce the amount of withholding tax to be paid; and notifying and assisting Juniper in any audit or tax proceeding related to transactions hereunder. Customer shall comply with all applicable tax laws and regulations, and Customer will promptly pay or reimburse Juniper for all costs and damages related to any liability incurred by Juniper as a result of Customer's non-compliance or delay with its responsibilities herein. Customer's obligations under this Section shall survive termination or expiration of this Agreement.

11.   **Export.** Customer agrees to comply with all applicable export laws and restrictions and regulations of any United States and any applicable foreign agency or authority, and not to export or re-export the Software or any direct product thereof in violation of any such restrictions, laws or regulations, or without all necessary approvals. Customer shall be liable for any such violations. The version of the Software supplied to Customer may contain encryption or other capabilities restricting Customer's ability to export the Software without an export license.

12. **Commercial Computer Software.** The Software is "commercial computer software" and is provided with restricted rights. Use, duplication, or disclosure by the United States government is subject to restrictions set forth in this Agreement and as provided in DFARS 227.7201 through 227.7202-4, FAR 12.212, FAR 27.405(b)(2), FAR 52.227-19, or FAR 52.227-14(ALT III) as applicable.

13. **Interface Information.** To the extent required by applicable law, and at Customer's written request, Juniper shall provide Customer with the interface information needed to achieve interoperability between the Software and another independently created program, on payment of applicable fee, if any. Customer shall observe strict obligations of confidentiality with respect to such information and shall use such information in compliance with any applicable terms and conditions upon which Juniper makes such information available.

14. **Third Party Software.** Any licensor of Juniper whose software is embedded in the Software and any supplier of Juniper whose products or technology are embedded in (or services are accessed by) the Software shall be a third party beneficiary with respect to this Agreement, and such licensor or vendor shall have the right to enforce this Agreement in its own name as if it were Juniper. In addition, certain third party software may be provided with the Software and is subject to the accompanying license(s), if any, of its respective owner(s). To the extent portions of the Software are distributed under and subject to open source licenses obligating Juniper to make the source code for such portions publicly available (such as the GNU General Public License ("GPL") or the GNU Library General Public License ("LGPL")), Juniper will make such source code portions (including Juniper modifications, as appropriate) available upon request for a period of up to three years from the date of distribution. Such request can be made in writing to Juniper Networks, Inc., 1194 N. Mathilda Ave., Sunnyvale, CA 94089, ATTN: General Counsel. You may obtain a copy of the GPL at http://www.gnu.org/licenses/gpl.html, and a copy of the LGPL at http://www.gnu.org/licenses/lgpl.html .

15. **Miscellaneous.** This Agreement shall be governed by the laws of the State of California without reference to its conflicts of laws principles. The provisions of the U.N. Convention for the International Sale of Goods shall not apply to this Agreement. For any disputes arising under this Agreement, the Parties hereby consent to the personal and exclusive jurisdiction of, and venue in, the state and federal courts within Santa Clara County, California. This Agreement constitutes the entire and sole agreement between Juniper and the Customer with respect to the Software, and supersedes all prior and contemporaneous agreements relating to the Software, whether oral or written (including any inconsistent terms contained in a purchase order), except that the terms of a separate written agreement executed by an authorized Juniper representative and Customer shall govern to the extent such terms are inconsistent or conflict with terms contained herein. No modification to this Agreement nor any waiver of any rights hereunder shall be effective unless expressly assented to in writing by the party to be charged. If any portion of this Agreement is held invalid, the Parties agree that such invalidity shall not affect the validity of the remainder of this Agreement. This Agreement and associated documentation has been written in the English language, and the Parties agree that the English version will govern. (For Canada: Les parties aux présentés confirment leur volonté que cette convention de même que tous les documents y compris tout avis qui s'y rattaché, soient redigés en langue anglaise. (Translation: The parties confirm that this Agreement and all related documentation is and will be in the English language)).

Table of Contents

List of Figures

List of Tables

Overview

CHAPTER 1

CTP150 Platform Overview

- Introducing CTP Platforms on page 3
- CTP150 Platform Overview on page 3

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.

CTP150 Platform Overview

The Juniper Networks CTP150 Circuit to Packet 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 CTP150 platform has two removable modules for serial interfaces, T1/E1 interfaces, or both, and a removable Type II CompactFlash card, but no hard drive. It is available in a removable AC-powered version only.

> **CAUTION:** Do not remove CompactFlash cards from a running device. If you remove the card while data is being written to or copied from the CompactFlash card, data can be lost or corrupted. Therefore, we strongly recommend that you shut down the device before removing or inserting a CompactFlash card.

The front panel comprises the following components (see Figure 1 on page 4):

- Power LED—Green when power is connected.

- CompactFlash LED—Solid amber when the CompactFlash drive is in use.

- Hardware LED—Quickly blinking red for a fan failure, slowly blinking red for the removable AC power supply in use, and solid red when overheating.

- Serial console port—Provides access, by means of an RJ-45 connector, to the command-line interface (CLI).

- Two traffic interface ports—Connect the appliance to your network, receiving and forwarding traffic, over copper Ethernet 10/100/1000 interfaces.

- USB port.

- Slots for two removable interface modules in three versions:

  - 4-port serial interface

  - 4-port serial interface with multiservice daughter board

  - 4-port T1/E interface

NOTE: The module slots are numbered 0 and 1 from left to right. If only one module is used, it must be inserted in slot 0. Also, any single clock module must be connected to the CLK connector in the left-most module slot 0.

Figure 1: CTP150 Chassis (Front View)
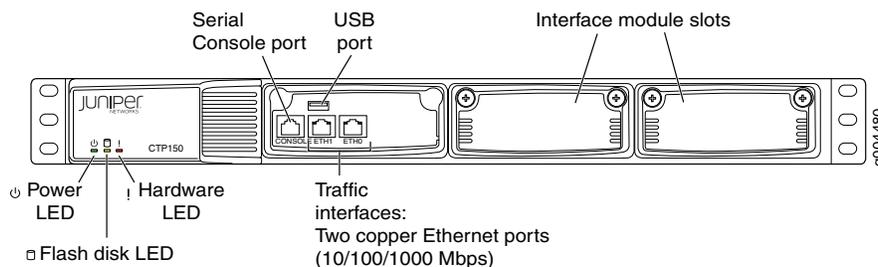
The rear panel comprises the following components (see Figure 2 on page 5):

- Removable CompactFlash drive—The device must be powered off when you insert or remove the CompactFlash card. The CTP150 platform does not provide a hard drive, nor is it required.

- Removable AC power supply—Power input using a standard IEC power cord.

- Fans—When the device is cool, the appliance fans spin at a slower speed to reduce noise and save energy. As the device heats up, the fans run at a faster speed. In the event of fan failure, the hardware LED blinks quickly and the remaining fan or fans run at full speed until the failed fan is replaced. The fans for this model are not field replaceable units (FRUs).

Figure 2 on page 5 shows the CompactFlash drive with the cover plate removed.

Figure 2: CTP150 Chassis (Rear View)

Ejector lever   Handle

Fans   Compact   AC power
                  Flash drive   cord inlet

g004481
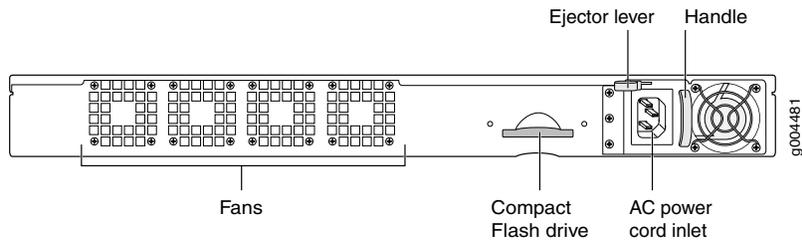
Related   • Introducing CTP Platforms on page 3
Documentation

CHAPTER 2

CTP150 Interface Modules

- CTP150 Serial Interface Module on page 7
- CTP150 T1/E1 Interface Module on page 8
- CTP150 Clock Module on page 8

CTP150 Serial Interface Module

The Juniper Networks CTP150 Circuit to Packet platform optionally includes a replaceable CTP150–IM-SER serial interface module that can be paired with another module of the same type or a T1/E1 interface module. The serial interface module also has the option of supporting two multiservice daughter cards for 4-KHz or high quality analog audio, or interrange instrumentation group (IRIG) signals. See CTP150 Multiservice Interface Module for details.

The four-port serial interface module supports individual cabling for each port. The CTP150 ports have small serial ports for HD-26 26-pin connectors (see Figure 3 on page 7). The lowest-numbered port (marked 0) is at the bottom left, and the highest-numbered port (marked 3) is at the top right.

Figure 3: CTP150 Serial Interface Module

HD-26 26-pin connectors
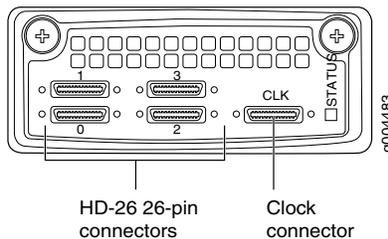
Clock connector

The software-selectable interfaces for the module are RS-232/V.24, EIA530/X.21, EIA530A, V.35, and IRIG. Software-selectable rates range from 50 bps to 12.228 Mbps.

The module also includes an external clock reference port for an HD-26 connector. Note that only one external clock reference is required even if there are two interface modules, serial or T1/E1.

> NOTE: The external clock reference port must be the one in module slot 0, the right-most slot in the front of the CTP150 chassis.

- CTP150 T1/E1 Interface Module on page 8

CTP150 T1/E1 Interface Module

The Juniper Networks CTP150 Circuit to Packet platform optionally includes a replaceable CTP150-IM-4P-T1E1 interface module that can be paired with another module of the same type or a serial interface module.

The four-port T1/E1 interface module supports individual cabling for each port. The CTP150 ports have T1/E1 ports for RJ-48 connectors (see Figure 4 on page 8). The highest-numbered port (labeled **3**) is on the left, and the lowest-numbered port (labeled **0**) is at the right, with the **CLK** port still farther to the right.

Figure 4: CTP150 T1/E1 Interface Module

Network ports

Clock connector
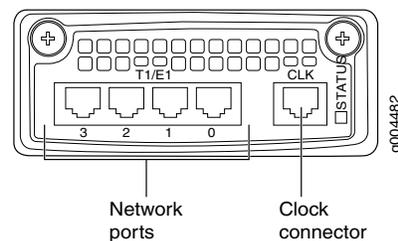
The software-selectable T1/E1 interfaces for the module are T1, E1, fractional T1, and fractional E1. CSU options, encoding, and encapsulation are also software-selectable.

The module also includes an external clock reference port for an RJ-48 connector. Note that only one external clock reference is required even if there are two interface modules, serial or T1/E1.

> NOTE: The external clock reference port must be the one in module slot 0, the right-most module slot in the front of the CTP150 chassis.

- CTP150 Serial Interface Module on page 7

- CTP150 Multiservice Interface Module

CTP150 Clock Module

Clock interface modules provide clock distribution between modules when the backplane is in use by voice applications. For the CTP150 model, the serial and T1/E1 interfaces each have a clock port, although only one port needs to be used for both interfaces. One port is of the HD-26 connector type, and the other is of the RJ-45 connector type.

NOTE: The external clock reference port must be connected to any module that is in slot 0, the right-most module slot on the chassis.

Related Documentation

- CTP150 Serial Interface Module on page 7
- CTP150 Multiservice Interface Module
- CTP150 T1/E1 Interface Module on page 8

PART 2

Planning

System Specifications and Certifications

CTP150 Platform Specifications

Table 1: CTP150 Platform Specifications

Category	Specification
Weight	
Chassis only	14.5 lb (6.6 kg)
Dimensions	
Chassis only	1.73 in. (4.4 cm) high
	17.24 in. (43.8 cm) wide
	14.5 in. (36.8 cm) deep
Environmental Requirements	
Ambient operating temperature	32 to 104º F (0 to 40º C)
Ambient operating humidity	5% to 90% (noncondensing)
DC Input	N/A
AC Input	
Power required	100–240 VAC
AC line frequency	50–60 Hz
Nominal current (115V amps)	<1.0
Power	100 W
Space Requirements	3 ft. (90 cm) behind device or rack.
	Do not block air vents on the front or back of the device.

Table 1: CTP150 Platform Specifications *(continued)*

Category	Specification
Airflow	Fan
Safety Agency Certification	- AS/NZS 60950.1-2003 Safety of Information Technology Equipment - CAN/CSA-C22.2 No. 60950-1 (2007) Information Technology Equipment - Safety - EN 60950-1 (2005) Information Technology Equipment - Safety - IEC 60950-1 (2005) Information Technology Equipment - Safety (All country deviations) - Low Voltage Directive (2006/95/EC) - UL 60950-1 (1st Ed.) Information Technology Equipment - Safety
Electromagnetic Emissions Agency Certification	- AS/NZS CISPR 22:2004 - BSMI CNS 13438 and NCC C6357 Taiwan Radiated Emissions - EMC Directive (89/336/EEC) - EN 300 386 V1.3.3 (2005) Telecom Network Equipment - EMC requirements - EN 55022 Class A (2006) European Radiated Emissions - EN 55024 +A1+A2 (1998) Information Technology Equipment Immunity Characteristics - EN-61000-3-2 (2006) Power Line Harmonics (2006) Power Line Harmonics - EN-61000-3-3 +A1 +A2 +A3 (1995) Power Line Voltage Fluctuations - EN-61000-4-2 +A1 +A2 (1995) Electrostatic Discharge - EN-61000-4-3 +A1+A2 (2002) Radiated Immunity - EN-61000-4-4 (2004) Electrical Fast Transients - EN-61000-4-5 (2006) Surge - EN-61000-4-6 (2007) Immunity to Conducted Disturbances - ETSI 300-386, Telecommunication Network Equipment; ElectroMagnetic Compatibility (EMC) requirements - FCC Part 15 Class A (2007) USA Radiated Emissions - IECS-03 Issue 3 Class A - VCCI Class A (2007) Japanese Radiated Emissions

CTP150 Platform Certifications

Table 2: CTP150 Platform Certifications

Category	Specification
Safety Agency Certification	• AS/NZS 60950.1-2003 Safety of Information Technology Equipment • CAN/CSA–C22.2 No. 60950-1 (2007) Information Technology Equipment - Safety • EN 60950-1 (2005) Information Technology Equipment - Safety • IEC 60950-1 (2005) Information Technology Equipment - Safety (All country deviations) • Low Voltage Directive (2006/95/EC) • UL 60950-1 (1st Ed.) Information Technology Equipment - Safety
Electromagnetic Emissions Agency Certification	• AS/NZS CISPR 22:2004 • BSMI CNS 13438 and NCC C6357 Taiwan Radiated Emissions • EMC Directive (89/336/EEC) • EN 300 386 V1.3.3 (2005) Telecom Network Equipment - EMC requirements • EN 55022 Class A (2006) European Radiated Emissions • EN 55024 +A1+A2 (1998) Information Technology Equipment Immunity Characteristics • EN-61000-3-2 (2006) Power Line Harmonics (2006) Power Line Harmonics • EN-61000-3-3 +A1 +A2 +A3 (1995) Power Line Voltage Fluctuations • EN-61000-4-2 +A1 +A2 (1995) Electrostatic Discharge • EN-61000-4-3 +A1+A2 (2002) Radiated Immunity • EN-61000-4-4 (2004) Electrical Fast Transients • EN-61000-4-5 (2006) Surge • EN-61000-4-6 (2007) Immunity to Conducted Disturbances • EN-61000-4-11 (2004) Voltage Dips and Sags • ETSI 300-386, Telecommunication Network Equipment; ElectroMagnetic Compatibility (EMC) requirements • FCC Part 15 Class A (2007) USA Radiated Emissions • IECS-03 Issue 3 Class A • VCCI Class A (2007) Japanese Radiated Emissions

Planning and Preparing the Site

- Before You Install a CTP Platform on page 17
- CTP150 Environmental Requirements on page 17

Before You Install a CTP Platform

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.

CTP150 Environmental Requirements

See the "CTP150 Platform Specifications" on page 13 for complete environmental specifications.

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.

Related Documentation
- Before You Install a CTP Platform on page 17

Equipment Rack Requirements

- CTP150 Rack Requirements on page 19
- CTP150 Mechanical Requirements on page 19
- CTP150 Space Requirements on page 20
- CTP150 Rack Installation on page 20
- CTP Cabling Recommendations on page 20

CTP150 Rack Requirements

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 Documentation
- CTP150 Mechanical Requirements on page 19
- CTP150 Space Requirements on page 20
- CTP150 Rack Installation on page 20

CTP150 Mechanical Requirements

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. ffl.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 Documentation
- CTP150 Rack Requirements on page 19
- CTP150 Space Requirements on page 20
- CTP150 Rack Installation on page 20

CTP150 Space Requirements

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 Documentation
- CTP150 Rack Requirements on page 19
- CTP150 Mechanical Requirements on page 19
- CTP150 Rack Installation on page 20

CTP150 Rack Installation

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 Documentation
- CTP150 Rack Requirements on page 19
- CTP150 Mechanical Requirements on page 19
- CTP150 Space Requirements on page 20

CTP Cabling Recommendations

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 6

Cable and Pinout Specifications

- CTP150 Interface Module HD-26 Connector Cable Pinouts on page 23
- CTP150 Console Cable Pinouts on page 30
- CTP Fast Ethernet and Power Cables on page 31

CTP150 Interface Module HD-26 Connector Cable Pinouts

The CTP150 device has five separate EIA-530 cabling options for the serial interface module, with a male HD-26 connector on the module end and the following connectors on the DCE or DTE end:

- Female DB-25 connector on the DCE end for EIA-530/RS-422/V.11, RS-232/V.24, V.35
- Male DB-25 connector on the DTE end for EIA-530/RS-422/V.11, RS-232/V.24, V.35
- Female DB-15 connector on the DCE end for X.21
- Male DB-15 connector on the DTE end for X.21
- RJ-45 connector for Radio V.24 Sync interface

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

- EIA-530 Connector Interface Signal Pinouts (DB-25 Female DCE) on page 23
- EIA-530 Connector Interface Signal Pinouts (DB-25 Male DTE) on page 25
- X.21 Connector Interface Signal Pinouts (DB-15 Female DCE) on page 26
- X.21 Connector Interface Signal Pinouts (DB-15 Male DTE) on page 27
- V.24 Connector Interface Signal Pinouts (RJ-45 Male) on page 28

EIA-530 Connector Interface Signal Pinouts (DB-25 Female DCE)

Table 3 on page 23 lists the EIA-530 interface signal pinouts for the HD-26 connector to the female DB-25 connector for the CTP150 platform.

Table 3: EIA-530 Connector Interface Signals for HD-26 to Female DB-25

HD-26 Pin	DB-25 Pin	Description	Circuit
1	3	Receive data (RD)—A	BB

Table 3: EIA-530 Connector Interface Signals for HD-26 to Female DB-25 *(continued)*

HD-26 Pin	DB-25 Pin	Description	Circuit
2	17	Receive timing (RT)—A	DD
3	15	Send timing (ST)—A (DCE)	DB
4	24	Transmit timing (TT)—A (DTE)	DA
5	2	Send data (SD)—A	BA
6	8	Data carrier detect (DCD)—A	CF
7	6	Data set ready (DSR)—A	CC
8	5	Clear to send (CTS)—A	CB
9	13	Clear to send (CTS)—B	CB
10	19	Request to send (RTS)—B	CA
11	4	Request to send (RTS)—A	CA
12	20	Data terminal ready (DTR)—A	CD
13	18	Local loopback (LL)	LL
14	16	Receive data (RD)—B	BB
15	9	Receive timing (RT)—B	DD
16	12	Send timing (ST)—B (DCE)	DB
17	11	Transmit timing (TT)—B (DTE)	DA
18	14	Clear to send (CTS)—B	BA
19	10	Data carrier detect (DCD)—B	CF
20	22	Data set ready (DSR)—B	CC
21	21	Remote loopback (RL)	RL
22	25	Test mode (TM)	TM
23	—	—	—
24, 26	7	Signal ground (GND)	Ground
25	23	Data terminal ready (DTR)—B	CD

EIA-530 Connector Interface Signal Pinouts (DB-25 Male DTE)

Table 4 on page 25 lists the EIA-530 interface signal pinouts for the HD-26 connector to the male DB-25 connector for the CTP150 platform.

Table 4: EIA-530 Connector Interface Signals to Male DB-25

HD-26 Pin	DB-25 Pin	Description
1	2	Transmit data—A
2	24	Transmit timing—A (DTE)
3	15	Send timing—A (DCE)
4	17	Receive timing—A
5	3	Receive data—A
6	8	Data carrier detect—A
7	20	Data terminal ready—A
8	4	Request to send—A
9	19	Request to send—B
10	13	Clear to send—B
11	5	Clear to send—A
12	6	Data set ready—A
13	18	Local loopback
14	14	Transmit data—B
15	11	Transmit timing—B (DTE)
16	12	Send timing—B (DCE)
17	9	Receive timing—B
18	16	Receive data—B
19	10	Data carrier detect—B
20	23	Data terminal ready—B
21	25	Test mode

Table 4: EIA-530 Connector Interface Signals to Male DB-25 *(continued)*

HD-26 Pin	DB-25 Pin	Description
22	21	Remote loop
23	—	—
24, 26	7	Ground
25	22	Data set ready—B

X.21 Connector Interface Signal Pinouts (DB-15 Female DCE)

Table 5 on page 26 lists the X.21 interface signal pinouts for the HD-26 connector to the female DB-15 connector for the CTP150 platform.

Table 5: X.21 Connector Interface Signals for HD-26 to Female DB-15

HD-26 Pin	DB-15 Pin	Description
1	4	Receive—A
2	6	Signal timing—A
3	—	—
4	7	Byte timing—A
5	2	Transmit—A
6	—	—
7	—	—
8	5	Indication—A
9	12	Indication—B
10	10	Control—B
11	3	Control—A
12	—	—
13	—	—
14	11	Receive—B
15	13	Signal timing—B
16	—	—

Table 5: X.21 Connector Interface Signals for HD-26 to Female DB-15 *(continued)*

HD-26 Pin	DB-15 Pin	Description
17	14	Byte timing—B
18	9	Transmit—B
19	—	—
20	—	—
21	—	—
22	—	—
23	—	—
24, 26	8	Ground
25	—	—

X.21 Connector Interface Signal Pinouts (DB-15 Male DTE)

Table 6 on page 27 lists the X.21 interface signal pinouts for the HD-26 connector to the male DB-15 connector for the CTP150 platform.

Table 6: X.21 Connector Interface Signals for HD-26 to Male DB-15

HD-26 Pin	DB-15 Pin	Description
1	2	Transmit—A
2	7	Byte timing—A
3	—	—
4	6	Signal timing—A
5	4	Receive—A
6	—	—
7	—	—
8	3	Control—A
9	10	Control—B
10	12	Indication—B
11	5	Indication—A

Table 6: X.21 Connector Interface Signals for HD-26 to Male DB-15 *(continued)*

HD-26 Pin	DB-15 Pin	Description
12	—	—
13	—	—
14	9	Transmit—B
15	14	Byte timing—B
16	—	—
17	13	Signal timing—B
18	11	Receive–B
19	—	—
20	—	—
21	—	—
22	—	—
23	—	—
24, 26	8	Ground
25	—	—

V.24 Connector Interface Signal Pinouts (RJ-45 Male)

Table 7 on page 28 lists the V.24 interface signal pinouts for the HD-26 connector to the male RJ-45 connector for the CTP150 platform.

Table 7: V.24 Connector Interface Signals for HD-26 to RJ-45

HD-26 Pin	RJ-45 Pin	Description
1	5	TX
2	1	RCLK
3	3	TCLK
5	6	RX
6	2	CD
8	7	CTS

Table 7: V.24 Connector Interface Signals for HD-26 to RJ-45 *(continued)*

HD-26 Pin	RJ-45 Pin	Description
11	8	RTS
24, 26	4	GND

Related Documentation

- CTP150 Console Cable Pinouts on page 30

- CTP Fast Ethernet and Power Cables on page 31

CTP150 Console Cable Pinouts

The console connector to the CTP150 platform is a standard RJ-45 to DB-9 adapter cable. Figure 5 on page 30 displays the console cable pin configurations for CTP150 device. On the left is the RJ-45 connector, and on the right is the DB-9 connector with the pin numbering indicated.

The console connections are configured to the following parameters:

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

Figure 5: CTP150 Console Cable Pin Configurations
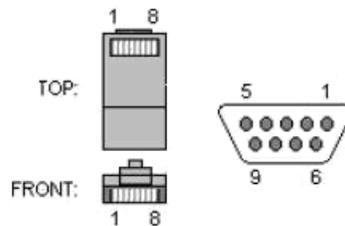
Table 8 on page 30 lists console cable pinouts for the CTP150 device based on the pin configurations.

Table 8: CTP150 Series Console Cable Pinouts

CTP RJ-45 Pin	Console DB-9 Pin
1 RTS	8 CTS
2 DTR	6 DSR
3 TXD	2 RXD
4 GND	5 GND
5 GND	5 GND
6 RXD	3 TXD
7 DSR	4 DTR
8 CTS	7 RTS

Related • CTP Fast Ethernet and Power Cables on page 31

Documentation

CTP Fast Ethernet and Power Cables

- Fast Ethernet Cables on page 31
- DC Power Cables on page 31

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 and Warnings

CTP Safety Guidelines and Warnings

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

WARNING: The recommended maximum ambient temperature is 40˚ºC (104º 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.

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

Related Documentation

- Federal Communications Commission (FCC) Statement on page 41
- FCC Requirements for Consumer Products on page 41
- Food and Drug Administration, Center for Devices and Radiological Health on page 42
- Compliance with Canadian Regulations on page 42
- Before You Install a CTP Platform on page 17

Module Installation Safety Guidelines and Warnings

- Safety Guidelines and Warnings for Installing CTP Modules on page 37

Safety Guidelines and Warnings for Installing CTP Modules

Before and during the installation process, observe the following warnings:

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

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

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.

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

WARNING: Never attempt to repair parts of modules yourself. Only trained customer service personnel are authorized to service parts. Call Juniper Networks Customer Service to make arrangements to return defective modules for repair.

Related Documentation

- Required Tools and Safety Items for Installing CTP Modules on page 54

- Federal Communications Commission (FCC) Statement on page 41

- FCC Requirements for Consumer Products on page 41

- Food and Drug Administration, Center for Devices and Radiological Health on page 42

- Compliance with Canadian Regulations on page 42

Hardware Compliance

Declaration of Conformity for the CTP150 Platform

Figure 6 on page 40 shows the Declaration of Conformity for the CTP150 platform.

Figure 6: CTP150 Platform Declaration of Conformity

Related Documentation
- CTP150 Platform Specifications on page 13

Federal Communications Commission (FCC) Statement

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 Documentation
- FCC Requirements for Consumer Products on page 41
- Food and Drug Administration, Center for Devices and Radiological Health on page 42
- Compliance with Canadian Regulations on page 42

FCC Requirements for Consumer Products

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 Documentation
- Federal Communications Commission (FCC) Statement on page 41
- Food and Drug Administration, Center for Devices and Radiological Health on page 42

- Compliance with Canadian Regulations on page 42

Food and Drug Administration, Center for Devices and Radiological Health

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

Related Documentation
- Federal Communications Commission (FCC) Statement on page 41
- FCC Requirements for Consumer Products on page 41
- Compliance with Canadian Regulations on page 42

Compliance with Canadian Regulations

- Industry Canada Notice on page 42
- Canadian Department of Communications Explanatory Notes on page 43

Industry Canada Notice

- Industry Canada Notice CS-03 on page 42
- Avis CS-03 d'Industrie Canada on page 43

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 lefournisseur. En cas de réparation ou de modification effectuées par l'utilisateur ou de mauvais fonctionnement del'appareillage, le service de télécommunications peut demander le débranchment 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

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 débranchment 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 Documentation

- Federal Communications Commission (FCC) Statement on page 41
- FCC Requirements for Consumer Products on page 41
- Food and Drug Administration, Center for Devices and Radiological Health on page 42

PART 4

Installation

Unpacking and Inspecting

- Before You Unpack the CTP Platform on page 47
- Unpacking the CTP Device on page 47
- Inspecting Platform Components and Accessories on page 48
- If You Detect or Suspect Damage on page 48
- Contacting Juniper Networks on page 49

Before You Unpack the CTP Platform

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 Documentation

- Unpacking the CTP Device on page 47
- Inspecting Platform Components and Accessories on page 48
- If You Detect or Suspect Damage on page 48
- Contacting Juniper Networks on page 49

Unpacking the CTP Device

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 Documentation
- Before You Unpack the CTP Platform on page 47
- Inspecting Platform Components and Accessories on page 48
- If You Detect or Suspect Damage on page 48
- Contacting Juniper Networks on page 49

Inspecting Platform Components and Accessories

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 Documentation
- Before You Unpack the CTP Platform on page 47
- Unpacking the CTP Device on page 47
- If You Detect or Suspect Damage on page 48
- Contacting Juniper Networks on page 49

If You Detect or Suspect Damage

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 Documentation
- Before You Unpack the CTP Platform on page 47
- Unpacking the CTP Device on page 47

- Inspecting Platform Components and Accessories on page 48

- Contacting Juniper Networks on page 49

Contacting Juniper Networks

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 85 for complete contact information.

Related Documentation

- Before You Unpack the CTP Platform on page 47

- Unpacking the CTP Device on page 47

- Inspecting Platform Components and Accessories on page 48

- If You Detect or Suspect Damage on page 48

Installing the Chassis

- Before You Install the CTP150 Platform on page 51
- Installing the CTP150 Platform in Freestanding Mode on page 51
- Installing the CTP150 Platform in a Rack on page 52

Before You Install the CTP150 Platform

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 "CTP150 Environmental Requirements" on page 17 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 Documentation
- Installing the CTP150 Platform in a Rack on page 52
- Installing the CTP150 Platform in Freestanding Mode on page 51

Installing the CTP150 Platform in Freestanding Mode

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.

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

Related Documentation

- Before You Install the CTP150 Platform on page 51
- Installing the CTP150 Platform in a Rack on page 52
- Cabling the CTP150 Platform Overview on page 57

Installing the CTP150 Platform in a Rack

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 CTP150 Platform Overview" on page 57 for instructions about installing the cables.)

Related Documentation

- Before You Install the CTP150 Platform on page 51
- Installing the CTP150 Platform in Freestanding Mode on page 51
- Cabling the CTP150 Platform Overview on page 57

Installing Modules

CTP150 Modules Slot and Port Numbering

The CTP150 device has removable interface modules from the front, but no removable power modules or fan trays.

In CTP150 devices, slot numbering is from right to left, 0 to 1. Any single module must be installed in slot 0, and any single clock connection must come from the port in slot 0.

CTP150 port numbering on the front panel for the serial interface module is bottom left 0, bottom right 1, top left 2, and top right 3.

Port numbering for the T1/E1 interface module is 1, 2, and 3, left to right.

Related Documentation
- Protecting CTP Modules and Slots on page 53

- Installing a CTP Interface Module, Processor Module, or Clock Module on page 54

Protecting CTP Modules and Slots

To prevent damage from electrostatic discharge, wear an antistatic wrist strap, and ensure proper grounding when handling components.

To protect the modules, components, and slots when installing components, observe the following guidelines:

> ⚠️ CAUTION: When handling components, use an antistatic wrist strap connected to a proper grounding device. This action helps to protect the module from damage by electrostatic discharge.

CAUTION: Always handle a module by its edges. Do not touch the components, pins, leads, or solder connections.

CAUTION: If you meet strong resistance when attempting to seat a module using the ejectors, remove it from the chassis and confirm that the slot is designed to hold the module. Also, be sure that you have aligned the left and right edges in the correct matching module guides.

CAUTION: Be sure to cover every empty slot with a blank filler panel to protect the device from dust or other foreign substances and to ensure proper device cooling.

CAUTION: Do not discard the antistatic bag. When a module is not in use, store it in an antistatic bag.

Related Documentation
- Safety Guidelines and Warnings for Installing CTP Modules on page 37
- Required Tools and Safety Items for Installing CTP Modules on page 54

Required Tools and Safety Items for Installing CTP Modules

You need the following tools to install a CTP module:

- Phillips screwdriver
- Flathead screwdriver
- ESD wrist strap or other grounding device

Related Documentation
- Safety Guidelines and Warnings for Installing CTP Modules on page 37
- Installing a CTP Interface Module, Processor Module, or Clock Module on page 54

Installing a CTP Interface Module, Processor Module, or Clock Module

To install a CTP module:

1. Ground yourself by using an antistatic wrist strap or other device, and connect it to one of the ESD grounding jacks, if available, or another grounding device.

2. Choose the slot where you want to insert the module.

3. With a Phillips screwdriver, loosen the screws that secure the blank filler panel covering the empty chassis slot, if present, and remove the filler panel.

4. Remove the module from its antistatic bag, being careful not to touch module components, pins, leads, or solder connections.

5. Verify that the ejectors are in the open position (facing outward).

6. Guide the module into the chassis by placing it between the guides of the selected slot and pushing the module until it stops.

   The module stops sliding when the ejectors make contact with the chassis.

   > CAUTION: If you meet strong resistance when attempting to seat the module using the ejectors, remove it from the chassis, and confirm that the slot is designed to hold the component. Also, be sure that you have aligned the left and right edges in the correct matching tracks.

7. Insert the module into the midplane by simultaneously pressing both ejectors inward and exerting forward pressure on the module. The small red release buttons should click into place.

8. Tighten the module's captive screws using a Phillips screwdriver.

   > NOTE: Tighten the captive screws completely before installing an adjacent module so that proper electromagnetic interference (EMI) gasket compression occurs. Failure to do this can make it difficult to install adjacent modules.

9. Go to Cabling a CTP Interface Module.

Related Documentation
- Removing a CTP Interface Module, Processor Module, or Clock Module on page 55

Removing a CTP Interface Module, Processor Module, or Clock Module

> NOTE: We recommend that you issue the **slot disable** command from the CLI before removing a line module.

> CAUTION: If you do not use the **halt** command before powering down the CTP device, the CompactFlash card might become corrupted.

To remove a CTP module:

1. Issue the **halt** command.

2. Ground yourself by using an antistatic wrist strap or other device, and connect it to an ESD grounding jack, if available, or another grounding device.

3. Use a Philips screwdriver to loosen the captive screws located at the top and bottom of the module panel.

4. If the module has ejector handles, press the red release buttons, and pull the ejector handles outward to the open position.

5. Carefully slide the module out of the chassis.

6. Place the module in its antistatic bag, being careful not to touch module components, pins, leads or solder connections.

7. Cover the empty chassis slot with a blank filler panel, and tighten the filler panel's captive screws using a Phillips screwdriver. Turn both screws several times before tightening them completely.

Related Documentation
- Installing a CTP Interface Module, Processor Module, or Clock Module on page 54

Installing or Removing a CTP150 CompactFlash Card

The CompactFlash card is installed in the rear panel of the CTP150. To remove or install the CompactFlash card:

1. Power off the unit.

2. Remove the CompactFlash face plate in the center of the rear panel by unscrewing the two retaining screws.

3. Remove or install the CompactFlash card in the flash socket.

4. Replace the face plate with the two retaining screws.

Related Documentation
- Installing a CTP Interface Module, Processor Module, or Clock Module on page 54

CHAPTER 13

Cabling

Cabling the CTP150 Platform Overview

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 35.)

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 Documentation
- CTP Cabling Recommendations on page 20
- Required Tools, Wires, and Cables for the CTP150 Platform on page 57
- Setting Up Management Access to the CTP150 Platform on page 63
- CTP150 Console Port Setup
- Cabling a CTP150 Interface Module on page 58

Required Tools, Wires, and Cables for the CTP150 Platform

Cabling your device takes only a few minutes. You need the following items and the cables listed in Table 9 on page 58 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 kep 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 Documentation
- Cabling the CTP150 Platform Overview on page 57
- Cabling a CTP150 Interface Module on page 58

Cabling a CTP150 Interface Module

To install a cable in an interface module:

1. Ground yourself by using an antistatic wrist strap or other device, and connect it to an ESD grounding jack, if available, or another grounding device.

2. Remove the dust cover that protects the cable connectors.

3. Slide the cable as far as you can into the module until it clicks into place.

4. Gently pull the cable to confirm that it is inserted correctly.

5. Go on to "Before You Power On the CTP150 Device" on page 67.

Related Documentation
- Required Tools, Wires, and Cables for the CTP150 Platform on page 57
- Setting Up Management Access to the CTP150 Platform on page 63
- CTP150 Console Port Setup
- Using SSH to Access the CTP Platform on page 64

CTP150 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.

PART 5

Configuration

Accessing the CTP150 Platform

- Setting Up Management Access to the CTP150 Platform on page 63
- Connecting Directly to the CTP150 Platform on page 63
- Using HyperTerminal to Access the CTP150 Device on page 64
- Using SSH to Access the CTP Platform on page 64

Setting Up Management Access to the CTP150 Platform

Before you power on the device for the first time, you need to physically connect a console (PC, Macintosh, or UNIX workstation) to the device's **CONSOLE** port. Through this connection, you communicate with the CTP150 device during the power-on process to set an IP address and initially configure the device.

After you configure an IP address on the CTP150 device, you can access the device remotely through the Ethernet port by running SSH from a remote console.

Related Documentation
- Connecting Directly to the CTP150 Platform on page 63
- Using HyperTerminal to Access the CTP150 Device on page 64
- Using SSH to Access the CTP Platform on page 64

Connecting Directly to the CTP150 Platform

You can connect a console terminal (PC, Macintosh, or UNIX workstation) directly to the **CONSOLE** port on the CTP150 device. Initial configuration of the CTP device requires a direct connection. Once you configure an IP address for the device, you can connect to the device remotely.

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

To connect a console directly to the CTP150 device:

1. Connect the RJ-45 connector to the **CONSOLE** port.

2. Connect the crossover adapter connector to your console's serial port.

3. You can now power on the device. See "Powering On and Initially Configuring the CTP150 Device" on page 67.

Related Documentation
- Setting Up Management Access to the CTP150 Platform on page 63
- Using HyperTerminal to Access the CTP150 Device on page 64

Using HyperTerminal to Access the CTP150 Device

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 Documentation
- Setting Up Management Access to the CTP150 Platform on page 63
- Connecting Directly to the CTP150 Platform on page 63

Using SSH to Access the CTP Platform

When you have configured an IP address for the CTP150 device, you can run SSH from a remote 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 front panel of the CTP150 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.

Related Documentation

- Setting Up Management Access to the CTP150 Platform on page 63

Powering On and Initially Configuring the CTP150 Device

- Before You Power On the CTP150 Device on page 67
- Powering On and Initially Configuring the CTP150 Device on page 67
- Powering Off the CTP Platform on page 70

Before You Power On the CTP150 Device

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 on page 54
- Setting Up Management Access to the CTP150 Platform on page 63

Related Documentation
- Powering On the CTP150 Device on page 68
- Powering Off the CTP Platform on page 70

Powering On and Initially Configuring the CTP150 Device

- Powering On the CTP150 Device on page 68
- Configuring the First Boot Script for the CTP150 Device on page 68

Powering On the CTP150 Device

In this procedure we assume that the device is already connected to a power source.

For specifications on the electrical requirements for the device, see "CTP150 Platform Specifications" on page 13.

> ⚠ 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 console, the device is ready to be configured. If the device is new, it boots to a first boot script. If the device is already operational, it boots to a login prompt.

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.

Configuring the First Boot Script for the CTP150 Device

For the first-time boot process, there is a series of login prompts that require 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:

```
***** First boot of this flash. Setting up basic system configuration. *****
*********** 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.
Backing up /etc to nonvolatile storage..
*************** Setting up the network ***************
Configure supported protocols:
0)  IPv4 Only
1)  IPv6 Only
2)  IPv4 & IPv6

Please select your option (rtn for 0):

There are 2 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 to the available devices
and their descriptions:

        eth0: 10/100/1000 Copper (right)
        eth1: 10/100/1000 Copper (left)

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


Please input the hostname (return for (none)): ctp150bot

===== Configuration for eth0 (default device):
Please input the ip (return for 127.0.0.1): 10.3.206.10
Please input the netmask (return for 255.255.255.0): 255.255.0.0
Please input the gateway (return for 127.0.0.1): 10.3.0.1
Please input the mtu in bytes (return for 1500):

Add route to interface eth0 [n]



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

```
======================================
Backing up /etc to nonvolatile storage..
Backing up /usr/local to nonvolatile storage..
************** 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 11):

Setting the date (GMT). Please input the day [1-31] (return for 14):

Setting the date (GMT). Please input the hour [0-23] (return for 16):

Setting the date (GMT). Please input the minute [0-59] (return for 41):

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

Powering Off the CTP Platform

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 6

Maintenance

- Maintaining Components on page 73
- Product Reclamation and Recycling on page 77
- Packing and Returning Hardware on page 79

CHAPTER 16

Maintaining Components

- Required Tools for Maintaining the CTP Platform on page 73
- Storing CTP Modules and Other Components on page 73
- Cleaning the CTP Platform on page 74
- Replacing an AC Power Supply on page 74

Required Tools for Maintaining the CTP Platform

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 Documentation
- Storing CTP Modules and Other Components on page 73
- Cleaning the CTP Platform on page 74

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 Documentation
- Required Tools for Maintaining the CTP Platform on page 73
- Cleaning the CTP Platform on page 74

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.

Related Documentation
- Required Tools for Maintaining the CTP Platform on page 73
- Storing CTP Modules and Other Components on page 73

Replacing an AC Power Supply

Before you remove a power supply, be aware of the following:

- The minimum number of power supplies must be present in the router at all times.

- To maintain proper cooling and prevent thermal shutdown of the operating power supply unit, each power supply slot must contain either a power supply or a blank panel. If you remove a power supply, you must install a replacement power supply or a blank panel shortly after the removal.

- After powering off a power supply, wait at least 60 seconds before turning it back on.

To remove an AC power supply (see Figure 7 on page 75 for a representative AC power supply at the rear of the chassis):

1. Switch off the dedicated customer site circuit breaker for the power supply, and remove the power cord from the AC power source. Follow the instructions for your site.

2. Attach an electrostatic discharge (ESD) grounding strap to your bare wrist, and connect the strap to one of the ESD points on the chassis.

3. If the chassis has a power switch, move it to the off (**O**) position.

4. Unplug the power cord from the power source receptacle.

5. Unplug the power cord from the appliance inlet in the chassis above the power supply.

6. The AC power supply has a pull handle and a locking tab. Press the locking tab to the right while you pull the unit out using the handle.

Figure 7: Replacing an AC Power Supply
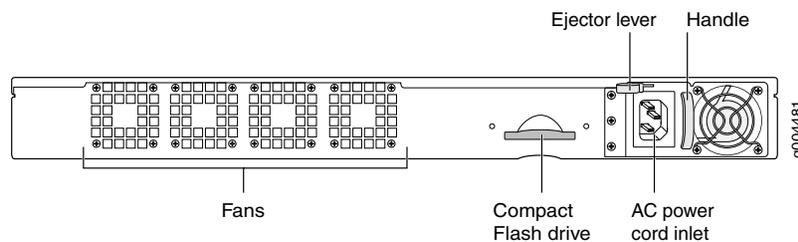
To install an AC power supply (see Figure 7 on page 75):

1. Move the AC input switch next to the appliance inlet on the power supply to the off (**O**) position.

2. Using both hands, slide the power supply straight into the chassis until the power supply is fully seated in the chassis slot. The power supply faceplate should be flush with any adjacent power supply faceplate or blank installed in the power supply slot.

3. Tighten both captive screws at the bottom of the power supply.

4. Attach the power cord to the power supply.

5. Attach the power cord to the AC power source, and switch on the dedicated customer site circuit breaker. Follow the instructions for your site.

6. If the chassis has a power switch, move it to the on (**|**) position.

7. Observe the status LEDs on the power supply faceplate. If the power supply is correctly installed and functioning normally, the **AC OK** and **DC OK** LEDs light steadily, and the **PS FAIL** LED is not lit.

Related Documentation

- Required Tools for Maintaining the CTP Platform on page 73
- Storing CTP Modules and Other Components on page 73
- Cleaning the CTP Platform on page 74

Product Reclamation and Recycling

- Product Reclamation and Recycling Program on page 77

Product Reclamation and Recycling Program

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 Documentation

- Return Procedure on page 79

- Returning CTP Products for Repair or Replacement on page 79

Packing and Returning Hardware

- Return Procedure on page 79
- Returning CTP Products for Repair or Replacement on page 79

Return Procedure

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 85.

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 86.

   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 79.

Related Documentation
- Returning CTP Products for Repair or Replacement on page 79
- Contacting Customer Support on page 85

Returning CTP Products for Repair or Replacement

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 Documentation

- Contacting Customer Support on page 85
- Return Procedure on page 79
- Locating CTP Component Serial Numbers on page 85
- Information You Might Need to Supply to JTAC on page 86

PART 7

Troubleshooting

CHAPTER 19

Troubleshooting Power Failures

- CTP Platform Does Not Power On on page 83
- CTP Platform Shuts Down on page 83

CTP Platform Does Not Power On

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 Documentation
- CTP Platform Shuts Down on page 83

CTP Platform Shuts Down

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 Documentation
- CTP Platform Does Not Power On on page 83

Contacting Customer Support

Contacting Customer Support

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 Documentation
- Return Procedure on page 79
- Locating CTP Component Serial Numbers on page 85
- Information You Might Need to Supply to JTAC on page 86
- Returning CTP Products for Repair or Replacement on page 79

Locating CTP Component Serial Numbers

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 Documentation
- Contacting Customer Support on page 85

- Return Procedure on page 79

- Information You Might Need to Supply to JTAC on page 86

- Returning CTP Products for Repair or Replacement on page 79

Information You Might Need to Supply to JTAC

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 Documentation
- Contacting Customer Support on page 85

- Return Procedure on page 79

- Locating CTP Component Serial Numbers on page 85

- Returning CTP Products for Repair or Replacement on page 79

PART 8

Index

Index