CTP SERIES CIRCUIT TO PACKET PLATFORMS
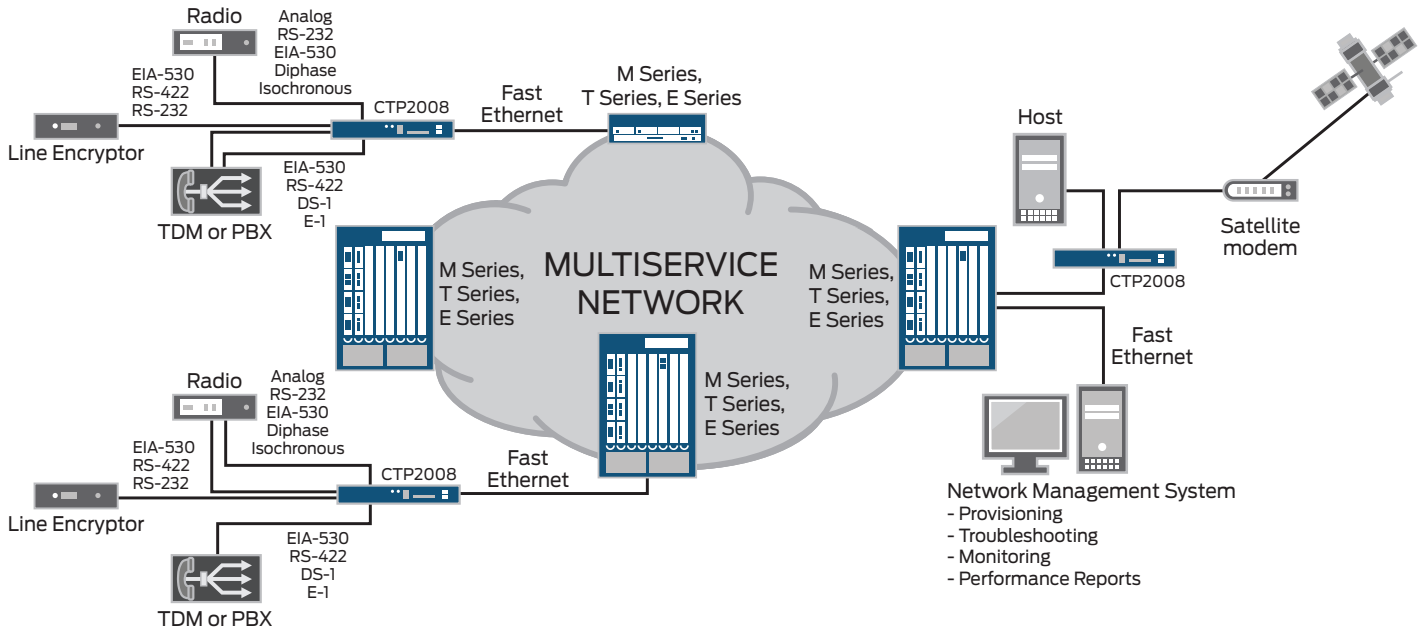
Product Overview

Juniper Networks CTP Series Circuit to Packet Platforms provide the advanced technology and features required to reliably transport time-division multiplexing and other circuit-based applications across next-generation IP/MPLS networks. The CTP Series has the field-proven flexibility, performance and reliability required for circuit applications. The CTP Series technology includes many advanced clocking options and per-circuit buffers to enable end-to-end timing and the removal of jitter to create a psuedowire across the IP/MPLS network. The CTP Series enables customers to connect digital and analog voice applications easily and reliably across the IP network using circuit emulation over IP, bringing them the advantages of converged multiservice IP networking without the complexities and cost of upgrades required for VoIP. The CTP Series bridges the legacy and IP world and provides many unique features that enable cost reduction by eliminating point-to-point circuits and convergence of all applications onto one IP/MPLS network.

Product Description

With the ongoing deployment of IP networks, the efficiency and cost-savings gains of IP are being realized for a variety of applications and functions. Largely left out of this evolution have been the circuit-based applications such as time-division multiplexing (TDM) leased line and voice private branch exchange (PBX) connections, serial encryption connections, and analog and digital radio systems networking, because their synchronous transport requirements are not addressed by a packet-based network. The Juniper Networks® CTP Series Circuit to Packet Platforms enable customers to connect these circuit-based applications easily and reliably across the IP network, bringing them the advantages of converged multiservice IP networking.

The CTP Series includes the Juniper Networks CTP150, CTP2008, CTP2024, CTP2056 Circuit to Packet Platforms, and the Juniper Networks CTPView Network Management System. The products are designed for government agencies, enterprises and service providers running circuit-based applications and range in size, port capacity and redundancy options.

PRODUCT	FEATURES
CTP150	The CTP150 Circuit to Packet Platform supports 4 to 8 interfaces of circuit emulation traffic in a 1 RU rack mountable chassis. The 4-port interface options include T1/E1 and serial, and they interwork with any CTP Series product.
CTP2008	The CTP2008 Circuit to Packet Platform is a 1 RU rack mountable chassis that supports up to 8 circuit emulation interfaces. The interface modules are software configurable and are the same across the CTP2000 line.
CTP2024	The CTP2024 Circuit to Packet Platform is a 2 RU rack mountable chassis that supports up to 24 circuit emulation interfaces. The chassis includes the option for redundant power.
CTP2056	The CTP2056 Circuit to Packet Platform is a 4 RU rack mountable chassis that supports up to 56 circuit emulation interfaces. The chassis includes the option for redundant power.
CTPView	The CTPView Network Management System provides network operators with the tools necessary to monitor network availability, report on IP networks performance, provision circuits, and troubleshoot circuit issues through a web-based GUI.

Radio
Analog
RS-232
EIA-530
Diphase
Isochronous

EIA-530
RS-422
RS-232

Line Encryptor

CTP2008

Fast
Ethernet

M Series,
T Series, E Series

Host

Satellite
modem

EIA-530
RS-422
DS-1
E-1

TDM or PBX

MULTISERVICE
NETWORK

M Series,
T Series,
E Series

M Series,
T Series,
E Series

M Series,
T Series,
E Series

CTP2008

Fast
Ethernet

Radio
Analog
RS-232
EIA-530
Diphase
Isochronous

EIA-530
RS-422
RS-232

Line Encryptor

CTP2008

Fast
Ethernet

EIA-530
RS-422
DS-1
E-1

TDM or PBX

Network Management System
- Provisioning
- Troubleshooting
- Monitoring
- Performance Reports

Primary Circuit to Packet Solutions

APPLICATION	APPLICATION DESCRIPTION	BENEFIT
SS7 transport over IP	Provides transport of dedicated T1 or E1 SS7 links over the IP/MPLS network.	Eliminates point-to-point T1 and E1 links required for transporting SS7 traffic and allows convergence over the IP/MPLS network.
TDM over IP solution	The provisioning of point-to-point TDM trunks over the IP network does not require changes to the TDM equipment.	Allows the continued use and investment protection of the existing TDM equipment or an easy transition path from a TDM network to an IP network.
PBX interconnect over IP solution	Provides T1, E1 and 4WE&M trunking for PBX interconnection over the IP network.	Reduce WAN infrastructure cost through the elimination of costly point-to-point circuits and leased lines required to support TDM and/or ATM networks. Circuit emulation over IP enables seamless transition to IP transport without upgrading your entire infrastructure to VoIP.
PBX Extension over IP with 2WFXS/2WFXO	Provides two-wire analog PBX to phone extensions over IP and two-wire PBX to PBX/central office connections over IP. Private-line automatic ringdown (PLAR) is also supported.	Reduces IT expenditures by enabling PBX tie lines to be transported across less expensive IP data network connections. Analog voice traffic is converted to IP, eliminating the need for costly T1 tie lines.
Leased line extension over IP solution	Supports standards-based encapsulation and DS0 bundling. IETF PWE3 RFCs, SAToP and CESoPSN are supported.	Enables full, fractional and DS0 bundling and mapping of T1 and E1 service provisioned over an IP/MPLS network and enables interoperability between vendors.
Radio over IP solution	Allows for connectivity of analog and digital radios over IP networks.	Provides a mechanism to deploy these systems over IP networks while maintaining critical communications.
Serial encryption over IP solution	Provides transport of KG/KIV bit-synchronous cipher text across an IP network.	Eliminates the need to deploy TDM or ATM equipment— saving cost, time, space, and power.
T1 and E1 backup over IP	Point-to-point T1 or E1 circuits can be automatically backed up over the IP/MPLS network.	Eliminates redundant point-to-point circuit costs. The end application does not need to detect IP, saving software and hardware upgrade costs.

Features and Benefits

Key features and benefits of the CTP Series Circuit to Packet Platforms include the following.

FEATURE	FEATURE DESCRIPTION	BENEFIT
Software circuit provisioning	EIA530, RS-232, V.35, 4WTO, T1, and E1 circuit types are software configured including the line encoding, clocking, rates, and IP settings.	The network quickly fulfills new and changing end user requirements without deploying excess hardware.
Scalable product family	A family of four CTP Series Circuit to Packet Platforms provides different port densities. Products can address the requirements of small remote sites through large central network hubs.	Network designers control costs by selecting the CTP Series Circuit to Packet Platforms most suitable for the site when considering circuit quantities and anticipated growth.

Features and Benefits (continued)

FEATURE	FEATURE DESCRIPTION	BENEFIT
CTPView Network Management System	Secure, multi-user, web-based network management system provides network monitoring, circuit provisioning, IP performance reporting, database backup, and circuit troubleshooting tools.	Managers quickly deploy circuits and services while proactively monitoring the network. IP performance reports provide detailed information on IP network jitter, delay and packet loss. Circuit troubleshooting tools include integral BERTS and loops to facilitate quick trouble resolution.
Multiple system and circuit clocking solutions	CTP Series Circuit to Packet Platforms are designed to use multiple external clocks as monitored and prioritized system references. Circuits are configured to use the system clock, external circuit timing, or to adaptively recover clock information from the remote port when required by the application or when no reference is configured.	Circuit reliability is improved since ports and systems are configured with the clocking solution that is most appropriate for the particular application.
Auto switch	The status of the CTP Series circuit ports is monitored, and the circuit is automatically switched to an alternate local or remote port when a failure is detected.	Network and circuit reliability are increased when the circuits are automatically restored to alternate locations and equipment in the event of an equipment, site or network failure.
Packet protector	Redundant packets are created and transmitted to the IP network and then processed by the receiving CTP Series.	Circuit quality and reliability are increased when IP connections experience significant packet loss caused by bit errors.
Autobaud	The input timing leads are monitored, and the circuit rate is automatically changed at both ends of the network if a rate change is detected.	Flexible rate agility enables immediate and automatic provisioning changes.
Loops and BERTs	Each CTP Series port supports interface and network loops and the ability to generate and monitor a bit error rate test with up to nine BERT patterns selectable.	Support for standard circuit troubleshooting tools that are built into the CTP Series help to quickly isolate network, circuit or cable problems.
Layer 2 IP aggregation	The CTP Series Circuit to Packet Platforms can aggregate layer 2 traffic from serial EIA530 interfaces onto a Fast Ethernet or Gigabit Ethernet interface. Layer 2 protocols supported are Frame Relay, PPP and Cisco-HDLC. Each CTP Series port is connected to a different VLAN.	The ability to aggregate layer 2 traffic on the CTP Series from multiple EIA530 serial interfaces reduces the router interfaces needed for low-speed EIA530 IP aggregation.
Port mirroring	The CTP Series is able to port-mirror any transmit or any receive up to 10 local or remote destinations.	Port mirroring minimizes the bandwidth required to send the same traffic to multiple sites across the network. It enables easy monitoring for troubleshooting circuit problems. Port mirroring enables the replication of data to multiple local or geographically dispersed locations.
Analog voice—4WE&M	The CTP Series supports analog 4WE&M type I, II,and V interfaces with software selectable transmit and receive-level adjustments per interface.	The ability to support analog 4WE&M interfaces allows the CTP Series Circuit to Packet Platforms to offer another PBX trunking option. The 4WE&M interface can also be used for radio interfaces with push-to-talk requirements.
Analog voice—2WFXS	The CTP Series supports analog 2WFXS loop start, ground start, and PLAR modes with software selectable transmit and receive-level adjustments per interface.	The ability to support analog 2WFXS interfaces allows the CTP Series Circuit to Packet Platforms to offer 2-wire voice extensions over IP for remote phones, remote central office or PBX equipment.
Analog voice—2WFXO	The CTP Series support analog 2WFXO loop start and ground start modes with software selectable transmit and receive-level adjustments per interface.	The ability to support analog 2WFXO interfaces allows the CTP Series Circuit to Packet Platforms to offer 2-wire voice extensions over IP to remote phones, or remote central office or PBX equipment.
Voice compression	The CTP Series Voice Compression module supports 64k G.711, 32k G.726, 16k G.726, 16k G.728, 8k G.729, and 2.4k MELP compression algorithms. The voice compression module also supports echo cancellation, silence suppression, fax and modem detection, and companding conversion.	Voice compression can be applied on any T1 or E1 DS0 and on the analog 4WE&M interfaces. The use of voice compression and silence suppression can dramatically reduce the bandwidth required in the IP network. Multiple DS0s or analog channels can be bundled into one packet to further reduce the bandwidth required in the IP network.
IRIG-B	The CTP Series supports an inter-range instrumentation group time code (IRIG-B) signal to be transported through an IP network. IRIG-B encodes day of year, hour, minute, and second data on a 1-KHz carrier frequency, with an update rate of once per second.	Provides the ability to support IRIG-B transport over the IP network with options to configure direction, output high and low levels, and data range per interface.

Product Options

OPTION	OPTION DESCRIPTION	APPLICABLE PRODUCTS
T1/E1 interface module	8-port T1 and E1 interface module with standard RJ48 interfaces. IETF PWE3 RFCs for SAToP and CESoPSN are supported.	CTP2008, CTP2024, CTP2056, CTP150 (4-port only)
Serial interface module	8-port serial interface module is provided. Per-port software selectable interfaces, data rates, clocking, etc. are available. Interface support for EIA232, V.24, EIA530, EIA449, V.35, and X.21 is provided.	CTP2008, CTP2024, CTP2056, CTP150 (4-port only)
Serial with T1/E1 interface option	Provides additional software configurable T1 and E1 interface option on the serial interface module. Full and fractional T1/E1 support is also available.	CTP2008, CTP2024, CTP2056
Serial with Multiservice interface option	Provides additional software configurable single channel 4-wire trunk-only interface option, IRIG-B option or high-quality analog option on the serial interface module.	CTP2008, CTP2024, CTP2056, CTP150 (4-port serial and 2-port MS support only)
4WE&M analog module	8-port 4WE&M front module and rear transition module support type I, II and V signaling options. The interface is a standard RJ21 amphenol connector. One voice compression module is required in the CTP Series.	CTP2024, CTP2056
2WFXS analog module	24-port 2WFXS front module and rear transition module support loop start, ground start and PLAR modes. The interface is a standard RJ21 amphenol connector. One voice compression module is required in the CTP Series.	CTP2024, CTP2056
2WFXO analog module	12-port 2WFXO front module and rear transition module support loop start and ground start modes. The interface is a standard RJ21 amphenol connector. One voice compression module is required in the CTP Series.	CTP2024, CTP2056
Voice compression module	The CTP Series Voice Compression module supports compression on T1 and E1 DS0s and all analog voice bundles. The module supports PCM, 32k G.726, 16k G.726, 16k G.728, 8k G.729, and 2.4k MELP compression algorithms. The voice compression module also supports echo cancellation, silence suppression, fax and modem detection, and companding conversion between T1 and E1.	CTP2024, CTP2056
CTP clock main and spoke modules	The CTP Series clock main and spoke modules are required when the 8-port serial module and compression module are installed into one CTP Series device.	CTP2024, CTP2056
Gigabit Ethernet and Fast Ethernet fiber SC modules	Provides for two 1000BASE-FX or 100BASE-FX SC connectors for IP connectivity on the network side.	CTP2008, CTP2024, CTP2056
Gigabit Ethernet SFP fiber options	SFP options include 1000BASE-T, 1000BASE-SX and 1000BASE-LX.	CTP2008, CTP2024, CTP2056
Y-cable	A cable connects one DTE to two DCE CTP Series serial ports to provide 1:1 hardware redundancy. This is only supported on serial interfaces. This option is not available on T1 or E1 interfaces.	CTP2008, CTP2024, CTP2056, CTP150
AC power	Internal AC power supply is provided.	CTP2008, CTP2024, CTP2056, CTP150
DC power	Internal DC power supply is provided.	CTP2008, CTP2024, CTP2056
Redundant power	Provides for dual redundancy power supplies.	CTP2024, CTP2056

CTP150

CTP2008

CTP2024

CTP2056

Specifications

	CTP150	CTP2008	CTP2024	CTP2056
Dimensions and Power				
Dimensions (W x H x D)	17.25 x 1.75 x 14.5 in (43.8 x 4.5 x 36.8 cm)	17.25 x 1.75 x 11.75 in (43.8 x 4.5 x 29.8 cm)	17.25 x 3.5 x 11.75 in (43.8 x 8.9 x 29.8 cm)	17.25 x 7.0 x 11.75 in (43.8 x 17.8 x 29.8 cm)
Weight (lb)	14.5	12	20	27
Mounting	Front Rack	Front Rack	Front Rack	Front Rack
Input voltage (AC)	100-240 VAC	100-240 VAC	100-240 VAC	100-240 VAC
Input voltage (DC)	N/A	40-72 VDC	40-72 VDC	40-72 VDC
Power supply	100 W	250 W	250 W x 2	250 W x 2
Input current	1.5 A at 110 VAC	2 A at 110 VAC	2 A at 110 VAC	2.5 A at 110 VAC
Operating temperature	32º to 104º F (0º to 40º C)	32º to 104º F (0º to 40º C)	32º to 104º F (0º to 40º C)	32º to 104º F (0º to 40º C)
Humidity noncondensing	5 to 90%	5 to 90%	5 to 90%	5 to 90%
Serial Interfaces				
Interfaces EIA232, EIA530, EIA530A, V.35, V.24, EIA449, X.21, T1, E1	Yes	Yes	Yes	Yes
IRIG-B	Yes	Yes	Yes	Yes
Encoding NRZ, Conditioned Diphase, Isochronous, Asynchronous, AMI, B8ZS, HDB3, TDM/TDC, Transparent	Yes	Yes	Yes	Yes
Interface quantity	8	8	24	56
Rates	50 bps–12.880 Mbps	50 bps–12.880 Mbps	50 bps–12.880 Mbps	50 bps–12.880 Mbps

Specifications (continued)

	CTP150	CTP2008	CTP2024	CTP2056
Voice Interfaces				
Analog voice 4-wire TO interface quantity	4	8	24	56
4WE&M	N/A	N/A	16	48
2WFXS	N/A	N/A	48	144
2WFXO	N/A	N/A	24	72
T1 and E1	8	8	24	56
Voice compression	N/A	N/A	Yes	Yes
Echo cancellation	N/A	N/A	Yes	Yes
Silence suppression	N/A	N/A	Yes	Yes
Fax and modem detection	N/A	N/A	Yes	Yes
Companding conversion	N/A	N/A	Yes	Yes
IP Interfaces				
100BASE-T (RJ-45)	N/A	N/A	N/A	N/A
100/1000BASE-T (RJ-45)	2	2	2	2
100BASE-FX (SC)—Optional	N/A	2	2	2
1000BASE-FX (SC)—Optional	N/A	2	2	2
SFP 1000BASE-T	N/A	4	4	4
SFP 1000BASE-SX	N/A	4	4	4
SFP 1000BASE-LX	N/A	4	4	4
Precedent setting—(DSCP), configurable TOS byte	Yes	Yes	Yes	Yes
VLAN tagging	Yes	Yes	Yes	Yes
Virtual IP	Yes	Yes	Yes	Yes
Circuit modes—symmetric, asymmetric, unidirectional, hairpin	Yes	Yes	Yes	Yes
IPv4 and IPv6	Yes	Yes	Yes	Yes
IETF PWE3 RFC SAToP	Yes	Yes	Yes	Yes
IETF PWE3 RFC CESoPSN	Yes	Yes	Yes	Yes
Layer 2 EIA530 aggregation	Yes	Yes	Yes	Yes
Port mirroring	Yes	Yes	Yes	Yes

Juniper Networks Services and Support

Juniper Networks is the leader in performance-enabling services and support, which are designed to accelerate, extend, and optimize your high-performance network. Our services allow you to bring revenue-generating capabilities online faster so you can realize bigger productivity gains and faster rollouts of new business models and ventures. At the same time, Juniper Networks ensures operational excellence by optimizing your network to maintain required levels of performance, reliability, and availability. For more details, please visit **www.juniper.net/us/en/products-services**.

Ordering Information

MODEL NUMBER	DESCRIPTION
CTP150	
CTP150-AC	AC base chassis
CTP150-IM-SER	4-port serial module with 4 HD-26 pin interfaces and one clock input interface. Serial supports RS-232/V.24, EIA530/530A/RS-422/499/X.21, V.35.
CTP150-IM-SER-MS	4-port serial module with 4 HD-26 pin interfaces and one clock input interface. Includes two daughter cards to add 4WTO analog, high-quality analog and IRIG capabilities to two ports.
CTP150-IM-T1E1	4-port T1/E1 module with 4 RJ48 interfaces and one clock input interface.
CTP150-PWR-AC	Spare AC power supply
CTP150-CBL-DB15-DCE-F	HD-26 interface cable, DB15, DCE, Female
CTP150-CBL-DB15-DTE-M	HD-26 interface cable, DB15, DTE, Male
CTP150-CBL-DB25-DCE-F	HD-26 interface cable, DB25, DCE, Female
CTP150-CBL-DB25-DCE-Y	Y-cable with DCE DB25 connectors
CTP150-CBL-DB25-DTE-M	HD-26 Interface cable, DB25, DTE, Male
CTP150-CBL-RJ45-DIU	HD-26 Interface cable, RJ45, V.24
CTP2000 Line	
Base Units	
CTP2008-AC-02	CTP2008 AC base chassis
CTP2008-DC-02	CTP2008 DC base chassis
CTP2024-AC-02	CTP2024 AC base chassis
CTP2024-DC-02	CTP2024 DC base chassis
CTP2056-AC-02	CTP2056 AC base chassis
CTP2056-DC-02	CTP2056 DC base chassis
Upgrades	
CTP-FX2000GE-UPG	Dual SC multimode fiber Gigabit Ethernet PMC upgrade
CTP-FX2000FE-UPG	Dual SC multimode fiber Fast Ethernet IM upgrade
CTP-Fiber-PMC	Fiber PMC card for CTP2000 line to support up to 2 SFP modules
CTP-SFP-1GE-T	Small form-factor pluggable 1000BASE-T Gigabit Ethernet module (uses Cat 5 cable)
CTP-SFP-1GE-SX	Small form-factor pluggable 1000BASE-SX Gigabit Ethernet optic module
CTP-SFP-1GE-LX	Small form-factor pluggable 1000BASE-LX Gigabit Ethernet optic module
CTP2000-RAM-RTM-UPG	CTP2000 line upgrade kit for release 6.0 includes 1G RAM, 4G CompactFlash card, and new Rear Transition Module (RTM).
CTP2000-RAM-UPG	CTP2000 line upgrade kit for release 6.0 includes 1G RAM and 4G CompactFlash card.

MODEL NUMBER	DESCRIPTION
CTP2000 Line	
Interface Modules	
CTP2000-IM-8P-T1E1	8-port T1/E1 RJ48 interface module
CTP2000-IM-8P	8-port serial interface module—EIA530/V.11/RS-422/X.21, RS-232/V.24, V.35
CTP2000-IM-8P-T1	8-port serial interface module—EIA530/V.11/RS-422/X.21, RS-232/V.24, V.35, T1, E1
CTP2000-IM-8P-MS	8-port serial interface module—EIA530/V.11/RS-422/X.21, RS-232/V.24, V.35, 4TWO, HQ Analog, IRIG
CTP2000-IM-4WEM	8-port 4WE&M analog voice module
4WEM-RTM	8-port 4WE&M 8-port rear transition module
CTP2000-COMPRESSION	8-DSP voice compression and echo cancellation module
CTP-COMPRESSION-2	16-DSP voice compression and echo cancellation module
CTP2000-IM-2WFXS	24-port 2WFXS analog voice module
2WFXS-RTM	24-port 2WFXS rear transition module
CTP2000-IM-2WFXO	12-port 2WFXO analog voice module
2WFXO-RTM	12-port 2WFXO rear transition module
Spares	
CTP2000-PRC-S	Processor spare
CTP2000-RTC-S	Rear transition module spare
CTP2000-PWR-R	CTP2024/CTP2056 redundant power supply option
CTP2000-PWR-DC-R	CTP2024/CTP2026 redundant DC power supply option
CTP2008-REC-RMK	CTP2008 recessed rack mount kit
CTP2024-REC-RMK	CTP2024 recessed rack mount kit
CTP2056-REC-RMK	CTP2056 recessed rack mount kit
CTP-CBL-4Q	Cable—100 pin to four (4) DB-25 DCE for CTP2000 line
CTP-CBL-4Q-DTE	Cable—100 pin to four (4) DB-25 DTE for CTP2000 line
CTP-CBL-4Q-Y	Redundancy cable for connections between two CTP Series platforms
CTP-CLK-MAIN	Clock main rear transition module for CTP2000 line
CTP-CLK-SPOKE	Clock spoke rear transition module for CTP2000 line
CTP Series Software	
CTP-OS-4G	Current software on 4G CompactFlash card
CTP-CF-4G-S	4G CompactFlash spare, no CTPOS
CTPView Network Management System Hardware/Software	
CTPVIEW-SVR-1	CTPView Network Management System server hardware
CTPVIEW-SW	CTPView Network Management System software

About Juniper Networks

Juniper Networks is in the business of network innovation. From devices to data centers, from consumers to cloud providers, Juniper Networks delivers the software, silicon and systems that transform the experience and economics of networking. The company serves customers and partners worldwide. Additional information can be found at **www.juniper.net**.

To purchase Juniper Networks solutions, please contact your Juniper Networks representative at 1-866-298-6428 or authorized reseller.