



# 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.*

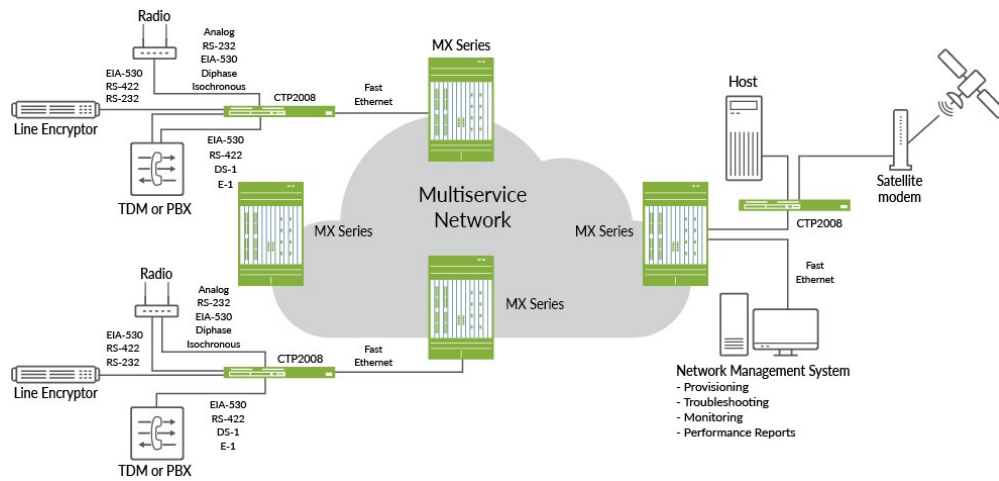
*The CTP Series technology includes many advanced clocking options and per-circuit buffers to enable end-to-end timing and the removal of jitter to create a pseudowire across the IP/MPLS network. The CTP Series enables customers to connect digital and analog voice applications easily and reliably across 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 CTP151, 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
<b>CTP151</b>	The CTP151 Circuit to Packet Platform supports 4 to 8 interfaces of circuit emulation traffic in a 1 U rack-mountable chassis. It provides T1/E1 and serial interface options in a powerful future-proofed chassis. The CTP151 is a functional replacement for the legacy CTP150, which is still widely deployed.
<b>CTP2008</b>	The CTP2008 Circuit to Packet Platform is a 1 U 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.
<b>CTP2024</b>	The CTP2024 Circuit to Packet Platform is a 2 U rack-mountable chassis that supports up to 24 circuit emulation interfaces. The chassis includes the option for redundant power.
<b>CTP2056</b>	The CTP2056 Circuit to Packet Platform is a 4 U rack-mountable chassis that supports up to 56 circuit emulation interfaces. The chassis includes the option for redundant power.
<b>CTPView</b>	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.



### Primary Circuit to Packet Solutions

Application	Application Description	Benefit
<b>SS7 transport over IP</b>	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.
<b>TDM over IP solution</b>	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.
<b>PBX interconnect over IP solution</b>	Provides E1 and T1 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.
<b>PBX Extension over IP with 2WFXS/2WFXO</b>	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.
<b>Leased line extension over IP solution</b>	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.
<b>Radio over IP solution</b>	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.
<b>Serial encryption over IP solution</b>	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.
<b>T1 and E1 backup over IP</b>	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
<b>Software circuit provisioning</b>	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.
<b>Scalable product family</b>	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.
<b>CTPView Network Management System</b>	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.
<b>Multiple system and circuit clocking solutions</b>	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.
<b>Auto switch</b>	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.
<b>Packet protector</b>	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.
<b>Autobaud</b>	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.
<b>Loops and BERTs</b>	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.
<b>Layer 2 Serial-to-Ethernet IP aggregation</b>	The CTP Series Circuit to Packet Platforms can aggregate layer 2 traffic from serial 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 serial interfaces reduces the router interfaces needed for low-speed IP aggregation.
<b>Port mirroring</b>	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.
<b>Analog voice—4WE&amp;M</b>	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.
<b>Analog voice—2WFXS</b>	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.
<b>Analog voice—2WFXO</b>	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.
<b>IRIG-B</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
<b>T1/E1 interface module</b>	8-port T1 and E1 interface module with standard RJ48 interfaces. IETF PWE3 RFCs for SAToP and CESoPSN are supported.	CTP2008, CTP2024, CTP2056, and CTP151/CTP150 (4-port only)
<b>Serial interface module</b>	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, and CTP151/CTP150 (4-port only)
<b>Serial with Multiservice interface option</b>	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, and CTP151/CTP150 (4-port serial and 2-port MS support only)
<b>4WE&amp;M analog module</b>	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.	CTP2024, CTP2056
<b>2WFXS analog module</b>	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.	CTP2024, CTP2056
<b>2WFXO analog module</b>	12-port 2WFXO front module and rear transition module support loop start and ground start modes. The interface is a standard RJ21 amphenol connector.	CTP2024, CTP2056
<b>CTP clock main and spoke modules</b>	The CTP Series clock main and spoke modules are required when the 8-port serial module and analog voice modules are installed into one CTP Series device.	CTP2024, CTP2056
<b>Gigabit Ethernet SFP fiber options</b>	SFP options include 1000BASE-T, 1000BASE-SX and 1000BASE-LX.	CTP2008, CTP2024, CTP2056
<b>Y-cable</b>	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, CTP151, CTP150
<b>AC power</b>	Internal AC power supply is provided.	CTP2008, CTP2024, CTP2056, CTP151, CTP150
<b>DC power</b>	Internal DC power supply is provided.	CTP2008, CTP2024, CTP2056
<b>Redundant power</b>	Provides for dual redundancy power supplies.	CTP2024, CTP2056



CTP151 Circuit to Packet Platform



CTP2008 Circuit to Packet Platform



CTP2024 Circuit to Packet Platform



CTP2056 Circuit to Packet Platform

## Specifications

	CTP151	CTP2008	CTP2024	CTP2056
<b>Dimensions and Power</b>				
Dimensions (W x H x D)	17.36 x 1.73 x 12 in (44.1 x 4.4 x 30.5 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)	9.92	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	150W	250 W	250 W x 2	250 W x 2
Input current	0.47 A at 110 VAC	2 A at 110 VAC	2 A at 110 VAC	2.5 A at 110 VAC
Operating temperature	32° to 104° F (0° to 40° C)	32° to 104° F (0° to 40° C)	32° to 104° F (0° to 40° C)	32° to 104° F (0° to 40° C)
Humidity noncondensing	5 to 90%	5 to 90%	5 to 90%	5 to 90%
<b>Serial Interfaces</b>				
Interfaces	Yes	Yes	Yes	Yes
EIA-530, RS-232/V.28, RS-422/V.11, RS-423/V.10, X.21, V.35, T1, E1				
IRIG-B	Yes	Yes	Yes	Yes
Encoding NRZ, Conditioned Diphas, 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
<b>Voice Interfaces</b>				
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
Companding conversion	N/A	N/A	Yes	Yes
<b>IP Interfaces</b>				
10/100/1000BASE-T (RJ-45)	4	2	2	2
SFP 1000BASE-T	2*	4	4	4
SFP 1000BASE-SX	2*	4	4	4
SFP 1000BASE-LX	2*	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 PW3E RFC SAToP	Yes	Yes	Yes	Yes
IETF PW3E RFC CESoPSN	Yes	Yes	Yes	Yes
Layer 2 serial aggregation	Yes	Yes	Yes	Yes
Port mirroring	Yes	Yes	Yes	Yes

\*Software support roadmap item

## Juniper Networks Services and Support

Juniper Networks is the leader in performance-enabling services that are designed to accelerate, extend, and optimize your high-performance network. Our services allow you to maximize operational efficiency while reducing costs and minimizing risk, achieving a faster time to value for your network. Juniper Networks ensures operational excellence by optimizing the network to maintain required levels of performance, reliability, and availability. For more details, please visit [www.juniper.net/uk/en/products-services](http://www.juniper.net/uk/en/products-services).

## Ordering Information

Model Number	Description
<b>CTP151 LINE</b>	
CTP151-AC	AC base chassis with 4-port 10/100/1000BASE-T RJ-45 and 2-port 1GbE/10GbE SFP/SFP+
<b>CTP151 Common Interface Modules</b>	
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 RJ-48 interfaces and one clock input interface
<b>CTP151 Common Spares</b>	
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
<b>CTP2000 LINE</b>	
<b>Base Units</b>	
CTP2008-AC-03	CTP2008 AC base chassis
CTP2008-DC-03	CTP2008 DC base chassis
CTP2024-AC-03	CTP2024 AC base chassis
CTP2024-DC-03	CTP2024 DC base chassis
CTP2056-AC-03	CTP2056 AC base chassis
CTP2056-DC-03	CTP2056 DC base chassis
<b>Upgrades</b>	
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
<b>Interface Modules</b>	
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-MS	8-port serial interface module—EIA530/V.11/RS-422/X.21, RS-232/V.24, V.35, 4TWO, HQ Analog, IRIG

Model Number	Description
CTP2000-IM-4WEM	8-port 4WE&M analog voice module
4WEM-RTM	8-port 4WE&M 8-port rear transition 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
<b>Spares</b>	
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
<b>CTP Series Software</b>	
CTP-OS-4G	Current software on 4G CompactFlash card
CTP-CF-4G-S	4G CompactFlash spare, no CTPOS
<b>CTPView Network Management System Hardware/Software</b>	
CTPVIEW-SVR-1	CTPView Network Management System server hardware
CTPVIEW-SW	CTPView Network Management System software

## About Juniper Networks

Juniper Networks brings simplicity to networking with products, solutions and services that connect the world. Through engineering innovation, we remove the constraints and complexities of networking in the cloud era to solve the toughest challenges our customers and partners face daily. At Juniper Networks, we believe that the network is a resource for sharing knowledge and human advancement that changes the world. We are committed to imagining groundbreaking ways to deliver automated, scalable and secure networks to move at the speed of business.

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