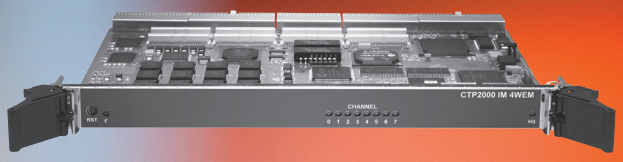
Voice Modules for the CTP Series



Product Overview

Enterprise organizations are leveraging the cost savings associated with IP transport for a variety of new packet based multi-media services. Yet legacy voice and circuit based applications are not able to take advantage of these savings due to their requirements for deterministic transport. Many enterprise organizations, governments, and first responders who have applications that run over circuit switched networks are challenged by the formidable expense to forklift upgrade their legacy networks to pure IP solutions, yet they desire the CapEx and OpEx savings associated with IP/MPLS network transport services.

The Juniper Networks CTP Series Voice Modules enable customers to reliably transport analog voice traffic over an IP/MPLS network, reducing CapEx and OpEx by utilizing a single IP/MPLS network to transport legacy and native IP traffic, enabling a smooth migration to a next generation network.

Your ideas. Connected.™

Product Description

Juniper Networks® CTP Series Circuit to Packet Platforms enable customers to connect voice applications easily and reliably across the IP network, bringing the advantages of converged multiservice IP networking without the complexities and cost of upgrades required for VoIP.

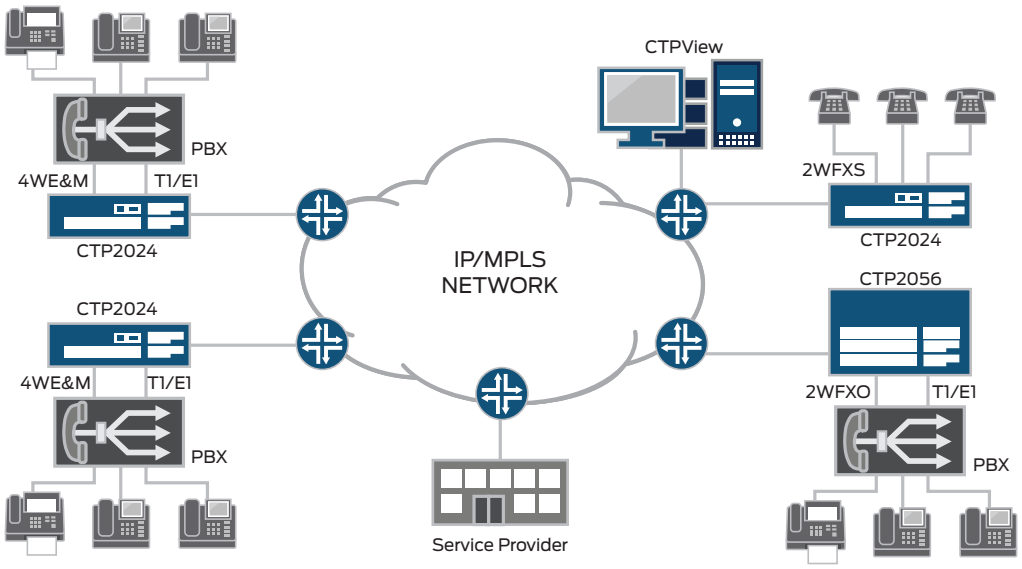
Juniper Networks CTP Series Voice Modules provide the advanced technology and features required to reliably transport voice applications across next-generation IP networks. The voice modules support T1 and E1 TDM voice and 4WE&M, 2WFXS, and 2WFXO analog voice interfaces, and the associated compression module can compress voice from either the digital TDM or analog voice module interfaces.

CTP Series platforms have the field-proven flexibility, performance, and reliability required for voice applications, and are deployed in government agency, enterprise, and service provider networks around the world.

Table 1: Juniper Networks CTP Series Products and Features

Product	Feature
CTP1002	CTP1002 Circuit to Packet Platform includes support for two T1 or E1 interfaces in a 1RU rack mountable chassis.
CTP1004	CTP1004 Circuit to Packet Platform includes support for four T1 or E1 interfaces in a 1RU rack mountable chassis.
CTP1012	CTP1012 Circuit to Packet Platform builds on the capabilities of the CTP1004 by tripling the T1 and E1 interface density in a 1RU rack mountable chassis.
CTP2008	CTP2008 Circuit to Packet Platform is a 1RU rack mountable chassis that supports eight T1 or E1 interfaces. The interface modules are software configurable and are the same across the CTP2000 product number series.
CTP2024	CTP2024 Circuit to Packet Platform is a 2RU rack mountable chassis that can be configured with 8 to 24 T1 or E1 interfaces, with options for voice compression, 4WE&M, 2WFXS, and 2WFXO analog interfaces. The chassis includes the option for redundant power.
CTP2056	CTP2056 Circuit to Packet Platform is a 4RU rack mountable chassis that can be configured with 8 to 56 T1 or E1 interfaces, with options for voice compression, 4WE&M, 2WFXS, and 2WFXO analog interfaces. The chassis includes the option for redundant power.
CTPView	CTPView Network Management System provides network operators with the tools necessary to monitor network availability, report on IP network performance, provision voice bundles, and troubleshoot voice issues through a GUI.

Architecture and Key Components



Features and Benefits

Table 2: Primary Circuit to Packet Solutions

Application	Application Description	Benefit
SS7 transport	Transport 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. No hardware or software changes are required on the voice switch.
PBX interconnect	Provides T1, E1, and analog 4WE&M trunking for PBX voice switch interconnect over the IP/MPLS network.	Eliminates point-to-point digital and analog voice switch trunks and allows voice trunking over the IP/MPLS network. No hardware or software changes are required on the voice switch.
ISDN Primary Rate Interface (PRI)	Transport ISDN PRI T1 or E1 between the same IP endpoints.	Eliminates the need for ISDN PRI service or the point-to-point T1 or E1 lines required for ISDN PRI, and allows the B channels and D channel to be transparently transported over the IP/MPLS network.
PBX extension	Provides two-wire analog PBX to phone extensions over IP and two-wire PBX to PBX/central office connections over the IP/MPLS network.	Enables two-wire phone extensions from PBX voice switches to be located anywhere in the IP network, and enables the PBX to connect to another PBX/central office located anywhere across the IP/MPLS network.

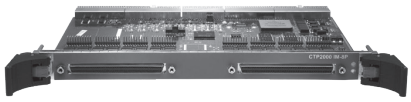
Table 3: CTP Series Key Features and Benefits

Application	Application Description	Benefit
Full T1 and E1 transport over IP	Transport full T1 and E1 circuits including framing across the IP/MPLS network.	This feature enables SS7 transport, PBX interconnect, and ISDN PRI transport over the IP/MPLS network.
CTPView management	Secure multiuser network management system provides network monitoring, circuit provisioning, IP performance reporting, 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.
Fractional T1 and E1 transport over IP	Transport a single fractional T1 or E1 bundle with or without framing across the IP/MPLS network.	This feature enables PBX interconnect from smaller remote sites and ISDN PRI transport with fewer B channels transported over the IP/MPLS network.
DS0 grooming and bundling over IP	The ability to bundle any number of T1 or E1 DS0 channels and have any number of bundles for each T1 or E1 to flexibly provision and groom T1 or E1 traffic over the IP/MPLS network.	This feature enables very flexible PBX interconnect from one to many sites by DS0 channel grooming each T1 or E1 to multiple destinations over the IP/MPLS network.
4WE&M analog transport over IP	Support 4WE&M analog trunking interface with type I, II, and V signaling options. Convert analog to digital and packetize for transport over the IP/MPLS network. Interwork with T1 or E1 DS0s.	The 4WE&M interface enables the CTP Series to connect directly to analog PBX voice switch trunks and transport those trunks over the IP/MPLS network. Bundling of multiple analog trunks into one packet minimizes IP overhead. Interworking between 4WE&M to T1 or E1 DS0s enables small analog sites to be aggregated into larger digital T1 or E1 PBX voice switches.
2WFXS and 2WFXO analog transport over IP	Support 2WFXS and 2WFXO analog interfaces with loop and ground start signaling. Convert analog to digital and packetize for transport over the IP/MPLS network. Interwork with T1 or E1 DS0s.	The 2WFXS and 2WFXO interfaces enable the CTP Series to connect directly to two-wire analog PBX voice switch interfaces to extend the phone extension over the IP/MPLS network. Bundling multiple analog channels into one packet minimizes IP overhead. Interworking between 2WFXS and 2WFXO to T1 or E1 DS0s enables small analog sites to be aggregated into larger digital T1 or E1 PBX voice switches.
Voice compression	The voice compression module supports 2.4 K MELP, 8 K G.729, 16 K G.728, 16 K G.726, 32 K G.726, and 64 K G.711 voice compression, and A-Law to mu-Law conversion. Silence suppression is also an option on each analog or T1/E1 DS0.	The voice compression module can compress all analog channels or T1/E1 DS0s. Compression is software selectable on each analog or DS0 channel. By using compression and silence suppression, significant bandwidth savings can be realized.
Echo cancellation	The voice compression module supports an option for echo cancellation with 32 ms end path delay per G.168.	The voice compression module can be used to provide echo cancellation on all analog channels or T1/E1 DS0s. Echo cancellation is software selectable. This can eliminate the requirement for external echo cancellation devices.
Fax and modem detection	The voice compression module supports an option for T.38 fax and modem detection.	The voice compression module can be used to detect fax and modem tones on all analog channels or T1/E1 DS0s. The fax is demodulated and transported over the IP/MPLS network. The modem is detected, the compression is bypassed, and the call is transported at 64 Kbps.
Port mirroring	Port mirroring copies any transmit or receive on any voice interface and allows it to be sent to 10 different destinations.	Port mirroring is a software selection available on any CTP Series analog channel or T1/E1 DS0. The voice is copied, the signaling is not copied. Port mirroring allows for a broadcast to multiple locations over the IP/MPLS network. This can greatly reduce bandwidth requirements.
Auto switch	The status of 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 platform.	Circuit quality and reliability are increased when IP connections experience significant packet loss caused by bit errors.

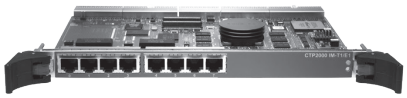
Product Options

Table 4: CTP Series Voice Product Options

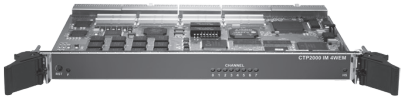
Option	Option Description	Applicable Products
T1/E1 interface module	8-port T1 and E1 interface module with standard RJ48 interfaces and built-in channel service unit (CSU) for line build out. PWE3 RFC's SAToP and CESoPSN.are supported. This module supports DS0 mapping and bundling, and interworks with the CTP Series analog voice modules and CTP Series compression module.	CTP2008, CTP2024, CTP2056
Serial with T1/E1 interface option	Serial interface module with T1 and E1 support. Per port software selectable interfaces. Interfaces with EIA232, V.24, EIA530, EIA449, V.35, X.21, T1, and E1. The T1 and E1 interfaces support CTP Series platforms and SAToP encapsulation. Full T1 and E1 or fractional T1 and E1 are supported.	CTP1002, CTP1004, CTP1012, CTP2008, CTP2024, CTP2056
Serial with 4WTO interface option	Provides additional software configurable single or dual channel 4-wire trunk only interface option.	CTP1002, CTP1004, CTP1012, CTP2008, CTP2024, CTP2056
4WE&M interface module	8-port 4WE&M analog interface module with type I, II, and V signaling options. This is a two card set with a front and rear interface module. The rear interface module supports the 50 pin amphenol cable interfaces. One voice compression module is required in the CTP Series.	CTP2024, CTP2056
2WFXS interface module	24-port 2WFXS analog interface module with loop and ground start signaling options. This is a two card set with a front and rear interface module. The rear interface module supports the 50 pin amphenol cable interfaces. One voice compression module is required in the CTP Series.	CTP2024, CTP2056
Clock Main and Clock Spoke Modules	The Clock Main and Clock Spoke modules are used to distribute the clock when both serial and analog voice and/or T1/E1 with voice compression are used in the same CTP.	CTP2024, CTP2056



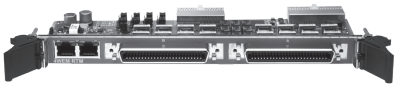
CTP2000-IM-8P-T1



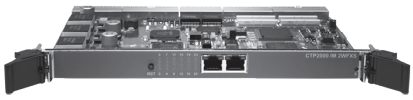
CTP2000-IM-8P-T1E1



CTP2000-IM-4WEM



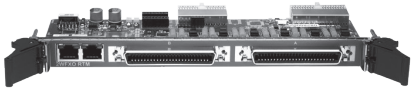
4WEM-RTM



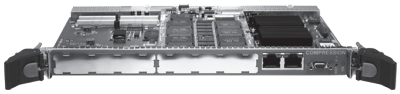
CTP2000-IM-2WFXS

2WFXS-RTM

CTP2000-IM-2WFXO



2WFXO-RTM



CTP2000-COMPRESSION

Specifications

	CTP1002	CTP1004	CTP1012	CTP2008	CTP2024	CTP2056
Voice Interfaces						
Analog voice 4-wire TO interface quantity	4	8	24	16	48	112
4WE&M	N/A	N/A	N/A	N/A	16	48
2WFXS	N/A	N/A	N/A	N/A	48	144
2WFXO	N/A	N/A	N/A	N/A	24	72
T1 and E1	2	4	12	8	24	56
Voice compression	N/A	N/A	N/A	N/A	Yes	Yes
Echo cancellation	N/A	N/A	N/A	N/A	Yes	Yes
Silence suppression	N/A	N/A	N/A	N/A	Yes	Yes
Fax and Modem detection	N/A	N/A	N/A	N/A	Yes	Yes
Companding conversion	N/A	N/A	N/A	N/A	Yes	Yes

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/us/en/products-services.

Ordering Information

Model Number	Model Name and Description
CTP2000-IM-8P-T1	CTP2000 interface module with serial RS-232, EIA530, V.35, T1 and E1
CTP2000-IM-8P-T1E1	CTP2000 interface module with 8 T1, E1 ports
CTP2000-IM-4WEM	CTP2000 line 4WE&M 8-port analog voice module
4WEM-RTM	CTP2000 line 4WE&M 8-port rear transition module
CTP2000-IM-2WFXS	CTP2000 line 2WFXS 24-port analog voice module
2WFXS-RTM	CTP2000 line 2WFXS 24-port rear transition module
CTP2000-IM-2WFXO	CTP2000 line 2WFXO 12-port analog voice module
2WFXO-RTM	CTP2000 line 2WFXO 12-port rear transition module.
CTP-CLK-MAIN	CTP2000 line clock main rear transition module
CTP-CLK-SPOKE	CTP2000 line clock spoke rear transition module

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.

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