

Cisco 7200, 7400 and 7500 Series Routers T1, E1 Enhanced Digital Voice Port Adapters



The Cisco enhanced digital voice port adapters (PA-VXC-2TE1+, PA-VXB-2TE1+, PA-VXA-1TE1-24+, and PA-VXA-1TE1-30+) for the Cisco 7000 Series routers provide high-capacity voice, termination to private branch exchanges (PBXs), and the Public Switched Telephone Network (PSTN) for central-site and large-branch packet voice applications.

The enhanced digital voice port adapter family consists of three members: the Two-Port T1, E1 High-Capacity Enhanced Digital Voice Port Adapter (PA-VXC-2TE1+), the Two-Port T1, E1 Moderate-Capacity Enhanced Digital Voice Port Adapter (PA-VXB-2TE1+), and the One-Port T1, E1 Enhanced Digital Voice Port Adapter (PA-VXA-1TE1-24+, PA-VXA-1TE1-30+). Supported on the Cisco 7200, 7400, and 7500 Series routers, all three port adapters offer the same industry-leading feature set and performance. The cards differ only in their overall voice-channel capacity.

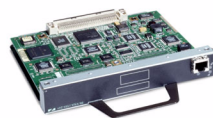


Figure 1: One-Port T1 and E1 High Capacity Enhanced Digital Voice Port Adapter

Both enhanced digital voice port adapters are highly integrated solutions offering a leap forward in voice-channel density and application flexibility. These single-width port adapters incorporate two universal ports that can be configured for either T1 or E1 connection with high-performance digital signal processors (DSP) that support up to 120 channels of compressed voice (see Table 1 for channels supported on each port adapter). Integrated channel service units/digital service units (CSU/DSU) echo cancellation, and Digital Signal Level 0 (DS0) drop and insert functionality eliminate the need for external line-termination devices and multiplexers, which simplifies network design and management.

The enhanced digital voice port adapters offer an end-to-end interoperable voice-over-IP (VoIP) solution with the Cisco 1750, 2600, 3600, 3660, 3810, 5300, 5800, 7200, 7400 and 7500 products. Powerful voice management on the Cisco 7200, 7400, and 7500 Series Routers is offered through the Cisco Voice Manager 2.0 Web-based user interface for provisioning, configuration, and monitoring functions. Device-level network management is also available using the Cisco Element Management Framework (CEMF)-based Element Management System (EMS). End-to-end network management and Fault, Configuration, Accounting, Provisioning, and Security (FCAPS) are now available using CIC, CPC, and third-party FCAPS products.

The enhanced digital-voice port adapters provide a solution for several common applications including toll bypass, Cisco AVVID Gateway, voice over Packet (IP, ATM or Frame), Managed CPE, and fax gateway services.

Enhanced Digital Voice, Port Adapter Series Comparison

Members of the enhanced digital-voice, port-adapter series offer the same set of feature-rich voice services. The only difference between the products is the number of voice channels they can support.

Specifications

Voice-Channel Support:

- Medium Complexity – ITU-T Codecs Supported (G.729a/b, G.726, G.711)
- High Complexity – ITU-T Codecs Supported (G.729, G.729b, G.723.1, G.723.1a, G.728)
- GSM/EFR
- Fax-relay (Group 3 up to 14.4 K)

The table below summarizes the number of calls supported on each of the voice port adapters.

Table 1 Table 1. Number of Channels Supported on the Enhanced Digital Voice Port Adapters

Product	Number of High-Complexity Channels	Number of Medium-Complexity Channels	GSM/EFR	Group 3 Fax
PA-VXA-1TE1-24+		24		24
PA-VXA-1TE1-30+		30		30
PA-VXB-2TE1+	24	48	24	48
PA-VXC-2TE1+	60	120	60	120

Voice Standards Support

- FRF.11 voice over Frame Relay
- Voice over ATM (VoAAL2 available now 7200 series Routers from Cisco IOS Software Release 12.2(2)T, VoAAL5 and CES available on the Cisco 7200 and 7500 Series routers)
- H.323 version 2 voice over IP including RAS, Fast Connect, and Codec negotiation
- H.323 v2 and MGCP 0.1 Call Control Protocols

DSP Features

- Fax relay: T.30 fax protocol with relay, V.17, V.29, V.27
- Echo cancellation: 32 ms meeting G.165
- DTMF/R2/MF/SF/CP tone detection and generation

- Dial-pulse detection and generation
- Energy-based VAD and codec-specific VAD
- Comfort-noise generator

Signaling Supported

- E1 CAS, T1 CAS (robbed-bit signaling)
- E1 R2
- PRI User and Network Side
- Transparent CCS
- Q.SIG
- FG-D
- Multi-D Channel

Port-configured as T1 Features

- DS1 100-ohm interfaces with RJ-48c connectors



- D4 super frame (SF) and extended super frame (ESF) framing
- Alternate mark inversion (AMI) or binary 8-zero substitution (B8ZS) line encoding
- Full FDL support and FDL performance monitoring per ANSI T1.403 or AT&T TR 54016
- Selectable DSX-1 cable length in increments from 0 to 655 feet
- Selectable DS1 CSU line build-out: 0, -7.5, -15, and -22.5 dB
- Selectable DS1 CSU receiver gain: 26 or 36 dB
- DS1 line protection per UL1459/1950, FCC part 68
- Full support for DSX-1 Management Information Base (MIB), RFC 1406, including alarm detection and reporting
- DSX-1 MIB remote access supported
- DS0 Drop and Insert

Port-configured as E1 Features

- E1 120-ohm (G.703) with RJ-48c connectors
- Software-configurable E1 national bits
- HDB3, AMI encoding
- CRC4 and non-CRC4 framing
- Full support for E1 MIB, RFC 1406, including alarm detection and reporting
- DS0 Drop and Insert

Full Bit-error, Rate-testing Capabilities on each E1/T1

- Programmable pseudo-random pattern up to 24-bits in length including 211-1, 215-1, 220-1, 220-1 QRSS, 233-1, all zeros, all ones, alternating ones and zeros
- 32-bit-error count registers

Supported Loopbacks

- Line loopback: T1/E1 stream is loopbacked at the LIU toward the network.

- Payload loopback: T1/E1 data stream is loopbacked at the framer toward the network.
- Diagnostic local loopback: T1/E1 data stream is loopbacked at the framer toward the system.
- Remote loopback: T1 stream is loopbacked at the LIU toward the network upon request from the far-end via FDL.

Network Management Support

- CEMF-based EMS
- Simple Network Management Protocol (SNMP) protocol-compliant
- Manageable via an MIB browser
- CiscoView interface for configuration
- Cisco Voice Manager (CVM) supported
- Netsys

Country Support

- Approved in most countries
- Software Configurable Ring Cadence and Call Progress Tones

Ordering Information

Part Number	Description
PA-VXC-2TE1+	Two-Port T1/E1 High-Capacity Enhanced Digital Voice Port Adapter
PA-VXC-2TE1+=	Two-Port T1/E1 High-Capacity Enhanced Digital Voice Port Adapter
PA-VXB-2TE1+	Two-Port T1/E1 Moderate-Capacity Enhanced Digital Voice Port Adapter
PA-VXB-2TE1+(=)	Two-Port T1/E1 Moderate-Capacity Enhanced Digital Voice Port Adapter
PA-VXA-1TE1-24+(=)	One-Port T1/E1 Enhanced Digital Voice Port Adapter with 24 channels

Part Number	Description
PA-VXA-1TE1-30+(=)	One-Port T1/E1 Enhanced Digital Voice Port Adapter with 30 channels

The following table shows platform and voice signaling support by Cisco IOS software release for the enhanced digital voice port adapters:

Cisco IOS Software Support

The high-capacity, enhanced digital-voice port adapter is supported in all Cisco IOS Software feature sets, except the ENTERPRISE MCM images, starting in the 12.1(2)T and 12.1(3)T releases.

Signaling	7200	7500	7400
T1 CAS, E1 CAS, Q.SIG, PRI Q.931 User/Network, R2, T-CCS, Multi-D Channel	12.1(3)T	12.1(3)T	12.2(2)DD
Feature D	12.1(5)T	12.1(5)T	12.2(2)DD
RAI	12.2(4)T	12.2(4)T	12.2(4)B
MGCP	12.2(2)T	12.2(2)T	12.2(2)DD
PA-VXC-2TE1+, PA-VXB-2TE1+	12.1(3)T	12.1(3)T	12.2(2)DD
PA-VXA-1TE1-24+, PA-VXA-1TE1-30+ with all the above features	12.2(4)T	12.2(4)T	12.2(4)B



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