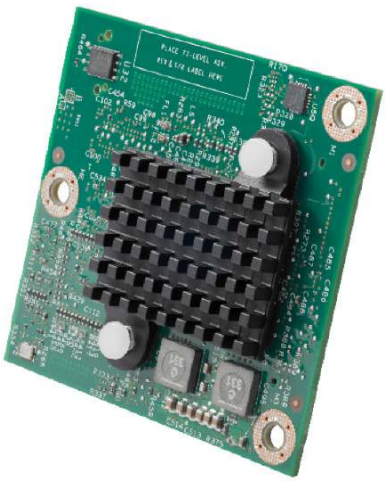
Cisco Fourth-Generation Packet Voice Digital Signal Processor Module for Cisco Unified Communications Solutions

Product Overview

The Cisco® Fourth-Generation Packet Voice Digital Signal Processor Module (PVDM4) enables Cisco 4451-X Integrated Services Routers (ISRs) to provide rich-media capabilities such as high-density voice connectivity, conferencing, transcoding, media optimization, transrating, and secure voice in Cisco Unified Communications Solutions.

The fourth-generation packet voice digital-signal-processor (DSP) modules are available in four densities: PVDM4-32, PVDM4-64, PVDM4-128, and PVDM4-256, with 32, 64, 128, and 256 channels, respectively (Figure 1). Tables 1 and 2 show the number of voice channels and codecs that each PVDM4 module supports.

Figure 1. PVDM4 Top View



Features and Benefits

The PVDM4 modules are supported on the Cisco 4451-X platform. You can plug them directly into the single slot on the router motherboard or onto the network interface module (NIM) that supports T1/E1 ports. Enhanced DSP architecture accommodates a new packet-processing engine optimized for rich-media voice applications, while concurrently supporting the time-division multiplexing IP (TDM-IP) voice framework.

A PVDM4 module plugged onto the motherboard delivers IP-based voice services such as conferencing, media optimization, and transcoding. A PVDM4 module plugged onto the NIM daughter card would be used for voice T1/E1 connectivity.

All the PVDM4 modules have the same form factor and are field-upgradable to allow you to easily scale your voice deployments.

Codec Support and Capacity

The PVDM4 modules support a wide range of codecs of different complexities. They support all codecs that are supported by the PVDM3 modules. Table 1 lists the codecs supported on the PVDM4 modules, and Table 2 gives the channel densities of the PVDM4 modules. Table 3 lists the media-enhancement features.

Table 1. Voice, Fax, and Modem Codec Support on PVDM4 Modules

Low-Complexity Codecs	Medium-Complexity Codecs	High-Complexity Codecs
G.711, Clear-channel, and Fax and Modem Pass-through	G.729a, G.729ab, G.726, G.722, and Fax Relay	G.728, G.729, G.729b, Internet Low Bitrate Codec (iLBC), and Modem Relay AMR WB

Table 2. Channel Densities of PVDM4 Modules

Name	Description	Number of Channels		
		Low- Complexity	Medium- Complexity	High-Complexity
PVDM4-32	32-channel voice DSP module	32	24	16
PVDM4-64	64-channel voice DSP module	64	48	32
PVDM4-128	128-channel voice DSP module	128	96	64
PVDM4-256	256-channel voice DSP module	256	192	128

Table 3. Media Enhancement Features

Feature
Echo cancellation
Tone detection
Noise reduction
Acoustic shock prevention

Conferencing, Transcoding, and Transrating Services

The PVDM4 modules support digital voice connections, conferencing, and universal transcoding services. The PVDM4-256 can support up to 8conferences with 64 participants in each conference and up to 88 conferences with 8 participants in each conference. Please refer to the PVDM4 Q&A for more information about the number of supported sessions.

In conjunction with Cisco IOS® Software, the PVDM4 modules support universal transcoding and the same codec repacketization as the PVDM3 modules. Universal transcoding allows transcoding from any supported codec to any other supported codec. Refer to the PVDM4 Q&A for more details about the number of supported sessions for each codec.

The PVDM4 modules support transrating, where repacketization of the same codec is used to connect dissimilar networks that have different codec packetization periods.

Voice-Quality Management

The PVDM4 modules perform compression, voice-activity-detection, jitter-management, and echo-cancellation functions. The echo cancellation offered in the PVDM4 modules has a tail length of 128 milliseconds (ms) and complies with ITU-T G.168.

Energy-Saving Feature

The PVDM4 DSPs offer multiple power-saving modes, including a power-saver mode when the module is not in use. In power-saver mode each PVDM4 can save up to 5 watts of power.

Cisco Platform Availability

The PVDM4 modules are supported on Cisco 4451-X platforms. The platform has one slot for the PVDM4 module. You can plug any additional PVDM4 modules onto the T1/E1 NIMs.

Note that PVDM3 modules are not supported on the Cisco 4451-X, and PVDM4 modules are not supported on the Cisco 2900 and 3900 Series platforms.

Product Specifications

Table 4 gives module specifications.

Table 4. Module Specifications

Feature	Specifications
Components	
DSP	Multicore DSP technology
DSP external memory	512-megabit double-data-rate (DDR) synchronous dynamic random access memory (SDRAM) for each DSP
Interface	240-pin dual-inline-memory-module (DIMM) interface
Features	
Echo cancellation	Software echo cancellation compliant with ITU-T G.168, with 128-ms tail coverage
Operating temperature	32 to 122℉ (0 to 50℃)
Voltage	3.3V
Current	1.47A
Power	4.85W
Weight	0.08 lb (36g)
Dimensions (H x W x D)	0.67 x 2.50 x 2.62 in. (1.70 x 5.08 x 6.65 cm)
Regulatory and Compliance	
Safety	• Complies with IEC 60950 (worldwide) and AS/NZS 60950-1 (Australia and New Zealand) CAN/CSA-C22.2 No. 60950-1, 1st and 2nd Ed. (Canada) and GB4943-95 (People's Republic of China) • EN60950-1, 1st and 2nd Ed. (CENELEC; includes EU and EFTA) • NOM-019-SCFI-1998 (Mexico), and UL 60950-1, 1st and 2nd Ed. (United States)
Homologation	Platform dependent
Mean time between failure (MTBF)	System dependent
EMC	
Emissions	• CISPR22, Class B • EN55022, Class B, CFR47, Part 15, Subpart B, Class B
Harmonics	EN61000-3-2
Flicker	EN61000-3-3
Immunity	• CISPR24 • EN 55024 • EN50082-1
Electrostatic discharge (ESD)	EN 61000-4-2
RF fields	EN 61000-4-3

Feature	Specifications
EFT	EN 61000-4-4
Surge	EN 61000-4-5
Conducted RF	EN 61000-4-6
Power-frequency magnetic fields	EN 6100-4-8
Voltage dips, sags, and interruptions	EN 61000-4-11

Ordering Information

Table 5 gives ordering information for the modules.

Table 5. Ordering Information

Description	Part Number
32-channel high-density voice DSP module, or spare	PVDM4-32 or PVDM4-32=
64-channel high-density voice DSP module, or spare	PVDM4-64 or PVDM4-64=
128-channel high-density voice DSP module, or spare	PVDM4-128 or PVDM4-128=
256-channel high-density voice DSP module, or spare	PVDM4-256 or PVDM4-256=

To place an order, visit the Cisco Ordering Home Page and refer to Table 5. To download software, visit the Cisco Software Center.

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