High-Density Packet Voice Digital Signal Processor Module for Cisco Unified Communications Solutions

Product Overview

The Cisco® High-Density Packet Voice Digital Signal Processor (DSP) Module (PVDM2) enables Cisco Integrated Services Routers to provide high-density voice connectivity, conferencing, and transcoding capabilities in Cisco IP Communications solutions. Cisco Integrated Services Routers provide enterprises and service providers with a toll bypass solution by connecting their existing telephony equipment (such as private branch exchanges [PBXs], key systems, analog telephones, and fax machines) to a toll-free data network and eventually migrating customers to Cisco Unified Communication Architecture for Voice, Video and Integrated Data IP telephony solutions.

The high-density packet voice DSP modules are available in five versions: PVDM2-8, PVDM2-16, PVDM2-32, PVDM2-48, and PVDM2-64 (Figure 1). Tables 1 and 2 show the number of voice channels and codecs that each PVDM2 module supports.

Figure 1. PVDM2 Top and Bottom Views

	Top	Bottom
PVDM2-64		
PVDM2-48		
PVDM2-32		
PVDM2-8 and PVDM2-16		

Table 1. Channel Density of Each PVDM2 Module

Name	Description*	Maximum Number of Channels in G.711	Maximum Number of Channels in High-Complexity Codecs	Maximum Number of Channels in Medium-Complexity Codecs
PVDM2-8	8-channel packet fax and voice DSP module	8	4	4
PVDM2-16	16-channel packet fax and voice DSP module	16	6	8
PVDM2-32	32-channel packet fax and voice DSP module	32	12	16
PVDM2-48	48-channel packet fax and voice DSP module	48	18	24
PVDM2-64	64-channel packet fax and voice DSP module	64	24	32

* The number of channels in PVDM2 product numbers and descriptions is the maximum channel density with the G.711 codec.

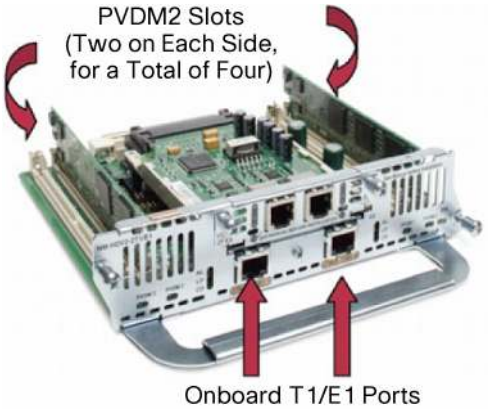
Table 2. Codec Support on the PVDM2 Module

Name	High-Complexity Codecs	Medium-Complexity Codecs
PVDM2 Module	G.723.1, G.728, G.729, G.729b, iLBC, and Modem Relay	G.7112, g.729a, G.729ab, G.726, G.722, and Fax Relay

* PVDM2 can support a higher density of G.711 calls than that of other medium-complexity codecs. See Table 1.

PVDM2 connects to the host through 80-pin single inline memory module (SIMM) slots. The module is field insertable and removable. Figure 2 shows how PVDM2 is plugged into PVDM2 SIMM slots on the Cisco high-density digital voice network modules.

Figure 2. PVDM2 SIMM Slots on the Cisco High-Density Digital Voice Network Modules



Features and Benefits

Investment Protection and Field-Upgradable Capability

PVDM2 is used across a series of Cisco Integrated Services Routers and high-density voice network modules, allowing users to distribute or reuse DSP resources among the routers or network modules as needed. The field-upgradable capability enables users to easily scale their voice deployments.

In addition, each DSP on the PVDM2 provides four times the processing power and more memory than the existing PVDM. The high performance of PVDM2 supports future growth.

High Density and Flexibility

PVDM2 provides high call density per DSP and flexibility of channel allocation. The maximized support of uncompressed G.711 voice calls optimizes DSP utilization for the solutions, mainly based on G.711 codecs such as IP telephony, in a LAN where the bandwidth consumed by uncompressed calls is not a concern.

Conferencing and Transcoding Services

With PVDM2, Cisco Integrated Services Routers and voice network modules provide both digital and analog voice connections and conferencing and transcoding services. In conjunction with host software, PVDM2 supports universal transcoding when needed. Universal transcoding allows transcoding from any supported codec to any other supported codec. As a general rule, the number of sessions needed for a universal transcoding channel is the sum of the session requirements for two separate voice channels, one running each of the configured codecs. For example, a channel running universal transcoding from a G.729a codec to iLBC would need the session capacity for a voice channel running the G.729a codec and MIPS (million instructions per second) for a voice channel running the iLBC codec.

Improved Voice Quality

PVDM2 performs compression, voice activity detection, jitter management, and echo cancellation functions to improve voice quality. The echo cancellation offered in PVDM2 has a tail length of 64 milliseconds (ms) and complies with International Telecommunication Union (ITU)-T G.168.

Availability of Features

Table 3 summarizes the availability of features.

Table 3. Features Availability

Name	Platform Support	Availability	Release
PVDM2-8, PVDM2-16, PVDM2-32, PVDM2-48, and PVDM2-64	NM-HDV2, NM-HDV2-1T1/E1, and NM-HDV2-2T1/E1	IP voice or IP plus above images	Cisco IOS® Software Release 12.3(7)T
PVDM2-8, PVDM2-16, PVDM2-32, PVDM2-48, and PVDM2-64	Cisco 2801*, 2811, 2821, and 2851 Integrated Services Routers	IP voice and above images	Cisco IOS Software Release 12.3(8)T4
PVDM2-8, PVDM2-16, PVDM2-32, PVDM2-48, and PVDM2-64	EVM-HD-8FXS/DID, EM-HDA-8FXS, and EM-4BRI-NT/TE	IP voice and above images	Cisco IOS Software Release 12.3(8)T4
PVDM2-8, PVDM2-16, PVDM2-32, PVDM2-48, and PVDM2-64	Cisco 3825 and 3845 Integrated Services Routers	IP voice and above images	Cisco IOS Software Release 12.3(11)T
PVDM2-8, PVDM2-16, PVDM2-32, PVDM2-48, and PVDM2-64	Cisco 2901, 2911, 2921, 2951, 3925, 3945 Integrated Service Routers **	Unified Communications License	Cisco IOS® Software Release 15.0(1)M

* The conferencing and transcoding feature on the Cisco 2801 will be available in a future Cisco IOS Software release.
** Onboard support for the PVDM2 modules in the 2911, 2921, 2951, 3925, and 3945 platforms will be via the PVDM adapter, PVDM2-ADPTR. Adapters are not required on the Cisco High-Density Digital Voice Network Modules.

Product Specifications

Table 4 presents product specifications.

Table 4. Product Specifications

Feature	Specifications
Components	
DSP	• Texas Instruments TNETV2510GGW for PVDM2-16, PVDM2-32, PVDM2-48, and PVDM2-64 • Texas Instruments TNETV2505GGW for PVDM2-8
DSP CPU Clock	• 200 MHz for TNETV2510GGW • 175MHz for TNETV2505GGW
DSP External Memory	128-megabit synchronous dynamic RAM for each DSP (for both TI 2510 and TI 2505)
Interface	80-pin SIMM interface
Features	
Echo Cancellation	Software echo cancellation compliant with ITU-I G.168, with 64-ms tail coverage
Approvals and Compliance	
Safety	• IEC 60950 (worldwide) and AS/NZS 3260 (Australia and New Zealand) • CAN/CSA-C22.2 No. 60950 (Canada) and GB4943-95 (People's Republic of China) • EN60950 (CENELEC; includes EU and EFTA) • SS337 (Singapore; PSB approval), NOM-019-SCFI-1998 (Mexico), and UL 60950 3rd edition (United States)
Homologation	Platform dependent
Mean Time between Failure (MTBF)	System dependent
EMC	
CISPR22, Class B	Emissions
EN55022, Class B	Emissions

Feature	Specifications
CFR47, Part 15, Subpart B, Class B	Emissions
EN61000-3-2	Harmonics
EN61000-3-3	Flicker
CISPR24	Immunity
EN 55024	Immunity
EN50082-1	Immunity
EN61000-3-2	Harmonics
EN 61000-3-3	Flicker
EN 61000-4-2	Electrostatic discharge (ESD)
EN 61000-4-3	Radio frequency (RF) fields
EN 61000-4-4	EFT
EN 61000-4-5	Surge
EN 61000-4-6	Conducted RF
EN 6100-4-8	Power-frequency magnetic fields
EN 61000-4-11	Voltage dips, sags, and interruptions

Ordering Information

Table 5 presents ordering information.

Table 5. Ordering Information

Description	Part Number
8-Channel Packet Fax/Voice DSP Module, or spare	PVDM2-8 or PVDM2-8=
16-Channel Packet Fax/Voice DSP Module, or spare	PVDM2-16 or PVDM2-16=
32-Channel Packet Fax/Voice DSP Module, or spare	PVDM2-32 or PVDM2-32=
48-Channel Packet Fax/Voice DSP Module, or spare	PVDM2-48 or PVDM2-48=
64-Channel Packet Fax/Voice DSP Module, or spare	PVDM2-64 or PVDM2-64=
PVDM2 Adapter for PVDM Slot on Cisco 2900, 3900 Series ISR	PVDM2-ADPTR or PVDM2-ADPTR=

To place an order, go to the Cisco Ordering homepage: http://www.cisco.com/en/US/ordering/index.shtml.

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