

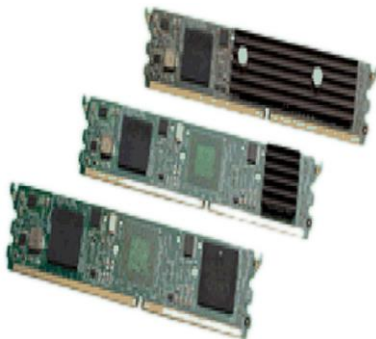
# High-Density Packet Voice Digital Signal Processor Module for Cisco Unified Communications

## Product Overview

The PVDM3 brings new rich-media capabilities to Cisco® Unified Communications Solutions. High-density voice connectivity. Conferencing, transcoding, and transrating. Management of voice quality. Power savings, secure voice, and more. The module resides on the Cisco 2900 and 3900 Series routers to enable these capabilities.

The next-generation high-density packet voice digital-signal-processor (DSP) modules are available in six densities: PVDM3-16, PVDM3-32, PVDM3-64, PVDM3-128, PVDM3-192, and PVDM3-256. The modules have 16, 32, 64, 128, 192, and 256 channels, respectively (Figure 1). Tables 1 and 2 show the number of voice channels and codecs that each PVDM3 module supports.

**Figure 1.** PVDM3 Family View



## Features and Benefits

The Cisco High-Density Packet Voice Digital Signal Processor Module (PVDM3) is supported on all Cisco 2900 and 3900 Series platforms, part of the Cisco Integrated Services Routers Generation 2 (ISR G2) portfolio. It provides higher density and more processing power than the PVDM2, making the addition of rich-media applications possible. 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 used by the PVDM2.

## Investment Protection and Field-Upgradable Capability

You can now choose a DSP module ranging from 16 to 256 G.711 channels from the PVDM3 module portfolio. The PVDM3 modules all have the same form factor, and are used across Cisco 2900 and 3900 Series Integrated Services Routers (ISRs). The field-upgradable capability can help you easily scale your voice deployments.

In addition, DSPs on the PVDM3 provide more processing power and memory than the DSPs on the PVDM2. The high performance of PVDM3 supports future voice and video growth with a simple image upgrade to eliminate complete system upgrades. The PVDM3 modules can not only meet your needs today but also anticipate your needs in the future.

## Wide Range of Codec Support

The PVDM3 modules support a wide range of codecs of different complexities. They support all codecs that are supported by the PVDM2 modules. Table 1 lists the codecs supported on the PVDM3 modules.

**Table 1.** Codec Support on PVDM3 Modules

Name	Low-Complexity Codecs	Medium-Complexity Codecs	High-Complexity Codecs
<b>PVDM3 module</b>	G.711, clear-channel, Fax and Modem Passthrough	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

## High Density and Flexibility

The PVDM3 modules have up to four times higher density than the PVDM2 modules. In addition, the PVDM3 modules provide better density for medium- and high-complexity codecs than their equivalent PVDM2 peers. For example, the number of supported medium-complexity codecs on a PVDM3-64 is 42, versus 32 on a PVDM2-64. Refer to Table 2 for more details about channel density for each PVDM3 module.

High-end PVDM3 modules such as the PVDM3-192 and PVDM3-256 enable scalable rich-media applications with improved user experience and quality. A PVDM3-256 can support up to 60 secure iLBC TDM-IP voice sessions, and up to 30 eight-party conferences with the high-fidelity wideband codec G.722.

**Table 2.** Channel Density of PVDM3 Modules

Name	Description	Maximum Number of Channels in Low-Complexity Codecs	Maximum Number of Channels in Medium-Complexity Codecs	Maximum Number of Channels in High-Complexity Codecs
<b>PVDM3-16</b>	16-channel high-density voice DSP module	16	12	10
<b>PVDM3-32</b>	32-channel high-density voice DSP module	32	21	14
<b>PVDM3-64</b>	64-channel high-density voice DSP module	64	42	28
<b>PVDM3-128</b>	128-channel high-density voice DSP module	128	96	60
<b>PVDM3-192</b>	192-channel high-density voice DSP module	192	138	88
<b>PVDM3-256</b>	256-channel high-density voice DSP module	256	192	120

## Conferencing, Transcoding, and Transrating Services

The PVDM3 modules support digital voice connections, analog voice connections, conferencing, and universal transcoding services. The same DSPs on the PVDM3 modules can now support all the services with a single DSP image. In addition, the PVDM3 supports a higher number of conference sessions and a higher number of participants per conference than the PVDM2. The PVDM3-256 can support up to 6 conferences with 64 participants in each conference and up to 66 conferences with 8 participants in each conference. Please refer to the [PVDM3 Q&A](#) for more information about the number of supported sessions.

In conjunction with Cisco IOS® Software, the PVDM3 modules support universal transcoding and the same codec repacketization as the PVDM2 modules. Universal transcoding allows transcoding from any supported codec to any other supported codec. The PVDM3 modules offer improved universal transcoding session capacity over the PVDM2 modules. Please refer to the [PVDM3 Q&A](#) for more details about the number of supported sessions for each codec on each PVDM3 module.

The PVDM3 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 PVDM3 modules perform compression, voice-activity-detection, jitter-management, and echo-cancellation functions. The echo cancellation offered in the PVDM3 modules has a tail length of 128 milliseconds (ms) and complies with ITU-T G.168.

### Energy-Saving Feature

The PVDM3 DSPs offer multiple power-saving modes, including a power-saver mode when the module is not in use. In power-saver mode each PVDM3 can save up to 5 watts of power.

### Cisco Platform Availability

The Cisco High-Density Packet Voice Digital Signal Processor Modules are supported on all Cisco 2900 and 3900 Series platforms. The Cisco 2901 and 2911 have 2 PVDM slots each, the Cisco 2921 and 2951 have 3 PVDM slots each, and the Cisco 3925 and 3945 have 4 PVDM slots each. Please refer to Table 3 for more information about the support matrix.

**Table 3.** Integrated Services Router Platform Support

Name	Platform Support	Availability	Release
<b>PVDM3-16, PVDM3-32, PVDM3-64, PVDM3-128, PVDM3-192, and PVDM3-256</b>	Cisco 2901, 2911, 2921, 2951, 3925, 3945, 3925-E, and 3945-E Integrated Service Routers	Unified Communications License on Universal Cisco IOS Software image	Cisco IOS Software Release 15.0(1)M

**Note:** PVDM3 modules are not supported on the existing Cisco 2800 and 3800 Series Integrated Services Routers.

### Product Specifications

Table 4 lists product specifications.

**Table 4.** Product Specifications

Feature	Specifications
<b>Components</b>	
<b>DSP</b>	Multicore DSP technology
<b>DSP external memory</b>	512-megabit double-data-rate (DDR) synchronous dynamic random access memory (SDRAM) for each DSP
<b>Interface</b>	240-pin dual-inline-memory-module (DIMM) interface
<b>Features</b>	
<b>Echo cancellation</b>	Software echo cancellation compliant with ITU-T G.168, with 128-ms tail coverage
<b>Operating temperature</b>	-41 to 131°F (-5 to 55°C)
<b>Voltage</b>	3.3V
<b>Current</b>	1.47A
<b>Power</b>	4.85W

Feature	Specifications
<b>Regulatory and Compliance</b>	
<b>Safety</b>	<ul style="list-style-type: none"> <li>Complies with IEC 60950 (worldwide) and AS/NZS 60950-1 (Australia and New Zealand), CAN/CSA-C22.2 No. 60950-1, 1<sup>st</sup> and 2<sup>nd</sup> Ed. (Canada), and GB4943-95 (People's Republic of China)</li> <li>EN60950-1, 1<sup>st</sup> and 2<sup>nd</sup> Ed. (CENELEC; includes EU and EFTA)</li> <li>NOM-019-SCFI-1998 (Mexico), and UL 60950-1, 1<sup>st</sup> and 2<sup>nd</sup> Ed. (United States)</li> </ul>
<b>Homologation</b>	Platform dependent
<b>Mean time between failure (MTBF)</b>	System dependent
<b>EMC</b>	
<b>Emissions</b>	<ul style="list-style-type: none"> <li>CISPR22, Class B</li> <li>EN55022, Class B, CFR47, Part 15, Subpart B, Class B</li> </ul>
<b>Harmonics</b>	EN61000-3-2
<b>Flicker</b>	EN61000-3-3
<b>Immunity</b>	<ul style="list-style-type: none"> <li>CISPR24</li> <li>EN 55024</li> <li>EN50082-1</li> </ul>
<b>Electrostatic discharge (ESD)</b>	EN 61000-4-2
<b>RF fields</b>	EN 61000-4-3
<b>EFT</b>	EN 61000-4-4
<b>Surge</b>	EN 61000-4-5
<b>Conducted RF</b>	EN 61000-4-6
<b>Power-frequency magnetic fields</b>	EN 6100-4-8
<b>Voltage dips, sags, and interruptions</b>	EN 61000-4-11

## Ordering Information

Table 5 presents ordering information.

**Table 5.** Ordering Information

Description	Part Number
16-channel high-density voice DSP module, or spare	PVDM3-16 or PVDM3-16=
32-channel high-density voice DSP module, or spare	PVDM3-32 or PVDM3-32=
64-channel high-density voice DSP module, or spare	PVDM3-64 or PVDM3-64=
128-channel high-density voice DSP module, or spare	PVDM3-128 or PVDM3-128=
192-channel high-density voice DSP module, or spare	PVDM3-192 or PVDM3-192=
256-channel high-density voice DSP module, or spare	PVDM3-256 or PVDM3-256=

To place an order, visit the [Cisco Ordering Home Page](#). To download software, visit the [Cisco Software Center](#).

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### For More Information

For more information, contact your Cisco sales rep or visit

[http://www.cisco.com/c/en/us/products/collateral/interfaces-modules/2800-3800-high-density-packet-voice-digital-signal-processor/prod\\_qas0900aecd8016c6ad.html](http://www.cisco.com/c/en/us/products/collateral/interfaces-modules/2800-3800-high-density-packet-voice-digital-signal-processor/prod_qas0900aecd8016c6ad.html).



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