Data Sheet

# High-Density Packet Voice/Fax Digital Signal Processor Module for Cisco AS5400XM and AS5350XM Voice Gateways

## PRODUCT OVERVIEW

The Cisco® High-Density Packet Voice/Fax DSP Module (AS54-PVDM2-64) helps the Cisco AS5400XM and AS5350XM Voice Gateways provide high-density voice connectivity to Cisco Voice Infrastructure and Applications (VIA) solutions. Cisco AS5000XM Series Voice Gateways offer service providers and large enterprises intelligent, high-capacity voice gateways that can be used for several solutions, including voice services over broadband, wholesale voice transport, unified communications, call-center services, IP-enabled interactive voice response (IVR), toll bypass, hosted IP telephony, and prepaid calling card services. The high-density packet voice/fax digital-signal-processor (DSP) module is available and supported in a single version (part number AS5X-PVDM2-64), shown in Figure 1.

**Figure 1.** Cisco High-Density Packet Voice/Fax DSP Module

Both sides of the module are shown in Table 1 and the numbers of voice channels and codecs that this module supports are shown in Table 2 and Table 3.

**Table 1.** Cisco PVDM2 Top and Bottom Views

| Part Number | Top | Bottom |
|---|---|---|
| **AS5X-PVDM2-64** | | |

**Table 2.** Channel Density of Each Cisco AS54-PVDM2-64 Module

| Part Number | Description | Maximum Channels in High-Complexity Codec | Maximum Channels in Medium-Complexity Codec | Maximum Channels in Low-Complexity Codec |
|---|---|---|---|---|
| **AS5X-PVDM2-64** | 64-channel packet voice/fax DSP module | 24 | 32 | 64 |

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**Table 3.** Codec Support on Cisco AS54-PVDM2-64 Module

| Part Number | High-Complexity Codecs | Medium-Complexity Codecs | Low-Complexity Codecs |
|---|---|---|---|
| **AS5X-PVDM2-64** | • Adaptive multirate AMR-NB: 4.75K, 5.15K, 5.9K, 6.7K, 7.4K, 7.95K, 10.2K, 12.2K, and silence insertion descriptor (SID)<br>• G.723.1: 5.3K and 6.3K<br>• G.723.1A: 5.3K and 6.3K<br>• G.728<br>• Modem relay<br>• Internet Low Bit Rate Codec (iLBC)* | • G.729 a<br>• G.729 ab<br>• G.726: 16K, 24K, and 32K<br>• T.38 Fax Relay<br>• Cisco Fax Relay | • G.711 mu-law<br>• G.711 a-law<br>• Fax pass-through<br>• Modem pass-through<br>• Clear channel codec |

* Support is planned for a future Cisco IOS® Software release.

The Cisco AS54-PVDM2-64 connects to the Cisco AS5000XM Feature Card (part number AS5X-FC) through 80-pin single inline memory module (SIMM) slots. The module is field-insert table and removable. The Cisco AS5400XM and AS5350XM manage DSP resources on a call-by-call basis to service all codec types (low, medium, and high complexity). Six Cisco AS54-PVDM2-64 modules can be plugged into a Cisco AS5000XM Feature Card. Table 2 shows the number of calls supported per Cisco PVDM2 on the Cisco AS5000XM. Figure 2 shows how a Cisco PVDM2 is plugged into the feature card.

**Figure 2.** Cisco AS54-PVDM2-64 SIMM Slots on the Cisco AS5000XM Feature Card

## KEY FEATURES AND BENEFITS

### Investment Protection and Field-Upgradeable Capability

The Cisco AS54-PVDM2-64 is used across the series of Cisco AS5000XM Series Voice Gateways. This module shares the technology with the modules used in the Cisco Integrated Services Routers, facilitating continued evolution of capabilities and investment protection. The field upgradeable capability helps users easily scale their voice deployment and redeploy DSPs where needed. The high performance of the module supports future growth.

### High Density and Flexibility

The Cisco AS5X-PVDM2-64 provides high call density per DSP and flexibility on the channel allocation. The maximized support of uncompressed G.711 voice calls optimizes the DSP usage for the solutions where G.711 codecs are appropriate, including call centers and interactive-voice-response (IVR) solutions, and the flexibility allows for high compression where required, such as toll-bypass and wireless solutions.

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### Industry-Leading Voice Quality

The Cisco AS54-PVDM2-64 performs compression, voice activity detection (VAD), jitter management and echo-cancellation functions to help ensure that the voice quality on Cisco Voice over IP (VoIP) solutions is toll quality. The echo cancellation offered in the module has a 64-ms tail length and is ITU-T G.168-compliant. Tables 3 through 5 describes the feature availability, supported IOS images, licenses, standards supported and ordering information regarding the module.

**Table 4.** Features Availability

| Part Number | Platform Support | Availability | Release |
|---|---|---|---|
| **AS5X-PVDM2-64** | Cisco AS5400XM and AS5350XM | All images | Cisco IOS Software Release 12.4(4)XC |
| **FR535XM-AMR-LIC(=)** | Cisco AS5350XM | Special license required to support AMR codecs on the Cisco AS5X-PVDM2-64 DSP; contact sales channel to obtain | Cisco IOS Software Release 12.4(4)XC |
| **FR54XM-AMR-LIC(=)** | Cisco AS5400XM | Special license required to support AMR codecs on the Cisco AS5X-PVDM2-64 DSP; contact sales channel to obtain | Cisco IOS Software Release 12.4(4)XC |

**Table 5.** Product Specifications

| Product | Specification |
|---|---|
| **Components** | |
| DSP | Texas Instruments TNETV2510GGW |
| DSP CPU Clock | 200 MHz for TNETV2510GGW |
| DSP External Memory | 128-Mb synchronous dynamic RAM (SDRAM) for each DSP (there are a total of 4 DSP modules on the Cisco AS5X-PVDM2-64) |
| 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)<br>• AS/NZS 3260 (Australia and New Zealand)<br>• CAN/CSA-C22.2 No. 60950 (Canada)<br>• GB4943-95 (Peoples Republic of China)<br>• EN60950 (CENELEC; includes EU and EFTA)<br>• SS337 (Singapore; PSB approval)<br>• NOM-019-SCFI-1998 (Mexico)<br>• UL 60950 3rd edition (United States) ) |
| Homologation | Platform dependent |
| Mean Time Between Failure (MTBF) | System dependent |

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| Product | Specification |
|---|---|
| **EMC** | |
| CISPR22, Class B | Emissions |
| EN55022, Class B | Emissions |
| 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 | ESD |
| EN 61000-4-3 | 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/interruptions |

**Table 6.** Ordering Information

| Product Description | Product Part Number |
|---|---|
| **64-Channel Packet Voice/Fax DSP Module, or Spare** | AS5X-PVDM2-64 or AS5X-PVDM2-64= |
| **AMR License for Cisco AS5350XM, or Spare** | FR535XM-AMR-LIC or FR535XM-AMR-LIC= |
| **AMR License for Cisco AS5400XM, or Spare** | FR54XM-AMR-LIC or FR54XM-AMR-LIC= |

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

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