




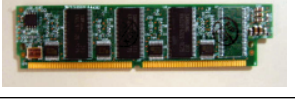
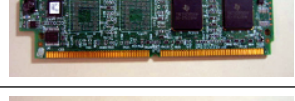
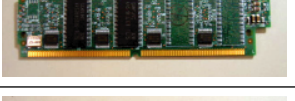
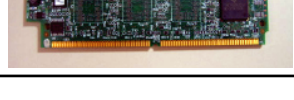
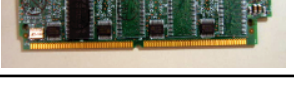
## HIGH-DENSITY PACKET VOICE DIGITAL SIGNAL PROCESSOR MODULE FOR CISCO IP COMMUNICATIONS SOLUTION

### PRODUCT OVERVIEW

The High-Density Packet Voice digital signal processor (DSP) Module (PVDM2) enables Cisco Systems® multiservice access routers to provide high-density voice connectivity, conferencing, and transcoding capabilities in Cisco® IP Communications solutions. Cisco multiservice access 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 migrate customers to Cisco AVVID (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). The number of voice channels and codecs that each PVDM2 module supports are shown in Tables 1 and 2.

**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 <sup>1</sup>               | Number of DSPs | Maximum Channels in G.711 | Maximum Channels in High Complexity Codecs | Maximum Channels in Medium Complexity Codecs |
|----------|--|----------------|---------------------------|--|--|
| PVDM2-8  | 8-Channel Packet Fax/Voice DSP Module  | 1 <sup>2</sup> | 8                         | 4  | 4  |
| PVDM2-16 | 16-Channel Packet Fax/Voice DSP Module | 1 <sup>3</sup> | 16                        | 6  | 8  |
| PVDM2-32 | 32-Channel Packet Fax/Voice DSP Module | 2              | 32                        | 12   | 16   |
| PVDM2-48 | 48-Channel Packet Fax/Voice DSP Module | 3              | 48                        | 18   | 24   |
| PVDM2-64 | 64-Channel Packet Fax/Voice DSP Module | 4              | 64                        | 24   | 32   |

1. The number of channels in PVDM2 product numbers and descriptions is the maximum channel density with G.711 codec.
2. One Texas Instrument TNETV2505GGW DSP.
3. One Texas Instrument TNETV2510GGW DSP.

**Table 2** Codec Support on PVDM2 Module

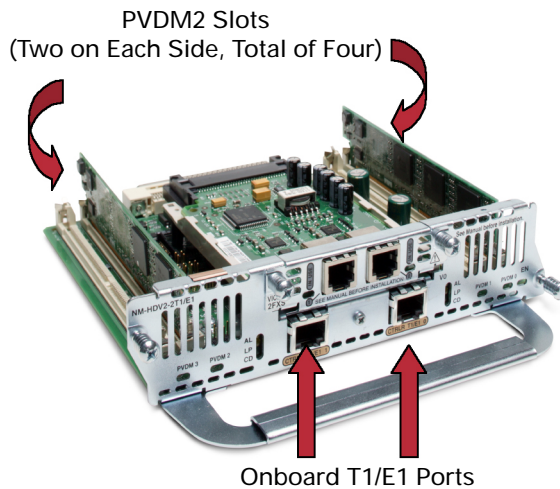
|                     | High-Complexity Codecs  | Medium-Complexity Codecs   |
|---------------------|---|--|
| <b>PVDM2 Module</b> | G.723.1, G.728, G.729, G.729b, Global System for Mobile Communications (GSM)-enhanced full rate and Modem Relay | G.711 <sup>1</sup> , g.729a, G.729ab, G.726, GSM-Full Rate and Fax Relay |

1. PVDM2 can support 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 in-line 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



## KEY FEATURES AND BENEFITS

### Investment Protection and Field-Upgradable Capability

PVDM2 will be used across a series of Cisco multiservice access routers and high-density voice network modules. This allows 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 deployment.

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

### High Density and Flexibility

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

### Conferencing and Transcoding Services

With PVDM2, Cisco multiservice access routers and voice network modules provide not only digital and analog voice connections, but also conferencing and transcoding services. Table 3 shows conferencing sessions support per DSP. In conjunction with host software, PVDM2 translates a call from one codec to G.711 or conversely, when needed. The channel density that each DSP supports for transcoding service is the same as for voice connections.

**Table 3** Hardware Conferencing Support on PVDM2

| Codec Type | Number of conferences Per DSP (PVDM2-16) |
|------------|--|
| G.711      | 8 conferences X 8 conferees              |
| G.729a     | 2 conferences X 8 conferees              |

### 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 128 milliseconds tail length and is International Telecommunication Union (ITU)-T G.168 compliant.

**Table 4** Features Availability

| Feature   | Platform Support                        | Availability             | Release                      |
|---|---|--------------------------|------------------------------|
| PVDM2-8, PVDM2-16, PVDM2-32, PVDM2-48, PVDM2-64 | NM-HDV2, NM-HDV2-1T1/E1, NM-HDV2-2T1/E1 | IP VOICE or above images | Cisco IOS® Software 12.3(7)T |

**Table 5** Product Specifications

| Description                      | Specification  |
|----------------------------------|--|
| <b>Components</b>                |  |
| DSP                              | Texas Instruments TNETV2510GGW for PVDM2-16, PVDM2-32, PVDM2-48, PVDM2-64<br>Texas Instruments TNETV2505GGW for PVDM2-8  |
| DSP CPU clock                    | 200 MHz for TNETV2510GGW<br>175MHz for TNETV2505GGW  |
| DSP external memory              | 128 Mbit synchronous dynamic RAM for each DSP (for both TI 2510 and TI 2505)   |
| Interface                        | 80-pin SIMM interface  |
| <b>Features</b>                  |  |
| Echo cancellation                | Software Echo Cancellation Compliant with ITU-I G.168 with 128 ms tail coverage  |
| <b>Approvals and Compliance</b>  |  |
| Safety                           | IEC 60950 [Worldwide], AS/NZS 3260[Australia, New Zealand], CAN/CSA-C22.2 No. 60950 [Canada], GB4943-95 [People's Republic of China], EN60950 [CENELEC; includes EU and EFTA], SS337 [Singapore; PSB approval]; NOM-019-SCFI-1998 [Mexico], UL 60950 3rd edition [USA] |
| Homologation                     | Platform dependent   |
| Mean time between failure (MTBF) | System dependent   |

**Table 5** Product Specifications (Continued)

| Description                        | Specification                   |
|------------------------------------|---------------------------------|
| <b>EMC</b>                         |                                 |
| 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 Part Number   | Product Description                              |
|-----------------------|--|
| PVDM2-8 or PVDM2-8=   | 8-Channel Packet Fax/Voice DSP Module, or spare  |
| PVDM2-16 or PVDM2-16= | 16-Channel Packet Fax/Voice DSP Module, or spare |
| PVDM2-32 or PVDM2-32= | 32-Channel Packet Fax/Voice DSP Module, or spare |
| PVDM2-48 or PVDM2-48= | 48-Channel Packet Fax/Voice DSP Module, or spare |
| PVDM2-64 or PVDM2-64= | 64-Channel Packet Fax/Voice DSP Module, or spare |

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