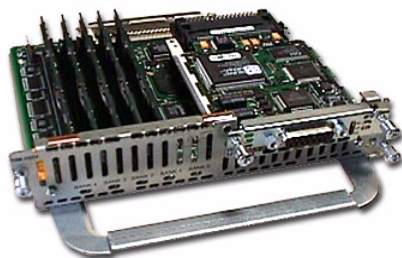


Digital J1 Packet Voice Network Module



The Digital J1 Packet Voice Network Module provides a flexible and scalable J1 voice and fax solution for the Cisco 2600, 2600XM, 3600 and 3700 series multiservice Modular Access routers and supports up to 30 voice channels in a single network module. A single packet voice network module supports connections to Japanese Private Branch Exchanges (PBXs), and is compliant with the J1 TTC JJ20 standard. The network module eliminates the need to use expensive external third-party T1 to J1 converter products. This network module is ideal for enterprise branches, large businesses and service providers wishing to migrate to packet-based multiservice infrastructures. It also enables the deployment of new packet voice applications while reducing recurring telephony charges.

Figure 1 Digital J1 Packet Voice Network Module (NM-HDV-1J1-30E Pictured)



The Digital J1 Packet Voice Network Module uses a real-time CPU and 12-channel packet voice digital signal processing (DSP) modules (PVDM-12) which support all functions needed to provide the highest levels of voice fidelity and quality, reducing the

processing burden from the Cisco 2600, 3600 or 3700's main CPU. The packet voice network module includes a VIC-1J1 voice interface card which offers a single port J1 voice/fax interface. Now, enterprise offices of several hundred users and managed network service providers can deploy multiservice networking using a single box solution.

Key Features and Benefits

- Interface to Japanese PBXs to route voice and fax, eliminating the need for an expensive external third-party T1 to J1 converter product.
- Programmable digital signal processors can support both medium- (G.729A, G.729B, G.711a- and u-law, G.726 all versions, clear-channel, fax-relay) and high-complexity CODECs (G.728, G.729, G.729B, G.723 all versions, GMS, GSMEFR, modem relay) for customized solutions to meet the need for high voice quality and bandwidth efficiency
- Packet Voice Digital Signal Processor Modules (PVDM-12=) provide the ability to increase the voice processing capabilities within a single network module
- Support of additional modular voice processing requirements on the Cisco 2600, 3600 and 3700 platforms such as routing, dial concentration, firewall, encryption and VPN.

Feature Summary

Table 1 Digital J1 Packet Voice Network Module Feature Summary

Feature	Benefits
J1 Standards Support	Supports the TTC JJ-20.10-12 standard with a line rate of 2.048 Mbps
Scalable from 1 to 30 Voice Channels	Single Network Module scales using from one to five 12-channel packet voice DSP module (PVDM-12) upgrade SIMMs to support from 1 to 30 voice channels.
Standards-Based PCM Encoding	Standards-based ITU-T G.711 PCM encoding provides 64 kbps analog to digital conversion using u-law or A-law.
Standards-based Compression Algorithm Support	Users can choose to either transmit voice across their networks as uncompressed PCM (G.711, u-law and A-law) or compressed from 5.3 kbps to 32 kbps using standards-based compression algorithms (G.729, G.729a/b, G.723.1, G.726, G.728).
Fax Support	Transmit Group III fax and T.38 over any voice channel without sacrificing voice processing resources regardless of compression type.
Voice over IP	Transmit voice across a single frame relay, ATM, ISDN, channelized, or multilink point-to-point protocol (MLPPP) network.
Voice over Frame Relay	Leverage existing or new frame relay network by transporting voice directly over this network using standards based transport methods (FRF.11). VoIP can also be transmitted over Frame Relay.
Voice over ATM	Transport voice directly over ATM networks using AAL 5 encapsulation. Leverages existing ATM networks as a direct transport method for voice. VoIP can also be transported over ATM (VoATM requires ATM network modules such as IMA or OC-3).
Connection Trunk	Creates a tie-line replacement structure while only consuming bandwidth during a call.
Toll Bypass	Reduce or eliminate toll charges assessed by long distance and local carriers by transporting voice and fax traffic across the enterprise intranet, LAN, metropolitan-area network (MAN), or WAN. Businesses incur significant recurring monthly costs for leased lines purely for the interconnection of telecom PBXs and switches. This product gives these enterprises the ability to remove these costly rigid-bandwidth leased lines and replace them with flexible bandwidth lines. The ability to support proprietary PBX signaling types exists by using connection trunking and transparent CCS.
LVBO (Local Voice Busy-Out) and AVBO (Advanced Voice Busy-Out)	Automatically busy out any desired voice trunk line (or individual DS0s) to a PBX when a direct WAN or LAN connection to the router is down. Also, busy out a far end trunk connection when configured for Connection Trunk. AVBO adds the capability to busy out voice trunk lines triggered by Security Assurance Agent (SAA) probes.
Local and Remote Loopback	Supports three types of loopback modes - line and local loopback, and isolation.
T-CCS (Transparent Common Channel Signal)	Supports clear channel transparent common channel signaling
J1 CAS (TTC JJ-20.10-12)	Supports J1 channel associated signaling
H.323 Support	Uses industry-standard signaling protocols for call setup between gateways, gatekeepers, and H.323 end points. Enables comprehensive, flexible application configuration for voice over IP, desktop video conferencing, collaborative computing and electronic whiteboard applications.
DTMF Relay	Carries DTMF tones/information out-of-band for clearer transmission and detection.
Any Call to Any Call with end-to-end Interoperability	Interoperates with Cisco IP phones, analog phones, fax machine connections, and PBX connections to and from any other Cisco voice enabled product.
AVVID IP Telephony Interoperable	Interoperable within Cisco's AVVID IP Telephony architecture (H.323 Networks)
VoIP Call Control Signaling	Supports H.323 call control protocols.
Gateway for IP phones, fax machines and key communication systems to Japanese PBXs	Enables a connection for incoming and outgoing calls to Japanese PBXs using Cisco IP phones, fax machines and other key communication systems connected to a data, voice and video infrastructure

Feature Highlights

Voice Channel Support

- Up to 30 channels of medium-complexity voice or fax-relay (G.729A, G.729B, G.711a- and u-law, G.726 all versions, clear-channel, fax-relay)
- Up to 30 channels of high-complexity voice or fax-relay (G.728, G.729, G.729B, G.723 all versions, GSM, GSMEFR, modem relay)
- Scalable number of on-board DSPs using PVDM-12=

Voice Feature Support

- Local Voice Busy-Out (LVBO)
- Advanced Voice Busy-Out (AVBO)
- Connection trunk
- PBX tie-line replacement
- AIS Alarm Signaling (per TTC JJ-20.11)

Telephony Interface Signaling Support

- J1 CAS (TTC JJ-20.11)
- Clear Channel Transparent CCS
- E & M Immediate Start, Wink Start

Cisco IOS and Platform Support

- Fully supported via IOS CLI including device configuration, monitoring, link status, security, Layer 2 and 3 protocol configuration and management, and call history
- Supported on all Cisco 2600 and 3600 series routers

Standards Support

- VoIP, VoFR and VoATM support
- H.323 feature support
- H.323 CODEC-negotiation
- H.323 gateway RAS support
- Supports ITU Standard Compression Algorithms (G.729A, G.729B, G.711a- and u-law, G.726 all versions, clear-channel, fax-relay, G.728, G.729, G.729B, G.723 all versions, GSM, GSMEFR, modem relay)

Japanese PBX Interoperability

Interoperability verified with the following PBXs: NEC NEAX 2400, Fujitsu E250 and the Hitachi CX3000MS

Technical Specifications

Table 2 Digital J1 Packet Voice Network Module Technical Specifications

Specification	Standard
Signaling Standards	J1 CAS E & M Immediate Start, Wink Start
Maximum Simultaneous Call Setup	30 calls per Network Module
Interface Type	DB15 Connector (Female)
Line Bit Rate	J1 2.048Mbps
Line Code	CMI (Coded Mark Inversion)
Framing Format	Eight frame multiframe J1 TTC JJ-20.11
Output level (LBO)	2.55 (min), 3.3 (typ) and 3.9 Max Vp-p
Input Level	greater than 0.2 Vp-p and less than 4 Vp-p
Diagnostic Loopback Support	Line Loopback, Local Loopback and Isolation Loopback.
Alarm Detection	Monitors for Loss of Signal, Out of Frame/Loss of Lock and Yellow Alarm. If any of these conditions are present, the alarm LED (labeled AL) on the NM-HDV faceplate will be lit.
LED Indicators	Data carrier detect (CD) Loopback (LP) Alarm (AL)
Physical Interface Standards	TTC JJ.20.10-11
Environmental	Operating temperature: 0 to 40° C (32 to 104 F) Storage temperature: -25 to +70° C (-13 to 158 F) Relative humidity: 5 to 85% noncondensing operating; 5 to 95% noncondensing, nonoperating
MTBF	Digital J1 Packet Voice Interface Card VIC-IJ1: 2,745,140 hours

Management

Table 3 Digital J1 Packet Voice Network Module Management

Type	Description
Telnet / Console	Remote and local configuration, monitoring, and troubleshooting from Cisco IOS CLI

Part Numbers

Table 4 Digital J1 Packet Voice Network Module Part Numbers

Product Number	Description
NM-HDV-1J1-30	Single Port 30-Channel J1 High-Density Voice Network Module. Supports 30 channels of medium complexity VoCodecs and fax (G.729A, G.729B, G.711a- and u-law, G.726 all versions, clear-channel, fax-relay) or 18 channels of high complexity VoCodecs (G.728, G.729, G.729B, G.723 all versions, GSM, GSMEFR, modem relay). This product can be upgraded to an NM-HDV-1J1-30(E) simply by adding two additional PVDM-12= modules. This complete bundle includes one (1) NM-HDV=, three (3) PVDM-12=, and one (1) VIC-1J1=.
NM-HDV-1J1-30=	Single Port 30-Channel J1 High-Density Voice Network Module Spare. Supports 30 channels of medium complexity VoCodecs and fax (G.729A, G.729B, G.711a- and u-law, G.726 all versions, clear-channel, fax-relay) , or 18 channels of high complexity VoCodecs and fax(G.728, G.729, G.729B, G.723 all versions, GSM, GSMEFR, modem relay). This product can be upgraded to an NM-HDV-1J1-30(E) simply by adding two additional PVDM-12= modules. This complete bundle includes one (1) NM-HDV=, three (3) PVDM-12=, and one (1) VIC-1J1=.
NM-HDV-1J1-30E	Single Port 30-Enhanced Channel J1 High-Density Voice Network Module. Supports 30 channels of medium complexity VoCodecs and fax (G.729A, G.729B, G.711a- and u-law, G.726 all versions, clear-channel, fax-relay) , or 30 channels of high complexity VoCodecs and fax(G.728, G.729, G.729B, G.723 all versions, GSM, GSMEFR, modem relay). This complete bundle includes one (1) NM-HDV=, five (5) PVDM-12=, and one (1) VIC-1J1=.

Product Number	Description
NM-HDV-1J1-30E=	Single Port 30-Enhanced Channel J1 High-Density Voice Network Module Spare. Supports 30 channels of medium complexity VoCodecs and fax (G.729A, G.729B, G.711a- and u-law, G.726 all versions, clear-channel, fax-relay), or 30 channels of high complexity VoCodecs and fax (G.728, G.729, G.729B, G.723 all versions, GSM, GSMEFR, modem relay). This complete bundle includes one (1) NM-HDV=, five (5) PVDM-12=, and one (1) VIC-1J1=.
NM-HDV=	High-density voice network module spare. This product can be used as the foundation to build any of the above NM-HDV-1J1 products using combinations of VIC-1J1 and PVDM-12= modules. This product is only orderable as a spare.
VIC-1J1=	Single Port J1 Voice Interface Card. This product can be used as the foundation to build any of the above NM-HDV-1J1 products using combinations of NM-HDV and PVDM-12= modules. This product is only orderable as a spare.
PVDM-12=	12-channel packet voice DSP module upgrade spare. This product must be used in combination with the NM-HDV= to build any of the above NM-HDV-1J1 products. This product can also be used to upgrade the NM-HDV-1J1-30 to the Enhanced version of these products. This product is only orderable as a spare.

Cisco IOS Software and Memory Support

Table 5 Digital J1 Packet Voice Network Module IOS Software and Memory Support

Product Number	Platform	IOS SW Version	IOS Feature Sets	Minimum DRAM Memory	Minimum FLASH Memory
All Digital J1 Packet Voice Network Modules	Cisco 2600	12.2(8)T	All Plus Feature Sets and higher (some IOS Plus Feature Sets require additional DRAM and Flash Memory) Enterprise Basic for Cisco 261x, Cisco 262x	64 Mbyte for Cisco 2600 Series	16 MB
All Digital J1 Packet Voice Network Modules	Cisco 2600XM	12.2(8)T1	All Plus Feature Sets (some IOS Plus Feature Sets require additional DRAM and Flash Memory)	64 Mbyte for Cisco 2600XM Series	16 MB
All Digital J1 Packet Voice Network Modules	Cisco 3600	12.2(8)T	All Plus Feature Sets and higher (some IOS Plus Feature Sets require additional DRAM and Flash Memory) Enterprise Basic for Cisco 3620	64 Mbyte (except for Cisco 3660) 96Mbyte for Cisco 3660	16 MB
All Digital J1 Packet Voice Network Modules	Cisco 2691, 3725 and 3745	12.2(13)T	All Plus Feature Sets and higher (some IOS Plus Feature Sets require additional DRAM and Flash Memory)	64 Mbyte for Cisco 2691 128 Mbyte for Cisco 3700 Series	16 MB



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