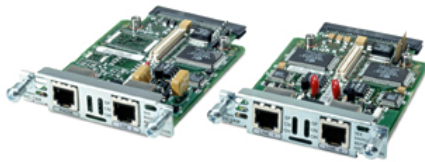


Cisco 1700, 2600, 3600, and 3700 Integrated V.90 Modem WAN Interface Cards



One- and two-port analog modem WAN Interface Cards (Part numbers WIC-1AM and WIC-2AM) are now available for the award-winning Cisco 1700, 2600, 3600, and 3700 Series modular router platforms. The addition expands the already extensive range of WAN Interface Cards currently available for these routers (Figure 1). The interface cards provide cost-effective basic telephone service connectivity to allow remote router management, asynchronous Dial-on-Demand Routing (DDR) and dial backup, dial- and fax-out modem access, and low-density remote access server (RAS) services. Combined with the differentiated services delivered through Cisco IOS® Software, the Cisco 1700, 2600, 3600, and 3700 Series routers offer customers best-of-breed scalability, flexibility, and investment protection, all in cost-effective, multifunctional platforms.

Figure 1 One- and Two-Port Analog Modem WAN Interface Cards for Cisco 1700, 2600, 3600, and 3700 Series Platforms



Both cards feature dual RJ-11 connectors, which are used for basic telephone service connection. The WIC-1AM uses one port for connection to a standard telephone line, and the other port can be connected to a basic analog telephone for use when the modem is idle.

Key Benefits

Combined with the Cisco 1700, 2600, 3600, and 3700, the WIC-1AM and WIC-2AM cards provide:

- An integrated solution for ease of deployment and management
- Enhanced remote management capabilities
- A cost-effective alternative to leased lines or ISDN
- On-demand dial backup for critical WAN links

Key Features

The Cisco 1700, 2600, 3600, and 3700, equipped with the new integrated analog modem WAN interface cards, offer the most flexible, scalable, and manageable Plain Old Telephone Service (POTS) dial access solution available on the market today.

- Internal analog modem dialup capability—Internal modems allow simple setup of a remote router. There is no separate external power, no cables, and everything is in one chassis.
- Support for speeds up to 56K (V.90 specification)—When dialing out to a digital endpoint, this feature allows users to achieve maximum data transfer rates, equating to faster file transfers, speedier Web access, and faster e-mail downloads.

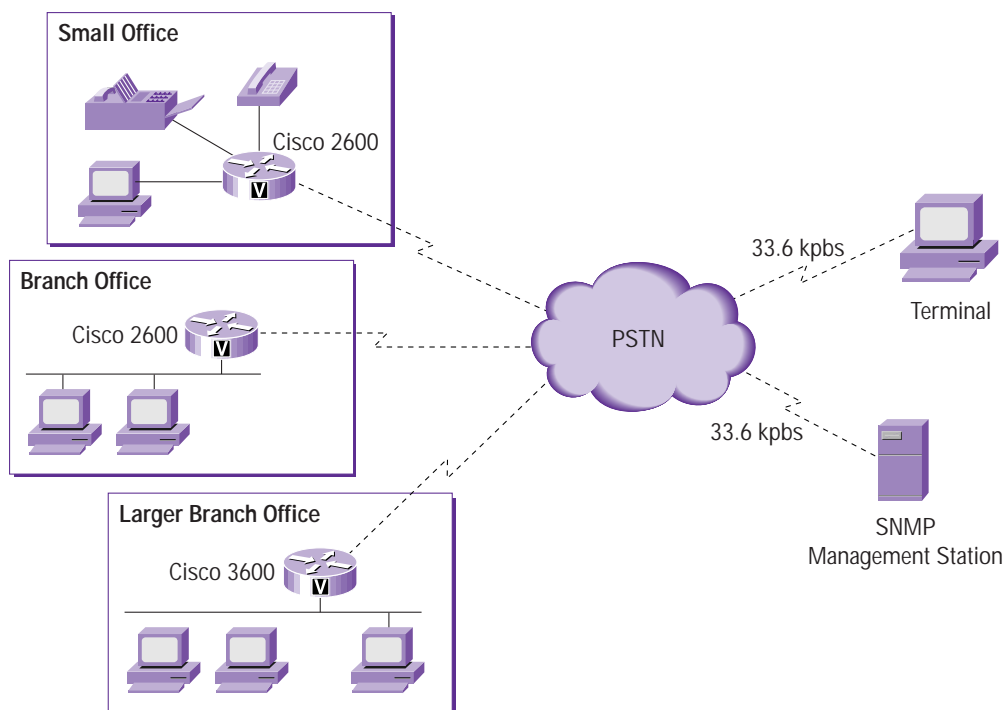


- Cisco IOS Dial Access Software—Cisco IOS Software provides a broad range of features for remote router management and dial backup, including:
 - Reverse Telnet support for LAN-based dial-out and fax-out
 - Point-to-Point Protocol (PPP), Multilink PPP (MLPPP), and Serial Line Internet Protocol (SLIP)
 - TACACS+, Radius, and PPP password security
 - Auto-sensing Internetwork Packet Exchange (IPX), Transmission Control Protocol/IP (TCP/IP), AppleTalk Remote Access (ARA), and AppleTalk Control Protocol (ATCP)

Applications

Remote Router Management

Figure 2 Remote Router Management

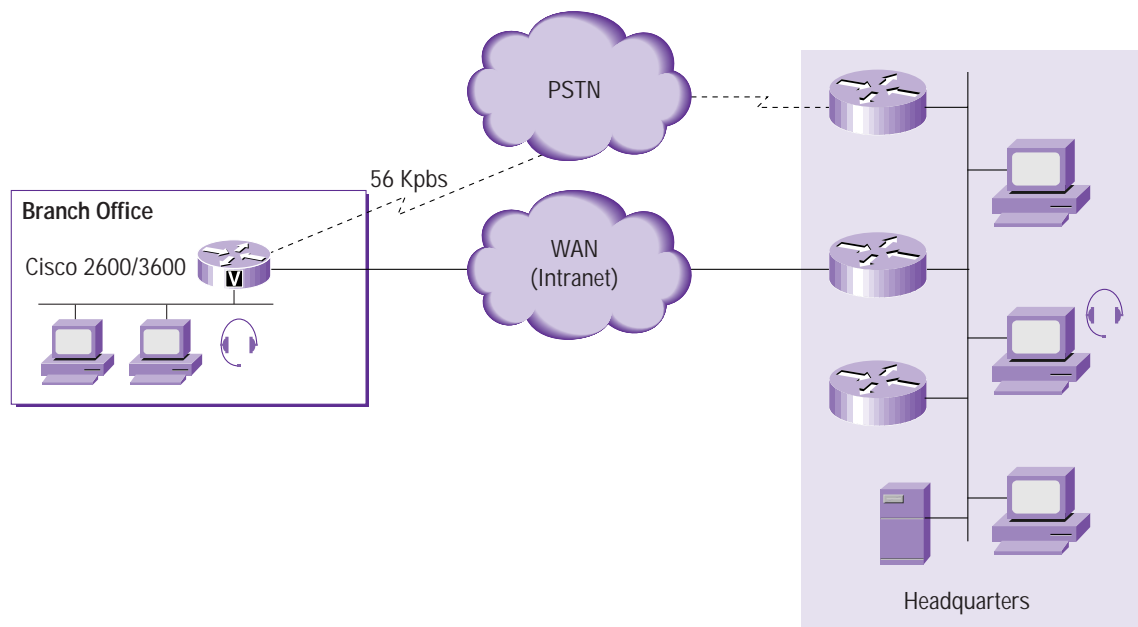


The WIC-1AM and WIC-2AM cards are ideal for dialup access for remote router configuration and management (Figure 2). Similar to connecting a modem to the router's auxiliary port, the modem WAN Interface Cards allow out-of-band management through an internal device. Both WAN Interface Cards can receive calls at speeds as fast as 33.6K, depending upon line conditions.



Dial Backup and Asynchronous DDR

Figure 3 Dial Backup and Asynchronous DDR



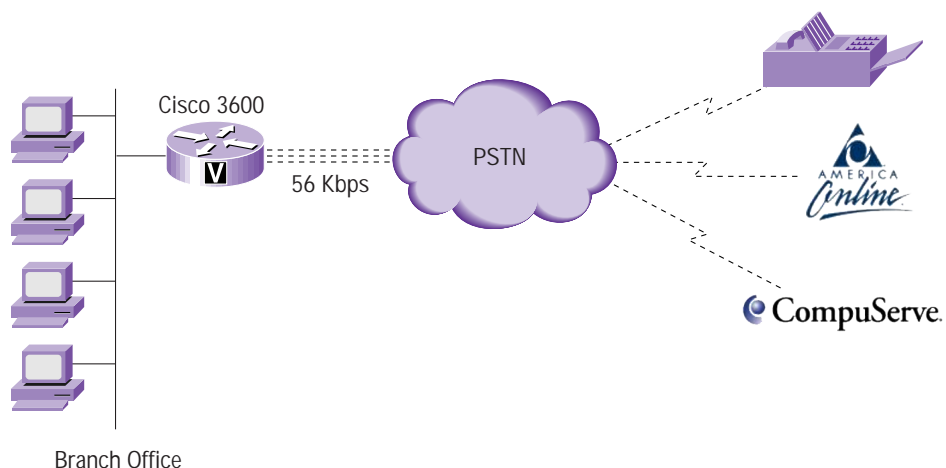
Constant WAN access is often a requirement for branch offices connecting to a corporate site or the Internet. While DSL, Frame Relay, ISDN, and leased line are common choices for a primary WAN link, an alternate data path is sometimes needed. The WIC-1AM and WIC-2AM cards combined with the Cisco 1700, 2600, 3600, and 3700 offer the ability to automatically dial a backup connection when the primary WAN link is unavailable. In addition, the modem WAN Interface Cards can also be used to provide supplemental bandwidth when the primary WAN link is overutilized. Multiple modem calls can be aggregated using MLPPP when one 56K connection is insufficient.

For some customers, dialup telephone service connectivity may be the only available choice for WAN access to the Internet or to a corporate home office. For those situations and for those installations that only require a dialup connection, the Cisco Series Routers with integrated modem WAN Interface Card offer WAN connectivity through Asynchronous DDR. As in the case of dial-backup, MLPPP can be used to aggregate multiple dialup connections into one data stream, providing higher throughput.



Dial-Out and Fax-Out Modem Access

Figure 4 Dial- and Fax-Out Modem Access



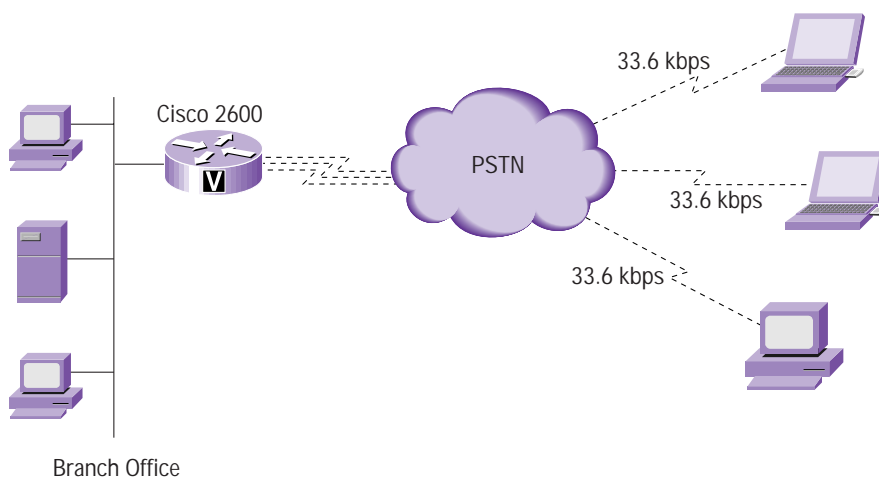
The WIC-1AM and WIC-2AM cards comply with RFC-2217 and provide dial-out and fax-out modem functionality to LAN-connected devices (Figure 4). Using the recommended “Advanced COM Port Redirection” software (available from <http://www.tacticalsoftware.com>), customers can take advantage of the modem WAN Interface Cards as if they were connected directly to their PC’s communications port. This allows convenient access to services such as America Online, CompuServe, and remote fax machines without requiring dedicated phone lines and modems at each PC. For more details on using “Advanced COM Port Redirection” software, visit the following URL:

<http://www.cisco.com/warp/public/cc/pd/iosw/ioft/dlout/index.shtml>

Note: The WIC-1AM and WIC-2AM cards do not have the ability to receive faxes—only fax-out is supported.

Low-Density Analog RAS Access

Figure 5 Low-Density Analog RAS Access





Dial-in users can take advantage of the router's ability to function as a small remote access server (RAS), thus allowing dialup access to the LAN (Figure 5). Typically, a two-port modem WAN Interface Card would be used here for maximum port density, but the WIC-1AM is also acceptable. Scalability to multiple modem WAN Interface

Cards per chassis (up to 12 in a Cisco 3660 Multiservice Platform) is also possible. Dial-in speeds of up to 33.6K (V.34bis) are possible. MLPPP is available to bond two or more calls together, therefore allowing higher speed RAS support.

Feature Summary

A summary of the features and benefits of the integrated modem WAN interface cards is provided in Table 1.

Table 1 Integrated V.90 Modem WAN Interface Cards Feature and Benefit Summary

Feature	Benefit
Auxiliary port compatibility	<ul style="list-style-type: none">• Eases deployment and saves space due to its integrated solution• Provides convenience by replicating all functions of an external modem connected to auxiliary port
V.90 (up to 56K) modem specification support when dialing out to a digital endpoint	<ul style="list-style-type: none">• Achieves maximum data transfer rates equating to faster file transfers, speedier Web access, and faster e-mail downloads
Fax-out capability at speeds up to 14.4K	<ul style="list-style-type: none">• Allows customers to access fax machines and servers from their LAN-connected PCs
Multilink PPP	<ul style="list-style-type: none">• Increases connection speeds across modems in the same WAN Interface Card and across other modem WAN Interface Cards in the same chassis
Full platform support	<ul style="list-style-type: none">• Modem WAN Interface Card supported on Cisco 1700, 2600, 2600XM, 2691, 3600, and 3700 routers
Retrofits into existing chassis	<ul style="list-style-type: none">• Fits into a WAN Interface Card slot on a Cisco 1700, 2600, 3600 chassis or any compatible network module on a Cisco 2600, 3600, or 3700 router (See Table 3 for details)
Cisco IOS Software support	<ul style="list-style-type: none">• Does not require additional memory to support the modem WAN Interface Cards
Up to 24 modems per chassis	<ul style="list-style-type: none">• No restriction on number of modems available (other than slot availability)(See Table 2 for details)
Major modem vendor compatibility	<ul style="list-style-type: none">• Works with AT&T, Hayes, Motorola, Microcom, Multitech, and USR modems (compatibility with other modem vendors is expected, but not confirmed)
Fax vendor compatibility	<ul style="list-style-type: none">• Works with Panasonic fax machines (compatibility with other fax vendors is expected, but not confirmed)
Current analog and digital modem network module compatibility	<ul style="list-style-type: none">• Integrates seamlessly with current NM-8AM and NM-16AM analog and NM-xDM digital modems
Worldwide support for country-specific standards	<ul style="list-style-type: none">• Supports various regulatory requirements. For the latest per-country approval information for the WIC-1AM and WIC-2AM, please visit the following URL: http://www.cisco.com/cgi-bin/compliance/approvals_search.pl or contact your local Cisco representative

Table 1 Integrated V.90 Modem WAN Interface Cards Feature and Benefit Summary (Continued)

Feature	Benefit
Leased-line mode	• Does not support leased-line mode
Modem firmware upgrade capability	• Does not support modem firmware upgrades

Network Management Support

One- and two-port analog modem WAN Interface Cards work with the following configuration and network management methods:

- CiscoWorks
- Telnet and console port command-line interface (CLI) configuration

Memory and Software Requirements

Minimum IOS Support	1700	2600	2600XM	3600	3700
WIC-1AM, WIC-2AM	12.2(4) YB	12.2(2) XB, 12.2(8) T	12.2(8)T1	12.2(2) XB, 12.2(8) T	12.2(8) T

- No additional memory required to support the modem WAN Interface Cards (see the IOS Software release notes for platform memory requirements per feature set)

Maximum Modem WAN Interface Cards Per Chassis

Table 2 Maximum Modem WAN Interface Cards Per Chassis

Platform	Maximum modem WAN Interface Cards per chassis
Cisco 1700	2
Cisco 2600, Cisco 2600XM	4
Cisco 2691	5
Cisco 3620	4

Table 2 Maximum Modem WAN Interface Cards Per Chassis

Platform	Maximum modem WAN Interface Cards per chassis
Cisco 3640	8
Cisco 3660	12
Cisco 3725	7
Cisco 3745	11

Note: Please refer to the platform documents for more details on other hardware restrictions. The Cisco 2600, 3600, and 3700 also support higher density modem solutions in a network module form factor. Visit the following URLs for additional information on the NM-8AM, NM-16AM, and NM-xDM:

For NM-8AM and NM-16AM (Cisco 2600, 3600, and 3700 Analog Modem Network Modules)
http://www.cisco.com/warp/public/cc/pd/rt/3600/prodlit/2636_ds.htm

For NM-xDM (Cisco 3600 and 3700 Series Digital Modem Network Modules)
http://www.cisco.com/warp/public/cc/pd/rt/3600/prodlit/d3600_ds.htm

Modem Specifications

Carrier protocols:

- International Telecommunications Union (ITU) V.90
- K56Flex
- ITU V.23
- Bell 103
- ITU V.21
- ITU V.22



- Bell 212A
- ITU V.22bis
- ITU V.32
- ITU V.32bis
- V.32 turbo
- V.34
- V.34 bis

Error-correcting link access protocols:

- V.42 Link Access Procedure for Modems (LAPM), MNP 2-4

Compression protocols:

- V.42bis (includes MNP-5)

Fax protocols:

- ITU-T V.27ter
- ITU-T V.29
- ITU-T V.17
- Point of Sale (PoS) Configuration support
- FAX Class 2
- TIA/EIA-592 Class 2.0 and TIA/EIA-592 draft SP-2388 Class 2 Group III fax transmission, at ITU-T V.33, V.17, V.29, V.27ter, and V.21 modulations

Hardware Specifications

Hardware specifications of the integrated modem WAN Interface Cards are described in Table 3.

Table 3 Specifications for the WIC-1AM and WIC-2AM

Specification	Data
Hardware/Platform Compatibility	Cisco 1700, 2600, 3600, and 3700 models
Dimensions	Width 3.08 in. (6.93 cm) Height .75 in. (1.91 cm) Depth 4.38 in. (9.86 cm)
Weight	2.4 oz (68 gram)

Table 3 Specifications for the WIC-1AM and WIC-2AM

Specification	Data
Network module support	Cisco 2600—Built-in WAN Interface Card slots plus the NM-2W Cisco 3600—Through combo modules (NM-2W, NM-1E2W, NM-2E2W, and NM-1E1R2W, NM-1FE2W, NM-2FE2W, NM-1FE1R2W) Cisco 3700- Through combo modules (NM-2W, NM-1FE2W, NM-2FE2W, NM-1FE1R2W)
Throughput	Up to 56K downstream and up to 33.6K upstream, subject to line conditions.
Ports	Two RJ-11 ports (second port on WIC-1AM can be used to connect an analog telephone for use when the modem is idle)
Cabling	One or two RJ-11 connectors
LEDs (per modem)	SP (high-speed connectivity for V.90 or K56flex), CN (carrier detect), and OH (off-hook) status indicators
NEBS compliance	Level 3, Types II and IV

Refer to the Cisco 1700, 2600, 3600, and 3700 data sheets for additional information on mechanical, environmental, and agency certifications. Please visit the following URLs for Cisco 1700, 2600, 3600, and 3700 data sheets:

- Cisco 1700:
<http://www.cisco.com/warp/public/cc/pd/rt/1700/prodlit/index.shtml>
- Cisco 2600:
http://www.cisco.com/warp/public/cc/pd/rt/2600/prodlit/2600_ds.htm
- Cisco 3600:
http://www.cisco.com/warp/public/cc/pd/rt/3600/prodlit/36kmp_ds.htm
- Cisco 3700:
<http://www.cisco.com/warp/public/cc/pd/rt/ps282/prodlit/index.shtml>

Country Availability

For the latest information regarding per country approval for the WIC-1AM and WIC-2AM, please visit the following URL or contact your local Cisco representative:

http://www.cisco.com/cgi-bin/compliance/approvals_search.pl

Ordering Information

Table 4 Part Numbers

Part Number	Description
WIC-1AM	One-port Analog Modem WAN Interface Card
WIC-1AM=	One-port Analog Modem WAN Interface Card
WIC-2AM	Two-port Analog Modem WAN Interface Card
WIC-2AM=	Two-port Analog Modem WAN Interface Card

- Non-operating temperature: -4 to 149° F (-20 to 65° C)
- Relative humidity: 10 to 85 percent non-condensing operating; 5 to 95 percent non-condensing, non-operating safety

Cisco 1700, 2600, 3600, and 3700 Power

- AC input voltage: 100 to 240 VAC
- DC voltages (2600, 3600, and 3700)
- Frequency: 47 to 64 Hz

Environmental Operating Ranges

- Operating temperature: 32 to 104° F (0 to 40° C)



Corporate Headquarters
Cisco Systems, Inc.
170 West Tasman Drive
San Jose, CA 95134-1706
USA
www.cisco.com
Tel: 408 526-4000
800 553-NETS (6387)
Fax: 408 526-4100

European Headquarters
Cisco Systems Europe
11, Rue Camille Desmoulins
92782 Issy-les-Moulineaux
Cedex 9
France
www-europe.cisco.com
Tel: 33 1 58 04 60 00
Fax: 33 1 58 04 61 00

Americas Headquarters
Cisco Systems, Inc.
170 West Tasman Drive
San Jose, CA 95134-1706
USA
www.cisco.com
Tel: 408 526-7660
Fax: 408 527-0883

Asia Pacific Headquarters
Cisco Systems Australia, Pty., Ltd
Level 9, 80 Pacific Highway
P.O. Box 469
North Sydney
NSW 2060 Australia
www.cisco.com
Tel: +61 2 8448 7100
Fax: +61 2 9957 4350

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