

## Cisco Integrated V.92 Modem WAN Interface Cards

One- and two-port analog modem WAN interface cards (WICs; part numbers WIC-1AM-V2 and WIC-2AM-V2) are now available for the award-winning Cisco® 1800, 2600XM, 2691, 2800, 3700, and 3800 Series modular router platforms. The new version of these cards expands the already extensive range of WICs 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 1800, 2600XM, 2691, 2800, 3700, and 3800 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 WICs for Cisco 1800, 2600XM, 2691, 2800, 3700, and 3800 Series Platforms



Both cards feature dual RJ-11 connectors, which are used for basic telephone service connection. The 2-port card uses one port for connection to a standard telephone line and the other port for connection to a basic analog telephone for use when the modem is idle.

### KEY BENEFITS

Combined with the Cisco 1800, 2600XM, 2691, 2800, 3700, and 3800, the 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

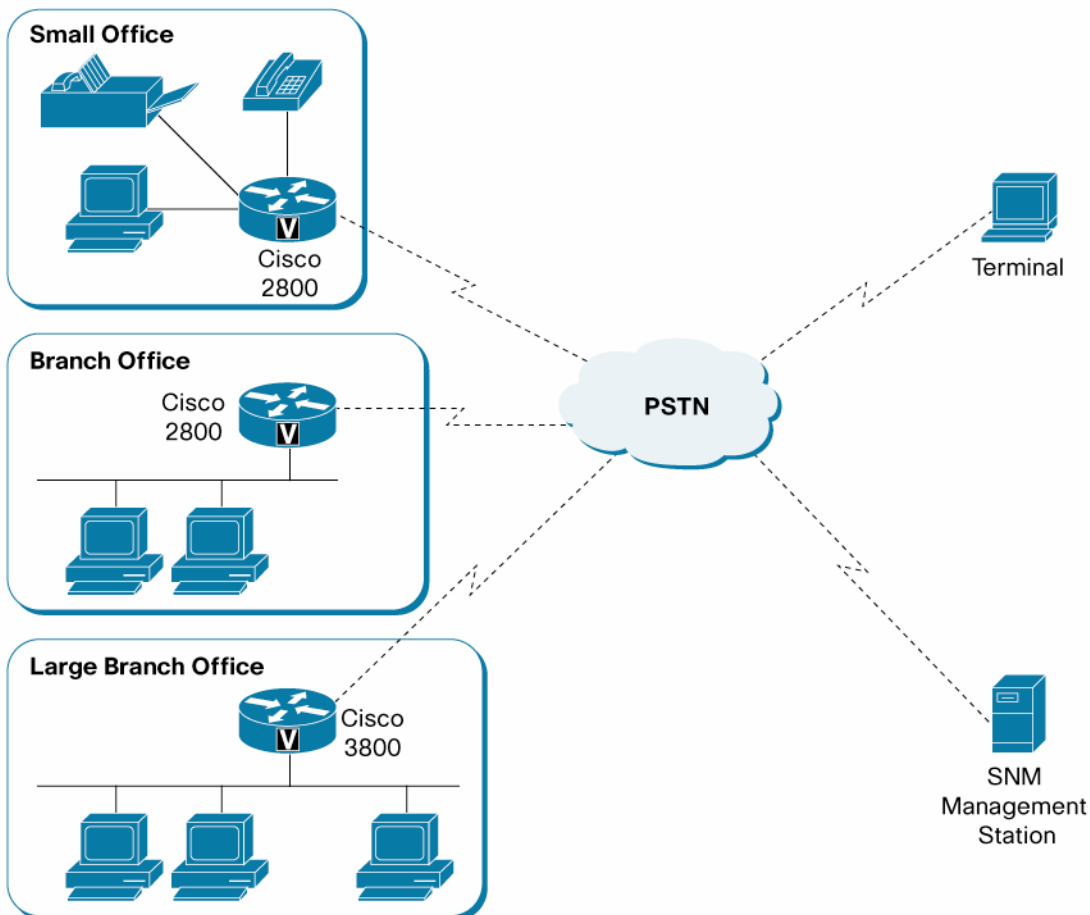
Equipped with the new integrated analog modem WICs, the Cisco 1800, 2600XM, 2691, 2800, 3700, and 3800 offer the most flexible, scalable, and manageable telephone dial access solution available on the market today.

- Internal analog modem dialup capability—Internal modems allow simple setup of a remote router. There is no separate external power and no cables, and everything is in one chassis.
- Support for speeds up to 56K (V.92 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- and fax-out
  - Point-to-Point Protocol (PPP), Multilink PPP (MLPPP), and Serial Line Internet Protocol (SLIP)
  - TACACS+, RADIUS, and PPP password security
  - Autosensing Internetwork Packet Exchange (IPX), Transmission Control Protocol/IP (TCP/IP), AppleTalk Remote Access (ARA), and AppleTalk Control Protocol (ATCP)

## APPLICATIONS

### Remote Router Management

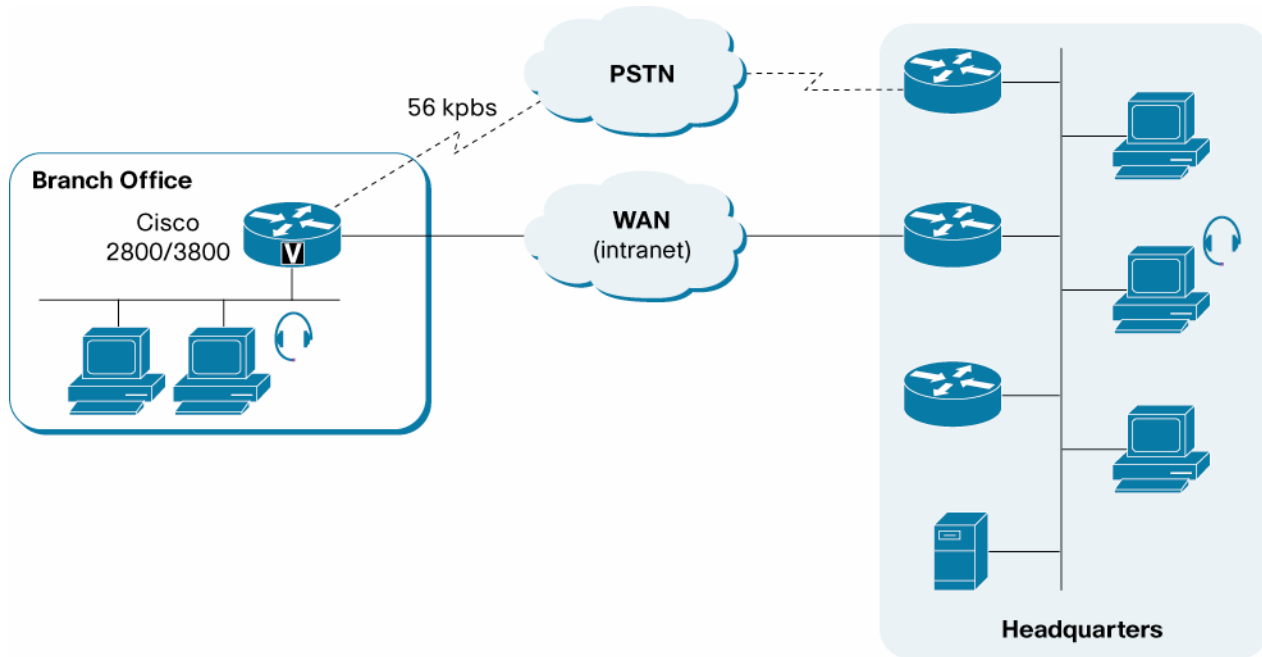
Figure 2. Remote Router Management



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

### Dial Backup and Asynchronous DDR

**Figure 3.** Dial Backup and Asynchronous

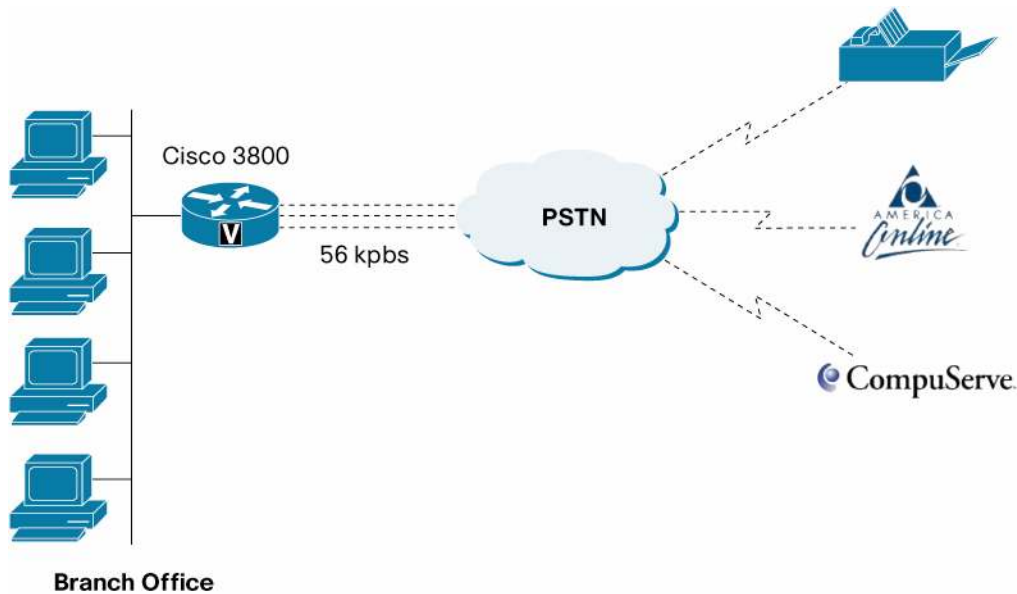


Constant WAN access is often a requirement for branch offices connecting to a corporate site or the Internet. Although DSL, Frame Relay, ISDN, and leased line are common choices for a primary WAN link, an alternate data path is sometimes needed. The WICs combined with the Cisco 1800, 2600XM, 2691, 2800, 3700, and 3800 offer the ability to automatically dial a backup connection when the primary WAN link is unavailable. In addition, the modem WICs can also be used to provide supplemental bandwidth when the primary WAN link is overused. 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 require only a dialup connection, the Cisco routers with the integrated modem WIC 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- and Fax-Out Modem Access

Figure 4. Dial- and Fax-Out Modem Access

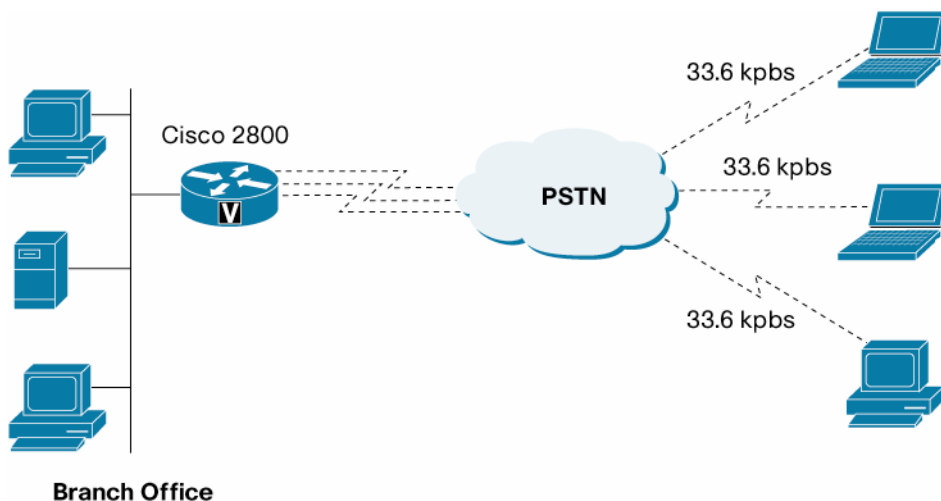


The modem WICs comply with RFC 2217 and provide dial- and fax-out modem functions to LAN-connected devices (Figure 4). Using the recommended “Advanced COM Port Redirection” software (available from <http://www.tacticalsoftware.com>), customers can take advantage of the modem WICs as if they were connected directly to their PC communications port, allowing convenient access to services such as America Online, CompuServe, and remote fax machines without requiring dedicated phone lines and modems at each PC.

**Note:** The WICs 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 ability of the router to function as a small RAS, thus allowing dialup access to the LAN (Figure 5). Typically, a 2-port modem WIC would be used here for maximum port density, but the 1-port WIC is also acceptable. Scalability to multiple modem WICs per chassis (up to 12 in a Cisco 3845—refer to Table 3) is also possible. Dial-in speeds of up to 33.6 kbps (V.34bis) are possible. MLPPP is available to bond two or more calls together, thereby allowing higher-speed RAS support.

## FEATURE SUMMARY

A summary of the features and benefits of the integrated modem WICs is provided in Table 1.

**Table 1.** Integrated V.92 and V.44 Modem WICs Features and Benefits Summary

Feature	Benefit
<b>Auxiliary port compatibility</b>	<ul style="list-style-type: none"> <li>Eases deployment and saves space because of its integrated solution</li> <li>Provides convenience by replicating all functions of an external modem connected to an auxiliary port</li> </ul>
<b>V.92 (up to 56K) and V.44 modem specification support when dialing out to a digital endpoint</b>	Achieves maximum data transfer rates though V.92 or V.44, equating to faster file transfers, speedier Web access, and faster e-mail downloads
<b>Fax-out capability at speeds up to 14.4 kbps</b>	Allows customers to access fax machines and servers from their LAN-connected PCs
<b>MLPPP</b>	Increases connection speeds across modems in the same WIC and across other modem WICs in the same chassis
<b>Full platform support</b>	Modem WIC supported on Cisco 1800, 2600XM, 2691, 2800, 3700, and 3800 routers
<b>Retrofits into existing chassis</b>	Fits into a WIC slot on a Cisco 2600XM, 2691, or 3700 chassis or any compatible network module on a Cisco 2600XM, 2691, or 3700 router (refer to Table 3 for details)
<b>Cisco IOS Software support</b>	Does not require additional memory to support the modem WICs
<b>Up to 24 modems per chassis</b>	No restriction on number of modems available (other than slot availability; refer to Table 3 for details)
<b>Major modem vendor compatibility</b>	Works with AT&T, Hayes, Motorola, Microcom, Multitech, and USR modems (compatibility with other modem vendors is expected, but not confirmed)
<b>Fax vendor compatibility</b>	Works with Panasonic fax machines (compatibility with other fax vendors is expected, but not confirmed)
<b>Current analog and digital modem network module compatibility</b>	Integrates transparently with current analog (NM-8AM-V2 and NM-16AM-V2) and digital modems (NM-xDM)
<b>Worldwide support for country-specific standards</b>	Supports various regulatory requirements; for the latest per-country approval information for the modem WICs, contact your local Cisco Systems® representative
<b>Leased-line mode</b>	Does not support leased-line mode
<b>Modem firmware upgrade capability</b>	Support modem firmware upgrades

## NETWORK MANAGEMENT SUPPORT

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

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

## MEMORY AND SOFTWARE REQUIREMENTS

**Table 2.** Memory and Software Requirements

Minimum Cisco IOS Software Support	Cisco 1800 Series Integrated Services Routers	Cisco 2600XM Multiservice Router	Cisco 2691 Multiservice Platform	Cisco 2800 Series Integrated Services Routers	Cisco 3700 Series Multiservice Access Routers	Cisco 3800 Series Integrated Services Routers
WIC-1AM-V2, WIC-2AM-V2	12.4(3), 12.4(4)T	12.3.(16), 12.3(14)T, 12.4(3), 12.4(4)T	12.3(16), 12.3(14)T, 12.4(3), 12.4(4)T	12.4(3), 12.4(4)T	12.3(16), 12.3(14)T, 12.4(3), 12.4(4)T	12.4(3), 12.4(4)T

**Note:** No additional memory is required to support the modem WICs (refer to the Cisco IOS Software release notes for platform memory requirements per feature set).

## MAXIMUM MODEM WAN INTERFACE CARDS PER CHASSIS

**Table 3.** Maximum Modem WICs per Chassis without Network Module

Platform	Maximum Modem WICs per Chassis
Cisco 1800	2
Cisco 2600XM	4
Cisco 2691	5
Cisco 2800	4 (Cisco 2801: only 3)
Cisco 3725	7
Cisco 3745	11
Cisco 3825	8
Cisco 3845	12

**Note:** Refer to the platform documents for more details about other hardware restrictions. The Cisco 2600XM, 2600, 2800, 3700, and 3800 also support higher-density modem solutions in a network module form factor. Visit the following URLs for additional information about the 1- and 2-port WICs and the digital modem:

- For the WICs (NM-8AM-V2 and NM-16AM-V2) (Cisco 2600XM, 2600, 2800, 3700, and 3800 Analog Modem Network Modules): [http://www.cisco.com/warp/public/cc/pd/rt/2600/prodlit/brisc\\_ds.pdf](http://www.cisco.com/warp/public/cc/pd/rt/2600/prodlit/brisc_ds.pdf)
- For digital modem (NM-xDM) (Cisco 3700 and 3800 Series Digital Modem Network Modules): [http://www.cisco.com/en/US/prod/collateral/routers/ps274/product\\_data\\_sheet09186a0080091b98.html](http://www.cisco.com/en/US/prod/collateral/routers/ps274/product_data_sheet09186a0080091b98.html)

## MODEM SPECIFICATIONS

### Carrier Protocols

- ITU V.92
- 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.34

### Error-Correcting Link Access Protocols

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

### Compression Protocols

V.44 and 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 WICs are described in Table 4.

**Table 4.** Specifications for the WICs

Specification	Data
<b>Hardware and platform compatibility</b>	Cisco 1800, 2600XM, 2691, 2800, 3700, and 3800 models
<b>Dimensions (H x W x D)</b>	75 x 3.08 x 4.38 in. (1.91 x 6.93 x 9.86 cm)
<b>Weight</b>	2.4 oz (68 gram)
<b>Network module support</b>	<ul style="list-style-type: none"><li>• Cisco 2600XM: Through NM-2W</li><li>• Cisco 2691: Through mixed modules (NM-2W, NM-1FE2W-V2, and NM-2FE2W-V2)</li><li>• Cisco 3700: Through combo modules (NM-2W, NM-1FE2W-V2, and NM-2FE2W-V2)</li><li>• Cisco 3800: Through combo modules (NM-2W, NM-1FE2W-V2, and NM-2FE2W-V2)</li></ul>
<b>Throughput</b>	Up to 56 kbps downstream and up to 33.6 kbps upstream, subject to line conditions
<b>Ports</b>	Two RJ-11 ports (second port on WIC [WIC-1AM] can be used to connect an analog telephone for use when the modem is idle)
<b>Cabling</b>	One or two RJ-11 connectors
<b>LEDs (per modem)</b>	SP (high-speed connectivity for V.92, V90, or K56Flex), CN (carrier detect), and OH (off-hook) status indicators
<b>Network Equipment Building Standards (NEBS) compliance</b>	Level 3, Types II and IV

Refer to the Cisco 1800, 2600, 2800, 3700, and 3800 data sheets for additional information about mechanical, environmental, and agency certifications. Also visit the following URLs:

- Cisco 1800: [http://www.cisco.com/en/US/products/ps5853/products\\_data\\_sheets\\_list.html](http://www.cisco.com/en/US/products/ps5853/products_data_sheets_list.html)
- Cisco 2600: [http://www.cisco.com/en/US/prod/collateral/routers/ps259/product\\_data\\_sheet0900aec800fa5be.html](http://www.cisco.com/en/US/prod/collateral/routers/ps259/product_data_sheet0900aec800fa5be.html)
- Cisco 2800: [http://www.cisco.com/en/US/prod/collateral/routers/ps5854/ps5882/product\\_data\\_sheet0900aec8016fa68.html](http://www.cisco.com/en/US/prod/collateral/routers/ps5854/ps5882/product_data_sheet0900aec8016fa68.html)
- Cisco 3700: [http://www.cisco.com/en/US/prod/collateral/routers/ps282/product\\_data\\_sheet09186a008009203f.html](http://www.cisco.com/en/US/prod/collateral/routers/ps282/product_data_sheet09186a008009203f.html)
- Cisco 3800: [http://www.cisco.com/en/US/prod/collateral/routers/ps5855/product\\_data\\_sheet0900aec8016a8e8.html](http://www.cisco.com/en/US/prod/collateral/routers/ps5855/product_data_sheet0900aec8016a8e8.html)

## COUNTRY AVAILABILITY

For the latest information regarding per-country approval for the WICs, contact your local Cisco representative.

## ORDERING INFORMATION

**Table 5.** Part Numbers

Part Number	Description
<b>WIC-1AM-V2</b>	1-port analog modem WIC
<b>WIC-1AM-V2=</b>	1-port analog modem WIC
<b>WIC-2AM-V2</b>	2-port analog modem WIC
<b>WIC-2AM-V2=</b>	2-port analog modem WIC

## ENVIRONMENTAL OPERATING RANGES

- Operating temperature: 32 to 104°F (0 to 40°C)
- Nonoperating temperature: -4 to 149°F (-20 to 65°C)
- Relative humidity: 10 to 85 percent noncondensing, operating; 5 to 95 percent noncondensing, nonoperating safety



## **CISCO 1800, 2600, 2800, 3700, AND 3800 POWER**

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



**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 International BV  
Haarlerbergpark  
Haarlerbergweg 13-19  
1101 CH Amsterdam  
The Netherlands  
www-europe.cisco.com  
Tel: 31 0 20 357 1000  
Fax: 31 0 20 357 1100

**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, Inc.  
168 Robinson Road  
#28-01 Capital Tower  
Singapore 068912  
www.cisco.com  
Tel: +65 6317 7777  
Fax: +65 6317 7799

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Printed in USA

C78-355431-02 08/06