


# Cisco SOHO 78 G.shdsl Router

**Affordable Multiuser Access with the Power of Cisco IOS Manageability and Reliability**



The Cisco SOHO 78 provides an affordable, secure, multiuser DSL access solution to small-office/home-office (SOHO) customers while reducing deployment and operational costs for service providers. Through the power of Cisco IOS<sup>®</sup> technology, the Cisco SOHO 78 G.shdsl Router provides superior manageability and reliability.

SOHO customers need affordable, multiuser access on a single DSL line as well firewall security and reliability. (See Figure 1.) Service providers need to deploy and manage intelligent customer premise equipment that supports SOHO customers' needs while keeping operational costs low. Easy set up, management, and support are key features that help reduce operational costs.

G.shdsl is the latest version of DSL technology, and it provides business customers a symmetrical service for bandwidth-intensive applications. G.shdsl can support speeds both upstream and downstream of up to 2.3 Mbps and can reach customers as far as 20,000 feet from the telco/PTT office.

### **Cisco SOHO 78 Benefits SOHO Users and Service Providers**

The Cisco SOHO 78 provides key features for SOHO users who have more requirements than a DSL modem can provide. Service providers can use the SOHO 78 to offer a DSL service with features beyond simple consumer needs. Additionally, with the SOHO 78 and Cisco IOS Software, service providers can help reduce their operational expenses in providing DSL services.

The Cisco SOHO 78 router is ideal for small offices or home offices and allows users to share a single G.shdsl line and a single IP address. The SOHO 78 router provides:

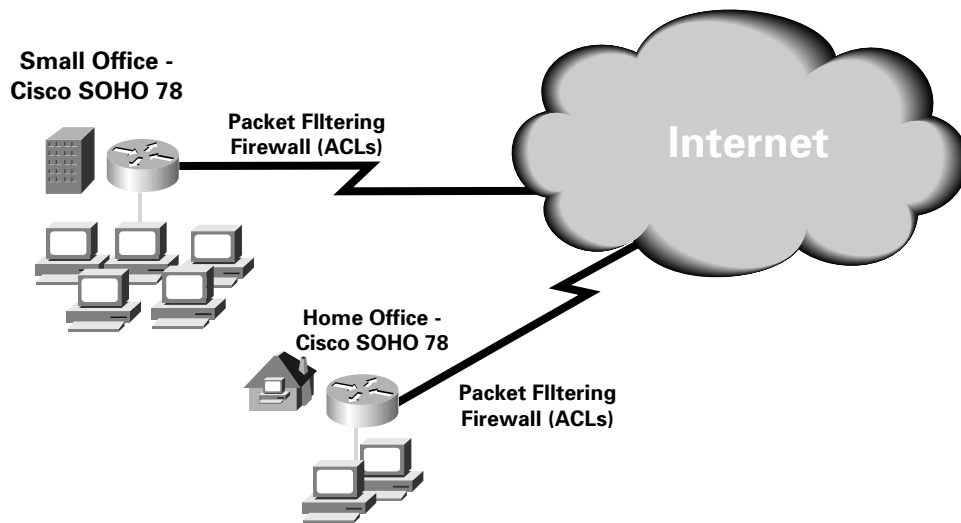
- Affordable, multiuser access
- Secure packet filtering firewall
- Easy set up and deployment with web-based configuration

### **Affordable, Multiuser Access with a Single DSL Line**

The Cisco SOHO 78 G.shdsl Router enables service providers to deploy an affordable, multiuser router that is ideal for sites that need fast, reliable access to the Internet. Network Address Translation (NAT) allows multiple users to share one DSL line with a single IP address. NAT eliminates the need to readdress all PCs with private network addresses. Unlike a DSL modem, which allows only a single PC to connect to the Internet at a time, the Cisco SOHO 78 G.shdsl router allows multiple PCs to connect to the Internet simultaneously.

The Cisco SOHO 78 also provides an integrated four-port Ethernet hub, which makes it ideal for a small office. As many as four PCs or devices can be connected directly to the Cisco SOHO 78 without a separate hub.

**Figure 1** The Cisco SOHO 78 G.shdsl router is ideal in a small office or home office for providing basic secure and reliable access to the Internet.



### **Internet Security with Packet-Filtering Firewall**

With the always-on connection that DSL provides, network security is essential. The Cisco SOHO 78 router enables service providers to offer a packet-filtering firewall that helps protect users from unauthorized access. Cisco's packet-filtering firewall logs information and provides an audit trail of unauthorized access attempts. Service providers can use this information to track down the source of these security threats. NAT also provides security by allowing users to hide behind a single public IP address, keeping the PCs behind the router concealed from public view.

### **Easy Setup and Deployment**

The Cisco SOHO 78 router includes a Web-based configuration tool. The Cisco Router Web Setup tool (CRWS) allows users who have no technical experience to set up the router quickly, without knowledge of Cisco IOS Software and without needing to install any additional software on a PC.



**Figure 2** Cisco Router Web Set-Up Tool



### **Reduced Cost of Operations for Service Providers**

Because the Cisco SOHO 78 router is based on Cisco IOS technology, service providers can leverage their training and investments in Cisco IOS Software to reduce their overall costs of doing business. With these key management and troubleshooting features, service providers can cost-effectively deploy and remotely manage the Cisco SOHO 78 router with the following advantages:

- Cisco IOS manageability, including interactive diagnostics/debugging features
- Familiar Cisco IOS command-line interface (CLI)
- Proven reliability and industry-leading support
- Lower deployment costs

### **Remote Management with Cisco IOS Technology**

The Cisco SOHO 78 router incorporates the same Cisco IOS technologies used by service providers and enterprises, allowing service providers to use existing knowledge of Cisco IOS Software to reduce training costs when configuring, installing, and deploying Cisco SOHO 78 routers.

Additionally, Cisco IOS Software provides many debug features that allow a service provider to diagnose network problems remotely. For example, the G.shdsl loop analysis feature provides information gathered remotely on line quality and data transfer rates, including train speeds for upstream and downstream, bit error rate, margin, and chipset status, as well bits per frequency bin.

The Cisco SOHO 78 Series supports centralized administration and management via Simple Network Management Protocol (SNMP), Telnet, or local management through the router console port. Additionally, the world-class support offered by the Cisco Technical Assistance Center (TAC) provides unparalleled support services.

### **Proven Reliability and Support**

Because the Cisco SOHO 78 router is based on the same proven Cisco IOS technology used on 80 percent of the Internet and because Cisco IOS Software is the industry-standard application for mission-critical enterprise networks, SOHO customers can depend on them day after day, year after year.

## Lower Deployment Costs

Additionally, Cisco aids service providers by helping reduce deployment costs. Cisco Configuration Express, a Web-based ordering system and customized in-line manufacturing process, allows service providers to order preconfigured SOHO 78 routers and have them shipped directly to the customer site. This reduces costs for warehousing and deploying products.

This, combined with the Cisco Router Web Setup tool, promotes efficient customer self-installation. End users complete the installation simply by bringing up a Web browser and entering a user name and password. By making deployment of services faster, service providers can save on costs while increasing customer satisfaction.

**Table 1** Key Product Features and Benefits

Key Features	Benefit
<b>Affordable, Multiuser Access</b>	
NAT/PAT	<ul style="list-style-type: none"> <li>• Allows multiple users to share a single DSL line and one IP address</li> <li>• Lets businesses and service providers conserve valuable IP address space</li> </ul>
Four-Port Ethernet Hub	<ul style="list-style-type: none"> <li>• Allows up to four PCs or devices to be connected directly to the router without the need for a separate hub</li> </ul>
<b>Security</b>	
Packet-Filtering Firewall (Access Control Lists)	<ul style="list-style-type: none"> <li>• Protect network from unauthorized access through Extended Access Control Lists</li> </ul>
NAT/PAT	<ul style="list-style-type: none"> <li>• Hides internal IP addresses from external networks</li> <li>• Prevents certain denial-of-service attacks from outside networks on internal hosts</li> </ul>
<b>Easy Setup and Deployment</b>	
Cisco Router Web Setup tool	<ul style="list-style-type: none"> <li>• Web-based configuration tool allows users to set up the router quickly without needing a working knowledge of Cisco IOS Software</li> <li>• No need to install additional software on a PC to configure the router</li> </ul>
Configuration Express	<ul style="list-style-type: none"> <li>• Allows service providers to order preconfigured customer premises equipment (CPE) and have it shipped directly to the customer site</li> </ul>
Color-Coded Ports and Cables and Quick-Start Reference Guide	<ul style="list-style-type: none"> <li>• Help users make proper connections</li> <li>• Provide easy-to-follow installation instructions</li> </ul>
Choice of Encapsulation: PPP over ATM (PPPoATM), PPP over Ethernet (PPPoE), and RFC 1483 Routed or Bridged (RFC 2684)	<ul style="list-style-type: none"> <li>• Ensures compatibility with existing network</li> </ul>
<b>Cisco IOS Management and Proven Reliability</b>	
Cisco IOS Interactive Debugging Features	<ul style="list-style-type: none"> <li>• Allow service providers to remotely or locally diagnose network problems in detail (for example, via Telnet or terminal connection into the router)</li> </ul>
Cisco IOS CLI	<ul style="list-style-type: none"> <li>• Allows customers to use existing knowledge of Cisco IOS CLI for easier installation and manageability without additional training</li> </ul>
Cisco IOS Easy IP	<ul style="list-style-type: none"> <li>• Enables true mobility-client IP addresses to be transparently configured via the Cisco IOS Dynamic Host Configuration Protocol (DHCP) server each time a client powers up</li> </ul>



Key Features	Benefit
Management	<ul style="list-style-type: none"> <li>Enables remote management and monitoring via SNMP, Telnet, or HTTP and local management via console port</li> </ul>
Proven Technology	<ul style="list-style-type: none"> <li>Cisco IOS Software offers technology that is used throughout the backbone of the Internet and in most enterprise networks.</li> </ul>
World-Class Support	<ul style="list-style-type: none"> <li>Helps customers keep their Cisco SOHO 78 Series routers running all the time</li> </ul>

**Table 2** Model Matrix

Hardware Specifications	Cisco SOHO 78
Processor	MPC 855T RISC
Processor Speed	50 MHz
Default DRAM <sup>1</sup> Memory	16 MB
Maximum DRAM Memory	16 MB
Default Flash <sup>2</sup> Memory	8 MB
Maximum Flash Memory	8 MB
G.shdsl Port	RJ-11
10 Mbps Ethernet Four Port Hub	RJ-45
Crossover Switch (To Hub/To PC)	Yes
Console Port	RJ-45
LEDs	10
Power Supply	Universal 100–240 VAC

**Table 3** Cisco SOHO 78 Software Feature Set for Release 12.2(1)XE

Protocols and Features Supported by Cisco SOHO 78 Software Feature Sets—Basic Protocols/Features	IP
<b>Routing/Bridging</b>	
Transparent Bridging	X
IP	X
PPPoE, PPPoA, RFC1483 Routed or Bridged	X
RIP, RIPv2	X
PAP, CHAP, Local Password	X

<b>Protocols and Features Supported by Cisco SOHO 78 Software Feature Sets—Basic Protocols/Features</b>		<b>IP</b>
IP Basic and Extended Access Lists		X
<b>Ease of Use and Deployment</b>		
Web-based Configuration		X
Easy IP Phase I and II		X
<b>Bandwidth Optimization</b>		
STAC Compression		X
<b>Ease of Use and Deployment</b>		
Cisco Router Web Setup tool		X
Easy IP Phase I and II		X
Configuration Express		X
<b>Management</b>		
SNMP, Telnet, Console Port		X
TFTP Client and Server		X
Address Conservation		X
NAT Many to One (PAT)		X
IPCP Address Negotiation		X
DHCP Client Address Negotiation		X
Dying Gasp		X

## **Regulatory and Standards Compliance**

### **Safety:**

- UL 1950
- CSA 22.2 No 950
- EN60950
- AUSTEL TS001
- AS/NZS 3260



## EMC:

• FCC Part 15 Class B	Emissions
• EN55022: 1998, Class B	Emissions
• EN61000-3-2: 1995	Harmonics
• EN61000-3-3: 1995	Flicker
• EN 50082-1 (1997)	Immunity
• EN55024: 1998	Immunity
– EN61000-4-2	ESD
– EN61000-4-3	RF Fields
– EN61000-4-4	EFT
– EN61000-4-5	Surge
– EN61000-4-6	Conducted RF
– EN61000-4-11	Voltage Dips/Sags/Interruptions

## PTT:

- Cisco supports telco approvals for SHDSL worldwide as demanded by different countries.

### G.shdsl Specifications

- Downstream and upstream symmetrical data rates 192 Kbps to 2.3 Mbps in increments of 64 Kbps
- Globespan G.shdsl Chipset
- ITU G.991.2 Annex A and Annex B

### Supported RFCs

- RFC 2516 Point-to-Point Protocol (PPP) over Ethernet
- RFC 2364 Point-to-Point Protocol (PPP) over ATM PVCs
- RFC 2684 (formerly 1483) Multiprotocol ATM encapsulation
- RFC 1577 Classical IP over ATM
- RFC 1213 MIB II for IP
- RFC 1695 AToM MIB for ATM
- RFC 1058 RIP1, RIP1-compatible
- RFC 1389 RIP2

- RFC 2131,2132 DHCP server
- RFC 1542, 2132 Bootp and DHCP relay agent
- RFC 2132 DHCP client
- RFC 1974 Data compression of up to 4:1 (STACTMLZS)
- RFC 1144 Van Jacobson TCP header compression
- RFC 1631 Network renumbering
- RFC 1334,1994 User authentication (PAP/CHAP) with PPP
- RFC 1631,2663 IP Network Address Translation (NAT)

### Interoperability

- Cisco 6130/6160/6015/6260 DSL access multiplexers (DSLAMs) with 8-port G.shdsl line cards
- Interoperability expected with other vendors' DSLAMs that use the Globespan chipset (testing to be done to confirm)

## Physical Specifications

### Dimensions and Weight Specifications

Dimensions (H x W x D) without cables:

2.0 x 9.7 x 8.5 in. (5.1 x 24.6 x 21.6 cm)

Weight:

1.43 lb (0.65 kg)

### Environmental Operating Ranges

Operating temperature:

32°F to 104°F (0°C to 40°C)

Nonoperating temperature:

-4°F to 149°F (-20°C to 65°C)

Operating humidity:

10% to 85% relative humidity (noncondensing)

Nonoperating humidity:

5% to 95% relative humidity (noncondensing)

Operating altitude:

0 ft to 10,000 ft (0m to 3000m)

Nonoperating altitude:

0 ft to 15,000 ft (0m to 4570m)

## Router Power

AC input voltage:

100 to 240 VAC, 50 to 60 Hz

Power consumption:

6 to 14W (idle-maximum consumption)

Power supply rating:

15W



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