Data Sheet

Cisco 827H ADSL Router
Business Class ADSL Access through the Power of Cisco IOS® Technology

The Cisco 827H ADSL Routers provides business-class functionality for small offices ands corporate teleworkers through the power of Cisco IOS technology. The Cisco 827H Router enables service providers and resellers to increase service revenue by supporting features for business-class security, differentiated classes of service, and managed network access. These value-added features, along with the manageability and proven reliability of Cisco IOS technology, provide the mission-critical networking that businesses require.

The Cisco 827H ADSL Router enables value added services including managed, secure Internet and VPN access for small remote offices, teleworkers and small to medium sized businesses. At the same time, the Cisco 827H Router helps reduce operational costs for business, resellers and service providers with simplified set up and remote management and troubleshooting tools provided by Cisco IOS software (see Figure 1).

Value-Added Services

The Cisco 827H Router is ideal for a small business or remote office or as an enterprise telecommuting solution. It has an integrated four port hub for up to four devices or with an external hub or switch support additional users (recommended up to 20 users). This Cisco 827H Router supports scalable, secure, and proven business solutions such as:

- Business-class security with integrated Stateful Firewall and VPN encryption
- Differentiated classes of service with QoS
- Managed network access with Cisco IOS

Reduced Cost of Operations

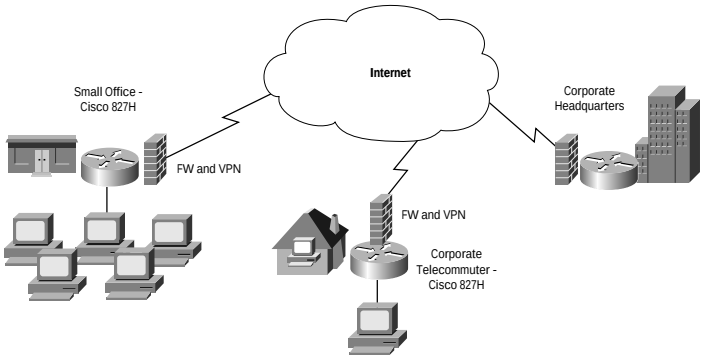
Because the Cisco 827H Router is based on Cisco IOS technology, service providers and resellers can take advantage of their training and investments in Cisco IOS Software to reduce their overall costs of doing business. With key management and troubleshooting features, service providers and resellers can cost-effectively deploy and manage the Cisco 827H Router at the business customers' premise, thanks to the following advantages:

- Cisco IOS manageability, including interactive diagnostics/debug features
- Familiar Cisco IOS command-line interface (CLI)
- Proven reliability

Figure 1:
Cisco 827H ADSL Router

Figure 2:
Cisco 827H Rear View

Figure 3:
The Cisco 827H Router business-class ADSL router (recommended for up to 20 users) is ideal in a small remote branch or as an enterprise telecommuting solution to provide secure and reliable access to the Internet or corporate offices.



Benefits of Cisco 827H Router Business-Class ADSL Router

Business-Class Security for Internet and VPN Access

To take advantage of the unprecedented opportunities offered by Internet-bases communications and commerce, private information must remain secure. Cisco IOS software provides many features to enable network security and the Cisco 827H Router includes a stateful firewall. It denies or permits WAN traffic based on a session's state, so requests from users behind the firewall can be received, whie preventing unauthorized access. Additionally, Cisco IOS software includes additional perimeter security features such as standard and extended access control lists (ACLs); Lock and Key (dynamic ACLs); router and route authentication; generic routing encapsulation (GRE) tunneling; and Network Address Translation. The perimeter security features control traffic entry and exit between private networks, intranets, extranets, or the Internet.

Beyond Firewall security the Cisco 827H Router also supports optional data encryption for Virtual Private Networks. VPNs allow secure communication over a public infrastructure such as the Internet. While a firewall provides perimeter network security for a given location, VPNs protect data when sent from one site to another, such as a branch office to corporate headquarters. VPNs use data encryption and secure tunnels to protect the integrity and confidentiality of data traveling over these public connections. The Cisco 827H Router supports IPSec 3DES encryption, which provides the most secure form of data encryption, and prevents hackers from gaining access to corporate information.

To simplify the setup of VPNs at remote locations the Cisco 827H Router supports Cisco Easy VPN. The Cisco Easy VPN Remote feature allows a Cisco router with a static or dynamic IP address to automatically establish and maintain a VPN tunnel to a Cisco VPN server or concentrator. This allows the same ease of configuration and

ongoing policy management of VPNs as VPN software clients. This cost effective solution is ideal for remote offices with little IT support, or large CPE deployments where it is impractical to individually configure multiple remote devices. For those at remote offices or teleworkers, the Cisco EasyVPN Remote feature can be configured with the Cisco Router Web Set Up tool (CRWS), a Web-based GUI. This makes VPN configuration as easy as entering a password, increasing productivity and decreasing support costs.

Differentiated Classes of Service

The Cisco 827H business-class ADSL router enables service providers to increase revenue by building differentiated service options based on premium, standard, or best-effort service classes.

It employs quality-of-service (QoS) features such as application-aware networking with IP QoS features and traffic management with ATM QoS features. This enables the router to expedite the handling of mission-critical or delay sensitive applications, such as enterprise resource planning (ERP) or videoconferencing while sharing network resources with lower-priority applications such as Web surfing.

Application-Aware Networking with IP QoS

Using Class-Based Weighted Fair Queuing (CBWFQ), the Cisco 827H Router enables service providers and resellers to guarantee or differentiate bandwidth based on a specific application or a specific user. For example, the order entry department traffic can be given priority over the marketing department traffic. For real time applications explicit low latency can be added using the low latency queuing, (LLQ) providing low delay and guaranteed bandwidth to real-time applications while providing the same differentiated bandwidth support as CBWFQ.

Traffic Management Using ATM QoS

In addition to IP QoS features, the Cisco 827H Router provides ATM QoS features that enable service providers to manage their core ATM network infrastructures to deliver scalable, cost-effective services with QoS guarantees to their customers. Per-virtual-circuit traffic shaping and queuing allow further optimization of the existing bandwidth between customers and various services. For congested ATM networks the router provides support for traffic policing with Cell Loss Priority (CLP) tagging options to allow the ATM network to drop all the cells from packets that exceed the policy or that have been identified as having less priority than other traffic.

Using the following features, service providers can offer true QoS and cater to applications with special requirements:

- Per-virtual-circuit queuing (ATM QoS)
- Traffic management (ATM QoS)
- Class-Based Weighted Fair Queuing (IP QoS)
- Policy-based routing (IP QoS)
- Weighed Random Early Detection (IP QoS)

Managed Network Services with Cisco IOS Software

Service providers can offer small business and enterprise telecommuters managed network or Internet access with the Cisco 827H Router, providing service level agreement (SLAs) and response time guarantees. Through Cisco IOS software, the Cisco 827H Router provides complete remote management features, which allow service providers to monitor the lines of the customers with SLAs and quickly react to any distruption in service.

Reduced Cost of Operations

Cisco IOS Software Manageability

The Cisco 827H Router incorporates the same Cisco IOS technologies used by service providers and enterprises, allowing service providers and resellers to use existing knowledge of Cisco IOS Software to reduce training costs when configuring, installing, and deploying Cisco 827H ADSL routers. Additionally, Cisco IOS Software provides many debug features that allow a service provider to remotely diagnose network problems. The Cisco 827H router supports centralized administration and management via Simple Network Management Protocol (SNMP), HTTP, Telnet, or local management through the router console port. The world-class support offered by the Cisco Technical Assistance Center (TAC) provides unparalleled support services.

Easy to Deploy and Setup

The Cisco 827H Router includes the Cisco Router Web Set Up tool, a Web-based configuration tool for simplified installation and setup. To configure the product, users simply point a Web browser to the IP address of the router and follow a few simple steps. This allows the Cisco 827H Router to be readily installed by non-technical personnel or end users. The setup tool allows a user to enable security, such as packet filtering, as well as the Cisco IOS Software Firewall Feature Set.

Additionally, Cisco offers at no additional cost, Cisco Configuration Express for direct purchase partners which allows Cisco to ship pre-configured routers to end users. Service Providers, System Integrators and Enterprises can utilized Conguration Express to save on the cost of deployment logistics and warehousing of products. Cisco Configuration Express also enables true plug and play deployments of Cisco 827H Routers without the need for any configuration tools through custom loaded configurations.

Proven Reliability

Because Cisco 800 Series routers are 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, small business and enterprise telecommuters can depend on them day after day, year after year.

Figure 4:
Easy Setup with Cisco Router Web Set Up tool

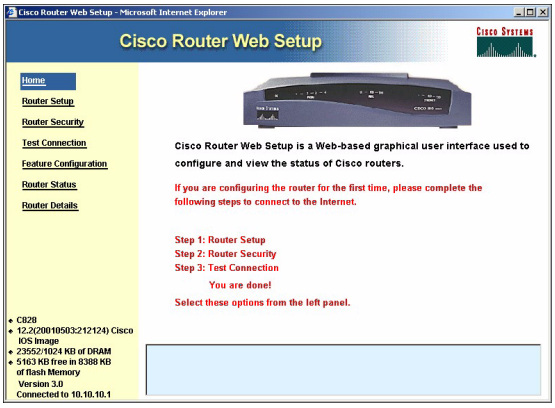


Table 1 Key Product Features and Benefits

Key Feature	Benefit
Multiuser Access	
NAT/PAT	• Creates multiple private IP addresses from a single valid public IP address • Allows multiple users to share a single broadband connection
PPPoE	• PPP over Ethernet encapsulation ensures compatibility with Service Provider network requirements
Business-Class Security	
Cisco IOS Firewall Feature Set	• Offers internal users secure, per-application dynamic access control (stateful inspection) for all traffic across perimeters • Defends and protects router resources against denial-of-service attacks • Checks packet headers, dropping suspicious packets • Protects against unidentified, malicious Java applets • Details transactions for reporting on a per-application, per-feature basis
IPSec DES and 3DES Encryption	• Ensures confidential data integrity and authenticity of origin by using standards-based encryption • Provide encryption for all users on the LAN without configuring individual PCs • Encryption available on a singe WAN devices allows users to access IP aware devices such as print servers, IP phones, etc, where as encryption initiated with PC software clients prevents access to those devices
Cisco Easy VPN Remote	• Easy deployment and maintenance of VPN connections with auto-IPSec tunnel initiation and pushed policy acceptance
Multiuser IPSec Pass-through	• Allows IPSec tunnels to pass through the router when VPN PC Software clients are required • Support for PPTP tunnels, encrypted or unencrypted, initiated at the PC
PAP, CHAP and ACLs	• Protects network from unauthorized access
Route and Router Authentication	• Accepts routing table updates from only known routers, ensuring that no corrupt information from unknown sources is received
NAT/PAT	• Hides internal IP addresses from external networks • Prevents certain denial-of-service attacks from outside networks on internal hosts
Differentiated Classes of Service	
QoS/CBWFQ/LLQ	• Ensures consistent response times for multiple applications by intelligently allocating bandwidth • Allows for classification of applications and gives the most important applications priority use of the WAN line • Allows for handling of real time applications minimizing latency while guaranteeing bandwidth
ATM Traffic UBR, VBRnrt, VBRrt, and CBR with per-VC Queuing and Traffic Shaping	• Ensures QoS guarantees for real-time traffic, with ability to send traffic over the appropriate virtual circuit to provide ATM level shaping and ensure that no head-of-line blocking can happen between circuits of different or equal traffic classes
Choice of Encapsulation (PPP over ATM, PPPoE, and RFC 2684 [formerly RFC1483])	• Ensures compatibility with existing network

Table 1 Key Product Features and Benefits (Continued)

Key Feature	Benefit
Lower Cost of Operations	
Cisco IOS Interactive Debug Features	• Allow service providers or system administrators to remotely or locally diagnose network problems in detail (for examples, via Telnet into the router)
Cisco IOS CLI	• Allows customers to use existing knowledge of Cisco IOS CLI for easier installation and manageability without additional training
Simplified Setup, Installation, and Management	
Cisco IOS Software Management	• Enables remote management and monitoring via SNMP, Telnet, or HTTP and local management via console port
Cisco IOS Software CLI	• Allows customers to use existing knowledge of Cisco IOS Software CLI for easier installaion and manageability without additional training
Cisco IOS Software Technology	• Offers technology that is used throughout the backbone of the Internet and in most enterprise networks
Cisco Router Web Set Up Tool (CRWS)	• Allows non-technical users to complete installation by simply pointing a browser at the router and providing user information
Supported by Cisco VPN Solution Center and Cisco Secure Policy Manager	• Security management tools that allow for scalable deployments of security policies
Secure Shell (SSH) Protocol	• Provides a secure, encrypted-connection to a router for proving secure Telnet functionality
NAT/PAT	• Lets businesses and service providers conserve valuable IP address space • Reduces time and costs by reducing IP address management
Cisco IOS Easy IP	• 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
Color Coded Ports and Cables and Quick-Start Reference Guide	• Helps users make proper connections • Provides easy-to-follow installation instructions
SNMP	• Enables remote management and monitoring via SNMP, Telnet, or HTTP as well as local management via console port

Table 2 Model Matrix

Hardware Specifications	Cisco 827H
Processor	MPC 855T RISC
Processor Speed	50 MHz
Default DRAM[1] Memory	8 MB
Maximum DRAM Memory	32 MB
Default Flash[2] Memory	8 MB
Maximum Flash Memory	8 MB
Ethernet	4 port hub - 10 Mbps
Console	RJ-45
LEDs	7

Table 2 Model Matrix (Continued)

Hardware Specifications	Cisco 827H
Support for Kensington-Style Physical Lock	Yes
Stackable	Yes
Crossover Hub Switch	Yes
Power Supply	Universal 100 - 240 VAC

1. DRAM must be obtained from Cisco Systems
2. Additional Flash memory is Intel "Mini-card" technology

Note: Ordinary circuit-switched telephone service can be supported on the same copper pair as ADSL by using micro filters or Plain Old Telephone Service (POTS) splitter connected between the line and phones, fax machines, or modems, to provide filtering of the high-frequency ADSL signal to avoid interference between the voice and the ADSL service.

Table 3 Cisco 827 Router and Cisco 827-4V Router Software Feature Set

Features Supported by Cisco 827H Software	IP Firewall	IP Plus	IP/ Firewall Plus IPSec 3DES
LAN			
Transparent Bridging	X	X	X
IP	X	X	X
Routing			
IP Enhanced IGRP	–	X	X
IP-Policy Routing (also listed in QoS)	X	X	X
RIP, RIPv2	X	X	X
IP Multicast (relay and PIM)	X	X	X
Security			
Cisco IOS Firewall	X	–	X
Context-Based Access Control Lists	X	–	X
Java Blocking	X	–	X
Denial-of-Service Detection	X	–	X
Easy VPN Remote	–	–	X
Multiuser IPSec Pass-through (TCP and Un-encapsulated)	X	X	X
Real-Time Alerts	X	–	X
IPSec Encryption w/3DES and L2TP	–	–	X
Route and Router Authentication	X	X	X
PAP, CHAP, Local Password	X	X	X
GRE Tunneling	–	X	X
IP Basic and Extended Access Lists	X	X	X
NetBIOS Access	X	X	X

Table 3 Cisco 827 Router and Cisco 827-4V Router Software Feature Set (Continued)

Features Supported by Cisco 827H Software	IP Firewall	IP Plus	IP/ Firewall Plus IPSec 3DES
Business-Class QoS			
Weighted Random Early Detection	X	X	X
CBR, VBRrt, VBRnrt, UBR Traffic Classes	X	X	X
LLQ	X	X	X
Per-VC Shaping	X	X	X
Per-VC Queuing	X	X	X
IP Policy Routing	X	X	X
Bandwidth Optimization			
STAC Compression	X	X	X
Net BIOS Name Caching	X	X	X
Ease of Use and Deployment			
Cisco Router Web Set Up tool	X	X	X
Easy IP Phase I and II	X	X	X
Management			
SNMP, Telnet, Console Port	X	X	X
Syslog	–	X	X
SNTP	X	X	X
CiscoView	X	X	X
TACACS+ (also a security feature)	X	X	X
TFTP Client and Server	X	X	X
Cisco Intelligence Engine 2100	X	X	X
Cisco VPN Solutions Center	–	–	X
Service Assurance (SA Agent)	X	X	X
Address Conservation			
NAT Many to One (PAT)	X	X	X
NAT Many to Many (Multi-NAT)	X	X	X
IPCP Address Negotiation	X	X	X
PPPoE, PPPoA, and RFC2684 (RFCC1483) encapsulations	X	X	X
DHCP Client Address Negotiation	X	X	X

Table 4 Cisco SOHO and 800 Series—DSLAM Interoperability

DSLAM	Alcatel ASAM 1000	Alcatel 7300		Cisco 6x60/6015			ECI		
Chipset	**AME ADSL**	**AME ADSL**	**GSI G.SHDSL**	**ADI ADSL**	**GSI ADSL**	**GSI G.SHDSL**	**ADI 918 ADSL**	**ADI 930 ADSL**	**Metalink G.SHDSL**
Cisco 826	X	X	–	–	P (ext)	–	P	P	–
Cisco 827H	X	X	–	X*	X	–	P	P	–
Cisco 828	–	–	P	–	–	X	–	–	R
Cisco SOHO 76	X	X	–	–	P (ext)	–	P	P	–
Cisco SOHO 77H	X	X	–	X*	X	–	P	P	–
Cisco SOHO 78	–	–	P	–	–	X	–	–	R

DSLAM	Siemens Xpresslink 2.0		Fujitsu/Westell		Marconi DSLAM AXH600		Lucent Stinger	
Chipset	**TI ADSL**	**GSI G.SHDSL**	**AME ADSL**	**GSI G.SHDSL**	**AME ADSL**	**Metalink G.SHDSL**	**AME ADSL**	**GSI ADSL**
Cisco 826	P		–		–		?	R
Cisco 827H	P	–	P	–	R	–	?	R
Cisco 828	–	R	–	P	–	R	–	–
Cisco SOHO 76	P	–	–	–	–	–	?	R
Cisco SOHO 77H	P	–	P	–	R	–	?	R
Cisco SOHO 78	–	R	–	P	–	R	–	–

Legend	
P	In progress
P (ext)	In progress
X	Supported
R	On roadmap
–	No plan/not supported
*	Needs external attenuator
?	TDB, testing required

Regulatory and Standards Compliance

The Cisco 827H business-class ADSL routers are available for worldwide deployment.

Safety

- UL 1950/ CSA 950-95, Third Edition
- IEC 950: Second Edition with Amendments 1, 2, 3, and 4
- EN60950:1992 with Amendments 1, 2, 3, and 4
- CSO3, Canadian Telecom requirements
- AS/NZS 3260: 1996 with Amendments 1, 2, 3, and 4
- ETSI 300-047
- TS 001 with Amendment 1
- EMI
- AS/NRZ 3548:1992 Class B
- CFR 47 Part 15 Class B
- EN60555-2 Class B
- EN55022 Class B
- VCCI Class II
- ICES-003, Issue 2, Class B, April 1997S
- IEC 1000-3-2

Immunity

- IEC 1000-4-2 (EN61000-4-2)
- IEC 1000-4-3 (ENV50140)
- IEC 1000-4-4 (EN61000-4-4)

ADSL Specifications

Alcatel DynaMiTe ADSL Chipset

- T1.413 ANSI ADSL DMT issue 2
- G.992.1 ITU G.DMT support
- G.992.2 ITU G.Lite support
- G.992.3 ITU G.hs ADSL type negotiation

The chipset does not provide interoperability with carrierless amplitude modulation/phase modulation (CAP)-based ADSL lines.

Physical Specifications

Dimensions and Weight Specifications

- Dimensions (H x W x D): 2.0 x 9.7 x 8.5 in. (5.1 x 24.6 x 21.6 cm)
- Weight (Cisco 827H/Cisco 827H–4V): 1.48/1.5 lb (0.67/0.68 kg)

Environmental Operating Ranges

- Nonoperating temperature: –4 to 149˚ F (–20 to 65˚ C)
- Nonoperating humidity: 5 to 95%, relative humidity (noncondensing)
- Nonoperating altitude: 0 to 15,000 ft (0 to 4570m)
- Operating temperature: 32 to 104˚ F (0 to 40˚ C)
- Operating humidity: 10 to 85%, relative humidity (noncondensing)
- Nonoperating altitude: 0 to 10,000 ft (0 to 3000m)

Router Power

- AC input voltage: 100 to 250 VAC, 50 to 60 Hz
- Power consumption: 6 to 23W (idle-maximum consumption)
- Power supply rating: 29W

Telephone Port Power

- Voltages: –24V and –71V

Pinout ADSL Port

- Tip and Ring: Pins 3 and 4

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