Data Sheet

Cisco 826 ADSL Router
Business-Class ADSL over ISDN Access through the Power of Cisco IOS® Technology

The Cisco 826 business-class ADSL router provides business-class functionality for small offices and corporate teleworkers through the power of Cisco IOS® technology. The Cisco 826 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 with Cisco IOS software. 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 826 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 826 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. The Cisco 826 ADSL router supports ADSL over ISDN allowing it to be deployed in environments where local loops support ISDN service. Additionally, the Cisco 826 Router ADSL router supports the U-R2 specification for deployments in Duetsche Telekom's ADSL network.

Figure 1:
Cisco 826 ADSL Router

Value Added Services

The Cisco 826 Router is ideal for a small business or remote office or as an enterprise telecommuting solution. The Cisco 826 Router with single Ethernet LAN port, supports scalable, secure, quality, 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

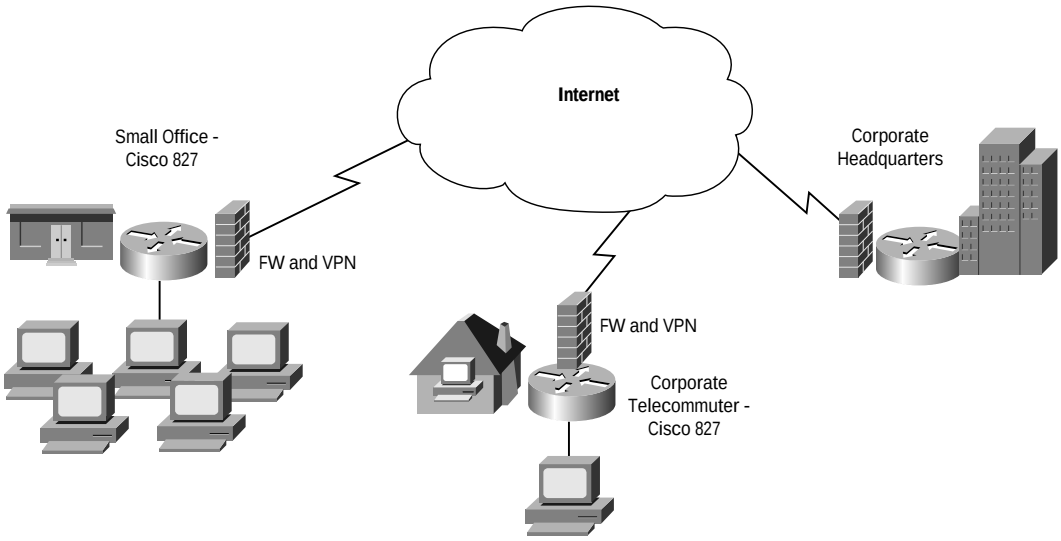
Reduced Cost of Operations

Because the Cisco 826 Router is based on Cisco IOS technology, service providers and resellers can leverage 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 826 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 2:
The Cisco 826 business-class ADSL router is ideal for up to 20 users in a small business or as an enterprise telecommuting solution to provide secure and reliable access to the Internet or corporate offices.



Benefits of Cisco 826 Router Business-Class ADSL Router

Business-Class Security for Internet and VPN Access

To take advantage of the unprecedented opportunities offered by Internet-based communications and commerce, private information must remain secure. Cisco IOS software provides many features to enable network security and the Cisco 826 Router offers a stateful inspection firewall. It denies or permits WAN traffic based on a session's state, so requests from users behind the firewall can be reached, while presenting 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. These perimeter security features control traffic entry and exit between private networks, intranets, extranets, and the Internet.

Beyond Firewall security the Cisco 826 Router also supports optional data encryption for Virtual Private Networks. VPNs allow secure communications over a public infrastructure such as the Internet. While a firewall provides perimeter network security for give 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 826 Router supports IPSec encryption, which provides the most secure form of data encryption, and prevents hackers from gaining access to corporate information.

To simply the set up of VPNs at remote locations the Cisco 826 Router supports Cisco Easy VPN. The Cisco Easy VPN Remote feature allows 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 remote offices or teleworkers, the Cisco Easy VPN 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 826 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 826 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 826 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

Service providers can offer small business and enterprise telecommuters managed network or Internet access with the Cisco 826 Router, providing service level agreement (SLAs) and response time guarantees. Through Cisco IOS software, the Cisco 826 Router provides complete remote management features, which allow service providers to proactively test the line's uptime and performance. In doing so, service providers can monitor the lines of customers with SLAs and quickly react to any disruption in service.

Reduced Cost of Operations

Cisco IOS Software Manageability

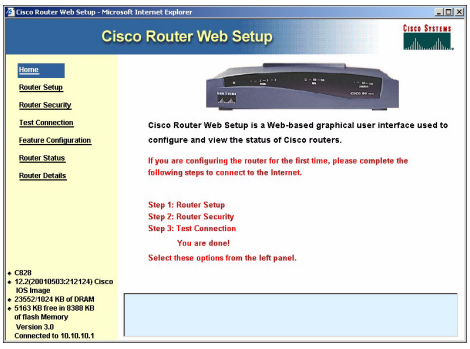
The Cisco 826 Router incorporates the same Cisco IOS technologies used by service providers and enterprises, allowing service providers and resellers to use existing knowledge of Cisco IOS software to reduce training costs when configuring, installing, and deploying Cisco 826 ADSL routers. Additionally, Cisco IOS software provides many debug features that allow a service provider to remotely diagnose network problems. The Cisco 826 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 Cisc 826 Router includes the Cisco Router Web Setup 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 826 Router to be readily installed by non-technical personnel or endusers. The setup tools 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 utilize Configuration 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 826 Routers without the need for any configuration tools through custom loaded configurations.

Figure 3:
Easy Setup with Cisco Router Web Setup tool



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.

Table 1 Key Product Features and Benefits

Key Features	Benefit
Access	
U-R2 Support	• Supports the U-R2 Specification for deployments in Duetsche Telekom's DSL network
NAT/PAT	• Create 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	• Ensure 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 single 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 networkers • Prevents certain denial-of-service attacks from outside networks on internal hosts

Table 1 Key Product Features and Benefits (Continued)

Key Features	Benefit
Differentiated Classes of Service	
QoS/CBWFQ/LLQ	• Ensures consistent response times from 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	• Ensure 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
Choice of Encapsulation (PPP over ATM, PPPoE, and RFC2684 [formerly RFC1483])	• Ensures compatibility with existing network
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 example, 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 mangement via console port
Cisco IOS Software CLI	• Allows customers to use existing knowledge of Cisco IOS Software CLI for easier installation 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 Setup tool (CRWS)	• Allows non-technical users to complete installation by simply pointing a browser at the router and providing user information • Available in German (May 2002)
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 providing secure telnet functionality
NAT/PAT	• Lets businesses and sevice 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	• Help users make proper connections • Provide easy-to-follow installation instructions
SNMP	• Enables remote management and monitoring via SNMP, Telnet, or HTTP as well as local managment via console port

Table 2 Model Matrix

Hardware Specifications	Cisco 826
Processor	MPC 855T RISC
Processor Speed	50 MHz
Default DRAM[1] Memory	32 MB
Maximum DRAM Memory	32 MB
Default Flash[2] Memory	8 MB
Maximum Flash Memory	16 MB
Ethernet	10 Mbps
Console	RJ-45
LEDs	7
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

Table 3 Memory Requirements and Software Feature Sets for Cisco 826 Router

Cisco IOS® Feature Sets	Cisco 826 Memory Requirements	
	Flash	**DRAM**
IP	8 MB	16 MB
IP Firewall	8 MB	16 MB
IP PLUS	8 MB	24 MB
IP/FW Plus IPSec 3DES	8 MB	24 MB

Table 4 Cisco 826 Router Software Feature Set

Protocols and Features Supported by Cisco 826 Software Feature Sets	IP	IP FW	IP Plus	IP FW Plus IPSec 3DES
LAN				
Transparent Bridging	X	X	X	X
IP	X	X	X	X
IPX	–	–	–	X
Routing				
IP Enhanced IGRP	–	–	X	X
IP-Policy Routing (also listed in QoS)	X	X	X	X
RIP, RIPv2	X	X	X	X
IP Multicast (relay and PIM)	–	–	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	X
Real-Time Alerts	–	X	–	X
IPSec Encryption w/3DES and L2TP	–	X	–	X
Route and Router Authentication	X	X	X	X
PAP,CHAP, Local Password	X	X	X	X
GRE Tunneling	–	–	X	X
IP Basic and Extended Access Lists	X	X	X	X
NetBIOS Access Lists	X	X	X	X
Business-Class QoS				
Weighted Random Early Detection	–	–	X	X
CBR, VBRrt, VBRnrt, UBR Traffic Classes	X	X	X	X
LLQ	X	X	X	X
Per-VC Shaping	X	X	X	X

Table 4 Cisco 826 Router Software Feature Set (Continued)

Protocols and Features Supported by Cisco 826 Software Feature Sets	IP	IP FW	IP Plus	IP FW Plus IPSec 3DES
Per-VC Queuing	X	X	X	X
IP Policy Routing	X	X	X	X
Bandwidth Optimization				
STAC Compression	X	X	X	X
NetBIOS Name Caching	X	X	X	X
Ease of Use and Deployment				
Cisco Router Web Set Up tool	X	X	X	X
Easy IP Phase I and II	X	X	X	X
Management				
SNMP, Telnet, Console Port	X	X	X	X
Syslog	–	X	X	X
SNTP	–	X	X	X
CiscoView	X	X	X	X
TACACS+ (also a security feature)	X	X	X	X
TFTP Client and Server	X	X	X	X
Address Conservation				
NAT Many to One (PAT)	X	X	X	X
NAT Many to Many (Multi-NAT)	X	X	X	X
IPCP Address Negotiation	X	X	X	X
PPPoE, PPPoA and RFC2684 (RFC1483) encapsulations	X	X	X	X
DHCP Client Address Negotiation	X	X	X	X

Table 5 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

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 1997
- 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

- ETSI 101.388 ADSL over ISDN
- Annex B ITU ADSL over ISDN support

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 826:
  1.48 lb (0.67kg)

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)
- Operating altitude:
  0 to 10,000 ft (0 to 3000m)

Router Power

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

Pinout ADSL Port

- Tip and Ring:
  Pins 3 and 4

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