Virtual Private Network (VPN) Services

Offered By Cisco Powered Network Service Providers

Listings effective November 1, 1999

Introducing Virtual Private Networks

Complementing existing private enterprise network capabilities, VPNs extend geographic connectivity to telecommuters, mobile users, and remote offices. They also extend to new constituencies such as customers and suppliers. VPN benefits include reduced total cost of ownership, as well as lightened infrastructure investments and simplified wide area network (WAN) operations over time. Most importantly, VPNs are fundamental for enterprises in order to achieve global reach and ubiquitous access, enabling new business applications in the Internet economy.

The five-point, multiphase enterprise VPN solution set from Cisco Systems, cost-effectively extends classic WAN infrastructures to meet the enhanced security, scalability, and management requirements of VPNs. Cisco offers the most complete range of VPN solutions on the market—ranging from PC client software, cable modems, and DSL to high-end VPN routers such as the Cisco 7100 series VPN router.

Cisco Powered Network™

What is the Cisco Powered Network Program?

Choosing the right service provider for Internet access or data service is an important decision. That's why Cisco developed the Cisco Powered Network program: to identify and introduce service providers who offer the highest levels of quality and reliability.

The service providers who display the Cisco Powered Network mark are telling you a lot about their services. They've earned the right to display this mark by maintaining high levels of network quality and by building their services with Cisco equipment—the same equipment that virtually all Internet traffic travels on today.

To learn more about the Cisco Powered Network program, please visit our Web site at http://www.cisco.com/cpn

For information on other Cisco products and services, please refer to the Cisco Systems Web site: http://www.cisco.com

CISCO SYSTEMS

Figure 1 **Cisco VPN Optimized Routers**

The broad range of Cisco VPN-optimized routers are suitable for a variety of implementation needs

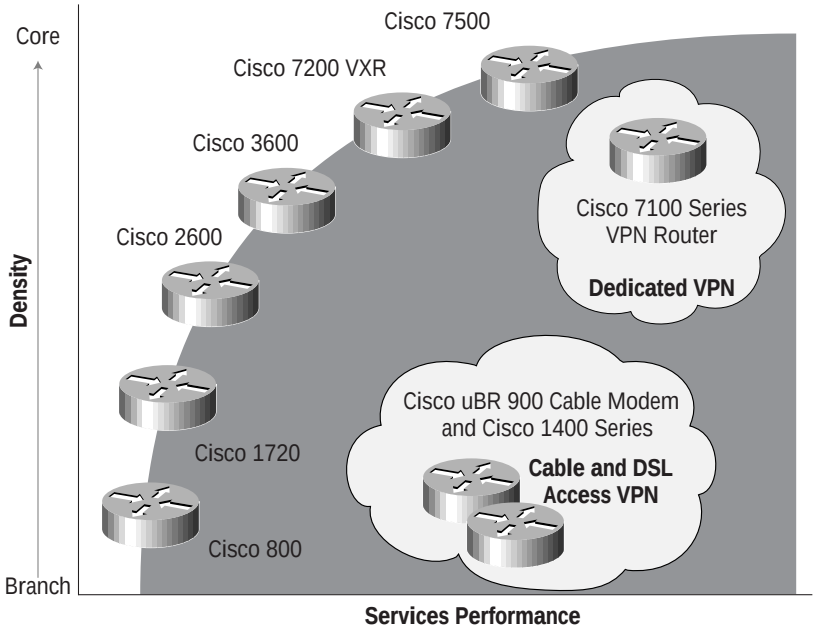


Figure 2 **Integrated VPN Solutions**

VPN solutions provided by Cisco extend to remote access, intranet, and extranet deployments

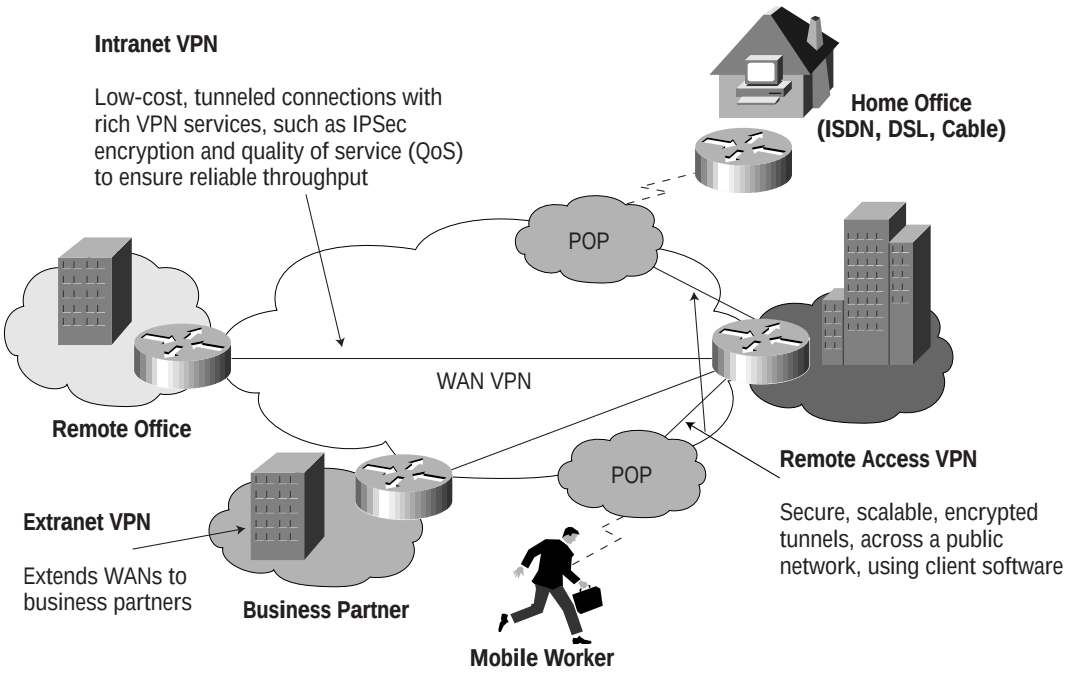
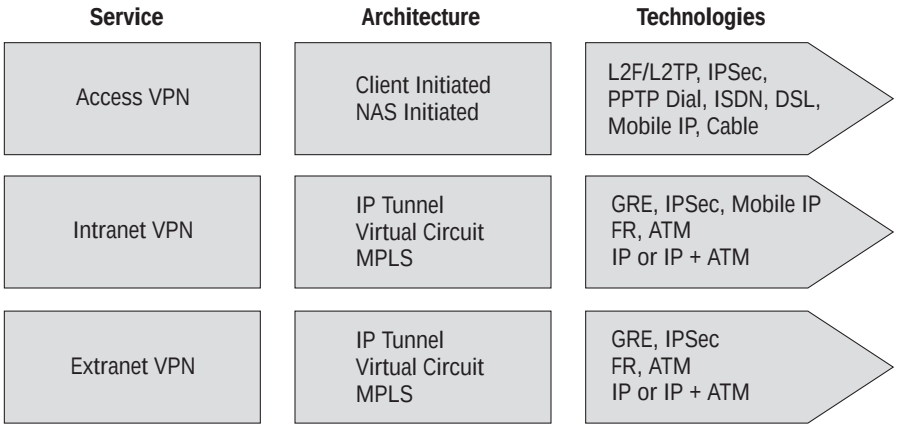


Figure 3 **VPN Services and Architectures**



The Cisco VPN suite of solutions enables three distinct VPN services: access, intranet, and extranet VPNs. Each service meets different business requirements for connectivity to mobile users, remote offices, partners, and customers. In each case, Cisco IOS® software ties these services together, enabling end-to-end networking with consistent policies over a shared infrastructure.

Types of Service

- *Access VPN*—Provides remote access to a corporate intranet or extranet over a shared infrastructure with the same policies as a private network. Access VPNs enable users to access corporate resources whenever and however they require. Access VPNs encompass analog, dial, ISDN, digital subscriber line (DSL), mobile IP, and cable technologies to securely connect mobile users, telecommuters, or branch offices.
- *Intranet VPN*—Links corporate headquarters, remote offices, and branch offices over a shared infrastructure using dedicated connections. Businesses enjoy the same policies as a private network, including security, quality of service (QoS), manageability, and reliability.
- *Extranet VPN*—Links customers, suppliers, partners, or communities of interest to a corporate intranet over a shared infrastructure using dedicated connections. Businesses enjoy the same policies as a private network, including security, QoS, manageability, and reliability.

Directory of Cisco Powered Network Providers

All addresses and telephone numbers are in the U.S. or Canada unless shown otherwise.

Name	Type of Service	Service Area	Contact Address
@Work (division of Excite@Home Networks)	Access VPN service	Available in metropolitan areas throughout the United States	@Work 425 Broadway Redwood City, CA 94063 http://www.home.net tel: 888 988-work
ACNet	Access VPN and intranet/extranet VPN services	Available in metropolitan areas of the United States, and to Mexico and Panama	ACNet USA, Inc. 200 South 10th St., Suite 400 McAllen, TX 78501 http://www.acnet.net/ tel: 956 984-4000
Affinity Internet Holdings	Access VPN service	Available in the United Kingdom	Affinity Internet Holdings PLC Victoria House, 64 Paul Street London, EC1A 4NA, United Kingdom http://www.aih.co.uk tel: +44 171 670 1155
Allegiance Telecom	Access VPN and intranet/extranet VPN services	Available in major metropolitan areas throughout the United States	Allegiance Telecom Inc. 1950 N. Stemmons Freeway, Suite 3026 Dallas, TX 75207 http://www.allegiancetele.com tel: 214261-7100
Ameritech	Access VPN sold as “ROAM” service	Available in Illinois, Indiana, Iowa, Kansas, Kentucky, Louisiana, Maine, Maryland, Massachusetts, Michigan, and Manitoba, Canada	Ameritech 225 West Randolph Chicago, IL 60606 http://www.ameritech.com tel: 800 709-5465
Allstream(formerly AT&T Canada)	Intranet/extranet VPN services	Available in Canada	Allstream 200 Wellington St. West, Toronto, Ontario M5V 3G2, Canada http://www.attcanada.com tel: 877 288-2345
BellSouth	Access VPN (dial)	Available in BellSouth territory in south east United States	BellSouth Communications 1100 Ashwood Parkway Atlanta, GA 30338 http://www.bellsouth.net tel: 800 436-8638
BT Worldwide Ltd.	Access VPN and intranet/extranet VPN services	Available in Europe	BT Worldwide Ltd. Excelsiorlaan 48/50 Zaventem, B-1930, Belgium http://www.bt.be tel: + 02 718 2211
Carrier1 International GmbH	Extranet/intranet VPN	Available in New York City area, and to France, Germany, and the Netherlands	Carrier1 International GmbH Militarstrasse 36 Zurich 8004, Switzerland http://www.carrier1.com tel: +44 1 297 2600
CESNET	Intranet/extranet VPN services	Available in the Czech Republic	CESNET z.s.p.o.: Zikova 4 Praha 6,160 00, Czech Republic http://www.cesnet.cz tel: +420 2 2435 2996
chello broadband	Intranet/extranet VPN services	Available in the Netherlands	chello broadband Boeing Avenue 101 Schipol Ryk, 1119E, Netherlands http://www.chello.com tel: +31 20 778 8274

Name	Type of Service	Service Area	Contact Address
Comunitel	Access and intranet/extranet VPN services	Available in Spain	Comunitel c/Cardenal Marcelo Spinola, 42 Madrid, 28016, Spain http://www.comunitel.es tel: +34 91 384 3200
Compugraph Services	Intranet/extranet VPN services	Available in Brazil	Compugraf Services Ltda. R. Augusta, 1638/42 Sao Paulo, 01333, Brazil http://www.compugraf.com.br tel: +55 11 243 4500
Connect.Com	Access VPN and intranet/extranet VPN services	Available in Australia	Connect.com.au Pty. Ltd. Level 9 114 Albert Road South Melbourne, Victoria 3205, Australia http://www.connect.com.au tel: +61 3 9251 3600 (or 800 818-262 in Australia)
Convergence, Inc.	Access VPN and intranet/extranet VPN	Available in metropolitan areas throughout the United States	Convergence, Inc. 2205 N. 20th Street Tampa, FL 33605 http://www.4convergence.com tel: 813 241-4299
Convergent Communications	Access VPN and intranet/extranet VPN Service	Available in Arizona, Arkansas, California, Colorado, Connecticut, Florida, Georgia, Idaho, Illinois, Iowa, Kansas, Maryland, Massachusetts, Michigan, Minnesota, Missouri, Nebraska, New Mexico, New York, North Carolina, Ohio, Oregon, Texas, Utah, Virginia, Washington, and Wisconsin	Convergent Communications 400 Inverness Dr., Suite 400 Englewood, CO 80112 http://www.converg.com tel: 303 749-3000
Corinex Group a.s.	Intranet/extranet VPN services	Available in Slovak Republic	Corinex Group a.s. PO Box 142 Bratislava, 821 05, Slovakia (Slovak Republic) http://www.corinex.sk tel: +421 7 555 682 013
debis Systemhaus	Intranet/extranet VPN services	Available in Germany	debis Systemhaus Fasanenweg 15 Leinfelden-Echterdingen, 70771 Germany http://www.tks.debis.de tel: +49 7 1187 225043
Digital Island	Intranet/extranet VPN services	Available in Australia, Brazil, China, France, Germany, Hong Kong, Israel, Italy, Japan, Korea (South), Mexico, the Netherlands, Russia, Singapore, South Africa, Sweden, Switzerland, Taiwan, and the United Kingdom	Digital Island 45 Fremont Street, Suite 1200 San Francisco, CA 94105 http://www.digitalisland.net tel: 415 738-4100
Electric Lightwave	Access VPN and intranet/extranet VPN services	Available in most major U.S. cities	Electric Lightwave 4400 N.E. 77th Avenue Vancouver, WA 98662 http://www.eli.net tel: 360 816-3000
Equant	Access VPN services	Available worldwide	Equant 3100 Cumberland Boulevard, 12th Floor Atlanta, GA 30339 http://www.equant.com tel: 770 612-4700
Fibernet Group PLC	Intranet/extranet VPN services	Available in the United Kingdom	Fibernet Group PLC Olympus House, Calleva Park Aldermaston, Berkshire RG7 8SA United Kingdom http://www.fibernet.co.uk tel: +44 118 940 8500

Name	Type of Service	Service Area	Contact Address
Global One	Access VPN services	Available worldwide	Global One Communications, S.A. Park Atrium, 11 Rue des Colonies B-1000 Brussels, Belgium http://www.globalone.net tel: +32 2 545 2000
Globix	Intranet/extranet VPN services	Available in California, New York, and the United Kingdom	Globix 139 Centre Street New York, NY 10013 http://www.globix.com tel: 212 334-8500
Group Telecom	Intranet/extranet VPN services	Available in British Columbia, Canada	Group Telecom 840 Howe Street, 3rd Floor Vancouver, British Columbia V6Z 2L2 Canada http://www.gt.ca tel: 604 688-3010
GTS INEC s.r.o.	Access and intranet/extranet VPN services	Available in the Czech Republic	GTS INEC s.r.o. Rimska 21 Prague 2,120 00, Czech Republic http://www.gtsinec.cz tel: +420 2 2422 6008
GX Networks	Intranet/extranet VPN services	Available in the United Kingdom	GX Networks 113-123 Upper Richmond Road Putney, London, SW15 2TL United Kingdom http://www.gxn.net tel: +44 800 056 63 23
High Speed Access	Access VPN and intranet/extranet VPN services	Available in selected cities throughout the United States	High Speed Access Corporation 4100 E. Mississippi Ave., Suite 1150 Denver, CO 80246 http://www.hsacorp.net tel: 303 256-2000
Hong Kong Telecom	Access VPN services	Available in Hong Kong	Hong Kong Telecom HK Telecom Tower, TaiKoo Place 979 King's Rd., Quarry Bay Hong Kong, China http://www.hkt.net tel: +852 2883 0880
ICL	Intranet/extranet VPN services	Available in major areas of Europe	ICL 26 Finsbury Square London, EC2A 1DS, United Kingdom http://www.icl.com tel: +44 171 638 5622
Informatik-Zentrum Bayern GmbH	Access VPN and intranet/extranet VPN services	Available in major areas of Europe	Informatik-Zentrum Bayern GmbH Karolinenplatz 1 Munich, 80333, Germany http://www.izb.de tel: +49 89 2171 1326
Infonet Services Corp.	Access VPN and intranet/extranet VPN services	Available worldwide	Infonet Services Corporation 2100 East Grand Avenue El Segundo, CA 90245 http://www.infonet.com tel: 310 335-2600
Interpath Communications	Access VPN services	Available in North and South Carolina, Virginia, and Washington, D.C.	Interpath Communications 1700 Perimeter Park Drive Morrisville, NC 77560 http://www.interpath.net tel: 800 849-6305
ITnet	Access VPN and intranet/extranet VPN services	Available in Italy	ITnet Via Greto di Cornigliano 6R Genova, 16152, Italy http://www.it.net tel: +39 010 6503641

Name	Type of Service	Service Area	Contact Address
Koc.net	Access VPN and intranet/extranet VPN services	Available in Turkey	Koc.net KocSistem A.S. Unalan Mah Ayazma Cad Camlica Is Merkezi B 3 Blok Istanbul, 81190, Turkey http://www.koc.net tel: +90 216 454 0000
Knoware BV	Access VPN and intranet/extranet VPN services	Available in the Netherlands	Knoware BV Groeneweg 150 Bunnik 3981 CP, Netherlands http://www.knoware.nl tel: +31 30 6572474
KPN Telecom	Intranet/extranet VPN services	Available in the Netherlands	KPN Telecom Pr. Bernhardstraat 12 5211 HE S-Hertogenbosch Amsterdam, 90052-5200, Netherlands http://www.kpn.com tel: +31 073 615 2555
Logic Communications Ltd.	Access VPN and intranet/extranet VPN services	Available in Bermuda	Logic Communications Ltd. Richmond House 12 Par-la-ville Road Hamilton, HM JX, Bermuda www logic.bm tel: +441 296 9600
Logix	Access VPN and intranet/extranet VPN services	Available in metropolitan areas in central and southwestern United States	Logix 13439 N. Broadway Extension Oklahoma City, Oklahoma 73114 http://www.logixcom.net tel: 888 391-8700
Navisite	Intranet/extranet VPN Services	Available in the United States, Canada, and the United Kingdom	NaviSite, Inc. 100 Brickstone Square, 5th Floor Andover, MA 01810 http://www.navisite.com tel: 888 298-8222
NEXTRA	Access VPN and intranet/extranet VPN services	Available in Switzerland	Nextra (Schweiz) AG Meriedweg 11 Niederwangen, 3172, Switzerland http://www.nextra.ch tel: +41 31 985 8888
Netstream	Access VPN and intranet/extranet VPN services	Available in Brazil	Netstream Av. Pres. Juscelino Kubitschek, 1830 Torre 2 - No. 9 Andar Sao Paulo, 04543-900, Brazil http://www.netstream.com.br tel: +55 11 827 4996
OROCONET	Intranet/extranet VPN services	Available in Arizona, California, Colorado, and Washington	Orconet.com 880 N. Eckhoff Street Orange, CA 92868 tel: 877 672-6638
Pilot Network Services	Intranet/extranet VPN services (marketed as Corporate Partner Networking Service)	Available in the United States and to the United Kingdom	Pilot Network Services 1080 Marina Village Parkway Alameda, CA 94501 http://www.pilot.net tel: 510 433-7800
Racal Telecom	Access VPN and intranet/extranet VPN services	Available in the United Kingdom and to New York City, New York	Racal Telecom Phoenix House, Station Hill Reading, Berkshire RG1 1NB United Kingdom http://www.racaltelecom.com tel: 0800 692 5000 in the United Kingdom
ReSourcePhoenix	Intranet/extranet VPN services	Available in the United States	ReSourcePhoenix.com 2401 Kerner Boulevard San Rafael, CA 94901 http://www.resourcephoenix.com tel: 415 485-4500

Name	Type of Service	Service Area	Contact Address
RSLCOM (Formerly Westel)	Access VPN and intranet/extranet VPN services	Available in North Vancouver, British Columbia and select major metropolitan areas of Canada	RSLCOM Canada 121-949 West 3rd. Street North Vancouver, British Columbia V7P 3P7 Canada http://www.rslcom.ca tel: 604 990-2000
SONATEL	Access VPN services	Available in Senegal, Africa	SONATEL 6 Rue Wagane Diouf Dakar, BP69, Senegal http://www.sonatel.sn tel: +22 1 839 1200
Star Internet	Access VPN and intranet/extranet VPN services	Available in the United Kingdom	Star Internet Ltd. Merchant House, Love Lane Cirencester, Gloucestershire GL7 1YG United Kingdom http://www.star.co.uk tel: +44 1285 884400
SVIANED	Access VPN services	Available in the Netherlands	SVIANED B.V. Jan Tooropstraat 109 Postbus 58150 Amsterdam, 1040HD, Netherlands http://www.svianed.com tel: +31 020 6875151
Swisscom	Access VPN	Available in Switzerland	Swisscom AG Scheimenwaldstrasse 13 Berne, CH-3050, Switzerland http://www.swisscom.com tel: +41 31 688 8269
Telecom Italia	Intranet/extranet VPN services	Available in Italy	Telecom Italia Via Paolo di Dono 44 Rome, 00142, Italy http://www.telecomitalia.it tel: +39 06 3687 3680
Tele Danmark	Intranet/extranet VPN services	Available in selected areas of Europe	Tele Danmark Erhverv A/S Sletvej 30 Viby J, 8260, Denmark http://www. teledanmaark.dk tel: +89 47 1111
Telstra	Access VPN and intranet/extranet VPN services	Available in Australia	Telstra 25/35 Collins Street Melbourne, Victoria 3000, Australia http://www.bigpond.com tel: 800 804-284 in Australia
TMI TeleMedia International	Access VPN and intranet/extranet VPN services	Available in Argentina, Australia, Austria, Belgium, Bolivia, Brazil, Chile, China, Denmark, Finland, France, Germany, Greece, Hungary, Ireland, Israel, Italy, Japan, Korea (South), Mexico, the Netherlands, New Zealand, Norway, Philippines, Singapore, Spain, Switzerland, Taiwan, and the United Kingdom	TMI TeleMedia International Viale Campo Boario 56/d Rome, 00153, Italy tel: +39 0636 895040
Transaction Network Services (TNS)	Access VPN and intranet/extranet VPN services	Available in the United States, Canada, Australia, France, Germany, and Ireland	Transaction Network Services 1939 Roland Clarke Place Reston, VA 20191 http://www.tnsi.com tel: 703 453-8300
USinternetworking	Intranet/extranet VPN services	Available in selected cities worldwide	USinternetworking, Inc. One USi Plaza Annapolis, MD 21401 http://www.usi.net tel: 410 897-4400

Name	Type of Service	Service Area	Contact Address
US Unwired	Intranet/extranet VPN services	Available in Louisiana, and in the Beaumont, Texas, area	US Unwired One Lakeshore Dr., Suite 1400 Lake Charles, LA 70629 http://www.usunwired.com tel: 318 436-9000
US WEST	Intranet/extranet VPN services	Available in US WEST's 14 state territory	US WEST 1999 Broadway, Suite 800 Denver, CO 80202 http://www.uswest.com tel: 303 965-1932
UUNETSouth Africa	Intranet/extranet VPN services	Available in South Africa	UUNET (SA) (Pty) Ltd PO Box 76747, Wendywood Bldg 9 Harrowdene Office Park Western Service Road Woodmead, 2144, South Africa http://www.uunet.com tel: +27 11 235 6500
WAM!NET	Intranet/extranet VPN services	Available in the United States and the United Kingdom	WAM!NET 6100 W. 110th Street Bloomington, MN 55438 http://www.wamnet.com tel: 612 886-5100

Note: As the information contained in this brochure is continually updated and/or changed, it is important to check with your designated Cisco Powered Network service provider to obtain updated information on their service areas and product offerings.

Virtual Private Network Acronym List

Acronym	Description
3DES (Data Encryption Standard)	A secret key encryption algorithm that was first developed by IBM and submitted to the U.S. government as part of the Ted-Std-1027 program. Now approved for use on all U.S. government sensitive, unclassified information and heavily adopted by the network security industry.
ACLs (Access Control List)	A mechanism in a network device (such as a router) for selecting traffic based on parameters in the packet header. In Cisco IOS routers, these are used to filter traffic and encrypt traffic.
AIM (Advanced Integration Module)	Data compression module that allows customers to deploy new network services such as voice without increasing WAN bandwidth.
ATM (Asynchronous Transfer Mode)	International standard for cell relay in which multiple service types (such as data, voice, or video) are conveyed in fixed-length (53-byte) cells. Fixed-length cells allow cell processing to occur in hardware, thereby reducing transit delays. ATM is designed to take advantage of high-speed transmission media.
CA (Certificate Authority)	A service or server that certifies that a particular public encryption key belongs to a user/device with a particular identity. It does this by issuing certificates.
CBWFQ (Class-Based Weighted Fair Queueing)	A sophisticated queueing mechanism used on WAN links to divide the available bandwidth in user-controlled proportions across classes and to allow small packets to transmit before large packets.
CHAP (Challenge-Handshake Authentication Protocol)	A protocol supported on a Point-to-Point Protocol (PPP) links used to authenticate network peers using a three-way handshake in which a random challenge is sent to a peer and must be responded to correctly.
CIR (Committed Information Rate)	A quality of service (QoS) feature that performs rate limiting and packet classification.
CLI (Command-Line Interface)	Interface that allows the user to interact with the operating system by entering commands and optional arguments. The UNIX operating system and DOS provide CLIs. Compare with GUI.
COPS (Common Open Policy Service)	An IETF Internet Draft that describes a query and response protocol that can be used to exchange policy information between a policy server or policy decision point (PDP) and its clients, the policy enforcement points (PEPs).

Acronym	Description
CRL (Certificate Revocation List)	Certificate authorities must maintain a list of digital certificates that are no longer valid (not including those that have expired).
CSU (Channel Service Unit)	Digital interface device that connects end-user equipment to the local digital telephone loop. Often referenced together with data service unit (DSU), as CSU/DSU.
DES (Data Encryption Standard)	A secret key encryption algorithm first developed by IBM and submitted to the U.S. government as part of the Fed-Std-1027 program. Now approved for use on all U.S. government sensitive, unclassified information per FIPS-140-1. Also used heavily by the financial community.
DHCP (Dynamic Host Configuration Protocol)	Provides a mechanism for allocating IP addresses dynamically so that addresses can be reused when hosts no longer need them.
Diffie-Hellman	A public-key-based key management system developed in 1976 by Whitfield Diffie and Marti Hellman at Stanford University that allows two users or network devices to exchange public keys over an unsecured medium and calculate a shared secret key that is only known by them.
DNS (Domain Name Service)	System used in the Internet for translating names of network nodes into addresses.
DSCP (Differentiated Service Code Points)	In the near future, the Internet Engineering Task Force (IETF)-sponsored Differentiated Service Code Points (DSCP) could become the classification criterion of choice. The purpose behind this type of packet marketing is to ensure that downstream QoS features such as scheduling and queuing may accord the right treatment for packets thus marked. In some cases, the service provider, whose backbone is being used for the VPN might provide differentiated services; classification allows you to leverage these services.
DSS (Digital Signature Standard)	A digital signature standard established in 1994 by the National Institute of Standards and Technologies. DSS is based on work done by El Gamal at Stanford University that makes use of Diffie-Hellman public key cryptography. A digital signature is created with a user's private key and can be verified by anyone possessing the user's public key.
DSU (Data Service Unit)	Device used in digital transmission that adapts the physical interface on a DTE device to a transmission facility such as T1 or E1. The DSU is also responsible for such functions as signal timing. See also CSU.
EDI (Electronic Data Interchange)	The electronic communication of operational data such as orders and invoices between organizations.
FR (Frame Relay)	Industry-standard, switched data link layer protocol that handles multiple virtual circuits using HDLC encapsulation between connected devices. Frame relay is more efficient that X.25, the protocol for which it is generally considered a replacement.
GRE (Generic Routing Encapsulation)	Tunneling protocol developed by Cisco that can encapsulate a wide variety of protocol packet types inside IP tunnels, creating a virtual point-to-point link to Cisco routers at remote points over an IP internetwork. By connecting multiprotocol subnetworks in a single-protocol backbone environment, IP tunneling using GRE allows network expansion across a single-protocol backbone environment.
IDEA (International Data Encryption Algorithm)	A cryptographic algorithm using a 128-bit key for strong encryption and designed to be efficient to compute in software.
IEEE (Institute of Electrical and Electronics Engineers)	Professional organization whose activities include the development of communications and network standards. IEEE LAN standards are the predominant LAN standards today.
IETF (Internet Engineering Task Force)	Task force consisting of more than 80 working groups responsible for developing Internet standards. The IETF operates under the auspices of the Internet Society (ISOC).
IKE (Internet Key Exchange)	The key-management protocol used in conjunction with IPSec.
IP (Internet Protocol)	A Layer 3 protocol that contains addressing information and some control information that allows packets to be routed.
IPSec (IP Security)	An IETF working group tasked with developing standards for security protocols to provide IP security services that will support combinations of authentication, integrity, access control, and confidentiality.
IPv4 (IP Version 4)	The most common implementation of the Internet Protocol in use today.
IPv6 (IP Version 6)	A replacement for IP Version 4, IPv6 includes support for flow ID in the packet header, which can be used to identify flows. Formerly known as LPNG (next generation).

Acronym	Description
ISAKMP/Oakley (Internet Security Architecture Key Management Protocol/Oakley)	A combination of security protocols used to establish security contexts and encrypting keys between a pair of hosts on the Internet. Mandatory standard in IPv6.
ISDN (Integrated Services Digital Network)	Communication protocol, offered by telephone companies that permits telephone networks to carry data, voice, and other source traffic.
ISP (Internet Service Provider)	Company that provides Internet access to other companies and individuals.
L2F (Layer 2 Forwarding protocol)	A protocol that supports the creation of secure virtual private dialup networks over the Internet.
L2TP (Layer 2 Tunneling Protocol)	An IETF standard that combines aspects of Cisco Layer Two Forwarding (L2F) protocol and Microsoft's Point-to-Point Tunneling Protocol (PPTP) for implementing VPNs.
LAN (Local Area Network)	High-speed, low-error data network covering a relatively small geographic area. LANs connect workstations, peripherals, terminals, and other devices in a single building or other geographically limited area.
LDAP (Lightweight Directory Access Protocol)	Protocol that provides access for management and browser applications that provide read/write interactive access to the X.500 Directory.
MD5 (Message Digest 5)	The latest in a line of algorithms used to create a digital signature for a message to prove authorship. After the message is compressed with the algorithm (also known as hashing), the result is signed with the author's private key using public-key cryptography. SNMPv2 requirement as specified in RFC 1446.
MPPE (Microsoft Point-to-Point Encryption)	A Microsoft sponsored IETF draft standard describing 40 and 12.8 bit encryption algorithms, used in conjunction with PPTP.
NAS (Network Access Server)	A server providing remote access services to multiple dialup users.
NAT (Network Address Translation)	A feature of firewalls and routers that prevents internal IP addresses from appearing to users outside the network. Also, helps conserve IP addresses.
OC-3	155-megabit-per-second connection often associated with an ATM or a packet over SONET link (POS).
PA (Port Adapter)	A network module for Cisco high-end routers that provides LAN, WAN, and service options on the 7100, 7200, and 7500 product families.
PAP (Password Authentication Protocol)	Authentication protocol that allows PPP peers to authenticate one another. The remote router attempting to connect to the local router is required to send an authentication request. Unlike CHAP, PAP passes the password and host name or username in the clear (unencrypted). PAP does not itself prevent unauthorized access, but merely identifies the remote end. The router or access server then determines if that user is allowed access. PAP is only supported on PPP lines.
PKI (Public-Key Infrastructure)	A trust hierarchy that regulates the rules and procedures for distributing and managing public-keys required for user/device authentication and encryption.
POP (Point of Presence)	In OSS, a physical location where an interexchange carrier has installed equipment to interconnect with an LEC (local exchange carrier).
PPP (Point-to-Point Protocol)	A successor to SLIP that provides router-to-router and host-to-network connections over synchronous and asynchronous circuits. Whereas SLIP was designed to work with IP, PPP was designed to work with several network protocols, such as IP, IPX, and ARA. PPP also has built-in security mechanisms, such as CHAP and PAP.
PPTP (Point-to-Point Tunneling Protocol)	A Microsoft sponsored IETF draft standard for implementing VPNs from the Windows 95/98 operating system to a VPN gateway. The tunneling protocol is used in conjunction with MPPE.
PSTN (Public Switched Telephone Network)	General term referring to the variety of telephone networks and services in place worldwide. Sometimes called plain old telephone service (POTS).
QoS (Quality of Service)	Measure of performance for a transmission system that reflects its transmission quality and service availability.
RADIUS (Remote Authentication Dial-In User Service)	A standard protocol for authenticating modem and ISDN connections and for tracking connection time. Defined in RFC 2138.
RC4	A variable key-size cipher designed by Ron Rivest for very fast bulk encryption. RC4 is a stream cipher and is as much as 10 times faster than DES.

Acronym	Description
RED (Random Early Detection)	A quality of service (QoS) mechanism that allows a network device to detect the early signs of congestion and take protective action to avoid it.
RPS (Redundant Power System)	A device resilience component that ensures the continued operation of the device despite a failure in a power supply.
RSA (Rivest-Shamir-Adleman)	A public-key technique developed in 1978 by Rivest, Shamir, and Adleman at MIT that is primarily used for encrypting information, creating digital signatures, and, to a lesser degree, for key management.
S/MIME (Secure Multipurpose Internet Mail Extensions)	A standard that adds digital signatures and encryption to Internet MIME messages using X.509 public-key certificates. Defined in RFC 1521.
SHA (Secure Hash Algorithm)	A packet authentication standard that is one of the IPSec options that protects packets from being altered, delayed, or replayed.
SLA (Service Level Agreement)	A form of contract between the service customer and service provider that describes the parameters, their levels and criteria over a fixed time period.
SNMP (Simple Network Management Protocol)	Network management protocol used almost exclusively in TCP/IP networks. SNMP provides a means to monitor and control network devices, and to manage configurations, statistics collection, performance, and security.
SSL (Secure Sockets Layer)	Encryption technology for the Web used to provide secure transactions such as transmission of credit card numbers for e-commerce.
TACACS+ (Terminal Access Controller Access Control System Plus)	Authentication protocol that provides remote access authentication and related services, such as event logging. User passwords are administered in a central database rather than in individual routers, providing an easily scalable network security solution. Defined in RFC 1492.
TCP (Transmission Control Protocol)	Connection-oriented transport layer protocol that provides reliable full-duplex data transmission. TCP is part of the TCP/IP protocol stack.
TCP/IP (Transmission Control Protocol/Internet Protocol)	Common name for the suite of protocols developed by the U.S. DoD in the 1970s to support the construction of worldwide internetworks. TCP and IP are the two best-known protocols in the suite.
ToS (Type of Service)	The TOS byte in the IP header is divided into three sections: the Precedence field (high-order 3 bits), a field that is customarily called Type of Service or TOS (next 4 bits), and a reserved bit (the low order bit).
UDP (User Datagram Protocol)	Connectionless transport layer protocol in the TCP/IP protocol stack. UDP is a simple protocol that exchanges datagrams without acknowledgments or guaranteed delivery, requiring that error processing and retransmission be handled by other protocols.
VPN (Virtual Private Network)	An encrypted connection between private networks over a public network, such as the Internet.
WFQ (Weighted Fair Queuing)	Quality of service (QoS) mechanism that segregates packet traffic into either flows or classes, and then schedules packet output to meet specified bandwidth allocation or delay bounds. WFQ classes may be assigned either by IP Precedence, application ports, IP protocol, or incoming interface.
WIC (WAN Interface Card)	A network module for Cisco multiservice access routers which WAN connectivity options on the 1700, 2600, and 3600 product families.
WRED (Weighted Random Early Detection)	Quality of service (QoS) mechanism that segregates packet traffic into either flows or classes, and then schedules packet output to meet specified bandwidth allocation or delay bounds. WFQ classes may be assigned either by IP precedence, application ports, IP protocol, or incoming interface.
XDSL	Group term used to refer to ADSL, HDSL, SDSL and VDSL. All are emerging digital technologies using the existing copper infrastructure provided by the telephone companies. xDSL is a high-speed alternative to ISDN.

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