
Cisco PIX Firewall 500 Series

Product Overview

Cisco PIX Firewall is the high-performance, enterprise-class integrated hardware/software firewall within Cisco's firewall family. PIX Firewall delivers high security without impacting network performance. The product line scales to meet a range of customer requirements, with three capacity license levels accommodating more than 256,000 concurrent connections. PIX Firewall is a key element in the overall Cisco security solution set and, at the same time, it is the leading product in its segment of the firewall market.

Figure 1 **Figure 11-1: PIX Firewall Front View**

Figure 2 **Figure 11-2: PIX Firewall Rear View**

Key Features and Benefits

- Non-UNIX, secure, real-time, embedded system

This design eliminates the risks associated with a general purpose operating system and allows the Cisco PIX Firewall series to deliver outstanding performance—more than 256,000 simultaneous connections—dramatically greater than any UNIX-based firewall.
- Less complex and more robust than packet-filtering; higher performance and more scalable than application proxy firewalls

The heart of the PIX Firewall series is the adaptive security algorithm (ASA), which maintains the secure perimeters between the networks controlled by the firewall. The stateful, connection-oriented ASA design creates session flows based on source and destination addresses, TCP sequence numbers (which are non-predictable), port numbers, and additional TCP flags. All inbound and outbound traffic is controlled by applying security policy to connection table entries.
- User authentication and authorization with cut-through proxy

Cisco's PIX Firewall series gains further dramatic performance advantage through its patented method of transparently verifying the identity of users at the firewall and permitting or denying access to any TCP- or UDP-based application. This method eliminates the price/performance impact UNIX-based firewalls impose in similar configurations, and leverages the authentication and authorization services of CiscoSecure Access Control Server. For more information on CiscoSecure Access Control Server, available for both Windows NT and UNIX (Solaris), see the chapter "CiscoSecure Access Control Server Software."
- Centralized configuration and management with the PIX Firewall Manager

This Java-based graphical user interface (GUI) configuration tool lets the administrator use a Web browser to retrieve, edit, and centrally manage security policies. Separate tabs provide access to configuration information common to all PIX Firewalls being managed and to built-in reports for user-based accounting for web sites visited and volume of files transferred. The PIX Firewall Manager can automatically provide real-time alerts of any attempted firewall breaches through e-mail or pager notification.
- Failover/hot standby upgrade option

The PIX Firewall failover option ensures high availability and eliminates a single point of failure. With two PIX Firewalls running in parallel, if one malfunctions, the second PIX Firewall transparently maintains security operations.
- Synchronized configurations for effective recovery from hardware failure

Simplified TFTP boot function allows consistent synchronization of multiple device configurations.

Specifications

Hardware

PIX Firewall Software

- Connection licenses available for 128, 1024, and Unrestricted (more than 256,000) simultaneous connections
- Adaptive security algorithm (ASA)
- Cut-through proxy authenticates, authorizes, and enhances performance
- Multiple interface support (10/100 Mbps ethernet, Token Ring, FDDI)
- Up to 4 interfaces
- Failover/hot standby; synchronized configurations
- True Network Address Translation (NAT) as specified in RFC 1631
- Port Address Translation (PAT) further expands a company's address pool-one IP address supports more than 64,000 hosts
- Mail Guard removes need for external mail relay server in perimeter network
- TACACS+, Radius authentication
- DNS Guard transparently protects outbound name and address lookups
- Flood Guard and Fragmentation Guard protect against denial of service attacks
- Java blocking eliminates potentially dangerous Java applets (not compressed or archived)
- Extremely high-performance URL filtering that surpasses the competition in any enterprise-scale network
- Cisco IOS-style command-line interface
- Extended authentication, authorization, and accounting capabilities
- Net Aliasing transparently merges overlapping networks with the same IP address space
- Enhanced granularity of inbound access (conduits)
- No translation choice allows use of existing registered IP addresses
- Extended access lists
- Ability to customize protocol ports
- Support for private networking of virtual sites at greater than 45MB using Cisco proprietary Private Link 2.
- Enhanced customization of syslog messages
- Simple Network Management Protocol (SNMP) and syslog for remote management
- Reliable syslogging using either TCP or UDP
- Extended transparent application support (both with and without NAT enabled) includes:
 - Sun remote procedure call (RPC)
 - Microsoft Networking client and server communication (NetBIOS over IP) using NAT
 - Multimedia, including Progressive Networks' RealAudio, Xing Technologies' Streamworks, White Pines' CuSeeMe, Vocal Tec's Internet Phone, VDOnet's VDOLive, Microsoft's NetShow, V Xtreme Web Theatre 2; and Intel's Internet Video Phone and Microsoft's NetMeeting (based on H.323 standards)
 - Oracle SQL*Net client and server communication

PIX Firewall Manager Specifications

- Hosted on a Windows NT 4.0 platform (required) Service Pack 4 compliant
- Each PIX Firewall Manager supports up to 10 PIX Firewalls for full logging, and configuration for up to 256 PIX Firewalls
- E-mail and pager alarms can be set based on single events or after a threshold is reached
- Built-in reports to display FTP and URL activity per user on a daily basis
- All configuration information sent between PIX Firewalls and PIX Firewall Manager are protected by a shared secret/secure hash algorithm (MD5)
- Strong authentication (one-time password) support for PIX Firewall management sessions can be provided by CiscoSecure or other TACACS+ or RADIUS server

Table 1 **Table 11-3: PIX Firewall 520**

Characteristic	Description
Flash Memory	2 MB
DRAM	32 MB upgrade to 128 MB available
Processor Type	Intel Pentium II-based
Software options	PIX Firewall v4.3 (Version 4.0 and later are supported)
Dimensions: (H x W x D)	5.22 inches x 6.75 inches x 17.675 inches
Weight	21 pounds (average shipping)
Network Interface Cards (NICs)	Up to four single port 10/100 Ethernet NICs Up to three 4/16 Token Ring NICs
Encryption Card	Private Link 2 encryption card (56-bit DES) (45 MB)
Performance	Up to 170 megabits per second, up to 256,000+ simultaneous connections, and up to 5,000+ connections per second

Table 2 **Table 11-4: PIX Firewall 520 Environmental Specifications**

Characteristic	Description
AC input voltage/DC input voltage/Amps	100 to 240 VAC / -48 VDC, 4 amps / 4 to 2 amps
Frequency	50-60 Hz
Operating temperature range	32° to 113°F (0° to 45°C)
Nonoperating temperature range	14° to 167°F (-10° to 75°C)
Operating humidity	95%, maximum at 131°F (55°C)

Software

Table 3 **Table 11-5: Software Options for the Cisco PIX Firewall Series**

Model	Software Options
Cisco PIX Firewall 520	PIX Firewall v. 4.3 (Version 4.0 and later are supported)

Ordering Information

Ordering Information

For documentation product numbers, refer to “Internet Products Documentation” in the “Documentation” chapter.

Product and Part Numbers

Table 0-4 Part Numbers for the PIX Firewall

Part Description	Part Number
PIX Firewall—, >170-Mbps performance	PIX-520
PIX Firewall—, >170-Mbps performance, -48VDC power	PIX-520-DC
PIX Firewall—, >170-Mbps performance, spare	PIX-520=
PIX Firewall—, >170-Mbps performance, -48VDC power, spare	PIX-520-DC=
PIX Entry level license (recommended for up to 100 users. Allows 128 connections)	PIX-CONN-128
PIX Midrange license (Recommended for between 100 and 500 users. Allows 1024 connections)	PIX-CONN-1K
PIX Unrestricted license (Recommended for 500 or more users. Allows from 32,768 to 256,000 connections)	PIX-CONN-UR
Failover cable	PIX-FO=
PIX license upgrade from 128 to 1024 connections	PIX-CONN-128-1K=
PIX license upgrade from 128 to 256,000 or more connections	PIX-CONN-128-UR=
PIX license upgrade from 1024 to 256,000 or more connections	PIX-CONN-1K-UR=
PIX software version upgrade	PIX-CONN-VER=
PIX 10/100 single port Ethernet card	PIX-1FE
PIX Token Ring Card	PIX1TR
PIX 10/100 single port Ethernet card, spare	PIX-1FE=
PIX Token Ring Card, spare	PIX1TR=
Private Link 2 56-bit DES encryption card	PIX-PL2
Private Link 2 56-bit DES encryption card, spare	PIX-PL2=
Memory Upgrades	
Memory Upgrade to 128 MB for PIX Firewalls prior to the 5XX Series	PIX-MEM-UPG-128=
Memory Upgrade to 128 MB for 5XX Series PIX Firewalls	PIX-MEM-5XX-128=

Part Description	Part Number
Entry level PIX Firewall 520 with two 10/100 Ethernet NICs. Allows 128 connections, recommended for up to 100 users	PIX-520-128-CH
Midrange PIX Firewall 520 with two 10/100 Ethernet NICs. Allows 1024 connections, recommended for between 100 and 500 users	PIX-520-1K-CH
Unrestricted PIX Firewall 520 with two 10/100 Ethernet NICs. Allows 256,000 connections, recommended for more than 500 users	PIX-520-UR-CH
PIX software version to update inventory	PIX-SW-SC=

Services and Support

Table 5 **Table 11-6: Available Support Contracts for the Cisco PIX Firewall Series**

Description	Product Number
PIX Enhanced SMARTnet Maintenance-all versions	CON-SNTE-PIX
PIX Premium SMARTnet Maintenance-all versions	CON-SNTP-PIX
PIX On-site Standard Maintenance-all versions	CON-OS-PIX
PIX On-site Enhanced Maintenance-all versions	CON-OSE-PIX
PIX On-site Premium Maintenance-all versions	CON-OSP-PIX

The PIX Firewall series includes the following documentation:

- PIX Firewall Configuration Guide
- PIX Firewall Installation Guides
- PIX Firewall Quick Reference Guide
- PIX Firewall Release Notes
- PIX Firewall Manager Release Notes
- Regulatory Compliance and Safety Information