

PA-7500

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Palo Alto Networks PA-7500 ML-Powered Next-Generation Firewall (NGFWs) enables enterprise-scale organizations and service providers to deploy security in high-performance environments, such as large data centers and high-bandwidth network perimeters. Designed to handle growing throughput needs for application-, user-, and device-generated data, these systems offer performance, prevention capabilities to stop the most advanced cyberattacks, and high-throughput decryption to stop threats hiding under the veil of encryption. Built to maximize security-processing resource utilization and automatically scale as new computing power becomes available, the PA-7500 offers simplicity defined by a single-UV approach to management and licensing.

Highlights

- World's first ML-Powered NGFW.
- Eleven-time Leader in the Gartner® Magic Quadrant™ for Network Firewalls.
- Leader in The Forrester Wave™: Enterprise Firewalls, Q4 2022.
- Operates on a unified and scalable architecture.
- Extends visibility and security to all devices, including unmanaged IoT devices, without the need to deploy additional sensors.
- Supports high availability with clustering solution.
- Delivers predictable performance with security services.
- Supports centralized administration with Panorama® network security management.
- Maximizes your security investment and prevents business disruption with AIOps.

The controlling element of the PA-7500 is PAN-OS®, the same software that runs all Palo Alto Networks NGFWs. PAN-OS natively classifies all traffic, inclusive of applications, threats, and content, and then ties that traffic to the user regardless of location or device type. The applications, content, and users—the elements that run your business—serve as the basis for your security policies, resulting in an improved security posture, reduced incident response time, and lower administrative overhead associated with keeping security policies current in a highly dynamic environment.

Key Security and Connectivity Features

ML-Powered Next-Generation Firewall

- Embeds machine learning (ML) in the core of the firewall to provide inline signatureless attack prevention for file-based attacks while identifying and immediately stopping never-before-seen phishing attempts.
- Leverages cloud-based ML processes to push zero-delay signatures and instructions back to the NGFW.
- Uses behavioral analysis to detect internet of things (IoT) devices and make policy recommendations; is a cloud-delivered and natively integrated service on the NGFW.
- Automates policy recommendations that save time and reduce the chance of human error.

Identifies and Categorizes All Applications, on All Ports, All the Time, with Full Layer 7 Inspection

- Identifies the applications traversing your network irrespective of port, protocol, evasive techniques, or encryption (SSL/TLS).
- Automatically discovers and controls new applications to keep pace with the software-as-a-service (SaaS) explosion with SaaS Security subscription.
- Uses the application, not the port, as the basis for all your safe enablement policy decisions: allow, deny, schedule, inspect, and apply traffic shaping.
- Offers the ability to create custom App-ID™ tags for proprietary applications or request App-ID development for new applications from Palo Alto Networks.
- Identifies all payload data within the application (e.g., files and data patterns) to block malicious files and thwart data exfiltration attempts.
- Creates standard and customized application usage reports, including SaaS reports that provide insight into all sanctioned and unsanctioned SaaS traffic on your network.
- Enables safe migration of legacy Layer 4 rule sets to rules based on App-ID with Policy Optimizer built in, giving you a rule set that is more secure and easier to manage.

Check out the App-ID tech brief for more information.

Enforces Security for User Devices Anywhere While Adapting Policies Based on User Activity

- Enables visibility, security policies, reporting, and forensics based on users and groups—not just IP addresses.
- Easily integrates with a wide range of repositories to leverage user information: wireless LAN controllers, VPNs, directory servers, SIEMs, proxies, and more.
- Allows you to define Dynamic User Groups (DUGs) on the firewall to take time-bound security actions without waiting for changes to be applied to user directories.

- Applies consistent policies irrespective of users' locations (office, home, travel, etc.) and devices (iOS and Android mobile devices, macOS, Windows, Linux desktops, laptops; Citrix and Microsoft VDI and Terminal Servers).
- Prevents corporate credentials from leaking to third-party websites and prevents reuse of stolen credentials by enabling multifactor authentication (MFA) at the network layer for any application without any application changes.
- Provides dynamic security actions based on user behavior to restrict suspicious or malicious users.
- Consistently authenticates and authorizes your users, regardless of location and where user identity stores live, to quickly move toward a zero trust security posture with Cloud Identity Engine—an entirely new cloud-based architecture for identity-based security.

Check out the Cloud Identity Engine solution brief for more information.

Prevents Malicious Activity Concealed in Encrypted Traffic

- Inspects and applies policy to SSL/TLS-encrypted traffic, both inbound and outbound, including for traffic that uses TLSv1.3 and HTTP/2.
- Offers rich visibility into TLS traffic, such as the amount of encrypted traffic, SSL/TLS versions, cipher suites, and more, without decrypting.
- Enables control over the use of legacy TLS protocols, insecure ciphers, and misconfigured certificates to mitigate risks.
- Facilitates easy deployment of decryption and lets you use logs to troubleshoot issues, such as applications with pinned certificates.
- Lets you enable or disable decryption flexibly—based on, for example, URL category, source and destination zone, address, user, user group, device, and port—for privacy and regulatory compliance purposes.
- Allows you to create a copy of decrypted traffic from the firewall (i.e., decryption mirroring) and send it to traffic collection tools for forensics, historical purposes, or data loss prevention (DLP).
- Allows you to intelligently forward all traffic (decrypted TLS, non-decrypted TLS, and non-TLS) to third-party security tools with a network packet broker and optimize your network performance and reduce operating expenses.

Read the Decryption: Why, Where, and How whitepaper to learn about decryption to prevent threats and secure your business.

Offers Centralized Management and Visibility

- Benefits from centralized management, configuration, and visibility for multiple distributed Palo Alto Networks NGFWs, regardless of location or scale, through Panorama network security management in one unified user interface.
- Streamlines configuration sharing through Panorama with templates and device groups and scales log collection as logging needs increase.
- Enables users, through the Application Command Center (ACC), to obtain deep visibility and comprehensive insights into network traffic and threats.

Maximize Your Security Investment and Prevent Business Disruption with AIOps

- AIOps for NGFW delivers continuous best practice recommendations customized to your unique deployment to strengthen your security posture and get the most out of your security investment.
- Intelligently predicts firewall health, performance, and capacity problems based on ML powered by advanced telemetry data. It also provides actionable insights to resolve the predicted disruptions.

Detects and Prevents Advanced Threats with Cloud-Delivered Security Services

Today's sophisticated cyberattacks can spawn 45,000 variants in 30 minutes using multiple threat vectors and advanced techniques to deliver malicious payloads. Traditional siloed security causes challenges for organizations by introducing security gaps, increasing overhead for security teams, and hindering business productivity with inconsistent access and visibility.

Seamlessly integrated with our industry-leading NGFWs, our Cloud-Delivered Security Services use the network effect of 80,000 customers to instantly coordinate intelligence and protect against all threats across all vectors. Eliminate coverage gaps across your locations and take advantage of best-in-class security delivered consistently in a platform to stay safe from even the most advanced and evasive threats.

Services include:

- **Advanced Threat Prevention:** Stop known exploits, malware, spyware, and command-and-control (C2) threats while utilizing industry-first prevention of zero-day attacks—prevent 60% more unknown injection attacks and 48% more highly evasive C2 traffic than traditional IPS solutions.
- **Advanced WildFire®:** Ensure files are safe by automatically preventing known, unknown, and highly evasive malware 60x faster with the industry's largest threat intelligence and malware prevention engine.
- **Advanced URL Filtering:** Ensure safe access to the internet and prevent 40% more web-based attacks with the industry's first real-time prevention of known and unknown threats, stopping 88% of malicious URLs at least 48 hours before other vendors.
- **DNS Security:** Gain 40% more threat coverage and stop 85% of malware that abuses DNS for C2 and data theft without requiring changes to your infrastructure.
- **Enterprise DLP:** Minimize risk of a data breach, stop out-of-policy data transfers, and enable compliance consistently across your enterprise, with 2x greater coverage of any cloud-delivered enterprise DLP.
- **SaaS Security:** Stay ahead of the SaaS explosion with the industry's only Next-Generation CASB to automatically see and secure all apps across all protocols.
- **IoT Security:** Safeguard every "thing" and implement zero trust device security 20x faster, with the industry's smartest security for smart devices.

Delivers a Unique Approach to Packet Processing with Single-Pass Architecture

- Performs networking, policy lookup, application and decoding, and signature matching—for all threats and content—in a single pass. This significantly reduces the amount of processing overhead required to perform multiple functions in one security device.
- Avoids introducing latency by scanning traffic for all signatures in a single pass, using stream-based, uniform signature matching.
- Enables consistent and predictable performance when security subscriptions are enabled. (In table 1, "Threat Prevention throughput" is measured with multiple subscriptions enabled.)

PA-7500 Architecture

The PA-7500 is powered by a scalable architecture for the purposes of applying the appropriate type and volume of processing power to the key functional tasks of networking, security, and management.

The PA-7500 is managed as a single, unified system, enabling you to easily direct all available resources to protect your data. The PA-7500 chassis intelligently distributes processing demands across three subsystems, each with massive amounts of computing power and dedicated memory: the Network Processing Card (PA-7500-NPC-A), the Data Processing Card (PA-7500-DPC-A), and the Management Processing Card (PA-7500-MPC-A). The PA-7500 offers nine slots that can be populated with these cards, with a minimum configuration requiring at least one of each card. Additionally, one or two Switching Fabric Cards (PAN-PA-7500-SFC-A) with optional redundancy is rear mounted for orthogonal mating.

Table 1. PA-7500 Performance and Capacities

	PA-7500-DPC-A	PA-7500*
Firewall throughput (appmix)†	310 Gbps	1,500 Gbps
Threat Prevention throughput (appmix)‡	250 Gbps	1,440 Gbps
Max concurrent sessions§	73M	440M
IPsec VPN throughput‖	67 Gbps	407 Gbps
New sessions per second#	1.2M	7.2M
Virtual systems (base/max)**	—	25/225

Note: Results were measured on PAN-OS 11.1.

* Results in this column were derived from a configuration using six PA-7500-DPC-A cards and two PA-7500-NPC-A cards.

† Firewall throughput is measured with App-ID and logging enabled, utilizing appmix transactions.

‡ Threat Prevention throughput is measured with App-ID, IPS, antivirus, antispyware, WildFire, DNS Security, file blocking, and logging enabled, utilizing appmix transactions.

§ Max concurrent sessions are measured utilizing HTTP transactions.

‖ IPsec VPN throughput is measured with 64KB HTTP transactions and logging enabled.

New sessions per second is measured with application override, utilizing 1 byte HTTP transactions.

** Adding virtual systems over base quantity requires a separately purchased license. NGFW Cluster A/A supports a maximum of 25 Virtual Systems.

Table 2. PA-7500 Networking Features
Interface Modes
L3, tap, virtual wire (transparent mode)
Routing
OSPFv2/v3 with graceful restart, BGP with graceful restart, RIP, static routing
Policy-based forwarding
DHCP supported for dynamic address assignment
Multicast: PIM-SM, PIM-SSM, IGMP v1, v2, and v3
Bidirectional Forwarding Detection (BFD)
IPv6
L3, tap, virtual wire (transparent mode)
Features: App-ID, User-ID™, Content-ID™, WildFire, and SSL decryption
SLAAC
IPsec and SSL VPN
Key exchange: manual key, IKEv1* and IKEv2 (pre-shared key, certificate-based authentication)
Encryption: 3des, AES (128-bit, 192-bit, 256-bit)
Authentication: MD5, SHA-1, SHA-256, SHA-384, SHA-512
GlobalProtect® Large Scale VPN for simplified configuration and management†
Secure access over IPsec and SSL VPN tunnels using GlobalProtect Gateway and Portals†
VLANs
802.1Q VLAN tags per device/per interface: 4,094/4,094
Aggregate interfaces (802.3ad) intracard and/or intercard, and LACP
Network Address Translation
NAT modes (IPv4): static IP, Dynamic IP, Dynamic IP and Port (port address translation)
NAT64, NPTv6
Additional NAT features: Dynamic IP reservation, tunable Dynamic IgP and Port oversubscription
High Availability
NGFW Clustering, active-passive‡

* Not supported with NGFW Clustering.

† Requires a GlobalProtect license.

‡ Requires PAN-OS 12.1.5 at a minimum.

Table 3. PA-7500 Hardware Specifications
I/O (each PA-7500-NPC-A)
QSFP-DD (8)—with support for 400 Gbps/100 Gbps/40 Gbps and hardware support for breakout mode SFP-DD (12)—100 Gbps/25 Gbps/10 Gbps ports
Management I/O (each PA-7500-MPC-A)
QSFP28 logging port (2)—100 Gbps/40 Gbps QSFP-DD high availability port (2)—400 Gbps/100 Gbps SFP28 management port (2) with support for 1 Gbps/10 Gbps/25 Gbps Combo RJ45 console port (1), Micro USB console port (1) USB (1)
Trusted Platform Module (TPM)
Integrated with TPM for secure boot, hardware root of trust, and securing system secrets.

Table 3. PA-7500 Hardware Specifications (continued)
BTU
Configuration: SFCs (2), NPCs (2), DPCs (6), MPC (1) Max BTU 31142 (total power—fan power in BTU units)
Power Supply (Idle/Typical/Max Power Consumption)
Configuration: SFCs (2), NPCs (2), DPCs (6), MPC (1) 6.3 KW/8.2 KW/10 KW @ 25C @ sea level 7.3 KW/9.2 KW/11.5 KW @ 40C @ 2,000 ft altitude
Power Supplies (Base/Max)
N+M Redundancy (up to 10 power supplies with load sharing)
AC input voltage
100–240 VAC (50–60 Hz)
AC Rated input current
20 A
AC power supply output
3600 @ High Line (180V, 200/240V, 305V) per power supply 1800 @ Low Line (90V, 110/120V, 132V) per power supply
DC input voltage
-48V DC
DC Rated input current
83A @ -48V DC
DC power output
3600W/power supply
Max current/power supply
20A AC Power Supply, 83A DC Power Supply
Rack Mount Dimensions
14U 24.4" H x 31.0" D x 17.4" W
Safety
cMETus, CB, Noise Level Compliant with NEBS
EMI
FCC Class A, CE Class A, VCCI Class A
Certifications
See our Compliance page.
Environment
Operating temperature: 32°F–104°F, 0°C–40°C Humidity tolerance: 5% to 90% noncondensing Airflow: front to back

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