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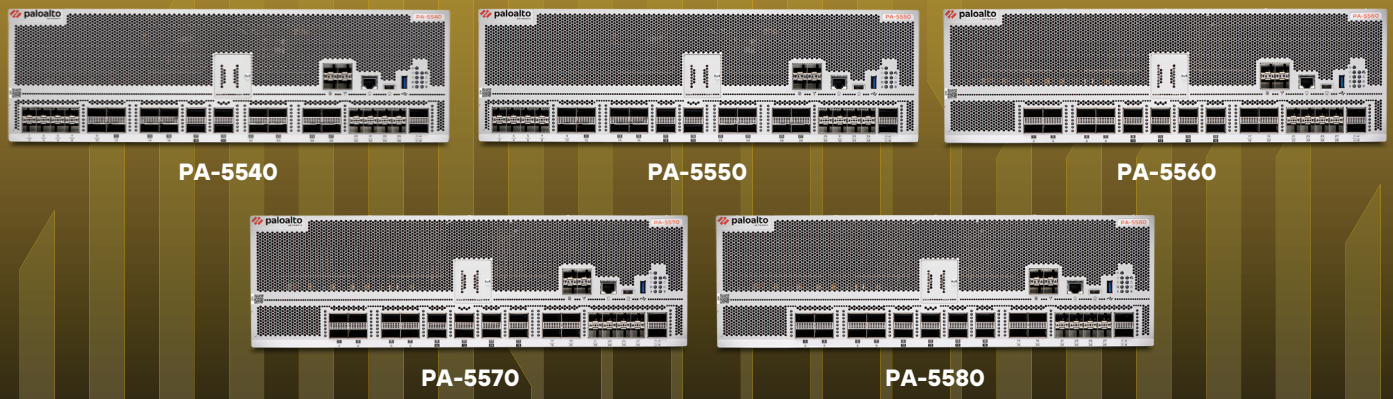

PA-5500 Series

Palo Alto Networks PA-5500 Series Quantum Optimized Next-Generation Firewalls (NGFWs)—comprising the PA-5540, PA-5550, PA-5560, PA-5570, and PA-5580—are ideal for high-speed data center, internet gateway, and service provider deployments. This series provides visibility into and secures all traffic, including post-quantum encrypted traffic.

The operating system of the PA-5500 Series is PAN-OS®, the same software that runs all Palo Alto Networks NGFWs. PAN-OS natively classifies all traffic—including applications, threats, and content—and then ties that traffic to the user regardless of location or device type. The applications, content, and users that run your business serve as the basis of your security policies, resulting in an improved security posture and reduced incident response time. PAN-OS 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.

Highlights

- The world's first quantum-optimized NGFW.
- Built with FE-400 ASIC for high throughput in the three-rack unit design for the data center.
- Powered by Precision AI®, a groundbreaking AI-driven engine that analyzes and prevents threats in real time.
- Built with a single-pass architecture to deliver predictable performance.
- Delivers Palo Alto Networks 5G-Native Security with 5G identifier-based visibility and enforcement capabilities.
- Offers high availability with NGFW clustering.
- Managed with Strata™ Cloud Manager, the industry's first AI-powered unified management and operations solution for network security.
- Leader in the 2025 Gartner® Magic Quadrant™ for Hybrid Mesh Firewall.
- Leader in The Forrester Wave™: Enterprise Firewall Solutions, Q4 2024.

Post-Quantum Cryptography Optimizations

PA-5500 Series is a post-quantum cryptography-ready device that helps you achieve quantum-safe security in hardware and software with PAN-OS 12.1. PA-5500 Series NGFWs support:

- Post-quantum cryptography (PQC) for PQC SSL/TLS decryption, PQC VPN site-to-site, PQC SSL/TLS Cipher Translation Proxy, and PQC SSL/TLS Service Profile for Management Access to the firewall.
- PQC algorithms, including NIST standards, like ML-KEM, ML-DSA, and SLH-DSA, as well as experimental PQCs, like Classic McEliece, BIKE, HQC, Frodo-KEM, and NTRU-Prime.
- A newly introduced PCIe slot for the future addition of post-quantum capabilities.

Prevention of Malicious Activity Concealed in Encrypted Traffic

PA-5500 Series NGFWs provide the ability to:

- Inspect and apply policies to SSL/TLS-encrypted traffic (both inbound and outbound), traffic that uses SSLv3, TLSv1.1, TLSv1.2, and TLSv1.3, as well as application protocols SMTP, WebSocket, gRPC, HTTP/1.0, HTTP/1.1, and HTTP/2.
- Decrypt and inspect SSL/TLS sessions with the classical key exchange algorithms RSA, ECDHE, DHE, and post-quantum key exchange standards ML-KEM, HQC, as well as experimental BIKE and Frodo-KEM.
- Gather metrics into TLS traffic, such as the amount of encrypted traffic, SSL/TLS versions, and ciphers.
- Support such suites as classic key exchanges RSA, ECDHE, and DHE, as well as post-quantum key exchanges ML-KEM and HQC—without needing decryption—bringing added visibility to cryptographic information from all SSL/TLS sessions passing through the firewall.
- Enable control over the use of legacy TLS protocols, insecure and deprecated ciphers, and misconfigured certificates, including a mismatched Server Name Indicator (SNI) to certificate Common Name (CN), to mitigate risks.
- Facilitate easy deployment of decryption and let you use enhanced built-in logs to troubleshoot issues across both client-side and server-side sessions independently for a seamless troubleshooting experience, whether it's missing intermediate certificates or pinned certificates.
- Let you enable or disable decryption flexibly—based on URL category, source and destination zone, address, user, user group, device, and port—for privacy and regulatory compliance purposes.

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

Application Identification and Categorization with Full Layer 7 Inspection

App-ID™ identifies and categorizes all applications, on all ports, all the time, with full Layer 7 inspection, supporting the following capabilities:

- Uses advanced techniques, such as protocol decoding, heuristics, and signature matching, to accurately identify applications across the network, regardless of the port, protocol, or encryption methods used. The optional App-ID Cloud Engine (ACE) service provides on-demand App-IDs for SaaS applications.
- Provides a comprehensive understanding of the risks and values associated with various applications, which aids in informed decision-making about network security policies.

- Allows for the effective enforcement of security policies tailored to specific applications, by centralizing the identification and control of applications at the firewall level.
- Identifies and manages evasive or custom applications that typically bypass traditional security measures.
- Continuously updates its application identifications, ensuring it stays effective against the latest application trends and tactics.
- Uses cutting-edge AI techniques to enhance precision in identifying and categorizing AI-powered applications. These techniques ensure that even the most advanced and dynamic applications are accurately recognized and appropriately managed within the network.

For more information, see our App-ID tech brief.

User Security Enforcement

PA-5500 Series NGFWs enforce security for users at any location, on any device, while adapting policies based on their activity. They include the ability to:

- Enable visibility, security policies, reporting, and forensics based on users, groups, and IP addresses.
- Apply consistent policies regardless of users' locations (office, home, travel, etc.) and devices. Such devices include iOS and Android mobile devices; macOS, Windows, and Linux desktops and laptops; Citrix and Microsoft VDI; and terminal servers.
- Leverage IP geolocation to automatically enforce security policies based on geographic location, enabling you to reduce the attack surface, meet compliance requirements, and control application access by blocking traffic to and from specific countries or regions.
- Consistently authenticate and authorize your users, regardless of location and where user identity is stored (cloud and on-premises directories or both), to move quickly toward a zero trust security posture with Cloud Identity Engine—a cloud-based architecture for identity-based security.
- Secure all applications with passwordless authentication, whether on-premises, SaaS, or hybrid.
- Provide dynamic security actions based on user behavior to restrict suspicious or malicious users by defining Cloud Dynamic User Groups (CDUGs) on the firewall to take risk-based, time-bound security actions without waiting to apply changes to user directories.
- Prevent both corporate credentials from leaking to third-party websites and the reuse of stolen credentials by enabling multifactor authentication (MFA) at the network layer for any application without changes.
- Easily integrate with a wide range of repositories to work with user information, including wireless LAN controllers, VPNs, directory servers, and security information and event management (SIEM) tools.
- Automate policy recommendations that save time and reduce the chance of human error.

For more information, see our Cloud Identity Engine solution brief.

Unique Approach to Packet Processing

PA-5500 Series NGFWs process packets by using a single-pass architecture. Using this approach, the NGFWs are able to:

- Perform 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.

- Avoid introducing latency by scanning traffic for all signatures in a single pass, using stream-based, uniform signature matching.
- Produce consistent and predictable performance when security subscriptions are enabled (see table 1).

AI-Powered Unified Management and Operations with Strata Cloud Manager

Manage your PA-5500 Series NGFWs with Strata Cloud Manager, which enables you to:

- **Gain complete visibility across your network security estate:** Achieve real-time, comprehensive visibility of your entire network security landscape, including all users, applications, devices, and the most critical threats that need attention through a unified interface.
- **Enable simple and consistent network security lifecycle management:** Manage configuration and policy management across all enforcement points, including SASE, hardware and software firewalls, as well as all security services to ensure consistency and reduce operational overhead.
- **Strengthen security posture in real time:** Leverage AI-powered analysis to detect, resolve, and optimize policy anomalies like shadow and redundant policies and overly permissive or unused rules. Improve your security posture with integrated best practice recommendations and maintain compliance with industry and InfoSec standards.
- **Proactively resolve network disruptions and enhance user experience:** Predict, diagnose, and resolve network health issues—such as user experience problems, capacity bottlenecks, CVE vulnerabilities, service connection issues, and 130 other categories of issues—up to 90 days in advance to ensure smooth operations.
- **Resolve issues fast with instant knowledge at your fingertips:** With Strata Copilot™, our AI-powered assistant features a natural language interface so you can quickly find, understand, and address security and operational challenges before they escalate. Plus, with its streamlined case creation capabilities, you get rapid support when you need it most.

Combined NGFW Clustering and High Availability Elements

NGFW clustering optimizes resource usage and increases throughput while maintaining a highly redundant and resilient solution. This solution enables efficient horizontal scaling for highly available networks.

See the Migrating to NGFW Clustering whitepaper for more information.

Best-in-Class Cloud-Delivered Security Services Powered by Precision AI

PA-5500 Series NGFWs provide best-in-class security with Cloud-Delivered Security Services (CDSS). At the heart of our CDSS is Precision AI. Unlike traditional reactive tools, Precision AI empowers your defenses with proactive threat detection, inline prevention, and automated response—stopping even the most evasive, never-before-seen attacks before they cause damage. Backed by threat intelligence from our over 70,000 customers globally, our cloud-delivered services continuously learn, adapt, and evolve. Integrated seamlessly with our NGFW and SASE platforms, CDSS delivers unified protection across web, DNS, email, applications, and more—no matter where your users or data reside.

Whether you're navigating hybrid work, embracing cloud transformation, or defending against sophisticated adversaries, CDSS powered by Precision AI gives you the visibility, automation, and confidence to stay ahead.

Advanced Threat Prevention

Analyze up to 673 million new sessions daily and proactively block 28.2 billion threats in real time—including zero-day exploits, malware, command-and-control (C2) traffic, and evasive techniques—to deliver cutting-edge security at unprecedented scale.

Advanced WildFire

Proactively stop up to 450,000 new threats every day with the industry's most powerful malware prevention engines. Advanced WildFire® identifies and blocks a wide range of advanced threats, including zero-day malware, ransomware, remote access Trojans (RATs), weaponized documents, and other evasive attack techniques—before they impact your organization.

Advanced URL Filtering

Safeguard web access by blocking up to 151 million threats inline every day, while analyzing 3.8 billion new URLs daily. Advanced URL Filtering protects against phishing, malware, ransomware, C2 communications, and evasive web-based attacks.

Advanced DNS Security

Advanced DNS Security delivers real-time protection that instantly blocks sophisticated DNS request and response-based threats—including DNS hijacking, domain generation algorithms (DGA), DNS tunneling, and C2 callbacks. It analyzes over 1.1 billion new domains daily and identifies up to 7.7 million newly malicious domains, preventing more than 2 billion threats inline. This powerful first line of defense identifies and stops threats at the DNS layer—whether they originate from outside or inside the network.

Device Security

Secure every connected device with a solution tailored to the industry (including manufacturing, retail, healthcare, high tech, and general enterprise), and achieve a 90% device discovery rate within 48 hours—providing prioritized vulnerability and risk assessments. Also, identify anomalies, get least-privileged access control security policy recommendations, and virtually patch vulnerabilities all in one single NetSec platform.

SaaS Security

Discover and control all SaaS consumption with visibility into over 75,000 SaaS apps and data loss prevention (DLP) controls for more than 150 SaaS apps. Prevent SaaS misconfigurations with posture management for over 117 SaaS apps, as well as SaaS inline tenancy control for 39 apps.

AI Access Security

Enable the safe use of GenAI with real-time visibility into GenAI apps, user access controls, data protection, and continuous risk monitoring. AI Access Security™ provides an industry-leading catalog of over 2,500 GenAI apps, including over 15 GenAI-specific application attributes to accurately identify and mitigate risk. It includes posture management for more than 13 GenAI apps and SaaS inline tenancy control for 11 apps.

Advanced SD-WAN

Easily adopt SD-WAN by simply enabling it on your existing firewalls with integrated security. Get an exceptional end-user experience and ensure SLAs by using SD-WAN path measurements and application steering capabilities to intelligently steer applications to the best performing paths.

Table 1. Performance and Capacities of PA-5500 Series Quantum Optimized NGFWs					
	PA-5540	PA-5550	PA-5560	PA-5570	PA-5580
Firewall throughput (appmix)*	150 Gbps	175 Gbps	240 Gbps	300 Gbps	375 Gbps
Threat Prevention throughput (appmix)†	90 Gbps	120 Gbps	180 Gbps	240 Gbps	300 Gbps
IPsec VPN throughput‡	80 Gbps	100 Gbps	125 Gbps	150 Gbps	170 Gbps
Max concurrent sessions§	39M	49M	74M	89M	99M
New sessions per second‖	1.33M	1.67M	2.5M	3M	3.3M
Virtual systems (base/max)#	25/225	25/225	25/225	25/225	25/225

Note: Results were measured on PAN-OS 12.1.

* Firewall throughput is measured with App-ID and logging enabled by using appmix transactions.

† Threat Prevention throughput is measured with App-ID, IPS, antivirus, antispyware, WildFire, file blocking, and logging enabled using appmix transactions.

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

§ Maximum concurrent sessions are measured using HTTP transactions.

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

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

Table 2. PA-5500 Series Networking Features
Interface Modes
L2 mode (not available on MC-LAG aggregate interfaces), L3 mode, tap, and virtual wire (transparent mode).
Routing
The advanced routing engine is the only routing engine supported.
OSPFv2/v3 and MP-BGP with graceful restart, RIP, and static routing.
Policy-based forwarding.
Point-to-Point Protocol over Ethernet (PPPoE) and DHCP client are supported for dynamic address assignment for both IPv4 and IPv6.
DHCPv4 server and DHCPv4 relay.
Multicast: PIM-SM, PIM-SSM, IGMPv2, and v3.
Bidirectional Forwarding Detection (BFD) and multihop BFD.
Advanced SD-WAN
Path quality measurement (jitter, packet loss, and latency).
Bandwidth monitoring.
Key exchange: Manual key, IKEv1,* and IKEv2 (pre-shared key and certificate-based authentication).
Post-quantum PPK.
Multi-VR and LR support over the SD-WAN overlay.
Prisma® Access Hub (hybrid SASE).
Autonomous Digital Experience Management (ADEM) for NGFW support.
IPv6
IPv6 inspection in L2, L3, tap, and virtual wire mode (transparent mode).
Support for dual-stack and IPv6-only networks.
Features: IPv6 geolocalization, OSPFv3, MP-BGP, NAT64, and NPTv6.
DHCPv6 client with prefix delegation (PD) support. Stateless address autoconfiguration (SLAAC) server support.
IPsec VPN
Key exchange: Manual key, IKEv1,* and IKEv2 (pre-shared key and certificate-based authentication).
Encryption: 3des, AES (128-bit, 192-bit, and 256-bit).
Authentication: MD5, SHA-1, SHA-256, SHA-384, and SHA-512.
GlobalProtect® Large Scale VPN for simplified configuration and management.†
Secure access over IPsec and SSL VPN tunnels using GlobalProtect gateway and portals.†

Table 2. PA-5500 Series Networking Features (continued)
VLANs
802.1Q VLAN tags per device or per interface: 4,094/4,094.
Aggregate interfaces (802.3ad) and LACP.
Network Address Translation
NAT modes (IPv4): static IP, dynamic IP, dynamic IP, and port (port address translation).
NAT64 and NPTv6.
Additional NAT features: Dynamic IP reservation, tunable dynamic IP, and port oversubscription.
High Availability and Clustering
NGFW clustering with active/active. HA active/passive.‡ NGFW clustering maintains a dual-active data plane with a single control plane, support for MC-LAG (Aggregate Ethernet interfaces with members on both systems).
Mobile Network Infrastructure§
5G security.

* Not supported with NGFW clustering.

† Requires a GlobalProtect license.

‡ Future release.

§ For additional information, refer to our ML-Powered NGFWs for 5G datasheet.

Table 3. PA-5500 Series Hardware Specifications
I/O
PA-5540/PA-5550: 10G/25G SFP28 (16), 40G/100G QSFP28 (16), and 100G/400G QSFP-DD (4) PA-5560/PA-5570/PA-5580: 10G/25G SFP28 (8), 40G/100G QSFP28 (12), and 100G/400G QSFP-DD (8)
Management I/O
Out-of-band management: 1G/10G SFP+ (2) Console: RJ-45 console port (1) Console: USB-C Bootstrap: USB 3.2 Gen1 Type A HSCI: 100G/400G QSFP-DD (2) Log: 10G SFP+ (2)
Storage Capacity
Optional 3.84 TB RAID1 SSD pair for system and log storage supported as cold swap.
Power Supply (Avg/Max Power Consumption)
2,100 W/3,100 W
Max BTU/hr
1638
Power Supplies
2+2 redundant for 220 V and DC 3+1 redundant for 110 V
Input Voltage
AC: 100–240 VAC (50–60 Hz) DC: -40 VDC to -60 VDC
Power Supply Output
AC: 2,700 W/power supply with 220 V or 1,200 W/power supply with 110 V DC: 2,200 W/power supply
Max Current Consumption
AC: 20.3 A @ 110 VAC and 9.3 A @ 240 VAC DC: 43.7 A @ 54 VDC

Table 3. PA-5500 Series Hardware Specifications (continued)
Max Inrush Current
AC: 50 A @ 230 VAC and 50 A @ 120 VAC DC: 25 A @ 54 VDC
Mean Time Between Failure (MTBF)
PA-5540/PA-5550: 8.1 years PA-5560/PA-5570/PA-5580: 6.3 years
Rack Mount Dimensions
3U, 19" standard rack (5.2" H x 29.8" D x 17.3" W) with power supply inserted.
Weight (Standalone Device/As Shipped)
70 lbs/116 lbs (includes accessory kit, rack kit, packaging, and pallet).
Safety
cTUVus, CB
EMI
FCC Class A, CE Class A, VCCI Class A
Certifications
See our Compliance page.
Environment
Operating temperature: 32°F to 122°F, 0°C to 50°C **Nonoperating temperature:** -4°F to 158°F, -20°C to 70°C **Humidity tolerance:** 10%–90% **Maximum altitude:** 10,000 ft/3,048 m **Airflow:** Front to back (port side to power supply side)

Table 4. PA-5500 Series Ordering Information	
Part Number	**Details**
PAN-PA-5540-AC PAN-PA-5550-AC PAN-PA-5560-AC PAN-PA-5570-AC PAN-PA-5580-AC	Includes: 4x PAN-PA-5500-PWR-2700-AC 5x PAN-PA-FAN-2RU-A 1x PAN-PA-5500-ACC-A accessory kit 1x PAN-PA-3RU-RACK-A 2x PAN-SFP-CG 1x PAN-PA-5500-SSD-3.84TB-PAIR
PAN-PA-5540-DC PAN-PA-5550-DC PAN-PA-5560-DC PAN-PA-5570-DC PAN-PA-5580-DC	Includes: 4x PAN-PA-5500-PWR-2000-DC 5x PAN-PA-FAN-2RU-A 1x PAN-PA-5500-ACC-B accessory kit 1x PAN-PA-3RU-RACK-A 2x PAN-SFP-CG 1x PAN-PA-5500-SSD-3.84TB-PAIR
PAN-PA-5500-SSD-3.84TB-PAIR	Spare replacement drive.
PAN-PA-5500-ACC-A	Spare accessory kit includes a 4x PAN-PWR-C19-US-120V cable, 1x USB cable, and 1x Cat6 cable.
PAN-PA-5500-ACC-B	Spare accessory kit includes a 4x PAN-PWR-DC-CBL-C cable, 1x USB cable, and 1x Cat6 cable.

Table 4 lists key SKUs for the PA-5500 Series. For detailed information about the complete SKU list, including LAB bundles, spares, software subscriptions, and support, work with your Palo Alto Networks account team and NextWave Channel partners.

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