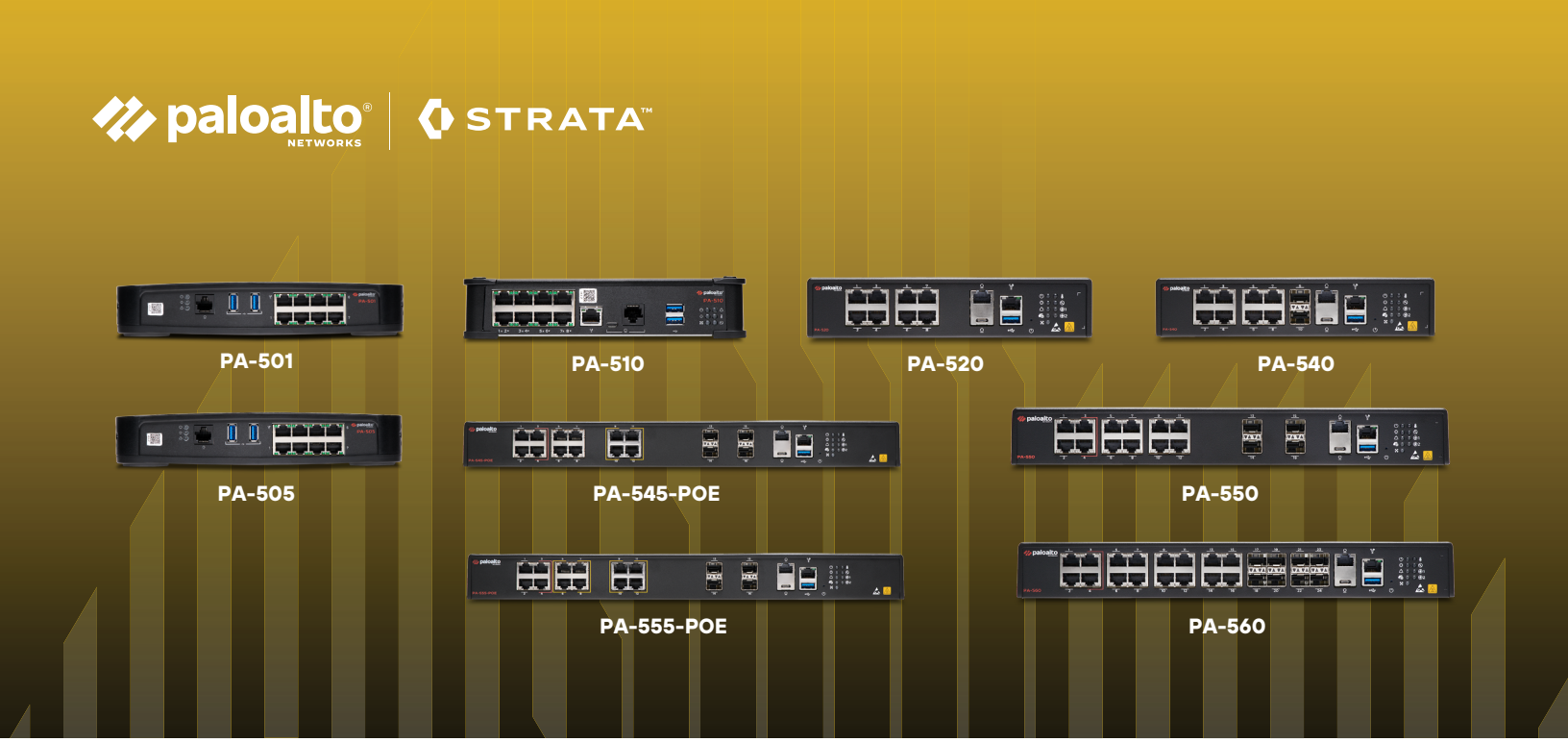


PA-500 Series

Palo Alto Networks PA-500 Series Next-Generation Firewalls (NGFWs) comprise the PA-501, PA-505, PA-510, PA-520, PA-540, PA-545-POE, PA-550, PA-555-POE, and PA-560 models. This series brings ML-Powered NGFW capabilities to distributed enterprise branch offices, retail locations, and midsize businesses.

The controlling element of the PA-500 Series NGFWs 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 application, content, and user—the elements 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 firewall core to provide inline signatureless attack prevention for file-based attacks while identifying and immediately stopping never-before-seen phishing attempts.

Highlights

- High-performance enterprise branch NGFW series.
- Powered by Precision AI®, a groundbreaking AI-driven engine that analyzes and prevents threats in real time.
- High port density with up to 24 copper and fiber interfaces.
- Up to 330W Power over Ethernet (PoE) support.
- IEEE 802.3bt support with a maximum of 90W of power per PoE port.
- Simplifies deployment with Zero Touch Provisioning (ZTP).
- Supports high availability with active/active and active/passive modes.
- Built with a single-pass architecture to deliver predictable performance with security services.
- 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

The PA-500 Series is a post-quantum cryptography (PQC)-ready NGFW that helps you achieve quantum-safe security in hardware and software with PAN-OS 12.1. PA-500 Series NGFWs support:

- 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.

For more information, see Support for Post-Quantum Features in TechDocs.

Prevention of Malicious Activity Concealed in Encrypted Traffic

PA-500 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.
- 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.
- Allows for the effective enforcement of security policies tailored to specific applications, by centralizing the identification and control of applications at the firewall level.
- 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 the App-ID solution brief.

User Security Enforcement

PA-500 Series NGFWs enforce security for users at any location, on any device, while adapting policies based on their activity. They include the ability to:

- **Unify identity and policy enforcement:** Bridge on-premises and cloud identity stores to enforce consistent user-based policies everywhere via the Cloud Identity Engine, and block malicious traffic sources automatically by using IP geolocation.
- **Automate dynamic risk control:** Apply dynamic security actions based on user behavior and risk scores using Cloud Dynamic User Groups (CDUGs)—without depending on directory updates. Also, leverage automated policy recommendations to save time and reduce human error when restricting suspicious activity.
- **Secure credentials:** Prevent credential theft and abuse by enforcing multifactor authentication (MFA) at the network layer for any application, including legacy and nonweb apps, without requiring application changes.

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

Unique Approach to Packet Processing

PA-500 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).

For more information, see the *Single-Pass Architecture* whitepaper.

AI-Powered Unified Management and Operations with Strata Cloud Manager

Manage your PA-500 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.

For more information, see the Strata Cloud Manager datasheet.

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-500 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

Palo Alto Networks Advanced Threat Prevention is the industry's first intrusion prevention system (IPS) that stops zero-day, command-and-control (C2) attacks and unknown exploits completely inline. In addition to traditional IPS capabilities, it delivers industry-leading protection against known and unknown threats.

For more information, see the Advanced Threat Prevention datasheet.

Advanced WildFire

Palo Alto Networks Advanced WildFire® is the industry's largest cloud-based malware prevention engine. It protects organizations from highly evasive threats by using patented ML detection engines, enabling automated protections across networks, cloud, and customer application endpoints.

For more information, see the Advanced WildFire datasheet.

Advanced URL Filtering

Advanced URL Filtering analyzes URL strings and web content in real time and classifies them into benign or malicious categories, which can be built into NGFW policies for control of web traffic. It protects against phishing, malware, ransomware, C2 communications, and evasive web-based attacks.

For more information, see the Advanced URL Filtering datasheet.

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 uses inline, AI-powered detection models to analyze every DNS request and response in real time. These models enable precise identification of never-before-seen malicious domains, DNS tunneling, C2 activity, and network-level DNS hijacking. This powerful first line of defense identifies and stops threats at the DNS layer—whether they originate from outside or inside the network.

For more information, see the Advanced DNS Security datasheet.

Device Security

Palo Alto Networks Device Security delivers a unified, AI-first solution that provides comprehensive protection and monitoring across your entire attack surface. It discovers all connected devices and then identifies and mitigates hidden risks that would otherwise remain invisible or elusive to even the most seasoned InfoSec professionals.

For more information, see the Device Security solution brief.

SaaS Security

Palo Alto Networks SaaS Security delivers broad visibility and real-time control over all SaaS applications, including GenAI apps. Moreover, it provides robust data protection by monitoring and securing the unapproved movement and storage of sensitive data across various SaaS platforms.

For more information, see the SaaS Security solution brief.

AI Access Security

AI Access Security™ empowers organizations to monitor the adoption and usage of sanctioned and unsanctioned GenAI apps. It proactively prevents sensitive data leakage and provides continuous risk monitoring so organizations can safely adopt and use third-party GenAI tools.

For more information, see the AI Access Security datasheet.

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.

For more information, refer to the SD-WAN documentation in TechDocs.

PA-500 Series Specifications

Table 1. PA-500 Series NGFWs Performance and Capacities

	PA-501	PA-505	PA-510	PA-520	PA-540	PA-545-POE	PA-550	PA-555-POE	PA-560
Firewall throughput (appmix)*	0.8 Gbps	1.2 Gbps	1.8 Gbps	2.8 Gbps	3.8 Gbps	5.0 Gbps	6.5 Gbps	7.5 Gbps	8.5 Gbps
Threat Prevention throughput (appmix)†	0.5 Gbps	0.8 Gbps	1.2 Gbps	1.8 Gbps	2.2 Gbps	3.0 Gbps	4.5 Gbps	5.0 Gbps	6.0 Gbps
IPsec VPN throughput‡	0.24 Gbps	0.4 Gbps	0.8 Gbps	1.5 Gbps	2.0 Gbps	3.0 Gbps	4.0 Gbps	4.5 Gbps	5.5 Gbps
Max concurrent sessions§	30K	64K	98K	148K	248K	298K	398K	448K	598K
New sessions per second‖	5K	10K	15K	25K	50K	55K	70K	75K	100K
Virtual systems (base/max)#	—	—	—	—	1/2	1/2	1/5	1/5	1/5

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 by using appmix transactions.

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

§ Maximum concurrent sessions are measured by using HTTP transactions.

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

Adding virtual systems over the base quantity requires a separately purchased license.

Table 2. PA-500 Series Networking Features
Interface Modes
L2 mode (not available on MC-LAG aggregate interfaces), L3, 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.
PPPoE and DHCP clients are supported for dynamic address assignment for both IPv4 and IPv6.
DHCPv4 server.
Multicast: PIM-SM, PIM-SSM, IGMPv2, and v3.
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 and SSL VPN
Key exchange: Manual key, IKEv1, and IKEv2 (pre-shared key and certificate-based authentication).
Encryption: 3DES and AES (128-bit, 192-bit, and 256-bit).
Authentication: MD5, SHA-1, SHA-256, SHA-384, and SHA-512.
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) and LACP.

* Requires a GlobalProtect license.

Table 3. PA-500 Series Hardware Specifications	
I/O	
PA-501, PA-505: 1G RJ45 (7) PA-510: 1G RJ45 (8) PA-520: 1G RJ45 (8) PA-540: 1G RJ45 (8), 1G SFP (2) PA-545-POE: 1G RJ45 (6), 1G RJ45 bypass (2), 1G/2.5G (4)/PoE, 1G SFP (4) PA-550: 1G RJ45 (10), 1G RJ45 bypass (2), 1G SFP (2), 1G/10G SFP/SFP+ (2) PA-555-POE: 1G RJ45 (2), 1G RJ45 bypass (2), 1G RJ45 (4)/PoE, 1G/2.5G (4)/PoE, 1G SFP (2), 1G/10G SFP/SFP+ (2) PA-560: 1G RJ45 (16), 1G SFP (4), 1G/10G SFP/SFP+ (4)	
Management I/O	
PA-501, PA-505: 10/100/1000 out-of-band management port (1), USB port (2), and RJ45 console port (1) PA-510: 10/100/1000 out-of-band management port (1), USB port (2), RJ45 console port (1), and Micro USB console port (1) PA-520, PA-540, PA-545-POE, PA-550, PA-555-POE, PA-560: 10/100/1000 out-of-band management port (1), USB port (1), RJ45 console port (1), and USB-C console port (1)	
Storage Capacity	
PA-501, PA-505, PA-510: 128 GB PA-520, PA-540, PA-545-POE, PA-550, PA-555-POE: 120 GB PA-560: 240 GB	
Trusted Platform Module (TPM)	
Integrated with TPM for secure boot, hardware root of trust, and securing system secrets.	
Power Over Ethernet	
PA-545-POE total PoE budget: 181W, PoE ports (4), maximum loading on a single port: 90W PA-555-POE total PoE budget: 330W, PoE ports (8), maximum loading on a single port: 90W	
Power Consumption	
Model	**Max Power Consumption**
PA-501	23W
PA-505	23W
PA-510	34.3W
PA-520, PA-540	30W
PA-545-POE*	336W (with 181W PoE output)
PA-550	57W
PA-555-POE*	503W (with 332W PoE output)
PA-560	106W
Max BTU/hr	
PA-501: 78 PA-505: 78 PA-510: 117 PA-520, PA-540: 102 PA-545-POE: 1145 (with 181W PoE output) PA-550: 195 PA-555-POE: 1715 (with 332W PoE output) PA-560: 361	
Input Voltage (Input Frequency)	
100–240 VAC (50-60 Hz)	

* With one or more provided AC adapters.

Table 3. PA-500 Series Hardware Specifications (continued)
Max Current Consumption
PA-501: 2 A @ 12 VDC PA-505: 2 A @ 12 VDC PA-510: 2.5 A @ 12 VDC PA-520, PA-540: 4 A @ 12 VDC PA-545-POE: 6 A @ 54 VDC PA-550: 5 A @ 12 VDC PA-555-POE: 9 A @ 54 VDC PA-560: 8 A @ 12 VDC
Dimensions
PA-501, PA-505: 1.63" H x 6.42" D x 9.53" W (43.9 mm H x 163 mm D x 242 mm W) PA-510: 1.74" H x 8.83" D x 8.07" W (43.9 mm H x 224 mm D x 205 mm W) PA-520, PA-540: 1.74" H x 10.4" D x 8" W (43.9 mm H x 265 mm D x 203 mm W) PA-550, PA-560: 1.74" H x 12.1" D x 13" W (43.9 mm H x 37 mm D x 330 mm W) PA-545-POE, PA-555-POE: 1.75" H x 12.6" D x 16.1" W (43.9 mm H x 314 mm D x 409 mm W)
Weight (Standalone Device/As Shipped)
PA-501: 3.1 lbs/5.9 lbs PA-505: 3.1 lbs/5.9 lbs PA-510: 5.0 lbs/7.8 lbs PA-520, PA-540: 5.8 lbs/8 lbs PA-545-POE: 13.5 lbs/19.8 lbs PA-550: 11.2 lbs/15.6 lbs PA-555-POE: 13.5 lbs/20.2 lbs PA-560: 11.2 lbs/15.6 lbs
Safety
cTUVus, CB
EMI
PA-501, PA-505, PA-510: FCC Class B, CE Class B, and VCCI Class B PA-520, PA-540, PA-545-POE, PA-550, PA-555-POE, PA-560: FCC Class A, CE Class A, and VCCI Class A
Certifications
See our Compliance page.
Environment
Operating temperature: 32°F to 104°F, 0°C to 40°C Nonoperating temperature: -4°F to 158°F, -20°C to 70°C Passive cooling: PA-501, PA-505, PA-510, PA-520, PA-540, PA-545-POE, PA-550, and PA-555-POE Active cooling: PA-560

Table 4. Ordering Guide			
	Accessory	**Short Description**	**Model(s)**
Power Adapters*	PAN-PWR-25W-AC	25W spare power adapter	PA-501 PA-505
	PAN-PWR-40W-12V-AC	40W spare power adapter	PA-510
	PAN-PWR-50W-AC	50W spare power adapter†	PA-510
	PAN-PWR-150W-12V-AC-A	150W spare power adapter	PA-560, PA-550 PA-540, PA-520
	PAN-PWR-350W-54V-AC-A	350W spare power adapter	PA-545-POE
	PAN-PWR-550W-54V-AC-A	550W spare power adapter	PA-555-POE
Accessory Kit	PAN-PA-505-ACC	Replacement accessory kit for PA-501, PA-505. The kit is included in the system (25W AC power adapter, US power cord, Ethernet cable).	PA-501 PA-505
	PAN-PA-510-ACC	Replacement accessory kit for PA-510. The kit is included in the system (40W AC power adapter, US power cord, Micro USB console cable, Ethernet cable).	PA-510
	PAN-PA-500-MED-ACC	Replacement accessory kit for PA-560, PA-550, PA-540, and PA-520. The kit is included in the system (150W AC power adapter, US power cord, Ground Lug, USB-C console cable, Ethernet cable).	PA-560 PA-550 PA-540 PA-520
	PAN-PA-545-POE-ACC	Replacement accessory kit for PA-545-POE. The kit is included in the system (350W AC power adapter, US power cord, Ground Lug, USB-C console cable, Ethernet cable).	PA-545-POE
	PAN-PA-555-POE-ACC	Replacement accessory kit for PA-555-POE. The kit is included in the system (530W AC power adapter, US power cord, Ground Lug, USB-C console cable, Ethernet cable).	PA-555-POE
Rack Kits	PAN-PA-400-RACKTRAY*	1RU 4-Post Rack Mount. Can be used for: 2 PA-510s and 4 power adapters.	PA-510
	PAN-1RU-4POST-RACK-10	1RU 4-Post Rack Mount for: 2 PA-510 and 2 power adapters. 1 PA-505 and 1 power adapter. 1 PA-501 and 1 power adapter.	PA-510 PA-505 PA-501
	PAN-1RU-4POST-RACK-11	1RU 4-Post Rack Mount for: 1 PA-560 and 2 power adapters. 1 PA-550 and 2 power adapters. 2 PA-540s and 4 power adapters. 2 PA-520s and 4 power adapters.	PA-560 PA-550 PA-540 PA-520
	PAN-1RU-4POST-RACK-12	1RU 4-Post Rack Mount for: 1 PA-555-POE and 2 power adapters. 1 PA-545-POE and 2 power adapters.	PA-555-POE PA-545-POE

* One power adapter ships with every firewall. A second or redundant power adapter is optionally available to order on platforms that support 2 power adapters.

† The following items are compatible with PA-510: PAN-PWR-50W-AC and PAN-PA-400-RACKTRAY.

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