

PA-7000 Series

Palo Alto Networks PA-7000 Series ML-Powered Next-Generation Firewalls enable 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 amazing 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-7000 Series offers simplicity defined by a single-system approach to management and licensing.

Key Security Features

Classifies all applications, on all ports, all the time

- Identifies the application, regardless of port, SSL/SSH encryption, or evasive technique employed.
- Uses the application, not the port, as the basis for all your safe enablement policy decisions.
- Categorizes unidentified applications for policy control, threat forensics, or App-ID™ technology development.
- Provides full visibility into the details of all TLS-encrypted connections and stops threats hidden in encrypted traffic, including traffic that uses TLS 1.3 and HTTP/2 protocols.

Enforces security policies for any user, at any location

- Deploys consistent policies to Windows®, macOS®, Linux, Android®, or Apple iOS platforms.
- Enables agentless integration with Microsoft Active Directory® and Terminal Services, LDAP, Novell eDirectory™, and Citrix.

- Easily integrates your firewall policies with 802.1X wireless, proxies, network access control, and any other source of user identity information.

Extends native protection across all attack vectors with cloud-delivered security subscriptions

- **Threat Prevention**—inspects all traffic to automatically block known vulnerabilities, malware, vulnerability exploits, spyware, command and control (C2), and custom intrusion prevention system (IPS) signatures.
- **WildFire® malware prevention**—protects against unknown file-based threats, delivering automated prevention in seconds for most new threats across networks, endpoints, and clouds.
- **URL Filtering**—prevents access to malicious sites and protects users against web-based threats.
- **DNS Security**—detects and blocks known and unknown threats over DNS while predictive analytics disrupt attacks using DNS for C2 or data theft.
- **IoT Security**—discovers all unmanaged devices in your network, identifies risks and vulnerabilities, and automates enforcement policies for your ML-Powered NGFW using a new Device-ID™ policy construct.



PA-7050

PA-7080

PA-7000 Series Architecture

The PA-7000 Series is powered by a scalable architecture for the purpose of applying the appropriate type and volume of processing power to the key functional tasks of networking, security, and management. The PA-7000 Series chassis intelligently distributes processing demands across three subsystems, each with massive amounts of computing power and dedicated memory.

Table 1: PA-7000 Series Performance and Capacities¹

	PA-7080	PA-7050	PA-7000 NPC-100G	PA-7000 NPC-XM
Firewall throughput (HTTP/appmix) ²	600/700 Gbps	360/420 Gbps	60/70 Gbps	17.1/20.0 Gbps
Threat Prevention throughput (DSRI enabled) ³	610 Gbps	366 Gbps	61 Gbps	18 Gbps
Threat Prevention throughput (HTTP/appmix) ⁴	270/330 Gbps	162/198 Gbps	27/33 Gbps	8.1/11.1 Gbps
IPsec VPN throughput ⁵	280 Gbps	168 Gbps	28 Gbps	8.7 Gbps
Max sessions	320M	192M	32M	8M
New sessions per second ⁶	4.56M	2.73M	456,000	225,000
Virtual systems (base/max) ⁷	25/225	25/225	—	—

1. Results were measured on PAN-OS 9.1.

2. Throughput is measured with App-ID and logging enabled, with 64 KB HTTP/appmix transactions.

3. Disable Server Response Inspection (DSRI) throughput is measured with App-ID, IPS, antivirus, anti-spyware, WildFire, file blocking, and logging enabled, utilizing 64 KB HTTP transactions.

4. Threat Prevention throughput measured with App-ID, IPS, antivirus, anti-spyware, WildFire, and logging enabled, utilizing 64 KB HTTP/appmix transactions.

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

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

7. The base system includes 25 virtual systems at no cost, and up to 200 additional licenses may be purchased. The maximum number of virtual systems supported is 225.

Network Processing Card

The Network Processing Card (NPC) is dedicated to executing all packet-processing tasks, including networking, traffic classification, and threat prevention. Each NPC has between 64 (first generation) and 144 (second generation) processing cores, all focused on protecting your network at up to 70 Gbps per NPC. Scaling the throughput to the maximum 700 Gbps on the PA-7080, or 420 Gbps on the PA-7050, is as easy as adding a new NPC and allowing the system to determine the best use of the new processing power.

To address growing demand for higher capacity 40 Gbps and 100 Gbps connectivity, as well as the more common 10 Gbps interface alternatives, three NPC options are available—the first-generation NPC-20GXM and NPC-20GQXM, and the second-generation 100G-NPC—that can be used interchangeably with the first-generation Switch Management Card.

Switch Management Card

Acting as the control center of the PA-7000 Series, the Switch Management Card (SMC) intelligently oversees all traffic and executes all management functions, using a combination of three elements: the First Packet Processor, a high-speed backplane, and the management subsystem. First- and second-generation SMCs are available, with the second generation offering significant improvements in the functionality of all three elements.

First Packet Processor

The key to maximizing performance and delivering linear scalability to the PA-7000 Series, the First Packet Processor (FPP) constantly tracks the shared pool of available processing and I/O resources across all NPCs, intelligently directing inbound traffic to underutilized processors. As NPCs are added to increase performance and capacity, no traffic management changes are required, nor is it necessary to re-cable or reconfigure your PA-7000 Series.

High-Speed Backplane

Each NPC has access to more than 100 Gbps of non-blocking traffic capacity with a high-speed backplane. The Management subsystem acts as a dedicated point of contact for controlling all aspects of the PA-7000 Series.

Management Subsystem

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Dedicated Logging Card

The Logging Card, an integral part of every system, utilizes a dual CPU design, creating a dedicated subsystem to manage the high volume of logs the PA-7000 Series generates. Two log cards are available: a first-generation Log Processing Card (LPC) and a second-generation Log Forwarding Card (LFC). The LPC uses up to 4 TB of RAID1 storage to offload logging-related activities, enabling you to run queries and reports from the most recent logs collected. The LFC is a high-performance card dedicated to exporting log messages. Both allow you to forward logs to Panorama™ network security management, Cortex™ Data Lake, and Syslog for offline analysis. The LPC supports mixed configurations of 20G-NPC and 100G-NPC while the LFC is optimized for use with the second-generation SMC and 100G-NPC.

The PA-7000 Series is managed as a single, unified system, enabling you to easily direct all available resources to protect your data. The controlling element of the PA-7000 Series is PAN-OS®, which 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 application, content, and user—in other words, the elements that run your business—then serve as the basis of your security policies, resulting in improved security posture, reduced incident response time, and lower administrative overhead associated with keeping security policies current in a highly dynamic environment.

Table 2: PA-7000 Series Hardware Specifications

	PA-7000 NPC	PA-7080 Full System	PA-7050 Full System
100G-NPC (PA-7000-100G-NPC-A)	SFP/SFP+ (8), QSFP+/QSFP28 (4)	SFP/SFP+ (80), QSFP+/QSFP28 (40)	(48) SFP/SFP+. (24) QSFP+/QSFP28
20G-NPC XM Option 1: (PA-7000-20GQXM-NPC)	QSFP+ (2), SFP+ (12)	QSFP+ (20), SFP+ (120)	(12) QSFP+, (72) SFP+
20G-NPC XM Option 2: (PA-7000-20GXM-NPC)	10/100/1000 (12), SFP (8), SFP+ (4)	10/100/1000 (120), SFP (80), SFP+ (40)	(72) 10/100/1000, (48) SFP, (24) SFP+
Management I/O (second generation)	—	SFP MGT (2), SFP HA1 (2), HSCI HA2/HA3 QSFP+/QSFP28 (2), RJ45 serial console (1), Micro USB serial console (1)	
Management I/O (first generation)	—	10/100/1000 (2), QSFP+ high availability (2), 10/100/1000 out-of-band management (1), RJ45 console port (1)	
Storage capacity (second generation)	—	240 GB SSD system drive, RAID1 (2)	
Storage options (first generation)	—	120 GB SSD system drive (1), 1 TB default or 2 TB optional HDD on LPC, RAID1 (4)	

Table 2: PA-7000 Series Hardware Specifications (continued)

	PA-7000 NPC	PA-7080 Full System	PA-7050 Full System
AC power supply output	–	2500 W @ 240 VAC 1200 W @ 120 VAC	2500 W @ 240 VAC 1200 W @ 120 VAC
DC input voltage	–	–36 to –75 VDC	–40 to –72 VDC
DC power output	–	2500 W / power supply	2500 W / power supply
Max current / power supply	–	12 ADC @ 240 VAC In 75 ADC @ >40 VDC In	16 A @ 180 VAC In 75 A @ 37.5 VDC In
Power supplies (base/max)	–	4/8	4/4
Max inrush current / power supply	–	30 AAC / 100 ADC peak	50 AAC / 75 ADC peak
Mean time between failure (MTBF)	Configuration dependent; contact your Palo Alto Networks representative for MTBF details.		
Max BTU/hr	–	20,132	10,236
Rack mount (dimensions)	–	19U, 19" standard rack (32.22" H x 19" W x 24.66" D)	9U, 19" standard rack (15.75" H x 19" W x 24" D)
Weight (standalone device/ as shipped)	–	299.3 lbs. AC / 298.3 lbs. DC	187.4 lbs. AC / 185 lbs. DC
Safety	–	cTUVus, cCSAus, CB	
EMI	–	FCC Class A, CE Class A, VCCI Class A	
Certifications	–	NEBS Level 3	
Environment			
Operating temperature	–	32° to 122° F, 0° to 50° C	
Non-operating temperature	–	–4° to 158° F, –20° to 70° C	