Overview

Models

HP F5000 Firewall Standalone Chassis	JG216A
HP F1000-E VPN Firewall Appliance	JD272A
HP F1000-EI VPN Firewall Appliance	JG214A
HP F1000-S-EI VPN Firewall Appliance	JG213A

Key features

- High performance with up to 40G firewall throughput
- Advanced virtual firewall
- Rich VPN functions, IPSec/GRE/L2TP
- Comprehensive security protection
- Carrier-grade reliability

Product overview

Built on the latest state-of-the-art multicore CPU platform and with advanced hardware acceleration, the HP Firewall Series enables advanced scalable network protection from the network core to the network edge with firewall throughput at up to 40 Gbps. The series also features rich VPN abilities, including GRE, L2TP, and IPSec tunneling technologies, which makes it ideal for building VPN gateways. The appliances combine built-in protection against denial-of-service (DoS) attacks, hacking attacks, zonal and virtual stateful packet inspection firewalls, application bandwidth management, audio/video IP multicast routing, and email attachment filtering. The series includes all the advanced security capabilities found in the unified software platform of HP switches and routers that deliver easy integration, simple management, and network deployment infrastructure, lowering a network's total cost of ownership.

Features and benefits

Firewall

- High performance: up to 40 Gbps throughput secures traffic without compromising network performance; a maximum of 4 million concurrent connections and 180,000 new connections per second enables high-volume networks to remain secure under peak traffic
- Application Specific Packet Filter (ASPF): dynamically determines whether to forward or drop a packet by checking its application layer protocol information (such as FTP, HTTP, SMTP, RTSP, and other application layer protocols based on TCP/UDP) and monitoring the connection-based application layer protocol status
- Zone-based access policies: logically groups virtual LANs (VLANs) into zones that share common security policies; allows both unicast and multicast policy settings by zones instead of by individual VLANs
- Virtualization: multicore architecture enables both multiple zones and multiple separate firewall instances to be created on the same device; support for 256/512 security zones, 256 virtual firewalls, and 4,094 VLANs offers robust protection to all corners of the network; centralized deployment of a single device offering multiple virtual firewalls lowers total cost of ownership through streamlined training, simplified deployment and management, and reduced power consumption
- Application-level gateway (ALG): deep packet inspection in the firewall discovers the IP address and service port information embedded in the application data; the firewall then dynamically opens appropriate connections for specific applications
- NAT: fully support NAT applications, including many-to-one, many-to-many, static NAT, dual translation, easy IP, and DNS mapping; supports NAT traversal with multiple protocols, and delivers NAT ALG functions such as DNS, FTP, H.323, and NBT

Virtual private network (VPN)

Overview

- IPSec: provides secure tunneling over an untrusted network such as the Internet or a wireless network; offers data confidentiality, authenticity, and integrity between two endpoints of the network
- Layer 2 Tunneling Protocol (L2TP): an industry standard-based traffic encapsulation mechanism supported by many common operating systems such as Windows® XP and Windows Vista®; will tunnel the Point-to-Point Protocol (PPP) traffic over the IP and non-IP networks; may use the IP/UDP transport mechanism in IP networks
- Generic Routing Encapsulation (GRE): can be used to transport Layer 2 connectivity over a Layer 3 path in a secured way; enables the segregation of traffic from site to site
- Manual or automatic Internet Key Exchange (IKE): provides both manual or automatic key exchange required for the algorithms used in encryption or authentication; auto-IKE allows automated management of the public key exchange, providing the highest levels of encryption

Management

- Complete session logging: provides detailed information for problem identification and resolution
- Manager and operator privilege levels: enable read-only (operator) and read/write (manager) access on CLI and Web browser management interfaces
- Secure Web GUI: provides a secure, easy-to-use graphical interface for configuring the module via HTTPS
- Command-line interface (CLI): provides a secure, easy-to-use command-line interface for configuring the module via SSH or a switch console; provides direct real-time session visibility
- SNMPv1, v2c, and v3: facilitate centralized discovery, monitoring, and secure management of networking devices
- Remote monitoring (RMON): uses standard SNMP to monitor essential network functions; supports events, alarm, history, and statistics group plus a private alarm extension group
- FTP, TFTP, and SFTP support: FTP allows bidirectional transfers over a TCP/IP network and is used for configuration updates; Trivial FTP is a simpler method using User Datagram Protocol (UDP)

Layer 3 routing

- Static IP routing: provides manually configured routing; includes ECMP capability
- Routing Information Protocol (RIP): provides RIPv1 and RIPv2 routing
- OSPF: includes host-based ECMP to provide link redundancy/scalable bandwidth and NSSA
- Border Gateway Protocol 4 (BGP-4): Exterior Gateway Protocol (EGP) with path vector protocol uses TCP for enhanced reliability for the route discovery process, reduces bandwidth consumption by advertising only incremental updates, and supports extensive policies for increased flexibility, as well as scales to very large networks
- Dual IP stack: maintains separate stacks for IPv4 and IPv6 to ease transition from an IPv4-only network to an IPv6-only network design
- Policy routing: allows custom filters for increased performance and security; supports ACLs, IP prefix, AS paths, community lists, and aggregate policies
- Layer 3 IPv6 routing: provides routing of IPv6 at media speed; supports static routes, RIPng, OSPFv3, BGP+, policy route, and PIM-SM/DM

Security

- Defense against attacks: provides defense against various attacks, such as DoS/DDoS, ARP spoofing, large ICMP packet, address/port scanning, Tracert, IP packets with the Record Route option, and static and dynamic blacklists; also supports binding of MAC address and IP addresses, as well as intelligent defense of worm viruses
- Application layer content filtering: supports mail filtering based on SMTP mail address, titles, attachments, and content; supports Web page filtering, including HTTP URL and content filtering
- Multiple security authentication services: support RADIUS and HWTACACS authentications, certificate-based (x.509 format) PKI/CA authentication, user identity management (different users own different rights to execute commands), and levels of user views (users of different levels have different management rights)
- Centralized management and auditing: provide logging, traffic statistics and analysis, events monitoring and statistics, and mail notification of alarms

Overview

Warranty and support

- 1-year warranty: with advance replacement and 30-calendar-day delivery (available in most countries)
- Electronic and telephone support: limited electronic and telephone support is available from HP; to reach our support centers, refer to www.hp.com/networking/contact-support; for details on the duration of support provided with your product purchase, refer to www.hp.com/networking/warrantysummary
- Software releases: to find software for your product, refer to www.hp.com/networking/support; for details on the software releases available with your product purchase, refer to www.hp.com/networking/warrantysummary

HP F5000 Firewall Standalone Chassis (JG216A)		
Included accessories	1 HP A-F5000 Fan Assembly (JG217A)	
Ports	1 MPU (for management modules) slot 4 I/O module slots	
Physical characteristics	**Dimensions**	19.72(d) x 22.87(w) x 24.65(h) in. (50.09 x 58.09 x 62.61 cm)
	Full configuration weight	99.21 lb. (45 kg)
	Weight	64.04 lb. (29.05 kg)
Environment	**Operating temperature**	32°F to 113°F (0°C to 45°C)
	Operating relative humidity	10% to 95%, noncondensing
Electrical characteristics	**Voltage**	100-120/200-240 VAC
	DC voltage	-48 to -60 VDC
	Current	10/25 A
	Idle power	97.5 W
	Maximum power rating	650 W
	Frequency	50/60 Hz
	Notes	Idle power is the actual power consumption of the device with no ports connected. Maximum power rating and maximum heat dissipation are the worst-case theoretical maximum numbers provided for planning the infrastructure with fully loaded PoE (if equipped), 100% traffic, all ports plugged in, and all modules populated. 10 A current is for AC power supply (JD217A); 25 A current is for DC power supply (JD209A); power supplies are ordered separately.
Emissions	CISPR 22; EN 55022; ICES-003; AS/NZS CISPR 22; FCC Part 15; EN 61000-3-2; EN 61000-3-3; VCCI V-3	
Immunity	**ESD**	EN300 386/EN 55024/EN 61000-4-2/EN301489-1/EN301489-17/IEC 61000-4-2
	Radiated	EN300 386/EN 55024/EN301489-1/EN301489-17/EN 61000-4-3/IEC 61000-4-3
	EFT/Burst	EN300 386/EN 55024/EN301489-1/EN301489-17/EN 61000-4-4/IEC 61000-4-4
	Surge	EN300 386/EN 55024/EN301489-1/EN301489-17/EN 61000-4-5/IEC 61000-4-5
	Conducted	EN300 386/EN 55024/EN301489-1/EN301489-17/EN 61000-4-6/IEC 61000-4-6
	Power frequency magnetic field	EN 55024/EN 61000-4-8/IEC 61000-4-8
	Voltage dips and interruptions	EN300 386/EN 55024/EN301489-1/EN301489-17/EN 61000-4-11/IEC 61000-4-11
Management	IMC - Intelligent Management Center; command-line interface; Web browser; SNMP Manager; Telnet; HTTPS; FTP	
Notes	Performance (of main processing unit, JG215A) • 40 Gbps firewall throughput • 4 million concurrent connections	

	• 180,000 new connections per second • Maximum 50,000 security policies • 2 Gbps 3DES/AES VPN throughput • 5,000 IPSec tunnels • 4,000 VLANs
Services	Refer to the HP website at www.hp.com/networking/services for details on the service-level descriptions and product numbers. For details about services and response times in your area, please contact your local HP sales office.

HP F1000-E VPN Firewall Appliance (JD272A)

Ports	1 RJ-45 serial console port 4 dual-personality ports; auto-sensing 10/100/1000BASE-T or SFP 1 RJ-45 Serial port 1 Compact Flash port 2 HIM slots	
Physical characteristics	Dimensions	18.43(d) x 17.4(w) x 1.74(h) in. (46.8 x 44.2 x 4.42 cm)
	Weight	16.53 lb. (7.5 kg)
Environment	Operating temperature	32°F to 113°F (0°C to 45°C)
	Operating relative humidity	10% to 95%, noncondensing
Electrical characteristics	Voltage	100-240 VAC
	Maximum power rating	150 W
	Frequency	50/60 Hz
	Notes	Maximum power rating and maximum heat dissipation are the worst-case theoretical maximum numbers provided for planning the infrastructure with fully loaded PoE (if equipped), 100% traffic, all ports plugged in, and all modules populated.
Emissions	CISPR 22; EN 55022; ICES-003; AS/NZS CISPR 22; FCC Part 15; EN 61000-3-2; EN 61000-3-3; VCCI V-3	
Immunity	ESD	EN300 386/EN 55024/EN 61000-4-2/EN301489-1/EN301489-17/IEC 61000-4-2
	Radiated	EN300 386/EN 55024/EN301489-1/EN301489-17/EN 61000-4-3/IEC 61000-4-3
	EFT/Burst	EN300 386/EN 55024/EN301489-1/EN301489-17/EN 61000-4-4/IEC 61000-4-4
	Surge	EN300 386/EN 55024/EN301489-1/EN301489-17/EN 61000-4-5/IEC 61000-4-5
	Conducted	EN300 386/EN 55024/EN301489-1/EN301489-17/EN 61000-4-6/IEC 61000-4-6
	Power frequency magnetic field	EN 55024/EN 61000-4-8/IEC 61000-4-8
	Voltage dips and interruptions	EN300 386/EN 55024/EN301489-1/EN301489-17/EN 61000-4-11/IEC 61000-4-11
Management	IMC - Intelligent Management Center; command-line interface; Web browser; SNMP Manager; Telnet; HTTPS; FTP	
Notes	Performance	

- 8 Gbps firewall throughput
- 2 million concurrent connections
- 60,000 new connections per second
- Maximum 20,480 security policies
- 2 Gbps 3DES/AES VPN throughput
- 5,000 IPSec tunnels
- 4,000 VLANs

Services Refer to the HP website at www.hp.com/networking/services for details on the service-level descriptions and product numbers. For details about services and response times in your area, please contact your local HP sales office.

HP F1000-EI VPN Firewall Appliance (JG214A)

Ports	12 dual-personality ports; auto-sensing 10/100/1000BASE-T or SFP 1 RJ-45 serial console port 2 I/O module slots	
Physical characteristics	**Dimensions**	22.7(d) x 22.7(w) x 7.9(h) in. (57.66 x 57.66 x 20.07 cm)
	Weight	18.89 lb. (8.57 kg)
Environment	**Operating temperature**	32°F to 113°F (0°C to 45°C)
	Operating relative humidity	10% to 95%, noncondensing
Electrical characteristics	**Voltage**	100-120/200-240 VAC
	DC voltage	-48 to -60 VDC
	Current	1 A
	Maximum power rating	150 W
	Frequency	50/60 Hz
	Notes	Maximum power rating and maximum heat dissipation are the worst-case theoretical maximum numbers provided for planning the infrastructure with fully loaded PoE (if equipped), 100% traffic, all ports plugged in, and all modules populated.
Emissions	CISPR 22; EN 55022; ICES-003; AS/NZS CISPR 22; FCC Part 15; EN 61000-3-2; EN 61000-3-3; VCCI V-3	
Immunity	**ESD**	EN300 386/EN 55024/EN 61000-4-2/EN301489-1/EN301489-17/IEC 61000-4-2
	Radiated	EN300 386/EN 55024/EN301489-1/EN301489-17/EN 61000-4-3/IEC 61000-4-3
	EFT/Burst	EN300 386/EN 55024/EN301489-1/EN301489-17/EN 61000-4-4/IEC 61000-4-4
	Surge	EN300 386/EN 55024/EN301489-1/EN301489-17/EN 61000-4-5/IEC 61000-4-5
	Conducted	EN300 386/EN 55024/EN301489-1/EN301489-17/EN 61000-4-6/IEC 61000-4-6
	Power frequency magnetic field	EN 55024/EN 61000-4-8/IEC 61000-4-8
	Voltage dips and interruptions	EN300 386/EN 55024/EN301489-1/EN301489-17/EN 61000-4-11/IEC 61000-4-11

Technical Specifications

Management	IMC - Intelligent Management Center; command-line interface; Web browser; SNMP Manager; Telnet; HTTPS; FTP
Notes	Performance • 4 Gbps firewall throughput • 1 million concurrent connections • 30,000 new connections per second • Maximum 20,480 security policies • 1 Gbps 3DES/AES VPN throughput • 4,000 IPSec tunnels • 4,000 VLANs
Services	Refer to the HP website at www.hp.com/networking/services for details on the service-level descriptions and product numbers. For details about services and response times in your area, please contact your local HP sales office.

HP F1000-S-EI VPN Firewall Appliance (JG213A)

Ports	12 dual-personality ports; auto-sensing 10/100/1000BASE-T or SFP 1 RJ-45 serial console port 2 I/O module slots	
Physical characteristics	Dimensions	22.7(d) x 22.7(w) x 7.9(h) in. (57.66 x 57.66 x 20.07 cm)
	Weight	18.81 lb. (8.53 kg)
Environment	Operating temperature	32°F to 113°F (0°C to 45°C)
	Operating relative humidity	10% to 95%, noncondensing
Electrical characteristics	Voltage	100-120/200-240 VAC
	DC voltage	-48 to -60 VDC
	Current	1 A
	Maximum power rating	150 W
	Frequency	50/60 Hz
	Notes	Maximum power rating and maximum heat dissipation are the worst-case theoretical maximum numbers provided for planning the infrastructure with fully loaded PoE (if equipped), 100% traffic, all ports plugged in, and all modules populated.
Emissions	CISPR 22; EN 55022; ICES-003; AS/NZS CISPR 22; FCC Part 15; EN 61000-3-2; EN 61000-3-3; VCCI V-3	
Immunity	ESD	EN300 386/EN 55024/EN 61000-4-2/EN301489-1/EN301489-17/IEC 61000-4-2
	Radiated	EN300 386/EN 55024/EN301489-1/EN301489-17/EN 61000-4-3/IEC 61000-4-3
	EFT/Burst	EN300 386/EN 55024/EN301489-1/EN301489-17/EN 61000-4-4/IEC 61000-4-4
	Surge	EN300 386/EN 55024/EN301489-1/EN301489-17/EN 61000-4-5/IEC 61000-4-5
	Conducted	EN300 386/EN 55024/EN301489-1/EN301489-17/EN 61000-4-6/IEC 61000-4-6

	Power frequency magnetic field	EN 55024/EN 61000-4-8/IEC 61000-4-8
	Voltage dips and interruptions	EN300 386/EN 55024/EN301489-1/EN301489-17/EN 61000-4-11/IEC 61000-4-11
Management		IMC - Intelligent Management Center; command-line interface; Web browser; SNMP Manager; Telnet; HTTPS; FTP
Notes		Performance • 2 Gbps firewall throughput • 1 million concurrent connections • 30,000 new connections per second • Maximum 20,480 security policies • 600 Mbps 3DES/AES VPN throughput • 2,000 IPSec tunnels • 4,000 VLANs
Services		Refer to the HP website at www.hp.com/networking/services for details on the service-level descriptions and product numbers. For details about services and response times in your area, please contact your local HP sales office.

Standards and protocols (applies to all products in series)

IPv6
RFC 1981 IPv6 Path MTU Discovery
RFC 2460 IPv6 Specification
RFC 2465 Management Information Base for IP Version 6: Textual Conventions and General Group (partially support, only "IPv6 Interface Statistics table")
RFC 3484 Default Address Selection for IPv6
RFC 3513 IPv6 Addressing Architecture
RFC 3587 IPv6 Global Unicast Address Format
RFC 4007 IPv6 Scoped Address Architecture
RFC 4862 IPv6 Stateless Address Auto-configuration

Security
IEEE 802.1X:Port-Based Network Access Control (2001)
RFC 1321 The MD5 Message-Digest Algorithm
RFC 1334 PPP Authentication Protocols (PAP)
RFC 1994 PPP Challenge Handshake Authentication Protocol (CHAP)
RFC 2104 Keyed-Hashing for Message Authentication
RFC 2138 RADIUS Authentication
RFC 2618 RADIUS Authentication Client MIB
RFC 2620 RADIUS Accounting Client MIB
RFC 2716 PPP EAP TLS Authentication Protocol
RFC 2865 RADIUS Authentication
RFC 2866 RADIUS Accounting
RFC 2867 RADIUS Accounting Modifications for Tunnel Protocol Support
RFC 2868 RADIUS Attributes for Tunnel Protocol Support
RFC 2869 RADIUS Extensions draft-grant-tacacs-02 (TACACS)

VPN
RFC 1701 Generic Routing Encapsulation (GRE)
RFC 1702 Generic Routing Encapsulation over IPv4 networks.
RFC 1828 IP Authentication using Keyed MD5
RFC 1829 The ESP DES-CBC Transform

RFC 1853 IP in IP Tunneling
RFC 2085 HMAC-MD5 IP Authentication with Replay Prevention
RFC 2401 Security Architecture for the Internet Protocol
RFC 2402 IP Authentication Header
RFC 2403 The Use of HMAC-MD5-96 within ESP and AH
RFC 2404 The Use of HMAC-SHA-1-96 within ESP and AH
RFC 2405 The ESP DES-CBC Cipher Algorithm With Explicit IV
RFC 2406 IP Encapsulating Security Payload (ESP)
RFC 2410 The NULL Encryption Algorithm and Its Use With IPsec
RFC 2411 IP Security Document Roadmap
RFC 2451 The ESP CBC-Mode Cipher Algorithms
RFC 2473 Generic Packet Tunneling in IPv6 Specification
RFC 2529 Transmission of IPv6 over IPv4 Domains without Explicit Tunnels
RFC 2661 Layer Two Tunneling Protocol "L2TP"
RFC 2784 Generic Routing Encapsulation (GRE)
RFC 2868 RADIUS Attributes for Tunnel Protocol Support
RFC 2893 Transition Mechanisms for IPv6 Hosts and Routers
RFC 3602 The AES-CBC Cipher Algorithm and Its Use with IPsec
RFC 4214 Intra-Site Automatic Tunnel Addressing Protocol (ISATAP)

IKEv1
RFC 2407 The Internet IP Security Domain of Interpretation for ISAKMP
RFC 2408 Internet Security Association and Key Management Protocol (ISAKMP).
RFC 2409 The Internet Key Exchange (IKE)
RFC 2412 The OAKLEY Key Determination Protocol
RFC 3526 More Modular Exponential (MODP)
Diffie-Hellman groups for Internet Key Exchange (IKE)
RFC 3706 A Traffic-Based Method of Detecting
Dead Internet Key Exchange (IKE) Peers

PKI
RFC 2510 Internet X.509 Public Key Infrastructure Certificate Management Protocols
RFC 2511 Internet X.509 Certificate Request Message Format
RFC 3279 Algorithms and Identifiers for the Internet
X.509 Public Key Infrastructure Certificate and Certificate Revocation List (CRL) Profile
RFC 3280 Internet X.509 Public Key Infrastructure
Certificate and Certificate Revocation List (CRL)
Profile
draft-nourse-scep-06:
PKCS#1
PKCS#10
PKCS#12
PKCS#7

Features

Firewall operation mode
Routing mode
Transparent mode
Hybrid mode

AAA service
Local authentication
Standard RADIUS
HWTACACS+

RADIUS domain authentication

ASPF
General TCP/UDP application
FTP/SMTP/HTTP/RTSP/H323 Protocol State Detection
SIP/MGCP/QQ/MSN Protocol State Detection
Java/ActiveX blocking and detection
Port mapping
Support for fragmented packets

Virtualization
256 virtual firewall
4 default security zone
Maximum 512 security zone for the F5000 chassis;
256 security zone for other appliances

NAT
NAPT
PAT
NAT server
Port mapping
Bidirectional NAT
Static NAT

Network security
Ability to add blacklist by hand or automatically
IP and MAC binding
ARP reverse query
ARP cheat check
Management ports closed by default

DDOS
DNS query flood
SYN flood
Auto starts TCP Proxy when detects SYN flood
ICMP flood
UDP flood
IP spoofing
SQL injection filter

L2TP VPN
LNS, LAC
L2TP Multi-instance

GRE
GRE tunneling protocol

IPSec
AH/ESP
ESP
Transport/tunnel
NAT traversal
Strategy template

IKE
DH
Pre-share key authentication method
Support for aggressive mode and main exchange mode
IKE DPD, PKI/CA

Network feature
IEEE 802.1q VLAN
4K subinterface
Static and dynamic ARP
Multicast, PIM
IGMPv1/v2/v3

Routing
RIP
OSPF
BGP
Static route
Policy route

High availability
Active/active mode
Active/passive mode
Session synchronization for firewall

System management
Web management supports Internet
Explorer/Firefox
Command-line interface (Console/Telnet/SSH)
Classification Manager
Unified management through IMC
SNMPv2c/v3

Administration
Software upgrades
Configuration backup and restore

Logging/Monitoring
Syslog
Mini-RMON
NTP
NAT/ASPF/firewall log stream (binary log)

IPv6 routing and multicast
RIPng
OSPFv3
BGP4+
Static route
Policy route
PIM-SM/PIM-DM

IPv6 security

NAT-PT
Manual tunnel
IPv6 over IPv4 GRE tunnel
6to4 tunnel (RFC 3056)
ISATAP tunnel
IPv6 packet filter
RADIUS
NAT64

Accessories

Software	HP Firewall Manager	JD295A
Memory	HP X600 1G Compact Flash Card	JC684A
	HP X600 512M Compact Flash Card	JC685A
	HP X600 256M Compact Flash Card	JC686A
HP F5000 Firewall Standalone Chassis (JG216A)	HP F5000 8-port Gig-T / 4-port GbE Combo Module	JD263A
	HP F5000 2-port 10GbE XFP Module	JD264A
	HP F5000 8-port GbE SFP / 4-port GbE Combo Module	JG212A
	HP F5000 Firewall Main Processing Unit	JG215A
	HP 7500 650W DC Power Supply	JD209A
	HP 7500 650W AC Power Supply	JD217A
	HP F5000 Fan Assembly	JG217A
HP F1000-E VPN Firewall Appliance (JD272A)	HP 6600 4-port Gig-T HIM Module	JC163A
	HP 6600 8-port Gig-T HIM Module	JC164A
	HP 6600 1-port 10-GbE XFP HIM Module	JC168A
	HP 6600 4-port GbE SFP HIM Module	JC171A
HP F1000-EI VPN Firewall Appliance (JG214A)	HP F1000-S/A 2-port 10GbE SFP+ Module	JG317A
	HP 5800/5500 150W AC Power Supply	JD362A
	HP 5800/5500 150W DC Power Supply	JD366A
HP F1000-S-EI VPN Firewall Appliance (JG213A)	HP F1000-S/A 2-port 10GbE SFP+ Module	JG317A
	HP 5800/5500 150W AC Power Supply	JD362A
	HP 5800/5500 150W DC Power Supply	JD366A

Accessory Product Details

HP 7500 650W DC Power Supply (JD209A)	Physical characteristics	Dimensions	13.78(d) x 5.51(w) x 1.57(h) in. (35 x 14 x 4 cm) (1U height)
		Weight	4.96 lb. (2.25 kg)
	Electrical characteristics	DC voltage	0~-48/-60V
		Current	0/25 A
		Idle power	97.5 W
		Maximum power rating	650 W
		PoE power	0 W
		Notes	Idle power is the actual power consumption of the device with no ports connected. Maximum power rating and maximum heat dissipation are the worst-case theoretical maximum numbers provided for planning the infrastructure with fully loaded PoE (if equipped), 100% traffic, all ports plugged in, and all modules populated.
	Services	Refer to the HP website at www.hp.com/networking/services for details on the service-level descriptions and product numbers. For details about services and response times in your area, please contact your local HP sales office.	

HP 7500 650W AC Power Supply (JD217A)	Physical characteristics	Dimensions	13.78(d) x 5.51(w) x 1.57(h) in. (35 x 14 x 4 cm) (1U height)
		Weight	5.34 lb. (2.42 kg)
	Electrical characteristics	Voltage	100-120/200-240 VAC
		Current	0/10 A
		Idle power	97.5 W
		Maximum power rating	650 W
		PoE power	0 W
		Frequency	50/60 Hz
		Notes	Idle power is the actual power consumption of the device with no ports connected. Maximum power rating and maximum heat dissipation are the worst-case theoretical maximum numbers provided for planning the infrastructure with fully loaded PoE (if equipped), 100% traffic, all ports plugged in, and all modules populated. 650W AC Power Supply uses a 10-A AC power cable
	Services	Refer to the HP website at www.hp.com/networking/services for details on the service-level descriptions and product numbers. For details about services and response times in your area, please contact your local HP sales office.	

Accessory Product Details

To learn more, visit: www.hp.com/networking