HP 5400 zl Switch Series

HP NETWORKING
BY BCDVIDEO

Product overview

The HP 5400 zl Switch Series consists of advanced intelligent switches in the HP modular chassis product line, which includes 6-slot and 12-slot chassis as well as associated zl modules and bundles. The foundation for the switch series is a purpose-built, programmable HP ProVision ASIC that allows the most demanding networking features, such as quality of service (QoS) and security, to be implemented in a scalable, yet granular, fashion. With 10/100/1000 and 10GbE connectivity; PoE+ and non-PoE options; integrated L3 features; and HP AllianceOne solutions, the 5400 zl Switch Series offers excellent investment protection, flexibility, and scalability as well as ease of deployment, operation, and maintenance.

A summary of the highlights of the 5400 zl Switch Series:

• Advanced access layer, distribution, and core

• Integrated L2-to-L4 intelligent edge feature set

• Enterprise-class performance and security

• AllianceOne integration

• Scalable 10/100/1000 and 10GbE connectivity

Features and benefits

Software-defined networking
• OpenFlow

Supports OpenFlow 1.0 and 1.3 specifications to enable SDN by allowing separation of the data (packet forwarding) and control (routing decision) paths

Unified Wired and Wireless
• NEW HTTP redirect function

Supports HP Intelligent Management Center (IMC) bring your own device (BYOD) solution

QoS
• Advanced classifier-based QoS

Classifies traffic using multiple match criteria based on L2, L3, and L4 information; and applies QoS policies such as setting the priority level and rate limiting to selected traffic on a per-port or per-VLAN basis

• L4 prioritization

Enables prioritization based on TCP/UDP port numbers

• Traffic prioritization

Allows real-time traffic classification into eight priority levels that are mapped to eight queues

• Bandwidth shaping

  – Port-based rate limiting

     Enabled per-port ingress/egress-enforced bandwidth increase

  – Classifier-based rate limiting

     Uses an access control list (ACL) to enforce increased bandwidth for ingress traffic on each port

  – Reduced bandwidth

     Provides per-port per-queue egress-based bandwidth reduction

• Class of service (CoS)

Sets the IEEE 802.1p priority tag based on the IP address, IP type of service (ToS), L3 protocol, TCP/UDP port number, source port, and DiffServ

Management
• Remote intelligent mirroring

Mirrors selected ingress/egress traffic based on an ACL, port, MAC address, or VLAN to a local or remote HP 8200 zl, 6600, 6200 yl, 5400 zl, or 3500 switch anywhere on the network

• Remote monitoring (RMON), Extended RMON (XRMON), and sFlow v5

Provide advanced monitoring and reporting capabilities for statistics, history, alarms, and events

- IEEE 802.1ab link-layer discovery protocol (LLDP)

  Advertises and receives management information from adjacent devices on a network, facilitating easy mapping by network management applications

- Unidirectional link detection (UDLD)

  Monitors the cable between two switches and shuts down the ports on both ends if the cable is broken, turning the bidirectional link into a unidirectional one; this helps prevent network problems such as loops

- Management simplicity

  Provides common software features and CLI implementation across all ProVision-based switches (including the zl and yl switches)

- Command authorization

  Leverages the RADIUS to link a custom list of CLI commands to an individual network administrator's login; an audit trail documents the activity

- Friendly port names

  Allows assignment of descriptive names to ports

- Dual flash images

  Provides independent primary and secondary operating system files for backup while upgrading

- Multiple configuration files

  Are easily stored with a flash image

- Comware CLI

  – Comware-compatible CLI

    Bridges the experience of HP Comware CLI users who use the ProVision software CLI

  – Display and fundamental Comware CLI commands

    Are embedded in the switch CLI as native commands; display output is formatted as on Comware-based switches and fundamental commands provide a Comware-familiar initial switch setup

  – Configuration Comware CLI commands

    Elicit CLI help to formulate the correct ProVision software CLI command

Connectivity

- IEEE 802.3az energy-efficient Ethernet

  Lowers power consumption in periods of low-link usage (supported on v2 zl 10/100/1000 and 10/100 modules)

- IEEE 802.3af PoE

  Provides up to 15.4 W per port to IEEE 802.3af-compliant PoE-powered devices such as IP phones, wireless access points, and security cameras

- IEEE 802.3at PoE+

  Provides up to 30 W per port to IEEE 802.3at-complaint PoE/PoE+-powered devices such as video IP phones, IEEE 802.11n wireless access points, and advanced pan/zoom/tilt security cameras

- Pre-standard PoE support

  Detects and provides power to pre-standard PoE devices (refer to the list of supported devices in the product FAQs, which can be accessed at hp.com/networking)

- High-density port connectivity

  Provides up to 12 interface-module slots and up to 288 wire-speed 10/100/1000 PoE-enabled ports or 96 10GbE ports per system

- Jumbo frames

  Allow high-performance remote backup and disaster-recovery services on GbE and 10GbE ports

- Auto-MDIX

  Provides automatic adjustments for straight-through or crossover cables on all 10/100 and 10/100/1000 ports

- IPv6

  – IPv6 host

    Enables switches to be managed in an IPv6 network

  – Dual stack (IPv4 and IPv6)

    Provides the transition mechanism from IPv4 to IPv6; and supports connectivity for both protocols

  – MLD snooping

    Forwards IPv6 multicast traffic to the appropriate interface

  – IPv6 ACL/QoS

    Supports ACL and QoS for IPv6 network traffic

  – IPv6 routing

    Supports static and open standard path first (OSPF) v3 routing protocols

  – 6-in-4 tunneling

    Supports encapsulation of IPv6 traffic in IPv4 packets

  – Security

    Provides RA guard, DHCPv6 protection, dynamic IPv6 lockdown

Performance

• High-speed, high-capacity architecture

Provides intra-module and inter-module switching with 585.6 million pps throughput on the purpose-built ProVision ASICs, using a 1 Tb/s crossbar switching fabric

• Selectable queue configurations

Enables increased performance by selecting the number of queues and associated memory buffering that best meet the requirements of the network applications

Resiliency and high availability

• Virtual router redundancy protocol (VRRP)

Allows groups of two routers to dynamically back each other up to create highly available routed environments for IPv4 and IPv6 networks

• Multiple spanning tree protocol (STP) and IEEE 802.1s

Offers high link availability in multiple VLAN environments by allowing multiple spanning trees; encompasses IEEE 802.1d STP and IEEE 802.1w Rapid STP

• IEEE 802.3ad link-aggregation-control protocol (LACP) and HP port trunking

Support up to 144 trunks, each with up to eight links (ports) per trunk

• Distributed trunking

Enables loop-free and redundant network topology without using STP; and allows a server or switch to connect to two switches using one logical trunk for redundancy and load sharing

• Optional redundant power supply (With the 5400 Switch Series)

Provides uninterrupted power supply; and allows hot swapping of the redundant power supplies when installed

• Hot-swappable modules (with the 5400 zl Switch Series)

Allows modules, mini-GBICs, and power supplies in a redundant power supply configuration to be added or swapped without interrupting the network

• Sparing simplicity

Includes HP zl common accessories (interface modules and power supplies)

• Uplink failure detection

Provides active-standby network path redundancy for servers that are configured for active-standby NIC teaming

• SmartLink

Provides easy-to-configure link redundancy of active and standby links

L2 switching
- VLAN support and tagging

  Supports the IEEE 802.1Q standard and 2,048 VLANs simultaneously
- IEEE 802.1v protocol VLANs

  Isolate select non-IPv4 protocols automatically into their own VLANs
- GARP VLAN registration protocol

  Allows automatic learning and dynamic assignment of VLANs
- IEEE 802.1ad Q-in-Q

  Increases the scalability of an Ethernet network by providing a hierarchical structure; and connects multiple LANs on a high-speed campus or metro network
- MAC-based VLAN

  Provides granular control and security; and uses the RADIUS to map a MAC address/user to specific VLANs (requires v2 modules)
- Rapid per-VLAN spanning tree (RPVST+)

  Allows each VLAN to build a separate spanning tree to improve link bandwidth usage; is compatible with PVST+
- HP switch meshing

  Enables dynamic load balancing across multiple active redundant links to increase the aggregate bandwidth availability; and allows concurrent L3 routing with v2 modules

L3 services
- User datagram protocol (UDP) helper function

  Allows UDP broadcasts to be directed across router interfaces to specific IP unicast or subnet broadcast addresses; and helps prevent server spoofing for UDP services such as DHCP
- Loopback interface address

  Defines an address in the routing information protocol (RIP) and OSPF, improving the diagnostic capability
- Route maps

  Provide more control during route redistribution; and allow filtering and altering of route metrics
- NEW DHCP server

  Centralizes and reduces the cost of IPv4 address management

L3 routing

- Static IP routing

  Provides manually configured routing for both IPv4 and IPv6 networks

- RIP

  Includes RIPv1 and RIPv2 routing

- OSPF

  Provides OSPFv2 for IPv4 routing and OSPFv3 for IPv6 routing

- Policy-based routing

  Uses a classifier to select traffic that can be forwarded based on the policy set by the network administrator (requires v2 modules)

- IPv4 border gateway routing protocol

  Is scalable, robust, and flexible

Security

- ACLs

  Provide filtering based on the IP field, source/destination IP address/subnet and source/destination TCP/UDP port number on a per-VLAN or per-port basis

- Multiple user authentication methods

  – IEEE 802.1X users per port

    Enables authentication of multiple IEEE 802.1X users per port

  – Web-based authentication

    Authenticates from the Web browser for clients that do not support the IEEE 802.1X supplicant

  – MAC-based authentication

    Provides client authentication with a RADIUS server, based on the client's MAC authentication

  – Concurrent IEEE 802.1X, Web, and MAC authentication schemes per port

    Allows a switch port to accept up to 32 sessions of IEEE 802.1X, Web, and MAC authentications

- Virus throttling

  Detects traffic patterns typical of worm-type viruses; and either throttles or helps entirely prevent the virus from spreading across the routed VLANs or bridged interfaces without requiring external appliances

- DHCP protection

  Blocks DHCP packets from unauthorized DHCP servers, mitigating denial-of-service attacks

- Secure management access

  Delivers secure encryption of all access methods (CLI, GUI, and MIB) through SSHv2, SSL, and/or SNMPv3

- Switch CPU protection

  Provides automatic protection against malicious network traffic trying to shut down the switch

- ICMP throttling

  Defeats ICMP denial-of-service attacks by enabling any switch port to automatically throttle ICMP traffic

- Identity-driven ACL

  Enables implementation of a highly granular and flexible access security policy and VLAN assignment specific to each authenticated network user

- STP bridge protocol data units (BPDUs) port protection

  Blocks BPDUs on ports that do not require BPDUs, mitigating forged BPDU attacks

- Dynamic IP lockdown

  Works with DHCP protection to block traffic from unauthorized hosts, mitigating IP source address spoofing

- Dynamic ARP protection

  Blocks ARP broadcasts from unauthorized hosts, helping prevent eavesdropping or theft of network data

- STP root guard

  Protects the root bridge from malicious attacks or configuration mistakes

- Detection of malicious attacks

  Monitors 10 types of network traffic; and sends a warning when an anomaly that can be potentially caused by malicious attacks is detected

- Port security

  Allows access only to specified MAC addresses, which can be learned or specified by the administrator

- MAC address lockout

  Helps prevent certain configured MAC addresses from connecting to the network

- Source-port filtering

  Allows only specified ports to communicate with each other

- RADIUS/TACACS+

  Eases switch management security administration by using a password authentication server

- Secure shell (SSH)

  Encrypts all transmitted data for secure remote CLI access over IP networks

- Secure sockets layer (SSL)

  Encrypts all HTTP traffic, allowing secure access to the browser-based management GUI in the switch

- Secure FTP

  Allows secure file transfer to and from the switch; and protects against unwanted file downloads or unauthorized copying of a switch configuration file

- Management interface wizard

  Helps secure management interfaces such as SNMP, telnet, SSH, SSL, Web, and USB at the desired level

- Switch management logon security

  Helps secure switch CLI logon by optionally requiring either RADIUS or TACACS+ authentication

- Security banner

  Displays a customized security policy when users log in to the switch

Convergence

- IP multicast routing

  Includes PIM sparse and dense modes to route IP multicast traffic

- IP multicast snooping (data-driven IGMP)

  Helps prevent flooding of IP multicast traffic

- LLDP-media endpoint discovery (MED)

  Defines a standard extension of LLDP that stores values for parameters such as QoS and VLAN to automatically configure network devices such as IP phones

- PoE allocations

  Supports multiple methods—automatic, IEEE 802.3af class, LLDP-MED, or user specified—to allocate PoE power for more efficient energy use

- Auto VLAN configuration for voice

  – RADIUS VLAN

    Uses a standard RADIUS attribute and LLDP-MED to automatically configure a VLAN for IP phones

  – CDPv2

    Uses CDPv2 to configure legacy IP phones

- Local MAC authentication

  Assigns attributes such as VLAN and QoS, using a locally configured profile that can be a list of MAC prefixes

Warranty and support

- Limited Lifetime warranty 2.0

  Advance hardware replacement with next-business-day delivery (available in most countries). See hp.com/networking/warrantysummary for duration details

- Electronic and telephone support (for Limited Lifetime Warranty 2.0)

  Limited 24x7 telephone support is available from HP for the first 3 years; limited electronic and business hours telephone support is available from HP for the entire warranty period; to reach our support centers, refer to hp.com/networking/contact-support; for details on the duration of support provided with your product purchase, refer to hp.com/networking/warrantysummary

- Software releases

  To find software for your product, visit hp.com/networking/support; for details on the software releases available with your product purchase, visit hp.com/networking/warrantysummary

HP 5400 zl Switch Series

Specifications

	HP 5406 zl Switch with Premium Software (J9642A)	HP 5412 zl Switch with Premium Software (J9643A)	HP 5406-44G-PoE+-2XG v2 zl Switch with Premium Software (J9533A)
Included accessories			1 HP 20-port Gig-T PoE+ / 2-port 10GbE SFP+ v2 zl Module (J9536A) 1 HP 1500W PoE+ zl Power Supply (J9306A) 1 HP 24-port Gig-T PoE+ v2 zl Module (J9534A)
Ports	6 open module slots Supports a maximum of 48 10GbE ports or 144 autosensing 10/100/1000 ports or 144 mini-GBICs, or a combination	12 open module slots Supports a maximum of 96 10GbE ports or 288 autosensing 10/100/1000 ports or 288 mini-GBICs, or a combination	44 RJ-45 autosensing 10/100/1000 PoE+ ports (IEEE 802.3 Type 10BASE-T, IEEE 802.3u Type 100BASE-TX, IEEE 802.3ab Type 1000BASE-T, IEEE 802.3at PoE+); Media Type: Auto-MDIX; Duplex: 10BASE-T/100BASE-TX: half or full; 1000BASE-T: full only 2 open 10GbE SFP+ transceiver slots 4 open module slots Supports a maximum of 34 10GbE ports or 140 autosensing 10/100/1000 ports or 98 mini-GBICs, or a combination
Power supplies	2 power supply slots 1 minimum power supply required (ordered separately)	4 power supply slots 2 minimum power supplies required (ordered separately)	2 power supply slots 1 minimum power supply required includes: 1 x J9306A (HP 1500W PoE+ zl Power Supply)
Physical characteristics Weight	17.5(w) x 17.75(d) x 6.9(h) in (44.45 x 45.09 x 17.53 cm)(4U height) 23.55 lb (10.68 kg)	17.5(w) x 17.75(d) x 12.1(h) in (44.45 x 45.09 x 30.73 cm) (7U height) 34.94 lb (15.85 kg)	17.5(w) x 17.75(d) x 6.9(h) in (44.45 x 45.09 x 17.53 cm) (4U height) 46.08 lb (20.9 kg)
Memory and processor Gigabit module 10G module Management module	 ARM9 @ 200 MHz; packet buffer size: 144 Mb QDR SDRAM ARM9 @ 200 MHz; packet buffer size: 36 Mb QDR SDRAM Freescale PowerPC 8540 @ 666 MHz, 4 MB flash, 128 MB compact flash, 256 MB DDR SDRAM	 ARM9 @ 200 MHz; packet buffer size: 144 Mb QDR SDRAM ARM9 @ 200 MHz; packet buffer size: 36 Mb QDR SDRAM Freescale PowerPC 8540 @ 666 MHz, 4 MB flash, 128 MB compact flash, 256 MB DDR SDRAM	 ARM9 @ 200 MHz; packet buffer size: 144 Mb QDR SDRAM ARM9 @ 200 MHz; packet buffer size: 36 Mb QDR SDRAM Freescale PowerPC 8540 @ 666 MHz, 4 MB flash, 128 MB compact flash, 256 MB DDR SDRAM

	HP 5406 zl Switch with Premium Software (J9642A)	HP 5412 zl Switch with Premium Software (J9643A)	HP 5406-44G-PoE+-2XG v2 zl Switch with Premium Software (J9533A)
Mounting	Mounts in an EIA standard 19-inch telco rack or equipment cabinet (hardware included); horizontal surface mounting only	Mounts in an EIA standard 19-inch telco rack or equipment cabinet (hardware included); horizontal surface mounting only	Mounts in an EIA standard 19-inch telco rack or equipment cabinet (hardware included); horizontal surface mounting only
Performance			
1000 Mb Latency	< 3.7 µs (FIFO 64-byte packets)	< 3.7 µs (FIFO 64-byte packets)	< 3.7 µs (FIFO 64-byte packets)
10 Gb/s Latency	< 2.1 µs (FIFO 64-byte packets)	< 2.1 µs (FIFO 64-byte packets)	< 2.1 µs (FIFO 64-byte packets)
Throughput	up to 282.1 million pps	up to 564.2 million pps	up to 282.1 million pps
Routing/Switching capacity	379.2 Gb/s	758.4 Gb/s	379.2 Gb/s
Switch fabric speed	379.2 Gb/s	758.4 Gb/s	379.2 Gb/s
Routing table size	10000 entries (IPv4), 5000 entries (IPv6)	10000 entries (IPv4), 5000 entries (IPv6)	10000 entries (IPv4), 5000 entries (IPv6)
MAC address table size	64000 entries	64000 entries	64000 entries
Environment			
Operating temperature	32°F to 131°F (0°C to 55°C); 0°C to 40°C with J8706A orJ8707A modules installed	32°F to 131°F (0°C to 55°C); 0°C to 40°C with J8706A or J8707A modules installed	32°F to 131°F (0°C to 55°C); 0°C to 40°C with J8706A or J8707A modules installed
Operating relative humidity	15% to 95% @ 104°F (40°C), noncondensing	15% to 95% @ 104°F (40°C), noncondensing	5% to 95% @ 104°F (40°C), noncondensing
Nonoperating/Storage temperature	-40°F to 158°F (-40°C to 70°C)	-40°F to 158°F (-40°C to 70°C)	-40°F to 158°F (-40°C to 70°C)
Nonoperating/Storage relative humidity	15% to 90% @ 149°F (65°C), noncondensing	15% to 90% @ 149°F (65°C), noncondensing	15% to 90% @ 149°F (65°C), noncondensing
Altitude	up to 10,000 ft (3 km)	up to 10,000 ft (3 km)	up to 16,404 ft (5 km)
Acoustic	Power: 57 dB, Pressure: 40.2 dB ISO 7779, ISO 9296	Power: 64 dB, Pressure: 57.5 dB ISO 7779, ISO 9296	Power: 57 dB, Pressure: 40.2 dB ISO 7779, ISO 9296
Electrical characteristics			
Frequency	50/60 Hz	50/60 Hz	50/60 Hz
Description	Achieved Miercom Certified Green Award Chassis ships without power supplies. Two power supply slots are available; three different power supplies are available. See power supply products for additional specifications.	Chassis ships without power supplies. Four power supply slots are available; three different power supplies are available. See power supply products for additional specifications.	One J9306A product is installed. One open power supply slot is available; three different power supplies are available. See power supply products for additional specifications.
Maximum heat dissipation	2450 BTU/hr (2584 kJ/hr), (max. non-PoE); 3700 BTU/hr (3903 kJ/hr) (max. using PoE)	4900 BTU/hr (5169 kJ/hr), (max. non-PoE); 7400 BTU/hr (7,807 kJ/hr) (max. using PoE)	2450 BTU/hr (2584.75 kJ/hr), (max. non-PoE); 3700 BTU/hr (3903 kJ/hr) (max. using PoE)
Voltage	100-240 VAC	100-240 VAC	110-127/200-240 VAC
Idle power	100-127/200-240 VAC	100-127/200-240 VAC	215 W
Notes	Power supplies must be ordered separately. Heat dissipation does not include heat dissipated by the PoE-powered devices themselves.	Power supplies must be ordered separately. Two power supplies are required to power the J8698A chassis. Heat dissipation does not include heat dissipated by the PoE-powered devices themselves.	Idle power is the actual power consumption of the device with no ports connected. Heat dissipation does not include heat dissipated by the PoE-powered devices themselves.
Safety	CSA 22.2 No. 60950; UL 60950; IEC 60950; EN 60950	CSA 22.2 No. 60950; UL 60950; IEC 60950; EN 60950	CSA 22.2 No. 60950; UL 60950; IEC 60950; EN 60950
Emissions	FCC Class A; VCCI Class A; EN 55022/CISPR 22 Class A	FCC Class A; VCCI Class A; EN 55022/CISPR 22 Class A	FCC Class A; VCCI Class A; EN 55022/CISPR 22 Class A

	HP 5406 zl Switch with Premium Software (J9642A)	HP 5412 zl Switch with Premium Software (J9643A)	HP 5406-44G-PoE+-2XG v2 zl Switch with Premium Software (J9533A)
Immunity			
EN	EN 55024, CISPR 24	EN 55024, CISPR 24	EN 55024, CISPR 24
ESD	IEC 61000-4-2; 4 kV CD, 8 kV AD	IEC 61000-4-2; 4 kV CD, 8 kV AD	IEC 61000-4-2; 4 kV CD, 8 kV AD
Radiated	IEC 61000-4-3; 3 V/m	IEC 61000-4-3; 3 V/m	IEC 61000-4-3; 3 V/m
EFT/Burst	IEC 61000-4-4; 1.0 kV (power line), 0.5 kV (signal line)	IEC 61000-4-4; 1.0 kV (power line), 0.5 kV (signal line)	IEC 61000-4-4; 1.0 kV (power line), 0.5 kV (signal line)
Surge	IEC 61000-4-5; 1 kV/2 kV AC	IEC 61000-4-5; 1 kV/2 kV AC	IEC 61000-4-5; 1 kV/2 kV AC
Conducted	IEC 61000-4-6; 3 V	IEC 61000-4-6; 3 V	IEC 61000-4-6; 3 V
Power frequency magnetic field	IEC 61000-4-8; 1 A/m, 50 or 60 Hz	IEC 61000-4-8; 1 A/m, 50 or 60 Hz	IEC 61000-4-8; 1 A/m, 50 or 60 Hz
Voltage dips and interruptions	IEC 61000-4-11; >95% reduction, 0.5 period; 30% reduction, 25 periods	IEC 61000-4-11; >95% reduction, 0.5 period; 30% reduction, 25 periods	IEC 61000-4-11; >95% reduction, 0.5 period; 30% reduction, 25 periods
Harmonics	EN 61000-3-2, IEC 61000-3-2	EN 61000-3-2, IEC 61000-3-2	EN 61000-3-2, IEC 61000-3-2
Flicker	EN 61000-3-3, IEC 61000-3-3	EN 61000-3-3, IEC 61000-3-3	EN 61000-3-3, IEC 61000-3-3
Management	IMC—Intelligent Management Center; command-line interface; Web browser; configuration menu; out-of-band management (serial RS-232C)	IMC—Intelligent Management Center; command-line interface; Web browser; configuration menu; out-of-band management (serial RS-232C)	IMC—Intelligent Management Center; command-line interface; Web browser; configuration menu; out-of-band management (serial RS-232C)
Notes	Supported 1G SFP transceivers are revision "B" or later (product number ends with the letter "B" or later; for example, J9142B, J8177C).	Supported 1G SFP transceivers are revision "B" or later (product number ends with the letter "B" or later; for example, J9142B, J8177C).	Supported 1G SFP transceivers are revision "B" or later (product number ends with the letter "B" or later; for example, J9142B, J8177C).
Services	Refer to the HP website at 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.	Refer to the HP website at 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.	Refer to the HP website at 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 5400 zl Switch Series

Specifications (continued)

	HP 5412-92G-PoE+-2XG v2 zl Switch with Premium Software (J9532A)	HP 5406-44G-PoE+-4G-SFP v2 zl Switch with Premium Software (J9539A)
Included accessories	3 HP 24-port Gig-T PoE+ v2 zl Module (J9534A) 1 HP 20-port Gig-T PoE+ / 2-port 10GbE SFP+ v2 zl Module (J9536A) 2 HP 1500W PoE+ zl Power Supply (J9306A	1 HP 24-port Gig-T PoE+ v2 zl Module (J9534A) 1 HP 20-port Gig-T PoE+ / 4-port SFP v2 zl Module (J9535A) 1 HP 1500W PoE+ zl Power Supply (J9306A)
Ports	92 RJ-45 autosensing 10/100/1000 PoE+ ports (IEEE 802.3 Type 10BASE-T, IEEE 802.3u Type 100BASE-TX, IEEE 802.3ab Type 1000BASE-T, IEEE 802.3at PoE+); Media Type: Auto-MDIX; Duplex: 10BASE-T/100BASE-TX: half or full; 1000BASE-T: full only 2 open 10GbE SFP+ transceiver slots 8 open module slots Supports a maximum of 66 10GbE ports or 284 autosensing 10/100/1000 ports or 194 mini-GBICs, or a combination	44 RJ-45 autosensing 10/100/1000 ports (IEEE 802.3 Type 10BASE-T, IEEE 802.3u Type 100BASE-TX, IEEE 802.3ab Type 1000BASE-T); Media Type: Auto-MDIX; Duplex: 10BASE-T/100BASE-TX: half or full; 1000BASE-T: full only 4 open mini-GBIC slots 4 open module slots Supports a maximum of 32 10GbE ports or 140 autosensing 10/100/1000 ports or 100 mini-GBICs, or a combination
Power supplies	4 power supply slots 2 minimum power supplies required includes: 2 x J9306A (HP 1500W PoE+ zl Power Supply)	2 power supply slots 1 minimum power supply required includes: 1 x J9306A (HP 1500W PoE+ zl Power Supply)
Physical characteristics Weight	17.5(w) x 17.75(d) x 12.1(h) in (44.45 x 45.09 x 30.73 cm) (7U height) 75.36 lb (34.18 kg)	17.5(w) x 17.75(d) x 6.9(h) in (44.45 x 45.09 x 17.53 cm) (4U height) 45.58 lb (20.68 kg)
Memory and processor Gigabit module 10G module Management module	ARM9 @ 200 MHz; packet buffer size: 144 Mb QDR SDRAM ARM9 @ 200 MHz; packet buffer size: 36 Mb QDR SDRAM Freescale PowerPC 8540 @ 666 MHz, 4 MB flash, 128 MB compact flash, 256 MB DDR SDRAM	ARM9 @ 200 MHz; packet buffer size: 144 Mb QDR SDRAM ARM9 @ 200 MHz; packet buffer size: 36 Mb QDR SDRAM Freescale PowerPC 8540 @ 666 MHz, 4 MB flash, 128 MB compact flash, 256 MB DDR SDRAM
Mounting	Mounts in an EIA standard 19-inch telco rack or equipment cabinet (hardware included); horizontal surface mounting only	Mounts in an EIA standard 19-inch telco rack or equipment cabinet (hardware included); horizontal surface mounting only
Performance 1000 Mb Latency 10 Gb/s Latency Throughput Routing/Switching capacity Switch fabric speed Routing table size MAC address table size	< 3.7 µs (FIFO 64-byte packets) < 2.1 µs (FIFO 64-byte packets) up to 564.2 Mpps 758.4 Gb/s 758.4 Gb/s 10000 entries (IPv4), 5000 entries (IPv6) 64000 entries	< 3.7 µs (FIFO 64-byte packets) < 2.1 µs (FIFO 64-byte packets) up to 282.1 Mpps 379.2 Gb/s 379.2 Gb/s 10000 entries (IPv4), 5000 entries (IPv6) 64000 entries

	HP 5412-92G-PoE+-2XG v2 zl Switch with Premium Software (J9532A)	HP 5406-44G-PoE+-4G-SFP v2 zl Switch with Premium Software (J9539A)
Environment		
Operating temperature	32°F to 131°F (0°C to 55°C); 0°C to 40°C with J8706A or J8707A modules installed	32°F to 131°F (0°C to 55°C); 0°C to 40°C with J8706A or J8707A modules installed
Operating relative humidity	15% to 95% @ 131°F (55°C), noncondensing	15% to 95% @ 131°F (55°C), noncondensing
Nonoperating/Storage temperature	-40°F to 158°F (-40°C to 70°C)	-40°F to 158°F (-40°C to 70°C)
Nonoperating/Storage relative humidity	15% to 95% @ 149°F (65°C), noncondensing	15% to 95% @ 149°F (65°C), noncondensing
Altitude	up to 10,000 ft (3 km)	up to 10,000 ft (3 km)
Acoustic	Power: 64 dB, Pressure: 57.5 dB ISO 7779, ISO 9296	Power: 57 dB, Pressure: 40.2 dB ISO 7779, ISO 9296
Electrical characteristics		
Frequency	50/60 Hz	50/60 Hz
Description	Two J9306A products are installed. Two open power supply slots are available; three different power supplies are available. See power supply products for additional specifications.	One J9306A product is installed. One open power supply slot is available; three different power supplies are available. See power supply products for additional specifications.
Maximum heat dissipation	4900 BTU/hr (5169.5 kJ/hr), (max. non-PoE); 7400 BTU/hr (7807 kJ/hr) (max. using PoE)	2450 BTU/hr (2584.75 kJ/hr), (max. non-PoE); 3700 BTU/hr (3903 kJ/hr) (max. using PoE)
Voltage	100-127/200-240 VAC	100-127/200-240 VAC
Idle power	312 W	215 W
	Notes	
	Idle power is the actual power consumption of the device with no ports connected. Heat dissipation does not include heat dissipated by the PoE-powered devices themselves.	Idle power is the actual power consumption of the device with no ports connected. Heat dissipation does not include heat dissipated by the PoE-powered devices themselves.
Safety	CSA 22.2 No. 60950; UL 60950; IEC 60950; EN 60950	CSA 22.2 No. 60950; UL 60950; IEC 60950; EN 60950
Emissions	FCC Class A; VCCI Class A; EN 55022/CISPR 22 Class A	FCC Class A; VCCI Class A; EN 55022/CISPR 22 Class A
Immunity		
EN	EN 55024, CISPR 24	EN 55024, CISPR 24
ESD	IEC 61000-4-2; 4 kV CD, 8 kV AD	IEC 61000-4-2; 4 kV CD, 8 kV AD
Radiated	IEC 61000-4-3; 3 V/m	IEC 61000-4-3; 3 V/m
EFT/Burst	IEC 61000-4-4; 1.0 kV (power line), 0.5 kV (signal line)	IEC 61000-4-4; 1.0 kV (power line), 0.5 kV (signal line)
Surge	IEC 61000-4-5; 1 kV/2 kV AC	IEC 61000-4-5; 1 kV/2 kV AC
Conducted	IEC 61000-4-6; 3 V	IEC 61000-4-6; 3 V
Power frequency magnetic field	IEC 61000-4-8; 1 A/m, 50 or 60 Hz	IEC 61000-4-8; 1 A/m, 50 or 60 Hz
Voltage dips and interruptions	IEC 61000-4-11; >95% reduction, 0.5 period; 30% reduction, 25 periods	IEC 61000-4-11; >95% reduction, 0.5 period; 30% reduction, 25 periods
Harmonics	EN 61000-3-2, IEC 61000-3-2	EN 61000-3-2, IEC 61000-3-2
Flicker	EN 61000-3-3, IEC 61000-3-3	EN 61000-3-3, IEC 61000-3-3
Management	IMC—Intelligent Management Center; command-line interface; Web browser; configuration menu; out-of-band management (serial RS-232C)	IMC—Intelligent Management Center; command-line interface; Web browser; configuration menu; out-of-band management (serial RS-232C)
Notes	Supported 1G SFP transceivers are revision "B" or later (product number ends with the letter "B" or later; for example, J9142B, J8177C).	Supported 1G SFP transceivers are revision "B" or later (product number ends with the letter "B" or later; for example, J9142B, J8177C).
Services	Refer to the HP website at 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.	Refer to the HP website at 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 5400 zl Switch Series

Specifications (continued)

	HP 5412-92G-PoE+-4G v2 zl Switch with Premium Software (J9540A)	HP 5406 8p 10GBASE-T 8p 10GbE SFP+ v2 zl Switch with Premium Software (J9866A)
Included accessories	3 HP 24-port Gig-T PoE+ v2 zl Module (J9534A) 1 HP 20-port Gig-T PoE+ / 4-port SFP v2 zl Module (J9535A) 2 HP 1500W PoE+ zl Power Supply (J9306A)	1 HP 8-port 10GbE SFP+ v2 zl Module (J9538A) 1 HP 1500W PoE+ zl Power Supply (J9306A) 1 HP 8-port 10GBASE-T v2 zl Module (J9546A)
Ports	92 RJ-45 autosensing 10/100/1000 PoE+ ports (IEEE 802.3 Type 10BASE-T, IEEE 802.3u Type 100BASE-TX, IEEE 802.3ab Type 1000BASE-T, IEEE 802.3at PoE+); Media Type: Auto-MDIX; Duplex: 10BASE-T/100BASE-TX: half or full; 1000BASE-T: full only 4 open mini-GBIC slots 8 open module slots Supports a maximum of 64 10GbE ports or 284 autosensing 10/100/1000 ports or 196 mini-GBICs, or a combination	8 RJ-45 10GbE ports (IEEE 802.3an-2006 Type 10GBASE-T) 8 open 10GbE SFP+ transceiver slots 4 open module slots Supports a maximum of 32 10GbE ports or 96 autosensing 10/100/1000 ports or 96 mini-GBICs, or a combination
Power supplies	4 power supply slots 2 minimum power supplies required includes: 2 x J9306A (HP 1500W PoE+ zl Power Supply)	2 power supply slots 1 minimum power supply required includes: 1 x J9306A (HP 1500W PoE+ zl Power Supply)
Physical characteristics Weight	17.5(w) x 17.75(d) x 12.1(h) in (44.45 x 45.09 x 30.73 cm) (7U height) 74.86 lb (33.96 kg)	17.5(w) x 17.75(d) x 6.9(h) in (44.45 x 45.09 x 17.53 cm) (4U height) 46.08 lb (20.9 kg)
Memory and processor Gigabit module 10G module Management module	ARM9 @ 200 MHz; packet buffer size: 144 Mb QDR SDRAM ARM9 @ 200 MHz; packet buffer size: 36 Mb QDR SDRAM Freescale PowerPC 8540 @ 666 MHz, 4 MB flash, 128 MB compact flash, 256 MB DDR SDRAM	 ARM9 @ 200 MHz; packet buffer size: 36 Mb QDR SDRAM Freescale PowerPC 8540 @ 666 MHz, 4 MB flash, 128 MB compact flash, 256 MB DDR SDRAM
Mounting	Mounts in an EIA standard 19-inch telco rack or equipment cabinet (hardware included); horizontal surface mounting only	Mounts in an EIA standard 19-inch telco rack or equipment cabinet (hardware included); horizontal surface mounting only
Performance 1000 Mb Latency 10 Gb/s Latency Throughput Routing/Switching capacity Switch fabric speed Routing table size MAC address table size	< 3.7 µs (FIFO 64-byte packets) < 2.1 µs (FIFO 64-byte packets) up to 564.2 Mpps 758.4 Gb/s 758.4 Gb/s 10000 entries (IPv4), 5000 entries (IPv6) 64000 entries	< 3.7 µs (FIFO 64-byte packets) < 2.1 µs (FIFO 64-byte packets) up to 282.1 Mpps 379.2 Gb/s 379.2 Gb/s 10000 entries (IPv4), 5000 entries (IPv6) 64000 entries

	HP 5412-92G-PoE+-4G v2 zl Switch with Premium Software (J9540A)	HP 5406 8p 10GBASE-T 8p 10GbE SFP+ v2 zl Switch with Premium Software (J9866A)
Environment		
Operating temperature	32°F to 131°F (0°C to 55°C); 0°C to 40°C with J8706A or J8707A modules installed	32°F to 131°F (0°C to 55°C); 0°C to 40°C with J8706A or J8707A modules installed
Operating relative humidity	15% to 95% @ 131°F (55°C), noncondensing	15% to 95% @ 131°F (55°C), noncondensing
Nonoperating/Storage temperature	-40°F to 158°F (-40°C to 70°C)	-40°F to 158°F (-40°C to 70°C)
Nonoperating/Storage relative humidity	15% to 95% @ 149°F (65°C), noncondensing	15% to 95% @ 149°F (65°C), noncondensing
Altitude	up to 10,000 ft (3 km)	up to 10,000 ft (3 km)
Acoustic	Power: 64 dB, Pressure: 57.5 dB ISO 7779, ISO 9296	Power: 57 dB, Pressure: 40.2 dB ISO 7779, ISO 9296
Safety	CSA 22.2 No. 60950; UL 60950; IEC 60950; EN 60950	CSA 22.2 No. 60950; UL 60950; IEC 60950; EN 60950
Emissions	FCC Class A; VCCI Class A; EN 55022/CISPR 22 Class A	FCC Class A; VCCI Class A; EN 55022/CISPR 22 Class A
Immunity		
EN	EN 55024, CISPR 24	EN 55024, CISPR 24
ESD	IEC 61000-4-2; 4 kV CD, 8 kV AD	IEC 61000-4-2; 4 kV CD, 8 kV AD
Radiated	IEC 61000-4-3; 3 V/m	IEC 61000-4-3; 3 V/m
EFT/Burst	IEC 61000-4-4; 1.0 kV (power line), 0.5 kV (signal line)	IEC 61000-4-4; 1.0 kV (power line), 0.5 kV (signal line)
Surge	IEC 61000-4-5; 1 kV/2 kV AC	IEC 61000-4-5; 1 kV/2 kV AC
Conducted	IEC 61000-4-6; 3 V	IEC 61000-4-6; 3 V
Power frequency magnetic field	IEC 61000-4-8; 1 A/m, 50 or 60 Hz	IEC 61000-4-8; 1 A/m, 50 or 60 Hz
Voltage dips and interruptions	IEC 61000-4-11; >95% reduction, 0.5 period; 30% reduction, 25 periods	IEC 61000-4-11; >95% reduction, 0.5 period; 30% reduction, 25 periods
Harmonics	EN 61000-3-2, IEC 61000-3-2	EN 61000-3-2, IEC 61000-3-2
Flicker	EN 61000-3-3, IEC 61000-3-3	EN 61000-3-3, IEC 61000-3-3
Management	IMC—Intelligent Management Center; command-line interface; Web browser; configuration menu; out-of-band management (serial RS-232C)	IMC—Intelligent Management Center; command-line interface; Web browser; configuration menu; out-of-band management (serial RS-232C)
Notes	Supported 1G SFP transceivers are revision "B" or later (product number ends with the letter "B" or later; for example, J9142B, J8177C).	Supported 1G SFP transceivers are revision "B" or later (product number ends with the letter "B" or later; for example, J9142B, J8177C).
Services	Refer to the HP website at 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.	Refer to the HP website at 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)

BGP	RFC 1997 BGP Communities Attribute	RFC 2918 Route Refresh Capability RFC 4271 A Border Gateway Protocol 4 (BGP-4)	RFC 4456 BGP Route Reflection: An Alternative to Full Mesh Internal BGP (IBGP) RFC 5492 Capabilities Advertisement with BGP-4
Device management		RFC 1591 DNS (client)	HTML and telnet management
General protocols	IEEE 802.1ad Q-in-Q IEEE 802.1AX-2008 Link Aggregation IEEE 802.1D MAC Bridges IEEE 802.1p Priority IEEE 802.1Q VLANs IEEE 802.1s Multiple Spanning Trees IEEE 802.1v VLAN classification by Protocol and Port IEEE 802.1w Rapid Reconfiguration of Spanning Tree IEEE 802.3ad Link Aggregation Control Protocol (LACP) IEEE 802.3af Power over Ethernet	IEEE 802.3x Flow Control RFC 768 UDP RFC 783 TFTP Protocol (revision 2) RFC 792 ICMP RFC 793 TCP RFC 826 ARP RFC 854 TELNET RFC 868 Time Protocol RFC 951 BOOTP RFC 1058 RIPv1 RFC 1350 TFTP Protocol (revision 2) RFC 1519 CIDR RFC 1542 BOOTP Extensions	RFC 1918 Address Allocation for Private Internet RFC 2030 Simple Network Time Protocol (SNTP) v4 RFC 2131 DHCP RFC 2453 RIPv2 RFC 2548 (MS-RAS-Vendor only) RFC 3046 DHCP Relay Agent Information Option RFC 3576 Ext to RADIUS (CoA only) RFC 3768 VRRP RFC 4675 RADIUS VLAN & Priority UDLD (Uni-directional Link Detection)
IP multicast		RFC 3376 IGMPv3 (host joins only)	RFC 3973 PIM Dense Mode
IPv6	RFC 1981 IPv6 Path MTU Discovery RFC 2375 IPv6 Multicast Address Assignments RFC 2460 IPv6 Specification RFC 2464 Transmission of IPv6 over Ethernet Networks RFC 2710 Multicast Listener Discovery (MLD) for IPv6 RFC 2925 Definitions of Managed Objects for Remote Ping, Traceroute, and Lookup Operations (Ping only) RFC 3019 MLDv1 MIB RFC 3315 DHCPv6 (client and relay) RFC 3484 Default Address Selection for IPv6	RFC 3587 IPv6 Global Unicast Address Format RFC 3596 DNS Extension for IPv6 RFC 3810 MLDv2 for IPv6 RFC 4022 MIB for TCP RFC 4087 IP Tunnel MIB RFC 4113 MIB for UDP RFC 4213 Basic Transition Mechanisms for IPv6 Hosts and Routers RFC 4251 SSHv6 Architecture RFC 4252 SSHv6 Authentication RFC 4253 SSHv6 Transport Layer RFC 4254 SSHv6 Connection RFC 4291 IP Version 6 Addressing Architecture	RFC 4293 MIB for IP RFC 4294 IPv6 Node Requirements RFC 4419 Key Exchange for SSH RFC 4443 ICMPv6 RFC 4541 IGMP & MLD Snooping Switch RFC 4861 IPv6 Neighbor Discovery RFC 4862 IPv6 Stateless Address Auto-configuration RFC 5095 Deprecation of Type 0 Routing Headers in IPv6 RFC 5340 OSPFv3 for IPv6 RFC 5453 Reserved IPv6 Interface Identifiers RFC 5519 Multicast Group Membership Discovery MIB (MLDv2 only)
MIBs	IEEE 802.1ap (MSTP and STP MIB's only) RFC 1155 Structure & ID of Mgmt Info for TCP/IP Internets RFC 1213 MIB II RFC 1493 Bridge MIB RFC 1724 RIPv2 MIB RFC 1850 OSPFv2 MIB RFC 2021 RMONv2 MIB	RFC 2096 IP Forwarding Table MIB RFC 2578 Structure of Management Information Version 2 (SMIv2) RFC 2613 SMON MIB RFC 2618 RADIUS Client MIB RFC 2620 RADIUS Accounting MIB RFC 2665 Ethernet-Like-MIB RFC 2668 802.3 MAU MIB	RFC 2674 802.1p and IEEE 802.1Q Bridge MIB RFC 2737 Entity MIB (Version 2) RFC 2787 VRRP MIB RFC 2863 The Interfaces Group MIB RFC 2925 Ping MIB RFC 2932 IP (Multicast Routing MIB) RFC 4836 Managed Objects for 802.3 Medium Attachment Units (MAU)

Network management	IEEE 802.1ab Link Layer Discovery Protocol (LLDP)	RFC 2819 Four groups of RMON: 1 (statistics), 2 (history), 3 (alarm) and 9 (events) RFC 3176 sFlow RFC 5424 Syslog Protocol	ANSI/TIA-1057 LLDP Media Endpoint Discovery (LLDP-MED) SNMPv1/v2c/v3 XRMON
OSPF		RFC 2328 OSPFv2	RFC 3101 OSPF NSSA
QoS/CoS		RFC 2474 DiffServ Precedence, including 8 queues/port	RFC 2597 DiffServ Assured Forwarding (AF)
Security	IEEE 802.1X Port Based Network Access Control RFC 1492 TACACS+	RFC 2865 RADIUS (client only) RFC 2866 RADIUS Accounting	RFC 3579 RADIUS Support For Extensible Authentication Protocol (EAP) Secure Sockets Layer (SSL) SSHv2 Secure Shell

HP 5400 zl Switch Series accessories

Modules	HP 8-port 10GBASE-T v2 zl Module (J9546A) HP 4-port 10GbE CX4 zl Module (J8708A) HP 4-port 10GbE X2 zl Module (J8707A) HP 4-port 10GbE SFP+ zl Module (J9309A) HP 8-port 10GbE SFP+ v2 zl Module (J9538A) HP 20-port Gig-T PoE+ / 2-port 10GbE SFP+ v2 zl Module (J9536A) HP 20-port Gig-T PoE+ / 4-port SFP v2 zl Module (J9535A) HP 24-port SFP v2 zl Module (J9537A) HP 12-port Gig-T PoE+ / 12-port SFP v2 zl Module (J9637A) HP 24-port 10/100/1000 PoE zl Module (J8702A) HP 20-port 10/100/1000 PoE+ / 4-port Mini-GBIC zl Module (J9308A) HP 20-port Gig-T / 4-port Mini-GBIC zl Module (J8705A) HP 24-port Mini-GBIC zl Module (J8706A) HP 24-port 10/100/1000 PoE+ zl Module (J9307A) HP 24-port Gig-T PoE+ v2 zl Module (J9534A) HP 24-port 10/100 PoE+ zl Module (J9478A) HP 24-port 10/100 PoE+ v2 zl Module (J9547A) HP 24-port Gig-T v2 zl Module (J9550A) HP 20-port Gig-T / 4-port SFP v2 zl Module (J9549A) HP 20-port Gig-T / 2-port 10GbE SFP+ v2 zl Module (J9548A) HP Survivable Branch Communication zl Module powered by Microsoft® Lync (J9485A) HP Services zl Module for Avaya Aura Session Border Controller powered by Acme Packet (J9486A) **NEW** HP Advanced Services v2 zl Module with HDD (J9857A) HP Advanced Services v2 zl Module with SSD (J9858A)
Transceivers	HP X131 10G X2 SC ER Transceiver (J8438A) HP X131 10G X2 SC SR Transceiver (J8436A) HP X131 10G X2 CX4 Transceiver (J8440C) HP X111 100M SFP LC FX Transceiver (J9054C) HP X131 10G X2 SC LR Transceiver (J8437A) HP X131 10G X2 SC LRM Transceiver (J9144A) HP X112 100M SFP LC BX-D Transceiver (J9099B) HP X112 100M SFP LC BX-U Transceiver (J9100B) HP X132 10G SFP+ LC SR Transceiver (J9150A) HP X132 10G SFP+ LC LR Transceiver (J9151A) HP X132 10G SFP+ LC LRM Transceiver (J9152A) HP X121 1G SFP LC LH Transceiver (J4860C) HP X121 1G SFP LC SX Transceiver (J4858C) HP X121 1G SFP LC LX Transceiver (J4859C) HP X121 1G SFP RJ45 T Transceiver (J8177C) HP X122 1G SFP LC BX-D Transceiver (J9142B) HP X122 1G SFP LC BX-U Transceiver (J9143B) HP X132 10G SFP+ LC ER Transceiver (J9153A)

Cables	HP X242 10G SFP+ to SFP+ 1m Direct Attach Copper Cable (J9281B)
	HP X242 10G SFP+ to SFP+ 3m Direct Attach Copper Cable (J9283B)
	HP X242 10G SFP+ to SFP+ 7m Direct Attach Copper Cable (J9285B)
	HP X244 10G XFP to SFP+ 1m Direct Attach Copper Cable (J9300A)
	HP X244 10G XFP to SFP+ 3m Direct Attach Copper Cable (J9301A)
	HP X244 10G XFP to SFP+ 5m Direct Attach Copper Cable (J9302A)
	HP 0.5 m Multimode OM3 LC/LC Optical Cable (AJ833A)
	HP 1 m Multimode OM3 LC/LC Optical Cable (AJ834A)
	HP 2 m Multimode OM3 LC/LC Optical Cable (AJ835A)
	HP 5 m Multimode OM3 LC/LC Optical Cable (AJ836A)
	HP 15 m Multimode OM3 LC/LC Optical Cable (AJ837A)
	HP 30 m Multimode OM3 LC/LC Optical Cable (AJ838A)
	HP 50 m Multimode OM3 LC/LC Optical Cable (AJ839A)
	HP Premier Flex LC/LC Multi-mode OM4 2 fiber 1m Cable (QK732A)
	HP Premier Flex LC/LC Multi-mode OM4 2 fiber 2m Cable (QK733A)
	HP Premier Flex LC/LC Multi-mode OM4 2 fiber 5m Cable (QK734A)
	HP Premier Flex LC/LC Multi-mode OM4 2 fiber 15m Cable (QK735A)
	HP Premier Flex LC/LC Multi-mode OM4 2 fiber 30m Cable (QK736A)
	HP Premier Flex LC/LC Multi-mode OM4 2 fiber 50m Cable (QK737A)
	HP X242 10G SFP+ to SFP+ 10m Direct Attach Copper Cable (J9286B)
	HP X242 10G SFP+ to SFP+ 15m Direct Attach Copper Cable (J9287B)
Power Supply	HP 1500W PoE+ zl Power Supply (J9306A)
	HP 1500W zl Power Supply (J8713A)
	HP 875W zl Power Supply (J8712A)
EPS/RPS	HP zl Power Supply Shelf (J8714A)
License	HP MSM Additional 40 Access Point License (J9371A)
	HP 5400 zl Premium License (J8994A)
	HP MSM Additional 40 Access Point E-LTU (J9371AAE)
WLAN	**NEW** HP MSM775 zl Premium Controller Module (J9840A)

Learn more at
hp.com/networking

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