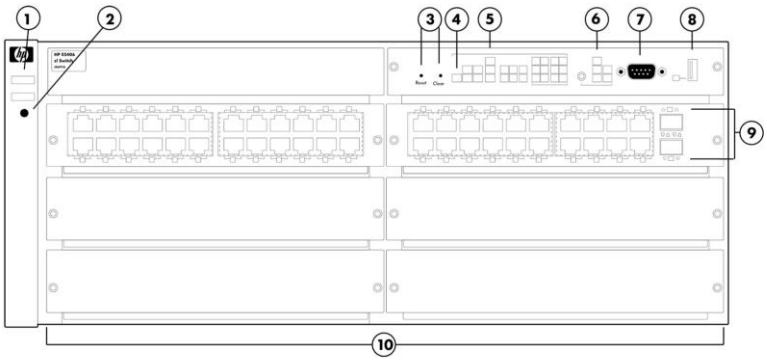
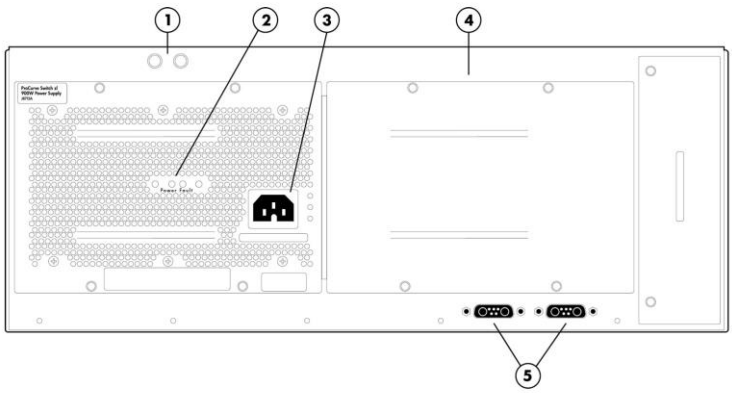
Overview

HP 5400 zl Switch Series



HP 5406-48G zl Switch

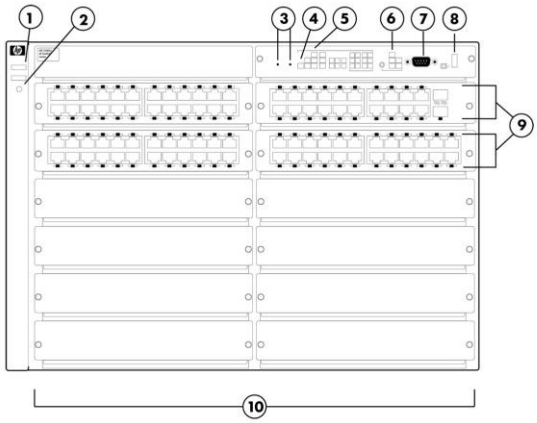
1 Power and Fault LEDs
2 Locator LED
3 Reset and Clear buttons
4 Self Test LED
5 Status LEDs for the Fans, Power Supplies, and Switch Modules
6 LED Mode Select button and indicator LEDs
7 Console Port
8 Auxiliary Port
9 Module Link and Mode LEDs
10 Switch Modules and slots with Link and Mode LEDs for each port located on each module



HP 5406-48G zl Switch Rear View

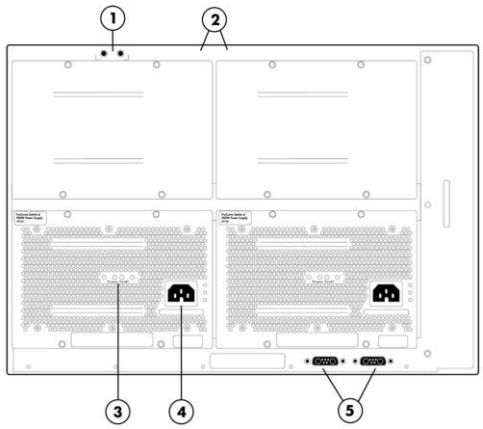
1 Grounding lug mounting holes
2 Power and Fault LEDs
3 AC power connector
4 Slot for installing optional redundant power supply
5 External PoE power connectors

Overview



HP 5412-92G zl Switch

1 Power and Fault LEDs
2 Locator LED
3 Reset and Clear buttons
4 Self Test LED
5 Status LEDs for the Fans, Power Supplies, and Switch Modules
6 LED Mode Select button and indicator LEDs
7 Console Port
8 Auxiliary Port
9 Module Link and Mode LEDs
10 Switch Modules and slots with Link and Mode LEDs for each port located on each module



HP 5412-92G zl Switch Rear View

1 Grounding lug mounting holes
2 Power and Fault LEDs
3 Slot for installing optional redundant power supply
4 AC power connector
5 External PoE power connectors

Models

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
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
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

Overview

Key Features

- Advanced access layer, distribution, and core
- Integrated L2-to-L4 intelligent edge feature set
- Enterprise-class performance and security
- AllianceOne integrated
- Scalable 10/100/1000 and 10GbE connectivity

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.

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

- **HTTP redirect function**
  supports HP Intelligent Management Center (IMC) bring your own device (BYOD) solution

Quality of Service (QoS)

- **Advanced classifier-based QoS**
  classifies traffic using multiple match criteria based on Layer 2, 3, and 4 information; applies QoS policies such as setting priority level and rate limit to selected traffic on a per-port or per-VLAN basis
- **Layer 4 prioritization**
  enables prioritization based on TCP/UDP port numbers
- **Traffic prioritization**
  allows real-time traffic classification into eight priority levels mapped to eight queues
- **Bandwidth shaping**
  - **Port-based rate limiting**
    provides per-port ingress-/egress-enforced increased bandwidth
  - **Classifier-based rate limiting**
    uses an access control list (ACL) to enforce increased bandwidth for ingress traffic on each port
  - **Guaranteed minimum**
    provides per-port, per-queue egress-based reduced bandwidth
- **Class of Service** (CoS)
  sets the IEEE 802.1p priority tag based on IP address, IP Type of Service (ToS), Layer 3 protocol, TCP/UDP port number, source port, and DiffServ

Management

- **Remote intelligent mirroring**
  mirrors selected ingress/egress traffic based on ACL, port, MAC address, or VLAN to a local or remote HP 8200 zl, 6600,

Overview

6200 yl, 5400 zl, or 3500 Switch located anywhere on the network

- **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
- **Uni-Directional Link Detection (UDLD)**
  monitors a 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 prevents network problems such as loops
- **Management simplicity**
  provides common software features and CLI implementation across all HP ProVision-based switches (including the zl and yl switches)
- **Command authorization**
  leverages RADIUS to link a custom list of CLI commands to an individual network administrator's login; an audit trail documents activity
- **Friendly port names**
  allow assignment of descriptive names to ports
- **Dual flash images**
  provide independent primary and secondary operating system files for backup while upgrading
- **Multiple configuration files**
  can be stored to the flash image
- **Comware CLI**
  - **Comware-compatible CLI**
    bridges the experience of Comware CLI users who are using the ProVision software CLI
  - **Display and fundamental Comware CLI commands**
    are embedded in the switch CLI as native commands; display output formatted as on Comware-based switches; fundamental commands provide a Comware-familiar initial switch setup
  - **Configuration Comware CLI commands**
    entered Comware CLI configuration commands elicit CLI help formulating 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 Power over Ethernet (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 Power over Ethernet Plus**
  provides up to 30 W per port to IEEE 802.3 for PoE- and PoE+-powered devices, such as video IP phones, IEEE 802.11n wireless access points, and advanced pan/zoom/tilt security cameras
- **Prestandard PoE support**
  detects and provides power to prestandard PoE devices; see the list of supported devices in the product FAQ at www.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 10-GbE ports per system
- **Jumbo frames**
  on Gigabit Ethernet and 10-Gigabit Ethernet ports, jumbo frames allow high-performance remote backup and disaster-recovery services
- **Auto-MDIX**
  automatically adjusts for straight-through or crossover cables on all 10/100 and 10/100/1000 ports
- **IPv6**
  - **IPv6 host**

Overview

enables switches to be managed in an IPv6 network

- **Dual stack (IPv4 and IPv6)**
  transitions from IPv4 to IPv6, supporting 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 OSPFv3 routing protocols
- **6in4 tunneling**
  supports encapsulation of IPv6 traffic in IPv4 packets
- **Security**
  provides RA guard, DHCPv6 protection, dynamic IPv6 lockdown

Performance

- **High-speed, high-capacity architecture**
  1 Tbps crossbar switching fabric provides intra-module and inter-module switching with 585.6 million pps throughput on the purpose-built ProVision ASICs
- **Selectable queue configurations**
  allows for 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

- **NEW 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
- **IEEE 802.1s Multiple Spanning Tree Protocol**
  provides high link availability in multiple VLAN environments by allowing multiple spanning trees; encompasses IEEE 802.1D Spanning Tree Protocol and IEEE 802.1w Rapid Spanning Tree Protocol
- **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 Spanning Tree Protocol; allows a server or switch to connect to two switches using one logical trunk for redundancy and load sharing
- **Optional redundant power supply (HP 5400 series)**
  provides uninterrupted power and allows hot-swapping of the redundant power supplies when installed
- **Hot-swappable modules (5400 zl series)**
  permits modules, mini-GBICs, and power supplies in a redundant power supply configuration to be added or swapped without interrupting the network
- **Sparing simplicity**
  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

Layer 2 switching

- **VLAN support and tagging**
  supports the IEEE 802.1Q standard and 2,048 VLANs simultaneously

Overview

- **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; connects multiple LANs on a high-speed campus or metro network
- **MAC-based VLAN**
  provides granular control and security; uses 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**
  dynamically load balances across multiple active redundant links to increase available aggregate bandwidth; allows concurrent Layer 3 routing with v2 modules

Layer 3 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 prevents server spoofing for UDP services such as DHCP
- **Loopback interface address**
  defines an address in Routing Information Protocol (RIP) and Open Standard Path First (OSPF), improving diagnostic capability
- **Route maps**
  provide more control during route redistribution; allow filtering and altering of route metrics
- **DHCP server**
  centralizes and reduces the cost of IPv4 address management

Layer 3 routing

- **Static IP routing**
  provides manually configured routing for both IPv4 and IPv6 networks
- **Routing Information Protocol (RIP)**
  provides 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 policy set by the network administrator (requires v2 modules)
- **Border Gateway Protocol (BGP)**
  provides IPv4 Border Gateway Protocol routing, which is scalable, robust, and flexible

Security

- **Access control lists (ACLs)**
  provide filtering based on the IP field, source/destination IP address/subnet, and source/destination TCP/UDP port number on per-VLAN or per-port basis
- **Multiple user authentication methods**
  - **IEEE 802.1X users per port**
    provides authentication of multiple IEEE 802.1X users per port
  - **Web-based authentication**
    authenticates from a Web browser for clients that do not support IEEE 802.1X supplicant
  - **MAC-based authentication**

Overview

client is authenticated with the RADIUS server based on the client's MAC address
    - **Concurrent IEEE 802.1X, Web, and MAC authentication schemes per port**
      switch port accepts 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 entirely prevents the virus from spreading across the routed VLANs or bridged interfaces without requiring external appliances
- **DHCP protection**
  blocks DHCP packets from unauthorized DHCP servers, preventing denial-of-service attacks
- **Secure management access**
  securely encrypts all access methods (CLI, GUI, or 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 BPDU port protection**
  blocks Bridge Protocol Data Units (BPDUs) on ports that do not require BPDUs, preventing forged BPDU attacks
- **Dynamic IP lockdown**
  works with DHCP protection to block traffic from unauthorized hosts, preventing IP source address spoofing
- **Dynamic ARP protection**
  blocks ARP broadcasts from unauthorized hosts, preventing 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 potentially can be 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**
  prevents particular 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**
  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; 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**
  can require either RADIUS or TACACS+ authentication for secure switch CLI logon
- **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

Overview

- **IP multicast snooping** (data-driven IGMP)
  automatically prevents flooding of IP multicast traffic
- **LLDP-MED (Media Endpoint Discovery)**
  is 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**
  support multiple methods (automatic, IEEE 802.3af class, LLDP-MED, or user specified) to allocate PoE power for more efficient energy savings
- **NEW 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
- **NEW Local MAC Authentication**
  assigns attributes such as VLAN and QoS using locally configured profile that can be a list of MAC prefixes

Warranty and support

- **Limited Lifetime Warranty v2.0**
  advance hardware replacement with next-business-day delivery (available in most countries). See www.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 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

Configuration

Build To Order:

BTO is a standalone unit with no integration. BTO products ship standalone are not part of a CTO or Rack-Shippable solution.

HP 5406 zl Switch with Premium Software — J9642A
- 1 Power Supply required
- 4U - Height

See Configuration Note:4

HP 5406R zl2 Switch — J9821A
- 1 Power Supply required
- 1 Fan Tray Included
- 1 Management module included
- 1 RJ-45 out-of-band management port
- 4U - Height

HP 5406-44G-PoE+-2XG v2 zl Swch w Pm SW — J9533A
- 44 autosensing 10/100/1000 port
- 1 - J9306A HP 1500 W PoE+ zl Power Supply included
- 1 - J9536A HP 20-port Gig-T PoE+ / 2-port 10-GbE SFP+ v2 zl Module included (min=0 \ max=2 SFP+ Transceivers)
- 1 - J9534A HP 24-port Gig-T PoE+ v2 zl Module included
- 4U - Height

See Configuration Note:1, 5, 9

PDU CABLE NA/MEX/TW/JP — J9533A#B2B
- C15 PDU Jumper Cord (NA/MEX/TW/JP)

PDU CABLE ROW — J9533A#B2C
- C15 PDU Jumper Cord (ROW)C15 PDU Jumper Cord (ROW)

High Volt Switch to Wall Power CordHigh Volt Switch to Wall Power Cord — J9533A#B2E
- NEMA L6-20P Cord (NA/MEX/JP/TW)

HP 5406 8p10GT 8p10GE Swch and Psw — J9866A
- 8 RJ-45 10GbE ports
- 1 - J9306A HP 1500 W PoE+ zl Power Supply included
- 1 - J9546A HP 8-port 10GBASE-T v2 zl Module included
- 1 - J9538A HP 8-port 10GbE SFP+ v2 zl Module included (min=0 \ max=8 SFP+ Transceivers)
- 4U - Height

See Configuration Note:1, 3, 5, 9

PDU CABLE NA/MEX/TW/JP — J9866A#B2B
- C15 PDU Jumper Cord (NA/MEX/TW/JP)

Configuration

PDU CABLE ROW — J9866A#B2C

- C15 PDU Jumper Cord (ROW)

High Volt Switch to Wall Power Cord — J9866A#B2E

- NEMA L6-20P Cord (NA/MEX/JP/TW)

HP 5406R-8XGT/8SFP+ v2 zl2 Swch — J9868A

See Configuration Note:1

- 1 Power Supply required
- 8 RJ-45 10GbE ports
- 1 - J9546A HP 8-port 10GBASE-T v2 zl Module included
- 1 - J9538A HP 8-port 10GbE SFP+ v2 zl Module included (min=0 \ max=8 SFP+ Transceivers)
- 1 Fan Tray Included
- 1 Management module included
- 1 RJ-45 out-of-band management port
- 4U - Height

HP 5406R-Gig-T-PoE+/SFP+ v2 zl2 Swch — J9823A

See Configuration Note:1

- 1 Power Supply required
- 1 - J9536A HP 20-port Gig-T PoE+ / 2-port 10-GbE SFP+ v2 zl Module included(min=0 \ max=2 SFP+ Transceivers)
- 1 - J9534A HP 24-port Gig-T PoE+ v2 zl Module included
- 1 Fan Tray Included
- 1 Management module included
- 1 RJ-45 out-of-band management port
- 4U - Height

HP 5406R-Gig-T-PoE+/SFP v2 zl2 Swch — J9824A

See Configuration Note:2

- 1 Power Supply required
- 1 - J9535A HP 20-port Gig-T PoE+ / 4-port SFP v2 zl Module included (min=0 \ max=4 SFP Transceivers)
- 1 - J9534A HP 24-port Gig-T PoE+ v2 zl Module included
- 1 Fan Tray Included
- 1 Management module included
- 1 RJ-45 out-of-band management port
- 4U - Height

HP 5406-44G-PoE+-4G v2 zl Swch w Prm SW — J9539A

See Configuration Note:2, 5, 9

- 44 autosensing 10/100/1000 port
- 1 - J9306A HP 1500 W PoE+ zl Power Supply included
- 1 - J9535A HP 20-port GT PoE+/4-port SFP v2 zl Mod included (min=0 \ max=4 SFP Transceivers)
- 1 - J9534A HP 24-port Gig-T PoE+ v2 zl Module included
- 4U - Height

Configuration

PDU CABLE NA/MEX/TW/JP — J9539A#B2B
- C15 PDU Jumper Cord (NA/MEX/TW/JP)

PDU CABLE ROW — J9539A#B2C
- C15 PDU Jumper Cord (ROW)

High Volt Switch to Wall Power Cord — J9539A#B2E
- NEMA L6-20P Cord (NA/MEX/JP/TW)

HP 5406 8p10GT 8p10GE Swch and Psw — J9866A
- 8 RJ-45 10GbE ports
- 1 - J9306A HP 1500 W PoE+ zl Power Supply included
- 1 - J9546A HP 8-port 10GBASE-T v2 zl Module included
- 1 - J9538A HP 8-port 10GbE SFP+ v2 zl Module included (min=0 \ max=8 SFP+ Transceivers)
- 4U - Height

See Configuration Note:1, 5, 9

PDU CABLE NA/MEX/TW/JP — J9866A#B2B
- C15 PDU Jumper Cord (NA/MEX/TW/JP)

PDU CABLE ROW — J9866A#B2C
- C15 PDU Jumper Cord (ROW)

High Volt Switch to Wall Power Cord — J9866A#B2E
- NEMA L6-20P Cord (NA/MEX/JP/TW)

HP 5412 zl Switch with Premium Software — J9643A
- 2 Power Supplies required
- 7U - Height

See Configuration Note:4

HP 5412R zl2 Switch — J9822A
- 2 Power Supplies required
- 1 Fan Tray Included
- 1 Management module included
- 1 RJ-45 out-of-band management port
- 7U - Height

HP 5412-92G-PoE+-2XG v2 zl Swch w Pm SW — J9532A
- 92 autosensing 10/100/1000 port
- 2 - J9306A HP 1500 W PoE+ zl Power Supply included
- 1 - J9536A HP 20-port Gig-T PoE+ / 2-port 10-GbE SFP+ v2 zl Module included(min=0 \ max=2

See Configuration Note:1, 5, 9

Configuration

SFP+ Transceivers)
- 3 - J9534A HP 24-port Gig-T PoE+ v2 zl Module included
- 7U - Height

PDU CABLE NA/MEX/TW/JP — J9532A#B2B
- C15 PDU Jumper Cord (NA/MEX/TW/JP)

PDU CABLE ROW — J9532A#B2C
- C15 PDU Jumper Cord (ROW)

High Volt Switch to Wall Power Cord — J9532A#B2E
- NEMA L6-20P Cord (NA/MEX/JP/TW)

HP 5412-92G-PoE+-4G v2 zl Swch w Prm SW — J9540A
See Configuration Note:2, 5, 9
- 92 autosensing 10/100/1000 port
- 2 - J9306A HP 1500 W PoE+ zl Power Supply included
- 1 - J9535A HP 20-port Gig-T PoE+ / 4-port SFP v2 zl Module included (min=0 \ max=4 SFP Transceivers)
- 3 - J9534A HP 24-port Gig-T PoE+ v2 zl Module included
- 7U - Height

PDU CABLE NA/MEX/TW/JP — J9540A#B2B
- C15 PDU Jumper Cord (NA/MEX/TW/JP)

PDU CABLE ROW — J9540A#B2C
- C15 PDU Jumper Cord (ROW)

High Volt Switch to Wall Power Cord — J9540A#B2E
- NEMA L6-20P Cord (NA/MEX/JP/TW)

HP 5412R-Gig-T-PoE+/SFP+ v2 zl2 Swch — J9825A
See Configuration Note:1
- 2 Power Supplies required
- 1 - J9536A HP 20-port Gig-T PoE+ / 2-port 10-GbE SFP+ v2 zl Module included(min=0 \ max=2 SFP+ Transceivers)
- 3 - J9534A HP 24-port Gig-T PoE+ v2 zl Module included
- 1 Fan Tray Included
- 1 Management module included
- 1 RJ-45 out-of-band management port
- 7U - Height

Configuration

HP 5412R zl2 Switch — J9822A — See Configuration Note:2

- 2 Power Supplies required
- 1 - J9535A HP 20-port Gig-T PoE+ / 4-port SFP v2 zl Module included (min=0 \ max=4 SFP Transceivers)
- 3 - J9534A HP 24-port Gig-T PoE+ v2 zl Module included
- 1 Fan Tray Included
- 1 Management module included
- 1 RJ-45 out-of-band management port
- 7U - Height

Configuration Rules:

Note 1 The following Transceivers install into this Chassis :

HP X121 1G SFP LC SX Transceiver	J4858C
HP X121 1G SFP LC LX Transceiver	J4859C
HP X121 1G SFP LC LH Transceiver	J4860C
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
HP X132 10G SFP+ LC LR Transceiver	J9151A
HP X132 10G SFP+ LC LRM Transceiver	J9152A
HP X132 10G SFP+ LC SR Transceiver	J9150A
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 10G X244 XFP to SFP+ 3m Direct Attach Copper Cable	J9301A
HP 10G X244 XFP to SFP+ 5m Direct Attach Copper Cable	J9302A
HP X242 10G SFP+ to SFP+ 10m Direct Attach Copper Cable	J9286B
HP X242 10G SFP+ to SFP+ 15m Direct Attach Copper Cable	J9287B

Note 2 The following Transceivers install into this switch:

HP X121 1G SFP LC SX Transceiver	J4858C
HP X121 1G SFP LC LX Transceiver	J4859C
HP X121 1G SFP LC LH Transceiver	J4860C
HP X121 1G SFP RJ45 T Transceiver	J8177C
HP X112 100M SFP LC BX-D Transceiver	J9099B
HP X112 100M SFP LC BX-U Transceiver	J9100B
HP X122 1G SFP LC BX-D Transceiver	J9142B
HP X122 1G SFP LC BX-U Transceiver	J9143B
HP X111 100M SFP LC FX Transceiver	J9054C

Note 4 If Switch is ordered in a Rack, Then #B2B, or #B2C is defaulted on the Power Supply's. (Optional when Switch is not Racked. See Drop down remark in "Power Supplies" section.)

Note 5 If #B2E is selected Then replace Localized option with #B2E for power supply and with #B2E for switch . (Offered only in North America, Mexico Taiwan, and Japan)

Configuration

Note 9 Localization required on orders without #B2B, #B2C, #B2D or #B2E options.

Box Level Integration CTO Models

CTO Solution Sku

HP 54xx CTO Switch Solution — J9809A
- SSP trigger sku

See Configuration Note:7

CTO Switch Chassis

HP 5406 zl Switch with Premium Software — J9642A
- 1 Power Supply required
- 4U - Height

See Configuration Note:4, 10

HP 5406R zl2 Switch — J9821A
- 1 Power Supply required
- 1 Fan Tray Included
- 1 Management module included
- 1 RJ-45 out-of-band management port
- 4U - Height

See Configuration Note:10

HP 5406-44G-PoE+-2XG v2 zl Swch w Pm SW — J9533A
- 44 autosensing 10/100/1000 port
- 1 - J9306A HP 1500 W PoE+ zl Power Supply included
- 1 - J9536A HP 20-port Gig-T PoE+ / 2-port 10-GbE SFP+ v2 zl Module included (min=0 \ max=2 SFP+ Transceivers)
- 1 - J9534A HP 24-port Gig-T PoE+ v2 zl Module included
- 4U - Height

See Configuration Note:1, 4, 8, 10, 12

PDU CABLE NA/MEX/TW/JP — #B2B
- C15 PDU Jumper Cord (NA/MEX/TW/JP)

PDU CABLE ROW — #B2C
- C15 PDU Jumper Cord (ROW)

High Volt Switch to Wall Power Cord — #B2E
- NEMA L6-20P Cord (NA/MEX/JP/TW)

HP 5406-44G-PoE+-4G v2 zl Swch w Prm SW — J9539A
- 44 autosensing 10/100/1000 port
- 1 - J9306A HP 1500 W PoE+ zl Power Supply included

See Configuration Note: 2, 4, 8, 10, 12

Configuration

- 1 - J9535A HP 20-port GT PoE+/4-port SFP v2 zl Mod included (min=0 \ max=4 SFP Transceivers)
- 1 - J9534A HP 24-port Gig-T PoE+ v2 zl Module included
- 4U - Height

PDU CABLE NA/MEX/TW/JP #B2B
- C15 PDU Jumper Cord (NA/MEX/TW/JP)

PDU CABLE ROW #B2C
- C15 PDU Jumper Cord (ROW)

High Volt Switch to Wall Power Cord #B2E
- NEMA L6-20P Cord (NA/MEX/JP/TW)

HP 5406 8p10GT 8p10GE Swch and Psw J9866A
See Configuration Note:1, 4, 8, 10, 12
- 8 RJ-45 10GbE ports
- 1 - J9306A HP 1500 W PoE+ zl Power Supply included
- 1 - J9546A HP 8-port 10GBASE-T v2 zl Module included
- 1 - J9538A HP 8-port 10GbE SFP+ v2 zl Module included (min=0 \ max=8 SFP+ Transceivers)
- 4U - Height

PDU CABLE NA/MEX/TW/JP J9866A#B2B
- C15 PDU Jumper Cord (NA/MEX/TW/JP)

PDU CABLE ROW J9866A#B2C
- C15 PDU Jumper Cord (ROW)

High Volt Switch to Wall Power Cord J9866A#B2E
- NEMA L6-20P Cord (NA/MEX/JP/TW)

HP 5406R-8XGT/8SFP+ v2 zl2 Swch J9868A
See Configuration Note:1, 10
- 1 Power Supply required
- 8 RJ-45 10GbE ports
- 1 - J9546A HP 8-port 10GBASE-T v2 zl Module included
- 1 - J9538A HP 8-port 10GbE SFP+ v2 zl Module included (min=0 \ max=8 SFP+ Transceivers)
- 1 Fan Tray Included
- 1 Management module included
- 1 RJ-45 out-of-band management port
- 4U - Height

Configuration

HP 5406R-Gig-T-PoE+/SFP+ v2 zl2 Swch — J9823A — See Configuration Note:1, 10

- 1 Power Supply required
- 1 - J9536A HP 20-port Gig-T PoE+ / 2-port 10-GbE SFP+ v2 zl Module included(min=0 \ max=2 SFP+ Transceivers)
- 1 - J9534A HP 24-port Gig-T PoE+ v2 zl Module included
- 1 Fan Tray Included
- 1 Management module included
- 1 RJ-45 out-of-band management port
- 4U - Height

HP 5406R-Gig-T-PoE+/SFP v2 zl2 Swch — J9824A — See Configuration Note:2, 10

- 1 Power Supply required
- 1 - J9535A HP 20-port Gig-T PoE+ / 4-port SFP v2 zl Module included (min=0 \ max=4 SFP Transceivers)
- 1 - J9534A HP 24-port Gig-T PoE+ v2 zl Module included
- 1 Fan Tray Included
- 1 Management module included
- 1 RJ-45 out-of-band management port
- 4U - Height

HP 5412 zl Switch with Premium Software — J9643A — See Configuration Note:4

- 2 Power Supplies required
- 7U - Height

HP 5412R zl2 Switch — J9822A — See Configuration Note:10

- 2 Power Supplies required
- 1 Fan Tray Included
- 1 Management module included
- 1 RJ-45 out-of-band management port
- 7U - Height

HP 5412-92G-PoE+-2XG v2 zl Swch w Pm SW — J9532A — See Configuration Note:1, 4, 8, 10, 12

- 92 autosensing 10/100/1000 port
- 2 - J9306A HP 1500 W PoE+ zl Power Supply included
- 1 - J9536A HP 20-port Gig-T PoE+ / 2-port 10-GbE SFP+ v2 zl Module included(min=0 \ max=2 SFP+ Transceivers)
- 3 - J9534A HP 24-port Gig-T PoE+ v2 zl Module included
- 7U - Height

PDU CABLE NA/MEX/TW/JP — #B2B

- C15 PDU Jumper Cord (NA/MEX/TW/JP)

PDU CABLE ROW — #B2C

Configuration

- C15 PDU Jumper Cord (ROW)

High Volt Switch to Wall Power Cord #B2E
- NEMA L6-20P Cord (NA/MEX/JP/TW)

HP 5412-92G-PoE+-4G v2 zl Swch w Prm SW J9540A
See Configuration Note:2, 4, 8, 10, 12
- 92 autosensing 10/100/1000 port
- 2 - J9306A HP 1500 W PoE+ zl Power Supply included
- 1 - J9535A HP 20-port Gig-T PoE+ / 4-port SFP v2 zl Module included (min=0 \ max=4 SFP Transceivers)
- 3 - J9534A HP 24-port Gig-T PoE+ v2 zl Module included
- 7U - Height

PDU CABLE NA/MEX/TW/JP #B2B
- C15 PDU Jumper Cord (NA/MEX/TW/JP)

PDU CABLE ROW #B2C
- C15 PDU Jumper Cord (ROW)

High Volt Switch to Wall Power Cord #B2E
- NEMA L6-20P Cord (NA/MEX/JP/TW)

HP 5412R-Gig-T-PoE+/SFP+ v2 zl2 Swch J9825A
See Configuration Note:1, 10
- 2 Power Supplies required
- 1 - J9536A HP 20-port Gig-T PoE+ / 2-port 10-GbE SFP+ v2 zl Module included(min=0 \ max=2 SFP+ Transceivers)
- 3 - J9534A HP 24-port Gig-T PoE+ v2 zl Module included
- 1 Fan Tray Included
- 1 Management module included
- 1 RJ-45 out-of-band management port
- 7U - Height

HP 5412R-Gig-T-PoE+/SFP v2 zl2 Swch J9826A
See Configuration Note:2, 10
- 2 Power Supplies required
- 1 - J9535A HP 20-port Gig-T PoE+ / 4-port SFP v2 zl Module included (min=0 \ max=4 SFP Transceivers)
- 3 - J9534A HP 24-port Gig-T PoE+ v2 zl Module included
- 1 Fan Tray Included
- 1 Management module included
- 1 RJ-45 out-of-band management port
- 7U - Height

Configuration

Configuration Rules:

Note 1	The following Transceivers install into this Chassis : (Use #0D1 or #B01 if switch is CTO) - if applicable	
	HP X121 1G SFP LC SX Transceiver	J4858C
	HP X121 1G SFP LC LX Transceiver	J4859C
	HP X121 1G SFP LC LH Transceiver	J4860C
	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
	HP X132 10G SFP+ LC LR Transceiver	J9151A
	HP X132 10G SFP+ LC LRM Transceiver	J9152A
	HP X132 10G SFP+ LC SR Transceiver	J9150A
	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 10G X244 XFP to SFP+ 3m Direct Attach Copper Cable	J9301A
	HP 10G X244 XFP to SFP+ 5m Direct Attach Copper Cable	J9302A
	HP X242 10G SFP+ to SFP+ 10m Direct Attach Copper Cable	J9286B
	HP X242 10G SFP+ to SFP+ 15m Direct Attach Copper Cable	J9287B
Note 2	The following Transceivers install into this Chassis : (Use #0D1 if switch is CTO) - if applicable	
	HP X121 1G SFP LC SX Transceiver	J4858C
	HP X121 1G SFP LC LX Transceiver	J4859C
	HP X121 1G SFP LC LH Transceiver	J4860C
	HP X121 1G SFP RJ45 T Transceiver	J8177C
	HP X112 100M SFP LC BX-D Transceiver	J9099B
	HP X112 100M SFP LC BX-U Transceiver	J9100B
	HP X122 1G SFP LC BX-D Transceiver	J9142B
	HP X122 1G SFP LC BX-U Transceiver	J9143B
	HP X111 100M SFP LC FX Transceiver	J9054C

Note 4 Localization required on orders without #B2B, #B2C, #B2D or #B2E options.

Note 8 If #B2E is selected Then replace Localized option with #B2E for power supply and with #B2E for switch . (Offered only in North America, Mexico Taiwan, and Japan)

Note 10 If the Switch Chassis is to be Factory Integrated (CTO), Then the #0D1 is required on the Switch Chassis and integrated to the J9809A - HP 5400 CTO Enablement. (Min 1/Max 1 Switch per SSP)

Note 12 If this Switch is selected, Then a Minimum of 1 factory integrated accessory must be ordered and integrated to CTO chassis. See Menu below, option must have a #0D1 to be integrated to the CTO Chassis.

Rack Level Integration CTO Models

CTO Switch Chassis

HP 5406 zl Switch with Premium Software	J9642A

Configuration

- 1 Power Supply required
- 4U - Height

See Configuration Note:11

HP 5406R zl2 Switch — J9821A

- 1 Power Supply required
- 1 Fan Tray Included
- 1 Management module included
- 1 RJ-45 out-of-band management port
- 4U - Height

See Configuration Note:11

HP 5406-44G-PoE+-2XG v2 zl Swch w Pm SW — J9533A

- 44 autosensing 10/100/1000 port
- 1 - J9306A HP 1500 W PoE+ zl Power Supply included
- 1 - J9536A HP 20-port Gig-T PoE+ / 2-port 10-GbE SFP+ v2 zl Module included (min=0 \ max=2 SFP+ ransceivers)
- 1 - J9534A HP 24-port Gig-T PoE+ v2 zl Module included
- 4U - Height

See Configuration Note:1, 4, 11

PDU CABLE NA/MEX/TW/JP — #B2B

- C15 PDU Jumper Cord (NA/MEX/TW/JP)

PDU CABLE ROW — #B2C

- C15 PDU Jumper Cord (ROW)

High Volt Switch to Wall Power Cord — #B2E

- NEMA L6-20P Cord (NA/MEX/JP/TW)

HP 5406-44G-PoE+-4G v2 zl Swch w Prm SW — J9539A

- 44 autosensing 10/100/1000 port
- 1 - J9306A HP 1500 W PoE+ zl Power Supply included
- 1 - J9535A HP 20-port GT PoE+/4-port SFP v2 zl Mod included (min=0 \ max=4 SFP Transceivers)
- 1 - J9534A HP 24-port Gig-T PoE+ v2 zl Module included
- 4U - Height

See Configuration Note:2, 4, 11

PDU CABLE NA/MEX/TW/JP — #B2B

- C15 PDU Jumper Cord (NA/MEX/TW/JP)

PDU CABLE ROW — #B2C

- C15 PDU Jumper Cord (ROW)

Configuration

High Volt Switch to Wall Power Cord — #B2E
- NEMA L6-20P Cord (NA/MEX/JP/TW)

HP 5406 8p10GT 8p10GE Swch and Psw — J9866A
- 8 RJ-45 10GbE ports
- 1 - J9306A HP 1500 W PoE+ zl Power Supply included
- 1 - J9546A HP 8-port 10GBASE-T v2 zl Module included
- 1 - J9538A HP 8-port 10GbE SFP+ v2 zl Module included (min=0 \ max=8 SFP+ Transceivers)
- 4U - Height

See Configuration Note:1, 4, 11

PDU CABLE NA/MEX/TW/JP — J9866A#B2B
- C15 PDU Jumper Cord (NA/MEX/TW/JP)

PDU CABLE ROW — J9866A#B2C
- C15 PDU Jumper Cord (ROW)

High Volt Switch to Wall Power Cord — J9866A#B2E
- NEMA L6-20P Cord (NA/MEX/JP/TW)

HP 5406R-8XGT/8SFP+ v2 zl2 Swch — J9868A
- 1 Power Supply required
- 8 RJ-45 10GbE ports
- 1 - J9546A HP 8-port 10GBASE-T v2 zl Module included
- 1 - J9538A HP 8-port 10GbE SFP+ v2 zl Module included (min=0 \ max=8 SFP+ Transceivers)
- 1 Fan Tray Included
- 1 Management module included
- 1 RJ-45 out-of-band management port
- 4U - Height

See Configuration Note:1, 11

HP 5406R-Gig-T-PoE+/SFP+ v2 zl2 Swch — J9823A
- 1 Power Supply required
- 1 - J9536A HP 20-port Gig-T PoE+ / 2-port 10-GbE SFP+ v2 zl Module included(min=0 \ max=2 SFP+ Transceivers)
- 1 - J9534A HP 24-port Gig-T PoE+ v2 zl Module included
- 1 Fan Tray Included
- 1 Management module included
- 1 RJ-45 out-of-band management port
- 4U - Height

See Configuration Note:1, 11

HP 5406R-Gig-T-PoE+/SFP v2 zl2 Swch — J9824A
- 1 Power Supply required
- 1 - J9535A HP 20-port Gig-T PoE+ / 4-port SFP v2 zl Module included (min=0 \ max=4 SFP Transceivers)

Configuration Note:2, 11

Configuration

- 1 - J9534A HP 24-port Gig-T PoE+ v2 zl Module included
- 1 Fan Tray Included
- 1 Management module included
- 1 RJ-45 out-of-band management port
- 4U - Height

HP 5412 zl Switch with Premium Software — J9643A — See Configuration Note:11

- 2 Power Supplies required
- 7U - Height

HP 5412R zl2 Switch — J9822A — See Configuration Note:11

- 2 Power Supplies required
- 1 Fan Tray Included
- 1 Management module included
- 1 RJ-45 out-of-band management port
- 7U - Height

HP 5412-92G-PoE+-2XG v2 zl Swch w Pm SW — J9532A — See Configuration Note:1, 4, 11

- 92 autosensing 10/100/1000 port
- 2 - J9306A HP 1500 W PoE+ zl Power Supply included
- 1 - J9536A HP 20-port Gig-T PoE+ / 2-port 10-GbE SFP+ v2 zl Module included(min=0 \ max=2 SFP+ Transceivers)
- 3 - J9534A HP 24-port Gig-T PoE+ v2 zl Module included
- 7U - Height

PDU CABLE NA/MEX/TW/JP — #B2B

- C15 PDU Jumper Cord (NA/MEX/TW/JP)

PDU CABLE ROW — #B2C

- C15 PDU Jumper Cord (ROW)

High Volt Switch to Wall Power Cord — #B2E

- NEMA L6-20P Cord (NA/MEX/JP/TW)

HP 5412-92G-PoE+-4G v2 zl Swch w Prm SW — J9540A — See Configuration Note:2, 4, 5, 8

- 92 autosensing 10/100/1000 port
- 2 - J9306A HP 1500 W PoE+ zl Power Supply included
- 1 - J9535A HP 20-port Gig-T PoE+ / 4-port SFP v2 zl Module included (min=0 \ max=4 SFP Transceivers)
- 3 - J9534A HP 24-port Gig-T PoE+ v2 zl Module included
- 7U - Height

Configuration

PDU CABLE NA/MEX/TW/JP #B2B

- C15 PDU Jumper Cord (NA/MEX/TW/JP)

PDU CABLE ROW #B2C

- C15 PDU Jumper Cord (ROW)

High Volt Switch to Wall Power Cord #B2E

- NEMA L6-20P Cord (NA/MEX/JP/TW)

HP 5412R-Gig-T-PoE+/SFP+ v2 zl2 Swch J9825A

- 2 Power Supplies required
- 1 - J9536A HP 20-port Gig-T PoE+ / 2-port 10-GbE SFP+ v2 zl Module included(min=0 \ max=2 SFP+ Transceivers)
- 3 - J9534A HP 24-port Gig-T PoE+ v2 zl Module included
- 1 Fan Tray Included
- 1 Management module included
- 1 RJ-45 out-of-band management port
- 7U - Height

See Configuration Note:1,11

HP 5412R-Gig-T-PoE+/SFP v2 zl2 Swch J9826A

- 2 Power Supplies required
- 1 - J9535A HP 20-port Gig-T PoE+ / 4-port SFP v2 zl Module included (min=0 \ max=4 SFP Transceivers)
- 3 - J9534A HP 24-port Gig-T PoE+ v2 zl Module included
- 1 Fan Tray Included
- 1 Management module included
- 1 RJ-45 out-of-band management port
- 7U - Height

See Configuration Note:2,11

Configuration Rules:

Note 1 The following Transceivers install into this Chassis : (Use #0D1 or #B01 if switch is CTO) - if applicable

HP X121 1G SFP LC SX Transceiver	J4858C
HP X121 1G SFP LC LX Transceiver	J4859C
HP X121 1G SFP LC LH Transceiver	J4860C
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
HP X132 10G SFP+ LC LR Transceiver	J9151A
HP X132 10G SFP+ LC LRM Transceiver	J9152A
HP X132 10G SFP+ LC SR Transceiver	J9150A
HP X242 10G SFP+ to SFP+ 1m Direct Attach Copper Cable	J9281B
HP X242 10G SFP+ to SFP+ 3m Direct Attach Copper Cable	J9283B

Configuration

	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 10G X244 XFP to SFP+ 3m Direct Attach Copper Cable	J9301A
	HP 10G X244 XFP to SFP+ 5m Direct Attach Copper Cable	J9302A
	HP X242 10G SFP+ to SFP+ 10m Direct Attach Copper Cable	J9286B
	HP X242 10G SFP+ to SFP+ 15m Direct Attach Copper Cable	J9287B
Note 2	The following Transceivers install into this Chassis : (Use #0D1 if switch is CTO) - if applicable	
	HP X121 1G SFP LC SX Transceiver	J4858C
	HP X121 1G SFP LC LX Transceiver	J4859C
	HP X121 1G SFP LC LH Transceiver	J4860C
	HP X121 1G SFP RJ45 T Transceiver	J8177C
	HP X112 100M SFP LC BX-D Transceiver	J9099B
	HP X112 100M SFP LC BX-U Transceiver	J9100B
	HP X122 1G SFP LC BX-D Transceiver	J9142B
	HP X122 1G SFP LC BX-U Transceiver	J9143B
	HP X111 100M SFP LC FX Transceiver	J9054C
Note 4	Localization required on orders without #B2B, #B2C, #B2D or #B2E options.	
Note 6	If the CTO Base Model is ordered #0D1, Then #B2B, or #B2C is Required on the Power Supply's. (Optional when Switch is not Factory Racked. See Drop down remark in "Power Supplies" section.)	
Note 11	If the CTO Switch Chassis needs to be racked, Then the CTO Base Model needs to integrate (with #0D1) to the HP Rack.	

Internal Power Supplies

J9642Ax System (std 0 // max 2) User Selection (min 1 / max 2)

J9533Ax, J9866A and J9539Ax System (std 1 // max 2) User Selection (min 0 / max 1)

J9643Ax System (std 0 // max 4) User Selection (min 2 / max 4)

J9532Ax and J9540x System (std 2 // max 4) User Selection (min 0 / max 2)

(J9821A, J9868A, J9823A, J9824A) System (std 0 // max 2) User Selection (min 1 / max 2)

(J9821A, J9868A, J9823A, J9824A) System (std 0 // max 2) User Selection (min 1 / max 2)

HP 1500 W PoE+ zl Power Supply • C15 Outlet	J9306A See Configuration Note:1, 2, 6
PDU CABLE NA/MEX/TW/JP • C15 PDU Jumper Cord (NA/MEX/TW/JP)	J9306A#B2B
PDU CABLE ROW	J9306A#B2C

Configuration

- C15 PDU Jumper Cord (ROW)

High Volt Switch to Wall Power Cord — J9306A#B2E
- NEMA L6-20P Cord (NA/MEX/JP/TW)

HP 875W zl Power Supply — J8712A
- C15 Outlet

See Configuration Note:1, 2, 5, 6

PDU CABLE NA/MEX/TW/JP — J8712A#B2B
- C15 PDU Jumper Cord (NA/MEX/TW/JP)

High Volt Switch to Wall Power Cord — J8712A#B2E
- NEMA L6-20P Cord (NA/MEX/JP/TW)

HP 1500 W zl Power Supply — J8713A
- C20 Outlet

See Configuration Note:1, 2, 5, 6

C19 PDU WW — J8713A#B2D
- C19 to C20 Jumper Cord

High Volt Switch to Wall Power Cord — J8713A#B2E
- NEMA L6-20P Cord (NA/MEX/JP/TW)

HP 5400R 700W PoE+ zl2 Power Supply — J9828A
- includes 1 x c13, 700w

See Configuration Note:2, 4, 6, 7

PDU Cable NA/MEX/TW/JP — J9828A#B2B
- C15 PDU Jumper Cord (NA/MEX/TW/JP)

PDU Cable ROW — J9828A#B2C
- C15 PDU Jumper Cord (ROW)

High Volt Switch to Wall Power Cord — J9828A#B2E
- NEMA L6-20P Cord (NA/MEX/JP/TW)

HP 5400R 1100W PoE+ zl2 Power Supply — J9829A

Configuration

- includes 1 x c15, 1100W — See Configuration Note:2, 4, 6, 7

PDU Cable NA/MEX/TW/JP — J9829A#B2B
- C15 PDU Jumper Cord (NA/MEX/TW/JP)

PDU Cable ROW — J9829A#B2C
- C15 PDU Jumper Cord (ROW)

High Volt Switch to Wall Power Cord — J9829A#B2E
- NEMA L6-20P Cord (NA/MEX/JP/TW)

HP 5400R 2750W PoE+ zl2 Power Supply — J9830A
- includes 1 x c19, 2750w — See Configuration Note:2, 4, 6, 7

PDU Cable NA/MEX/TW/JP — J9830A#B2B
- C19 PDU Jumper Cord (NA/MEX/TW/JP)

PDU Cable ROW — J9830A#B2C
- C19 PDU Jumper Cord (ROW)

High Volt Switch to Wall Power Cord — J9830A#B2E
- NEMA L6-20P Cord (NA/MEX/JP/TW)

Configuration Rules:

Note 1 Power Supplies cannot be mixed for a switch enclosure

Note 2 Localization required on orders without #B2B, #B2C or #B2E options.

Note 3 This power supply is not supported on the J9821A, J9868A, J9823A, J9824A, J9822A, J9825A and J9826A switches.

Note 4 This power supply is ONLY supported on the J9821A, J9868A, J9823A, J9824A, J9822A, J9825A and J9826A switches.

Note 5 This power supply is not supported on the J9533Ax, J9539Ax, J9532Ax, J9866A and J9540x switches.

Note 6 If #B2E is selected Then replace Localized option with #B2E for power supply and with #B2E for switch . (Offered only in NA, Mexico,, Taiwan, and Japan)

Note 7 Power Supplies can be mixed for a switch enclosure

Configuration

Remarks: If Power Supply is added to switch with power supply, then Switch and Power Supply localization must match.

For J9828A, J9829A, J9830A: Power Supplies can be mixed for a switch enclosure. However, the three different power supplies each require different power cords, and the wall plug that is needed for J9830A is different from the wall plug that is needed for J9828A and J9829A. Moreover, full redundancy and N+1 redundancy are only supported with like power supplies.

"Drop down under power supply should offer the following options and results:

Switch/Router/Power Supply to PDU Power Cord - #B2B in North America, Mexico, Taiwan, and Japan or #B2C ROW. (Watson Default B2B or B2C for Rack Level CTO)

Switch/Router/Power Supply to Wall Power Cord - Localized Option (Watson Default for BTO and Box Level CTO)

High Volt Switch/Router/Power Supply to Wall Power Cord - #B2E Option. (Offered only in North America, Mexico, Taiwan, and Japan)"

Enter the following menu selections as integrated to the CTO Model X server above if order is factory built.

Modules

Management Modules

(J9821A, J9868A, J9823A, J9824A, J9822A, J9825A, J9826A) System (std 1 // max 2) User Selection (min 0 / max 1)

HP 5400R zl2 Management Module J9827A

I/O Modules

J9642x only - System (std 0 // max=6) User Selection (min 0 / max=6) per Chassis

J9821A only - System (std 0 // max=6) User Selection (min 0 / max=6) per Chassis

J9643x only - System (std 0 // max=12) User Selection (min 0 / max=12) per Chassis

J9822A only - System (std 0 // max=12) User Selection (min 0 / max=12) per Chassis

J9533x, J9539x, J8699x, J9447x, J9866A only - System (std 2 // max=6) User Selection (min 0 / max=4) per Chassis

J9868A, J9823A, J9824A only - System (std 2 // max=6) User Selection (min 0 / max=4) per Chassis

J9532A, J9540A only - System (std 4 // max=12) User Selection (min 0 / max=8) per Chassis

J9825A, J9826A only - System (std 4 // max=12) User Selection (min 0 / max=8) per Chassis

HP 20-port GT PoE+/4-port SFP v2 zl Mod J9535A

- min=0 \ max=4 SFP Transceivers See Configuration Note:1

Configuration

HP 24-port SFP v2 zl Module — J9537A
- min=0 \ max=24 SFP Transceivers — See Configuration Note:1

HP 12p Gig-T PoE+/12p SFP v2 zl Mod — J9637A
- min=0 \ max=12 SFP Transceivers — See Configuration Note:1

HP 20-port Gig-T / 4-port SFP v2 zl Mod — J9549A
- min=0 \ max=20 SFP Transceivers — See Configuration Note:1

HP 4-port 10GbE SFP+ zl Module — J9309A
- min=0 \ max=4 SFP+ Transceivers — See Configuration Note:2

HP 8-port 10 GbE SFP+ v2 zl Module — J9538A
- min=0 \ max=8 SFP+ Transceivers — See Configuration Note:5

HP 20p GT PoE+ / 2p SFP+ v2 zl Module — J9536A
- min=0 \ max=2 SFP+ Transceivers — See Configuration Note:5

HP 20-port Gig-T / 2-port SFP+ v2 zl Mod — J9548A
- min=0 \ max=2 SFP+ Transceivers — See Configuration Note:5

HP 4-Port 10 GbE X2 zl Module — J8707A
- min=0 \ max=2 X2 Transceivers — See Configuration Note:3

HP 4-Port 10 GbE CX4 zl Module — J8708A
- min=0 \ max=2 CX4 Media Converter

HP 8-port 10GBase-T v2 zl Module — J9546A
- No Transceivers

HP 24-Port 10/100/1000 PoE zl Module — J8702A
- No Transceivers

HP 20p 10/100/1000 PoE+/4p MGBIC zl Mod — J9308A
- No Transceivers — See Configuration Note:1

Configuration

HP 20-Port Gig-T/4-Port Mini-GBIC zl Module • No Transceivers	J8705A See Configuration Note:12
HP 24-Port Mini-GBIC zl Module • No Transceivers	J8706A See Configuration Note:12
HP 24-Port 10/100/1000 PoE+ zl Module • No Transceivers	J9307A
HP 24-port Gig-T PoE+ v2 zl Module • No Transceivers	J9534A
HP 24-Port 10/100 PoE+ zl Module • No Transceivers	J9478A
HP 24-port 10/100 PoE+ v2 zl Module • No Transceivers	J9547A
HP 24-port Gig-T v2 zl Module • No Transceivers	J9550A
HP MSM765 zl Mobility Controller • No Transceivers	J9370A
HP MSM775 zl Premium Controller Module • No Transceivers	J9840A See Configuration Note:10
HP Surv Brch Com zl Mod pwrby Msft Lync • No Transceivers. Double Height Module, takes up 2 Vertical slots*	J9485A See Configuration Note:4, 6, 7, 8, 9
HP Svc zlMod f/AvayaSBC pwrby AcmePacket • No Transceivers. Double Height Module, takes up 2 Vertical slots*	J9486A See Configuration Note:6, 7, 8, 9
HP Advanced Services v2 zl Module w/ HDD • No Transceivers	J9857A See Configuration Note:11

Configuration

HP Advanced Services v2 zl Module w/ SSD • No Transceivers	J9858A See Configuration Note:11
HP Adv Srvs zl Mod w/XenServer Platform • No Transceivers	J9747A See Configuration Note:6, 7, 8
HP Adv Srvs zl Mod w/vSphere Platform • No Transceivers	J9748A See Configuration Note:6, 7, 8

Configuration Rules:

Note 1	The following Transceivers install into this Module: (Use #0D1 if switch is CTO) - if applicable	
	HP X111 100M SFP LC FX Transceiver	J9054C
	HP X112 100M SFP LC BX-D Transceiver	J9099B
	HP X112 100M SFP LC BX-U Transceiver	J9100B
	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 X122 1G SFP LC BX-D Transceiver	J9142B
	HP X122 1G SFP LC BX-U Transceiver	J9143B
	HP X121 1G SFP RJ45 T Transceiver	J8177C
Note 2	The following Transceivers install into this Module: (Use #0D1 or #B01 if switch is CTO) - if applicable	
	HP X132 10G SFP+ LC ER Transceiver	J9153A
	HP X132 10G SFP+ LC LR Transceiver	J9151A
	HP X132 10G SFP+ LC LRM Transceiver	J9152A
	HP X132 10G SFP+ LC SR Transceiver	J9150A
	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 10G X244 XFP to SFP+ 3m Direct Attach Copper Cable	J9301A
	HP 10G X244 XFP to SFP+ 5m Direct Attach Copper Cable	J9302A
	HP X242 10G SFP+ to SFP+ 10m Direct Attach Copper Cable	J9286B
	HP X242 10G SFP+ to SFP+ 15m Direct Attach Copper Cable	J9287B
Note 3	The following Transceivers install into this Module: (Use #0D1 if switch is CTO) - if applicable	
	HP X131 10G X2 SC SR Transceiver	J8436A
	HP X131 10G X2 SC LR Transceiver	J8437A
	HP X131 10G X2 SC ER Transceiver	J8438A
	HP X131 10G X2 SC LRM Transceiver	J9144A
Note 4	The following Upgrades install into this Module:	
	Sangoma 2-port T1/E1/J1 Telephony Card	J9488A

Configuration

	Sangoma 4-port T1/E1/J1 Telephony Card	J9489A
	Sangoma 4-port FXO Telephony Card	J9516A
	Sangoma 4-port FXS Telephony Card	J9482A
	Sangoma 2-p FXO / 2-p FXS Telephony Card	J9518A
	Sangoma 1-port T1/E1/J1 Telephony Card	J9487A
Note 5	The following Transceivers install into this Module: (Use #0D1 if switch is CTO) - if applicable	
	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 X122 1G SFP LC BX-D Transceiver	J9142B
	HP X122 1G SFP LC BX-U Transceiver	J9143B
	HP X121 1G SFP RJ45 T Transceiver	J8177C
	HP X132 10G SFP+ LC ER Transceiver	J9153A
	HP X132 10G SFP+ LC LR Transceiver	J9151A
	HP X132 10G SFP+ LC LRM Transceiver	J9152A
	HP X132 10G SFP+ LC SR Transceiver	J9150A
	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 10G X244 XFP to SFP+ 3m Direct Attach Copper Cable	J9301A
	HP 10G X244 XFP to SFP+ 5m Direct Attach Copper Cable	J9302A

Note 6 For Switches: J9643A, J9532A, J9540A; If this module is selected, Then Max = 4 Modules of any combination or pairing of the following modules: J9517A, J9485A, J9486A, J9289A, J9483A, J9666A, J9747A, J9748A. Double Height Modules occupy 2 vertical slots.

Note 7 If this module is selected, Then show following message:
For better airflow, This module must be located on left side only in the following Switches: J9642A, J9533A, J9539A, J9866A.
For better airflow, It is preferred, but not required, that This module be located on left side only in the following Switches: J9643A, J9532A, J9540A.

Note 8 For Switches J9642A, J9533A, J9539A, J9866A; If this module is selected, Then Max = 3 SLOTS on left side of chassis only, of any combination or pairing of the following modules: J9517A, J9485A, J9486A, J9289A, J9483A, J9666A, J9747A, J9748A. Double Height Modules occupy 2 vertical slots.

Note 9 This module occupies 2 Vertical Slots.

Note 10 Maximum of this Module per Chassis:
J9642A min=0\max=5 per Chassis
J9533A, J9539A, J9866A min=0\max=4 per Chassis
J9643A, J9532A, J9540A min=0\max=6 per Chassis
There are no restrictions on which slots these modules may go in.

Note 11 Maximum of this Module per Chassis:
J9642A, J9533A, J9539A, J9866A min=0\max=4 per Chassis
J9643A, J9532A, J9540A min=0\max=6 per Chassis
There are no restrictions on which slots these modules may go in.

Configuration

Note 12	The following Transceivers install into this Module: (Use #0D1 if switch is CTO) - if applicable	
	HP X111 100M SFP LC FX Transceiver	J9054C
	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

Transceivers

SFP Transceivers

HP X111 100M SFP LC FX Transceiver	J9054C
HP X112 100M SFP LC BX-D Transceiver	J9099B
HP X112 100M SFP LC BX-U Transceiver	J9100B
HP X121 1G SFP LC LH Transceiver	J4860C
HP X121 1G SFP LC LX Transceiver	J4859C
HP X121 1G SFP LC SX Transceiver	J4858C
HP X122 1G SFP LC BX-D Transceiver	J9142B
HP X122 1G SFP LC BX-U Transceiver	J9143B
HP X121 1G SFP RJ45 T Transceiver	J8177C

SFP+ Transceivers

HP X132 10G SFP+ LC ER Transceiver	J9153A
HP X132 10G SFP+ LC LR Transceiver	J9151A
HP X132 10G SFP+ LC LRM Transceiver	J9152A
HP X132 10G SFP+ LC SR Transceiver	J9150A
HP X242 10G SFP+ to SFP+ 1m Direct Attach Copper Cable	J9281B#B01
HP X242 10G SFP+ to SFP+ 3m Direct Attach Copper Cable	J9283B#B01
HP X242 10G SFP+ to SFP+ 7m Direct Attach Copper Cable	J9285B#B01
HP X242 10G SFP+ 10m DAC Cable	J9286B
HP X242 10G SFP+ 15m DAC Cable	J9287B

Configuration

HP X244 10G XFP to SFP+ 1m Direct Attach Copper Cable	J9300A#B01
HP 10G X244 XFP to SFP+ 3m Direct Attach Copper Cable	J9301A#B01
HP 10G X244 XFP to SFP+ 5m Direct Attach Copper Cable	J9302A#B01

X2 Transceivers

HP X131 10G X2 SC ER Transceiver	J8438A
HP X131 10G X2 SC LR Transceiver	J8437A
HP X131 10G X2 SC LRM Transceiver	J9144A
HP X131 10G X2 SC SR Transceiver	J8436A

Cables

Multi-Mode Cables

HP .5m Multi-mode OM3 LC/LC FC Cable	AJ833A
HP 1m Multi-mode OM3 LC/LC FC Cable	AJ834A
HP 2 m Multimode OM3 LC/LC FC Cable	AJ835A
HP 5 m Multimode OM3 LC/LC FC Cable	AJ836A
HP 15 m Multimode OM3 LC/LC FC Cable	AJ837A
HP 30 m Multimode OM3 LC/LC FC Cable	AJ838A
HP 50 m Multimode OM3 LC/LC FC Cable	AJ839A
HP Premier Flex LC/LC OM4 2f 1m Cbl	QK732A
HP Premier Flex LC/LC OM4 2f 2m Cbl	QK733A
HP Premier Flex LC/LC OM4 2f 5m Cbl	QK734A
HP Premier Flex LC/LC OM4 2f 15m Cbl	QK735A
HP Premier Flex LC/LC OM4 2f 30m Cbl	QK736A
HP Premier Flex LC/LC OM4 2f 50m Cbl	QK737A

Switch Enclosure Options

Configuration

Fan Trays

HP 5406R zl2 Switch Fan Tray	J9831A
HP 5412R zl2 Switch Fan Tray	J9832A

Mounting Kit

HP X450 4U/7U Univ 4-Post Rack Mnt Kit	J9852A See Configuration Note:1, 2

Configuration Rules:

Note 1 If this Mounting Kit is ordered with #0D1 then it integrates to the HP Universal Rack. (not the switch)

Note 2 If switches J9821A, J9868A, J9823A, J9824A, J9822A, J9825A and J9826A are installed into a rack, Then this Rack Mounting kit is required.

External Redundant Power Supplies

HP zl Power Supply Shelf J8714A

- Height = 3U

Remarks:

Cables included: includes two 2 m PoE (EPS) cables; cables can be used to carry PoE power to the connected switch; no extra cables are needed for a complete solution. Flexible mounting: the power shelf can be mounted forward or rear facing in a rack; in a four-post rack, two power shelves can be mounted front to front, requiring only 3U of rack space.

License

HP MSM760/765 Additional 40 AP License J9371A

Remarks:

The License is an option to the J9370A.

Survivable Branch Communication Upgrades

Sangoma 2-port T1/E1/J1 Telephony Card	J9488A
Sangoma 4-port T1/E1/J1 Telephony Card	J9489A
Sangoma 4-port FXO Telephony Card	J9516A
Sangoma 4-port FXS Telephony Card	J9482A
Sangoma 2-port FXO / 2-port FXS Telephony Card	J9518A
Sangoma 1-port T1/E1/J1 Telephony Card	J9487A

Configuration

Remarks:

The Sangoma Telephony Cards are accessories to the J9485A.

US Federal Government certifications

HP zl Chassis FIPS 10K Rack Mounting Kit	J9708A See Configuration Note:1
HP 16mm x 32mm Tmpr-Evidence (20) Labels	J9740A See Configuration Note:1
HP 16mm x 32mm Tmpr-Evidence (120) Label	J9709A See Configuration Note:1
HP 5406 zl FIPS Opacity Shield Kit	J9710A See Configuration Note:1
HP 5412 zl FIPS Opacity Shield Kit	J9711A See Configuration Note:1
HP 5406 zl High Performance Fan Tray	J9721A See Configuration Note:1
HP 5412 zl High Performance Fan Tray	J9722A See Configuration Note:1

Cofiguration Rules:

Note 1 Do not display in Watson.

Technical Specifications

HP 5406 zl Switch with Premium Software (J9642A)	**I/O ports and slots**	6 open module slots Supports a maximum of 48 10-GbE ports or 144 autosensing 10/100/1000 ports or 144 mini-GBICs, or a combination	
	Power supplies	2 power supply slots 1 minimum power supply required (ordered separately)	
	Physical characteristics	**Dimensions**	17.5(w) x 17.75(d) x 6.9(h) in (44.45 x 45.09 x 17.53 cm) (4U height)
		Weight	23.55 lb (10.68 kg)
	Memory and processor	**Gigabit Module**	ARM9 @ 200 MHz; packet buffer size: 144 Mb QDR SDRAM
		10G module	ARM9 @ 200 MHz; packet buffer size: 36 Mb QDR SDRAM
		Management Module	Freescale PowerPC 8540 @ 666 MHz, 4 MB flash, 128 MB compact flash, 256 MB DDR SDRAM
	Mounting and enclosure	Mounts in an EIA-standard 19 in. telco rack or equipment cabinet (hardware included); horizontal surface mounting only	
	Performance	**1000 Mb Latency**	< 3.7 µs (FIFO 64-byte packets)
		10 Gbps Latency	< 2.1 µs (FIFO 64-byte packets)
		Throughput	up to 282.1 Mpps
		Routing/Switching capacity	379.2 Gbps
		Switch fabric speed	379.2 Gbps
		Routing table size	10000 entries (IPv4), 5000 entries (IPv6)
		MAC address table size	64000 entries
	Environment	**Operating temperature**	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
		Nonoperating/Storage temperature	-40°F to 158°F (-40°C to 70°C)
		Nonoperating/Storage relative humidity	15% to 95% @ 149°F (65°C), noncondensing
		Altitude	up to 10,000 ft (3 km)
		Acoustic	Power: 57 dB, Pressure: 40.2 dB ISO 7779, ISO 9296
	Electrical characteristics	**Frequency**	50/60 Hz
		Achieved Miercom Certified Green Award	
		Description	Chassis ships without power supplies. Two power supply slots are 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)
		AC voltage	100-127/200-240 VAC
	Safety	CSA 22.2 No. 60950; UL 60950; IEC 60950; EN 60950	

Technical Specifications

	Emissions	FCC Class A; VCCI Class A; EN 55022/CISPR 22 Class A	
	Immunity	**EN**	EN 55024, CISPR 24
		ESD	IEC 61000-4-2; 4 kV CD, 8 kV AD
		Radiated	IEC 61000-4-3; 3 V/m
		EFT/Burst	IEC 61000-4-4; 1.0 kV (power line), 0.5 kV (signal line)
		Surge	IEC 61000-4-5; 1 kV/2 kV AC
		Conducted	IEC 61000-4-6; 3 V
		Power frequency magnetic field	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
		Harmonics	EN 61000-3-2, IEC 61000-3-2
		Flicker	EN 61000-3-3, IEC 61000-3-3
	Management	HP PCM+; HP PCM (included); 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).	
	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 5412 zl Switch with Premium Software (J9643A)	**I/O ports and slots**	12 open module slots Supports a maximum of 96 10-GbE ports or 288 autosensing 10/100/1000 ports or 288 mini-GBICs, or a combination	
	Power supplies	4 power supply slots 2 minimum power supplies required (ordered separately)	
	Physical characteristics	**Dimensions**	17.5(w) x 17.75(d) x 12.1(h) in (44.45 x 45.09 x 30.73 cm) (7U height)
		Weight	34.94 lb (15.85 kg)
	Memory and processor	**Gigabit Module**	ARM9 @ 200 MHz; packet buffer size: 144 Mb QDR SDRAM
		10G module	ARM9 @ 200 MHz; packet buffer size: 36 Mb QDR SDRAM
		Management Module	Freescale PowerPC 8540 @ 666 MHz, 4 MB flash Mb, 128 MB compact flash, 256 MB DDR SDRAM
	Mounting and enclosure	Mounts in an EIA-standard 19 in. telco rack or equipment cabinet (hardware included); horizontal surface mounting only	
	Performance	**1000 Mb Latency**	< 3.7 µs (FIFO 64-byte packets)
		10 Gbps Latency	< 2.1 µs (FIFO 64-byte packets)
		Throughput	up to 564.2 Mpps
		Routing/Switching capacity	758.4 Gbps
		Switch fabric speed	758.4 Gbps
		Routing table size	10000 entries (IPv4), 5000 entries (IPv6)
		MAC address table size	64000 entries

Technical Specifications

	Environment	**Operating temperature**	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
		Nonoperating/Storage temperature	-40°F to 158°F (-40°C to 70°C)
		Nonoperating/Storage relative humidity	15% to 95% @ 149°F (65°C), noncondensing
		Altitude	up to 10,000 ft (3 km)
		Acoustic	Power: 64 dB, Pressure: 57.5 dB ISO 7779, ISO 9296
	Electrical characteristics	**Frequency**	50/60 Hz
		Description	Chassis ships without power supplies. Four power supply slots are available; three different power supplies are available. See power supply products for additional specifications.
		Maximum heat dissipation	4900 BTU/hr (5169 kJ/hr), (max. non-PoE); 7400 BTU/hr (7,807 kJ/hr) (max. using PoE)
		AC voltage	100-127/200-240 VAC
	Safety	CSA 22.2 No. 60950; UL 60950; IEC 60950; EN 60950	
	Emissions	FCC Class A; VCCI Class A; EN 55022/CISPR 22 Class A	
	Immunity	**EN**	EN 55024, CISPR 24
		ESD	IEC 61000-4-2; 4 kV CD, 8 kV AD
		Radiated	IEC 61000-4-3; 3 V/m
		EFT/Burst	IEC 61000-4-4; 1.0 kV (power line), 0.5 kV (signal line)
		Surge	IEC 61000-4-5; 1 kV/2 kV AC
		Conducted	IEC 61000-4-6; 3 V
		Power frequency magnetic field	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
		Harmonics	EN 61000-3-2, IEC 61000-3-2
		Flicker	EN 61000-3-3, IEC 61000-3-3
	Management	HP PCM+; HP PCM (included); 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).	
	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 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	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	

Technical Specifications

	802.3at PoE+); Media Type: Auto-MDIX; Duplex: 10BASE-T/100BASE-TX: half or full; 1000BASE-T: full only	
	2 open 10-GbE SFP+ transceiver slots	
	4 open module slots	
	Supports a maximum of 16 10-GbE ports or 140 autosensing 10/100/1000 ports or 100 mini-GBICs, or a combination	
Power supplies	2 power supply slots 1 minimum power supply required includes: 1 x J9306A (HP 1500W PoE+ zl Power Supply)	
Physical characteristics	**Dimensions**	17.5(w) x 17.75(d) x 6.9(h) in (44.45 x 45.09 x 17.53 cm) (4U height)
	Weight	46.08 lb (20.9 kg)
Memory and processor	**Gigabit Module**	ARM9 @ 200 MHz; packet buffer size: 144 Mb QDR SDRAM
	10G module	ARM9 @ 200 MHz; packet buffer size: 36 Mb QDR SDRAM
	Management Module	Freescale PowerPC 8540 @ 666 MHz, 4 MB flash, 128 MB compact flash, 256 MB DDR SDRAM
Mounting and enclosure	Mounts in an EIA-standard 19 in. telco rack or equipment cabinet (hardware included); horizontal surface mounting only	
Performance	**1000 Mb Latency**	< 3.7 µs (FIFO 64-byte packets)
	10 Gbps Latency	< 2.1 µs (FIFO 64-byte packets)
	Throughput	up to 282.1 Mpps
	Routing/Switching capacity	379.2 Gbps
	Switch fabric speed	379.2 Gbps
	Routing table size	10000 entries (IPv4), 5000 entries (IPv6)
	MAC address table size	64000 entries
Environment	**Operating temperature**	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
	Nonoperating/Storage temperature	-40°F to 158°F (-40°C to 70°C)
	Nonoperating/Storage relative humidity	15% to 95% @ 149°F (65°C), noncondensing
	Altitude	up to 10,000 ft (3 km)
	Acoustic	Power: 57 dB, Pressure: 40.2 dB ISO 7779, ISO 9296
Electrical characteristics	**Frequency**	50/60 Hz
	Description	One J9306A 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 (2584.75 kJ/hr), (max. non-PoE); 3700 BTU/hr (3903 kJ/hr) (max. using PoE)
	AC voltage	100-127/200-240 VAC

Technical Specifications

		Idle power	215 W
	Safety	CSA 22.2 No. 60950; UL 60950; IEC 60950; EN 60950	
	Emissions	FCC Class A; VCCI Class A; EN 55022/CISPR 22 Class A	
	Immunity	**EN**	EN 55024, CISPR 24
		ESD	IEC 61000-4-2; 4 kV CD, 8 kV AD
		Radiated	IEC 61000-4-3; 3 V/m
		EFT/Burst	IEC 61000-4-4; 1.0 kV (power line), 0.5 kV (signal line)
		Surge	IEC 61000-4-5; 1 kV/2 kV AC
		Conducted	IEC 61000-4-6; 3 V
		Power frequency magnetic field	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
		Harmonics	EN 61000-3-2, IEC 61000-3-2
		Flicker	EN 61000-3-3, IEC 61000-3-3
	Management	HP PCM+; HP PCM (included); 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).	
	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 5412-92G-PoE+-2XG v2 zl Switch with Premium Software (J9532A)	**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)	
	I/O ports and slots	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 10-GbE SFP+ transceiver slots	
		8 open module slots	
		Supports a maximum of 32 10-GbE ports or 284 autosensing 10/100/1000 ports or 196 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)	
	Physical characteristics	**Dimensions**	17.5(w) x 17.75(d) x 12.1(h) in (44.45 x 45.09 x 30.73 cm) (7U height)
		Weight	75.36 lb (34.18 kg)
	Memory and processor	**Gigabit Module**	ARM9 @ 200 MHz; packet buffer size: 144 Mb QDR SDRAM
		10G module	ARM9 @ 200 MHz; packet buffer size: 36 Mb QDR SDRAM
		Management Module	Freescale PowerPC 8540 @ 666 MHz, 4 MB flash Mb, 128 MB compact flash, 256 MB DDR SDRAM

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Mounting and enclosure	Mounts in an EIA-standard 19 in. telco rack or equipment cabinet (hardware included); horizontal surface mounting only	
Performance	**1000 Mb Latency**	< 3.7 µs (FIFO 64-byte packets)
	10 Gbps Latency	< 2.1 µs (FIFO 64-byte packets)
	Throughput	up to 564.2 Mpps
	Routing/Switching capacity	758.4 Gbps
	Switch fabric speed	758.4 Gbps
	Routing table size	10000 entries (IPv4), 5000 entries (IPv6)
	MAC address table size	64000 entries
Environment	**Operating temperature**	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
	Nonoperating/Storage temperature	-40°F to 158°F (-40°C to 70°C)
	Nonoperating/Storage relative humidity	15% to 95% @ 149°F (65°C), noncondensing
	Altitude	up to 10,000 ft (3 km)
	Acoustic	Power: 64 dB, Pressure: 57.5 dB ISO 7779, ISO 9296
Electrical characteristics	**Frequency**	50/60 Hz
	Description	Two J9306A installed. Two open power supply slots are 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)
	AC voltage	110-127/200-240 VAC
	Idle power	312 W
Safety	CSA 22.2 No. 60950; UL 60950; IEC 60950; EN 60950	
Emissions	FCC Class A; VCCI Class A; EN 55022/CISPR 22 Class A	
Immunity	**EN**	EN 55024, CISPR 24
	ESD	IEC 61000-4-2; 4 kV CD, 8 kV AD
	Radiated	IEC 61000-4-3; 3 V/m
	EFT/Burst	IEC 61000-4-4; 1.0 kV (power line), 0.5 kV (signal line)
	Surge	IEC 61000-4-5; 1 kV/2 kV AC
	Conducted	IEC 61000-4-6; 3 V
	Power frequency magnetic field	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
	Harmonics	EN 61000-3-2, IEC 61000-3-2
	Flicker	EN 61000-3-3, IEC 61000-3-3
Management	HP PCM+; HP PCM (included); command-line interface; Web browser; configuration menu; out-of-band management (serial RS-232C)	

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	Notes		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: 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 5406-44G-PoE+-4G-SFP v2 zl Switch with Premium Software (J9539A)	**Included accessories**		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		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 16 10-GbE ports or 140 autosensing 10/100/1000 ports or 100 mini-GBICs, or a combination
	Power supplies		2 power supply slots 1 minimum power supply required includes: 1 x J9306A (HP 1500W PoE+ zl Power Supply)
	Physical characteristics	**Dimensions**	17.5(w) x 17.75(d) x 6.9(h) in (44.45 x 45.09 x 17.53 cm) (4U height)
		Weight	45.58 lb (20.68 kg)
	Memory and processor	**Gigabit Module**	ARM9 @ 200 MHz; packet buffer size: 144 Mb QDR SDRAM
		10G module	ARM9 @ 200 MHz; packet buffer size: 36 Mb QDR SDRAM
		Management Module	Freescale PowerPC 8540 @ 666 MHz, 4 MB flash, 128 MB compact flash, 256 MB DDR SDRAM
	Mounting and enclosure		Mounts in an EIA-standard 19 in. telco rack or equipment cabinet (hardware included); horizontal surface mounting only
	Performance	**1000 Mb Latency**	< 3.7 µs (FIFO 64-byte packets)
		10 Gbps Latency	< 2.1 µs (FIFO 64-byte packets)
		Throughput	up to 282.1 Mpps
		Routing/Switching capacity	379.2 Gbps
		Switch fabric speed	379.2 Gbps
		Routing table size	10000 entries (IPv4), 5000 entries (IPv6)
		MAC address table size	64000 entries
	Environment	**Operating temperature**	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
		Nonoperating/Storage temperature	-40°F to 158°F (-40°C to 70°C)
		Nonoperating/Storage relative humidity	15% to 95% @ 149°F (65°C), noncondensing

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		Altitude	up to 10,000 ft (3 km)
		Acoustic	Power: 57 dB, Pressure: 40.2 dB ISO 7779, ISO 9296
	Electrical characteristics	**Frequency**	50/60 Hz
		Description	One J9306A 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 (2584.75 kJ/hr), (max. non-PoE); 3700 BTU/hr (3903 kJ/hr) (max. using PoE)
		AC voltage	110-127/200-240 VAC
		Idle power	215 W
	Safety	CSA 22.2 No. 60950; UL 60950; IEC 60950; EN 60950	
	Emissions	FCC Class A; VCCI Class A; EN 55022/CISPR 22 Class A	
	Immunity	**EN**	EN 55024, CISPR 24
		ESD	IEC 61000-4-2; 4 kV CD, 8 kV AD
		Radiated	IEC 61000-4-3; 3 V/m
		EFT/Burst	IEC 61000-4-4; 1.0 kV (power line), 0.5 kV (signal line)
		Surge	IEC 61000-4-5; 1 kV/2 kV AC
		Conducted	IEC 61000-4-6; 3 V
		Power frequency magnetic field	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
		Harmonics	EN 61000-3-2, IEC 61000-3-2
		Flicker	EN 61000-3-3, IEC 61000-3-3
	Management	HP PCM+; HP PCM (included); 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).	
	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 5412-92G-PoE+-4G v2 zl Switch with Premium Software (J9540A)	**Included accessories**	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)	
	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 32 10-GbE ports or 284 autosensing 10/100/1000 ports or 196 mini-GBICs, or a combination	
	Power supplies	4 power supply slots 2 minimum power supplies required	

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	includes: 2 x J9306A (HP 1500W PoE+ zl Power Supply)	
Physical characteristics	**Dimensions**	17.5(w) x 17.75(d) x 12.1(h) in (44.45 x 45.09 x 30.73 cm) (7U height)
	Weight	74.86 lb (33.96 kg)
Memory and processor	**Gigabit Module**	ARM9 @ 200 MHz; packet buffer size: 144 Mb QDR SDRAM
	10G module	ARM9 @ 200 MHz; packet buffer size: 36 Mb QDR SDRAM
	Management Module	Freescale PowerPC 8540 @ 666 MHz, 4 MB flash Mb, 128 MB compact flash, 256 MB DDR SDRAM
Mounting and enclosure	Mounts in an EIA-standard 19 in. telco rack or equipment cabinet (hardware included); horizontal surface mounting only	
Performance	**1000 Mb Latency**	< 3.7 µs (FIFO 64-byte packets)
	10 Gbps Latency	< 2.1 µs (FIFO 64-byte packets)
	Throughput	up to 564.2 Mpps
	Routing/Switching capacity	758.4 Gbps
	Switch fabric speed	758.4 Gbps
	Routing table size	10000 entries (IPv4), 5000 entries (IPv6)
	MAC address table size	64000 entries
Environment	**Operating temperature**	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
	Nonoperating/Storage temperature	-40°F to 158°F (-40°C to 70°C)
	Nonoperating/Storage relative humidity	15% to 95% @ 149°F (65°C), noncondensing
	Altitude	up to 10,000 ft (3 km)
	Acoustic	Power: 64 dB, Pressure: 57.5 dB ISO 7779, ISO 9296
Electrical characteristics	**Frequency**	50/60 Hz
	Description	Two J9306A installed. Two open power supply slots are 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)
	AC voltage	110-127/200-240 VAC
	Idle power	312 W
Safety	CSA 22.2 No. 60950; UL 60950; IEC 60950; EN 60950	
Emissions	FCC Class A; VCCI Class A; EN 55022/CISPR 22 Class A	
Immunity	**EN**	EN 55024, CISPR 24
	ESD	IEC 61000-4-2; 4 kV CD, 8 kV AD
	Radiated	IEC 61000-4-3; 3 V/m
	EFT/Burst	IEC 61000-4-4; 1.0 kV (power line), 0.5 kV (signal line)

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		Surge	IEC 61000-4-5; 1 kV/2 kV AC
		Conducted	IEC 61000-4-6; 3 V
		Power frequency magnetic field	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
		Harmonics	EN 61000-3-2, IEC 61000-3-2
		Flicker	EN 61000-3-3, IEC 61000-3-3
	Management		HP PCM+; HP PCM (included); 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).
	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 5406 8p 10GBASE-T 8p 10GbE SFP+ v2 zl Switch with Premium Software (J9866A)	**Included accessories**		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		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		2 power supply slots 1 minimum power supply required includes: 1 x J9306A (HP 1500W PoE+ zl Power Supply)
	Physical characteristics	**Dimensions**	17.5(w) x 17.75(d) x 6.9(h) in (44.45 x 45.09 x 17.53 cm) (4U height)
		Weight	46.08 lb (20.9 kg)
	Memory and processor	**10G module**	ARM9 @ 200 MHz; packet buffer size: 36 Mb QDR SDRAM
		Management Module	Freescale PowerPC 8540 @ 666 MHz, 4 MB flash, 128 MB compact flash, 256 MB DDR SDRAM
	Mounting and enclosure		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)
		10 Gbps Latency	< 2.1 µs (FIFO 64-byte packets)
		Throughput	up to 282.1 Mpps
		Routing/Switching capacity	379.2 Gbps
		Switch fabric speed	379.2 Gbps
		Routing table size	10000 entries (IPv4), 5000 entries (IPv6)
		MAC address table size	64000 entries
	Environment	**Operating temperature**	32°F to 131°F (0°C to 55°C); 0°C to 40°C with J8706A or J8707A modules installed
		Operating relative	15% to 95% @ 131°F (55°C), noncondensing

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	humidity	
	Nonoperating/Storage temperature	-40°F to 158°F (-40°C to 70°C)
	Nonoperating/Storage relative humidity	15% to 95% @ 149°F (65°C), noncondensing
	Altitude	up to 10,000 ft (3 km)
	Acoustic	Power: 57 dB, Pressure: 40.2 dB ISO 7779, ISO 9296
Electrical characteristics	**Frequency**	50/60 Hz
	Description	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 (2584.75 kJ/hr), (max. non-PoE); 3700 BTU/hr (3903 kJ/hr) (max. using PoE)
	AC voltage	110-127/200-240 VAC
	Idle power	215 W
Safety	CSA 22.2 No. 60950; UL 60950; IEC 60950; EN 60950	
Emissions	FCC Class A; VCCI Class A; EN 55022/CISPR 22 Class A	
Immunity	**EN**	EN 55024, CISPR 24
	ESD	IEC 61000-4-2; 4 kV CD, 8 kV AD
	Radiated	IEC 61000-4-3; 3 V/m
	EFT/Burst	IEC 61000-4-4; 1.0 kV (power line), 0.5 kV (signal line)
	Surge	IEC 61000-4-5; 1 kV/2 kV AC
	Conducted	IEC 61000-4-6; 3 V
	Power frequency magnetic field	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
	Harmonics	EN 61000-3-2, IEC 61000-3-2
	Flicker	EN 61000-3-3, IEC 61000-3-3
Management	HP PCM+; HP PCM (included); 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).	
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	**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

Technical Specifications

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 RFC 4601 PIM Sparse 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) RFC 5722 Handling of Overlapping IPv6 Fragments
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 2933 IGMP 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 RFC 5340 OSPFv3 for IPv6
QoS/CoS	RFC 2474 DiffServ Precedence, including 8 queues/port RFC 2597 DiffServ Assured Forwarding (AF) RFC 2598 DiffServ Expedited Forwarding (EF)
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

Accessories

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 20p GT PoE+ / 2p SFP+ v2 zl Module	J9536A
	HP 20-port GT PoE+/4-port SFP v2 zl Mod	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 Mod	J9549A
	HP 20-port Gig-T / 2-port SFP+ v2 zl Mod	J9548A
	HP Extended Services zl Module with Riverbed Steelhead RiOS Application	J9517A
	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

Accessories

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 10G X244 XFP to SFP+ 3m Direct Attach Copper Cable	J9301A
HP 10G X244 XFP to SFP+ 5m Direct Attach Copper Cable	J9302A
HP LC to LC Multi-mode OM3 2-Fiber 0.5m 1-Pack Fiber Optic Cable	AJ833A
HP LC to LC Multi-mode OM3 2-Fiber 1.0m 1-Pack Fiber Optic Cable	AJ834A
HP LC to LC Multi-mode OM3 2-Fiber 2.0m 1-Pack Fiber Optic Cable	AJ835A
HP LC to LC Multi-mode OM3 2-Fiber 5.0m 1-Pack Fiber Optic Cable	AJ836A
HP LC to LC Multi-mode OM3 2-Fiber 15.0m 1-Pack Fiber Optic Cable	AJ837A
HP LC to LC Multi-mode OM3 2-Fiber 30.0m 1-Pack Fiber Optic Cable	AJ838A
HP LC to LC Multi-mode OM3 2-Fiber 50.0m 1-Pack Fiber Optic 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
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
WLAN	
NEW HP MSM775 zl Premium Controller Module	J9840A

Accessory Product Details

NOTE: Details are not available for all accessories. The following specifications were available at the time of publication.

HP 8-port 10GBase-T v2 zl Module (J9546A)	**Ports**	8 RJ-45 10-GbE ports; Duplex: full only	
	Physical characteristics	**Dimensions**	10.3(d) x 8.13(w) x 1.75(h) in. (26.16 x 20.65 x 4.45 cm)
		Weight	2.1 lb. (0.95 kg)
		Full configuration weight	2.1 lb. (0.95 kg)
	Environment	**Operating temperature**	32°F to 131°F (0°C to 55°C)
		Operating relative humidity	15% to 95% @ 131°F (55°C), noncondensing
		Nonoperating/Storage temperature	-40°F to 158°F (-40°C to 70°C)
		Nonoperating/Storage relative humidity	15% to 95% @ 158°F (70°C), noncondensing
		Fiber type	Single Mode
	Notes	Max Distance upto 100m with qualified 10Gbase-T Cat7(Shielded), Cat6a (Shielded/Unshielded) and Cat6 (Shielded, tested to 350Mhz TIA/EIA TSB-155A) cables. Max Distance upto 55m with Cat6 (unshielded, tested to 350Mhz TIA/EIA TSB-155A)	
	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 4-Port 10 GbE CX4 zl Module (J8708A)	**Ports**	4 CX4 10-GbE ports (IEEE 802.3ak Type 10GBASE-CX4); Duplex: full only	
	Physical characteristics	**Dimensions**	10.3(d) x 8.13(w) x 1.75(h) in. (26.16 x 20.65 x 4.45 cm)
		Weight	1.74 lb. (0.79 kg)
	Environment	**Operating temperature**	32°F to 131°F (0°C to 55°C)
	Cabling	Maximum distance: • 15 m using CX4 cable • 300 m using optical media converters and multimode fiber cable	
	Notes	Use CX4 10-GbE cable (0.5 m-15 m) or HP ProCurve 10-GbE CX4 Media Converter (J8439A). No CX4 cables are included with this module.	
	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 4-Port 10 GbE X2 zl Module (J8707A)	**Ports**	4 open 10-GbE X2 transceiver slots	
	Physical characteristics	**Dimensions**	10.3(d) x 8.13(w) x 1.75(h) in. (26.16 x 20.65 x 4.45 cm)
		Weight	1.74 lb. (0.79 kg)
	Environment	**Operating temperature**	32°F to 104°F (0°C to 40°C)
	Notes	When installed in a zl chassis, the J8707A module limits the operating temperature range of the chassis to 32°F to 104°F (0°C to 40°C).	
	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 4-Port 10 GbE SFP+ zl Module (J9309A)	**Ports**	4 open 10-GbE SFP+ transceiver slots	
	Physical characteristics	**Dimensions**	10.3(d) x 8.13(w) x 1.75(h) in. (26.16 x 20.65 x 4.45 cm)
		Weight	1.64 lb. (0.74 kg)
	Environment	**Operating temperature**	32°F to 131°F (0°C to 55°C)
		Operating relative humidity	15% to 95% @ 113°F (45°C), noncondensing
		Nonoperating/Storage temperature	-40°F to 158°F (-40°C to 70°C)
		Nonoperating/Storage relative humidity	15% to 95% @ 158°F (70°C), noncondensing
	Notes	When installed in a zl chassis, the J9309A module limits the operating temperature range of the chassis to 32F to 113F (0C to 45C).	
	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 8-port 10 GbE SFP+ v2 zl Module (J9538A)	**Ports**	8 open 10-GbE SFP+ transceiver slots	
	Physical characteristics	**Dimensions**	10.3(d) x 8.13(w) x 1.75(h) in. (26.16 x 20.65 x 4.45 cm)
		Weight	2.09 lb (0.95 kg)
	Environment	**Operating temperature**	32°F to 131°F (0°C to 55°C)
		Operating relative humidity	15% to 95% @ 131°F (55°C), noncondensing
		Nonoperating/Storage temperature	-40°F to 158°F (-40°C to 70°C)
		Nonoperating/Storage relative humidity	15% to 95% @ 158°F (70°C), noncondensing
	Notes	When using mini-GBICs with this product, mini-GBICs with revision "B" or later (product number ends with the letter "B" or later, e.g., J4858B, J4859C) are required. When mini-GBICs are inserted in any mini-GBIC slot of a J9538A, this limits the operating temperature range of the chassis to 32F to 104F (0C to 40C).	
	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 20-port Gig-T PoE+/2-port 10-GbE SFP+ v2 zl Module (J9536A)	**Ports**	2 open 10-GbE SFP+ transceiver slots 20 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	
	Physical characteristics	**Dimensions**	10.3(d) x 8.13(w) x 1.75(h) in. (26.16 x 20.65 x 4.45 cm)

Accessory Product Details

		Weight	2.1 lb. (0.95 kg)
	Environment	**Operating temperature**	32°F to 131°F (0°C to 55°C)
		Operating relative humidity	15% to 95% @ 131°F (55°C), noncondensing
		Nonoperating/Storage temperature	-40°F to 158°F (-40°C to 70°C)
		Nonoperating/Storage relative humidity	15% to 95% @ 158°F (70°C), noncondensing
	Cabling	Cable type: 1000BASE-T: Category 5 (5E or better recommended), 100 Ω differential 4-pair unshielded twisted pair (UTP) or shielded twisted pair (STP) balanced, complying with IEEE 802.3ab 1000BASE-T;	
	Notes	When using mini-GBICs with this product, mini-GBICs with revision "B" or later (product number ends with the letter "B" or later, e.g., J4858B, J4859C) are required. When mini-GBICs are inserted in any mini-GBIC slot of a J9308A, this limits the operating temperature range of the chassis to 32F to 104F (0C to 40C).	
	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 20-port Gig-T PoE+/4-port SFP v2 zl Module (J9535A)	**Ports**	4 open mini-GBIC (SFP) slots 20 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	
	Physical characteristics	**Dimensions**	10.3(d) x 8.13(w) x 1.75(h) in. (26.16 x 20.65 x 4.45 cm)
		Weight	2.1 lb. (0.95 kg)
	Environment	**Operating temperature**	32°F to 131°F (0°C to 55°C)
		Operating relative humidity	15% to 95% @ 131°F (55°C), noncondensing
		Nonoperating/Storage temperature	-40°F to 158°F (-40°C to 70°C)
		Nonoperating/Storage relative humidity	15% to 95% @ 158°F (70°C), noncondensing
	Cabling	Cable type: 1000BASE-T: Category 5 (5E or better recommended), 100 Ω differential 4-pair unshielded twisted pair (UTP) or shielded twisted pair (STP) balanced, complying with IEEE 802.3ab 1000BASE-T;	
	Notes	When using mini-GBICs with this product, mini-GBICs with revision "B" or later (product number ends with the letter "B" or later, e.g., J4858B, J4859C) are required. When mini-GBICs are inserted in any mini-GBIC slot of a J9308A, this limits the operating temperature range of the chassis to 32F to 104F (0C to 40C).	
	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

HP 24-port SFP v2 zl Module (J9537A)	**Ports**	24 open mini-GBIC (SFP) slots	
	Physical characteristics	**Dimensions**	10.3(d) x 8.13(w) x 1.75(h) in. (26.16 x 20.65 x 4.45 cm)
		Weight	2.01 lb. (0.91 kg)
	Notes	When using mini-GBICs with this product, mini-GBICs with revision "B" or later (product number ends with the letter "B" or later, e.g., J4858B, J4859C) are required. When installed in a zl chassis, the J8706A module limits the operating temperature range of the chassis to 32°F to 104°F (0°C to 40°C).	
	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 12-port Gig-T PoE+/12-port SFP v2 zl Module (J9637A)	**Ports**	12 open mini-GBIC (SFP) slots 12 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	
	Physical characteristics	**Dimensions**	10.3(d) x 8.13(w) x 1.75(h) in. (26.16 x 20.65 x 4.45 cm)
		Weight	2.1 lb. (0.95 kg)
	Environment	**Operating temperature**	32°F to 131°F (0°C to 55°C)
		Operating relative humidity	15% to 95% @ 131°F (55°C), noncondensing
		Nonoperating/Storage temperature	-40°F to 158°F (-40°C to 70°C)
		Nonoperating/Storage relative humidity	15% to 95% @ 158°F (70°C), noncondensing
	Cabling	Cable type: 1000BASE-T: Category 5 (5E or better recommended), 100 Ω differential 4-pair unshielded twisted pair (UTP) or shielded twisted pair (STP) balanced, complying with IEEE 802.3ab 1000BASE-T	
	Notes	When using mini-GBICs with this product, mini-GBICs with revision "B" or later (product number ends with the letter "B" or later, e.g., J4858B, J4859C) are required. When mini-GBICs are inserted in any mini-GBIC slot of a J9308A, this limits the operating temperature range of the chassis to 32F to 104F (0C to 40C).	
	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 24-port 10/100/1000 PoE zl Module (J8702A)	**Ports**	24 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	
	Physical characteristics	**Dimensions**	10.3(d) x 8.13(w) x 1.75(h) in. (26.16 x 20.65 x 4.45 cm)
		Weight	2.16 lb. (0.98 kg)
	Cabling	Cable type:	

Accessory Product Details

			1000BASE-T: Category 5 (5E or better recommended), 100 Ù differential 4-pair unshielded twisted pair (UTP) or shielded twisted pair (STP) balanced, complying with IEEE 802.3ab 1000BASE-T
	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 20-Port 10/100/1000 PoE+/4-Port Mini-GBIC zl Module (J9308A)	**Ports**		4 open mini-GBIC (SFP) slots 20 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
	Physical characteristics	**Dimensions**	10.3(d) x 8.13(w) x 1.75(h) in. (26.16 x 20.65 x 4.45 cm)
		Weight	2.1 lb. (0.95 kg)
	Environment	**Operating temperature**	32°F to 131°F (0°C to 55°C)
		Operating relative humidity	15% to 95% @ 131°F (55°C), noncondensing
		Nonoperating/Storage temperature	-40°F to 158°F (-40°C to 70°C)
		Nonoperating/Storage relative humidity	15% to 95% @ 158°F (70°C), noncondensing
	Cabling		Cable type: 1000BASE-T: Category 5 (5E or better recommended), 100 Ω differential 4-pair unshielded twisted pair (UTP) or shielded twisted pair (STP) balanced, complying with IEEE 802.3ab 1000BASE-T;
	Notes		When using mini-GBICs with this product, mini-GBICs with revision "B" or later (product number ends with the letter "B" or later, e.g., J4858B, J4859C) are required. When mini-GBICs are inserted in any mini-GBIC slot of a J9308A, this limits the operating temperature range of the chassis to 32F to 104F (0C to 40C).
	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 20-port Gig-T / 4-port Mini-GBIC zl Module (J8705A)	**Ports**		4 open mini-GBIC (SFP) slots 20 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
	Physical characteristics	**Dimensions**	10.3(d) x 8.13(w) x 1.75(h) in. (26.16 x 20.65 x 4.45 cm)
		Weight	2.2 lb. (1 kg)
	Notes		When using mini-GBICs with this product, mini-GBICs with revision "B" or later (product number ends with the letter "B" or later, e.g., J4858B, J4859C) are required. When mini-GBICs are inserted in any mini-GBIC slot of a J8705A, this limits the operating temperature range of the chassis to 32F to 104F (0C to 40C).
	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 24-port Mini-GBIC zl Module (J8706A)	**Ports**	24 open mini-GBIC (SFP) slots	
	Physical characteristics	**Dimensions**	10.3(d) x 8.13(w) x 1.75(h) in. (26.16 x 20.65 x 4.45 cm)
		Weight	2.01 lb. (0.91 kg)
	Notes	When using mini-GBICs with this product, mini-GBICs with revision "B" or later (product number ends with the letter "B" or later, e.g., J4858B, J4859C) are required. When installed in a zl chassis, the J8706A module limits the operating temperature range of the chassis to 32°F to 104°F (0°C to 40°C).	
	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 24-Port 10/100/1000 PoE+ zl Module (J9307A)	**Ports**	24 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	
	Physical characteristics	**Dimensions**	10.3(d) x 8.13(w) x 1.75(h) in. (26.16 x 20.65 x 4.45 cm)
		Weight	2.0 lb. (0.98 kg)
	Environment	**Operating temperature**	32°F to 131°F (0°C to 55°C)
		Operating relative humidity	15% to 95% @ 131°F (55°C), noncondensing
		Nonoperating/Storage temperature	-40°F to 158°F (-40°C to 70°C)
		Nonoperating/Storage relative humidity	15% to 95% @ 149°F (-40°C), noncondensing
	Cabling	Cable type: 1000BASE-T: Category 5 (5E or better recommended), 100 Ω differential 4-pair unshielded twisted pair (UTP) or shielded twisted pair (STP) balanced, complying with IEEE 802.3ab 1000BASE-T;	
	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 24-port Gig-T PoE+ v2 zl Module (J9534A)	**Ports**	24 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	
	Physical characteristics	**Dimensions**	10.3(d) x 8.13(w) x 1.75(h) in. (26.16 x 20.65 x 4.45 cm)
		Weight	2.0 lb. (0.98 kg)
	Environment	**Operating temperature**	32°F to 131°F (0°C to 55°C)
		Operating relative humidity	15% to 95% @ 131°F (55°C), noncondensing
		Nonoperating/Storage	-40°F to 158°F (-40°C to 70°C)

Accessory Product Details

		temperature	
		Nonoperating/Storage relative humidity	15% to 95% @ 149°F (-40°C), noncondensing
	Cabling	Cable type: 1000BASE-T: Category 5 (5E or better recommended), 100 Ω differential 4-pair unshielded twisted pair (UTP) or shielded twisted pair (STP) balanced, complying with IEEE 802.3ab 1000BASE-T;	
	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 24-Port 10/100 PoE+ zl Module (J9478A)	**Ports**	24 RJ-45 autosensing 10/100 ports (IEEE 802.3 Type 10BASE-T, IEEE 802.3u Type 100BASE-TX); Media Type: Auto-MDIX; Duplex: half or full	
	Physical characteristics	**Dimensions**	10.3(d) x 8.13(w) x 1.75(h) in. (26.16 x 20.65 x 4.45 cm)
		Weight	2.0 lb. (0.98 kg)
	Environment	**Operating temperature**	32°F to 131°F (0°C to 55°C)
		Operating relative humidity	15% to 95% @ 131°F (55°C), noncondensing
		Nonoperating/Storage temperature	-40°F to 158°F (-40°C to 70°C)
		Nonoperating/Storage relative humidity	15% to 95% @ 158°F (70°C), noncondensing
	Cabling	Cable type: 100BASE-TX: Category 5 (or better), 100 Ω unshielded twisted pair (UTP) or shielded twisted pair (STP), complying with IEEE 802.3u 100BASE-TX;	
	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 24-port 10/100 PoE+ v2 zl Module (J9547A)	**Ports**	24 RJ-45 autosensing 10/100 PoE+ ports (IEEE 802.3 Type 10BASE-T, IEEE 802.3u Type 100BASE-TX, IEEE 802.3at PoE+); Media Type: Auto-MDIX; Duplex: half or full	
	Physical characteristics	**Dimensions**	10.3(d) x 8.13(w) x 1.75(h) in. (26.16 x 20.65 x 4.45 cm)
		Weight	2.0 lb. (0.98 kg)
	Environment	**Operating temperature**	32°F to 131°F (0°C to 55°C)
		Operating relative humidity	15% to 95% @ 131°F (55°C), noncondensing
		Nonoperating/Storage temperature	-40°F to 158°F (-40°C to 70°C)
		Nonoperating/Storage relative humidity	15% to 95% @ 158°F (70°C), noncondensing
	Cabling	Cable type: 100BASE-TX: Category 5 (or better), 100 Ω differential unshielded twisted pair (UTP) or shielded twisted pair (STP), complying with IEEE 802.3u 100BASE-TX;	
	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 24-port Gig-T v2 zl Module (J9550A)	**Ports**	24 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	
	Physical characteristics	**Dimensions**	10.3(d) x 8.13(w) x 1.75(h) in. (26.16 x 20.65 x 4.45 cm)
		Weight	2.0 lb. (0.98 kg)
	Environment	**Operating temperature**	32°F to 131°F (0°C to 55°C)
		Operating relative humidity	15% to 95% @ 131°F (55°C), noncondensing
		Nonoperating/Storage temperature	-40°F to 158°F (-40°C to 70°C)
		Nonoperating/Storage relative humidity	15% to 95% @ 149°F (-40°C), noncondensing
	Cabling	Cable type: 1000BASE-T: Category 5 (5E or better recommended), 100 Ω differential 4-pair unshielded twisted pair (UTP) or shielded twisted pair (STP) balanced, complying with IEEE 802.3ab 1000BASE-T;	
	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 20-port Gig-T/4-port SFP v2 zl Module (J9549A)	**Ports**	4 open mini-GBIC (SFP) slots 20 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	
	Physical characteristics	**Dimensions**	10.3(d) x 8.13(w) x 1.75(h) in. (26.16 x 20.65 x 4.45 cm)
		Weight	2.1 lb. (0.95 kg)
	Environment	**Operating temperature**	32°F to 131°F (0°C to 55°C)
		Operating relative humidity	15% to 95% @ 131°F (55°C), noncondensing
		Nonoperating/Storage temperature	-40°F to 158°F (-40°C to 70°C)
		Nonoperating/Storage relative humidity	15% to 95% @ 158°F (70°C), noncondensing
	Cabling	Cable type: 1000BASE-T: Category 5 (5E or better recommended), 100 Ω differential 4-pair unshielded twisted pair (UTP) or shielded twisted pair (STP) balanced, complying with IEEE 802.3ab 1000BASE-T;	
	Notes	When using mini-GBICs with this product, mini-GBICs with revision "B" or later (product number ends with the letter "B" or later, e.g., J4858B, J4859C) are required. When mini-GBICs are inserted in any mini-GBIC slot of a J9549A, this limits the operating temperature range of the chassis to 32F to 104F (0C to 40C).	

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	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 20-port Gig-T/2-port 10-GbE SFP+ v2 zl Module (J9548A)	**Ports**	2 open 10-GbE SFP+ transceiver slots 20 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	
	Physical characteristics	**Dimensions**	10.3(d) x 8.13(w) x 1.75(h) in. (26.16 x 20.65 x 4.45 cm)
		Weight	2.1 lb. (0.95 kg)
	Environment	**Operating temperature**	32°F to 131°F (0°C to 55°C)
		Operating relative humidity	15% to 95% @ 131°F (55°C), noncondensing
		Nonoperating/Storage temperature	-40°F to 158°F (-40°C to 70°C)
		Nonoperating/Storage relative humidity	15% to 95% @ 158°F (70°C), noncondensing
	Cabling	Cable type: 1000BASE-T: Category 5 (5E or better recommended), 100 Ω differential 4-pair unshielded twisted pair (UTP) or shielded twisted pair (STP) balanced, complying with IEEE 802.3ab 1000BASE-T;	
	Notes	When using mini-GBICs with this product, mini-GBICs with revision "B" or later (product number ends with the letter "B" or later, e.g., J4858B, J4859C) are required. When mini-GBICs are inserted in any mini-GBIC slot of a J9308A, this limits the operating temperature range of the chassis to 32F to 104F (0C to 40C).	
	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 Extended Services zl Module with Riverbed Steelhead RiOS™ Application (J9517A)	**Physical characteristics**	**Dimensions**	9.75(d) x 8.13(w) x 3.5(h) in. (24.77 x 20.65 x 8.89 cm)
		Weight	4.5 lb. (2.04 kg)
	Environment	**Operating temperature**	32ºF to 122ºF (0ºC to 50ºC); **Important**: See **NOTE** for 50°C temperature spec rules
		Operating relative humidity	15% to 90% @ 122ºF (50ºC), non-condensing
		Non-operating/ Storage temperature	14ºF to 149ºF (-10ºC to 65ºC)
		Non-operating/ Storage relative humidity	15% to 95% @ 149ºF (65ºC), non-condensing
		Alitude	up to 10,000 ft. (3 km)
	Notes	5400 series switches operating temperature specifications apply to when the services module is installed; 40°C when any services module is installed in the right side of the chassis, and 50°C when all services modules are installed in the left side.	

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		Up to four services modules can be installed in a 5412zl/8212zl chassis simultaneously. When the services module is installed, the maximum relative humidity for the switch drops from 95% to 90%. This product does not support Riverbed Services Platform (RSP) functionality.
	Services	3-year, 4-hour onsite, 13x5 coverage for hardware (UZ154E) 3-year, 4-hour onsite, 24x7 coverage for hardware (UZ155E) 3-year, 4-hour onsite, 24x7 coverage for hardware, 24x7 SW phone support and SW updates (UZ156E) 3-year, 24x7 SW phone support, software updates (UZ157E) 3 Yr 6 hr Call-to-Repair Onsite (UZ158E) 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 Advanced Services v2 zl Module with HDD (J9857A)

Physical characteristics	**Dimensions**	8.13(w) x 9.75(d) x 1.75(h) in (20.65 x 24.77 x 4.45 cm) (1U height)
	Weight	3.00 lb (1.36 kg)
Environment	**Operating temperature**	32°F to 113°F (0°C to 45°C)
	Operating relative humidity	15% to 95% @ 104°F (40°C), noncondensing
	Nonoperating/Storage temperature	-40°F to 158°F (-40°C to 70°C)
	Nonoperating/Storage relative humidity	15% to 90% @ 149°F (65°C), noncondensing
	Altitude	up to 9,842 ft (3 km)
Electrical characteristics	**Maximum heat dissipation**	133/287 BTU/hr (140.32/302.78 kJ/hr)
	Idle power	84 W
	Maximum power rating	39 W
Management	command-line interface	
Notes	The services module can be used with VMware certified applications. • The HDD has a maximum operational wet bulb temperature of 28°C • The HDD has a maximum non-operational wet bulb temperature of 28°C • Up to four services modules can be installed in a 5406 zl chassis. There are no restrictions on where the modules can go in the chassis • Up to three services modules can be installed in an 8206 zl chassis. There are no restrictions on where the modules can go in the chassis • Up to six services modules can be installed in a 5412 or 8212 zl chassis. There are no restrictions on where the modules can go in the chassis	
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 Advanced Services v2 zl Module with SSD (J9858A)

Physical characteristics	**Dimensions**	8.13(w) x 9.75(d) x 1.75(h) in (20.65 x 24.77 x 4.45 cm) (1U height)
	Weight	2.75 lb (1.36 kg)
Environment	**Operating temperature**	32°F to 113°F (0°C to 45°C)

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	Operating relative humidity	15% to 95% @ 104°F (40°C), noncondensing
	Nonoperating/Storage temperature	-40°F to 158°F (-40°C to 70°C)
	Nonoperating/Storage relative humidity	15% to 90% @ 149°F (65°C), noncondensing
	Altitude	up to 10,000 ft (3 km)
Electrical characteristics	**Maximum heat dissipation**	133/290 BTU/hr (140.32/280.63 kJ/hr)
	Idle power	85 W
	Maximum power rating	37 W
Management	command-line interface	
Notes	The services module can be used with VMware certified applications. • The SSD has a maximum operational wet bulb temperature of 28°C • The SSD has a maximum non-operational wet bulb temperature of 28°C • Up to four services modules can be installed in a 5406 zl chassis. There are no restrictions on where the modules can go in the chassis • Up to three services modules can be installed in an 8206 zl chassis. There are no restrictions on where the modules can go in the chassis • Up to six services modules can be installed in a 5412 or 8212 zl chassis. There are no restrictions on where the modules can go in the chassis	
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 X131 10G X2 SC ER Transceiver (J8438A) HP X131 10G X2 SC ER Transceiver: An X2 format 10-gigabit transceiver with SC connectors using ER technology.	**Ports**	1 SC 10-GbE port (IEEE 802.3ae Type 10GBASE-ER); Duplex: full only	
	Connectivity	**Connector type**	SC
		Wavelength	1550 nm
	Physical characteristics	**Dimensions**	3.48(d) x 1.42(w) x 0.43(h) in. (8.84 x 3.61 x 1.09 cm)
		Weight	0.35 lb. (0.16 kg)
		Transceiver form factor	X2
	Environment	**Operating temperature**	32ºF to 104ºF (0ºC to 40ºC)
		Operating relative humidity	15% to 95%, noncondensing
	Electrical characteristics	**Power consumption typical**	3 W
		Power consumption maximum	4.5 W
	Cabling	Cable type:: Low metal content, single-mode fiber-optic, complying with ITU-T G.652 and ISO/IEC 793-2 Type B1;	
		Cable length	2m to 30km (max 40km on engineered links)
		Fiber type	Single Mode
	Notes	Conditioning patch cord cables are not supported For fiber patch cords, use Ultra Physical Contact (UPC) surface termination/polish. Angled Physical Contact (APC) is not recommended.	
	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 X131 10G X2 SC SR Transceiver (J8436A) HP X131 10G X2 SC SR Transceiver: An X2 format 10-gigabit transceiver with SC connectors using SR technology.	**Ports**	1 SC 10-GbE port (IEEE 802.3ae Type 10GBASE-SR); Duplex: full only	
	Connectivity	**Connector type**	SC
		Wavelength	850 nm
	Physical characteristics	**Dimensions**	3.48(d) x 1.42(w) x 0.43(h) in. (8.84 x 3.61 x 1.09 cm)
		Weight	0.35 lb. (0.16 kg)
		Transceiver form factor	X2
	Environment	**Operating temperature**	32ºF to 158ºF (0ºC to 70ºC)
		Operating relative humidity	0% to 95%, noncondensing
		Nonoperating/Storage temperature	-40ºF to 185ºF (-40ºC to 85ºC)
		Nonoperating/Storage relative humidity	0% to 95%, noncondensing
		Altitude	up to 10,000 ft. (3 km)
	Electrical characteristics	**Power consumption typical**	1.7 W
		Power consumption maximum	2.4 W
	Cabling	Cable type:: 62.5/125 µm or 50/125 µm (core/cladding) graded-index, low metal content, multimode fiber optic, complying with ITU-T G.651 and ISO/IEC 793-2 Type A1b or A1a, respectively; Maximum distance: • 2-26m with 62.5 µm multimode cable @ 160 MHz*km • 2-33m with 62.5 µm multimode cable @ 200 MHz*km • 2-66m with 50 µm multimode cable @ 400 MHz*km • 2-82m with 50 µm multimode cable @ 500 MHz*km • 2-300m with 50 µm multimode cable @ 2000 MHz*km	
		Cable length	2-300m
		Fiber type	Multi Mode
	Notes	For fiber patch cords, use Ultra Physical Contact (UPC) surface termination/polish. Angled Physical Contact (APC) is not recommended.	
	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 X131 10G X2 CX4 Transceiver (J8440C) HP X131 10G X2 CX4 Transceiver: An X2 format 10-gigabit CX4	**Ports**	1 CX4 10-GbE port (IEEE 802.3ak Type 10GBASE-CX4); Duplex: full only	
	Connectivity	**Connector type**	CX4
	Physical characteristics	**Dimensions**	3.54(d) x 1.42(w) x 0.53(h) in. (8.99 x 3.61 x 1.35 cm)
		Weight	0.18 lb. (0.08 kg)
	Environment	**Operating temperature**	32ºF to 131ºF (0ºC to 55ºC)

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transceiver.		**Operating relative humidity**	15% to 95% @ 149ºF (65ºC), non-condensing
	Cabling	Maximum distance: • 15 m using CX4 cables • 300 m using optical media converters and multimode fiber cable	
	Notes	Use CX4 10-GbE cable (0.5-15 m) Includes a single 0.5 m 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.	
HP X111 100M SFP LC FX Transceiver (J9054C) HP X111 100M SFP LC FX Transceiver: An SFP format 100-megabit transceiver with LC connectors using FX technology.	**Ports**	1 LC 100BASE-FX port (IEEE 802.3u Type 100BASE-FX); Duplex: half or full	
	Physical characteristics	Dimensions: 2.7(d) x 0.54(w) x 0.48(h) in. (6.86 x 1.38 x 1.22 cm) Weight: 0.06 lb. (0.03 kg)	
	Environment	Operating temperature: 32ºF to 158ºF (0ºC to 70ºC) Operating relative humidity: 5% to 95% Nonoperating/Storage temperature: -40ºF to 185ºF (-40ºC to 85ºC) Nonoperating/Storage relative humidity: 5% to 85% Altitude: up to 10,000 ft. (3 km)	
	Cabling	Type: • 62.5/125 µm or 50/125 µm (core/cladding) diameter, graded-index, low metal content, multimode fiber optic, complying with ITU-T G.651 and ISO/IEC 793-2 Type A1b or A1a, respectively; Maximum distance: • 2 km (full duplex) or 412 m (half duplex)	
	Notes	Transmitter wavelength: 1310nm Power consumption is 1.1 watt maximum. For supported platforms and minimum software requirements to support this product, see the document titled "Support for the J9054C 100-FX SFP-LC Transceiver" on the "HP Mini-GBICs and SFPs" Manuals Web page.	
	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 X131 10G X2 SC LR Transceiver (J8437A) An X2 form-factor transceiver that supports the 10-Gigabit LR standard, providing 10-Gigabit connectivity up to 10 km on single-mode	**Ports**	1 SC 10-GbE port (IEEE 802.3ae Type 10GBASE-LR); Duplex: full only	
	Connectivity	**Connector type**	SC
		Wavelength	1310 nm
	Physical characteristics	**Dimensions**	3.48(d) x 1.42(w) x 0.43(h) in. (8.84 x 3.61 x 1.09 cm)
		Weight	0.35 lb. (0.16 kg)
		Transceiver form factor	X2
	Environment	**Operating temperature**	32ºF to 104ºF (0ºC to 40ºC)

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fiber.		**Operating relative humidity**	15% to 95%, noncondensing
		Nonoperating/Storage temperature	-40ºF to 185ºF (-40ºC to 85ºC)
		Altitude	up to 10,000 ft. (3 km)
	Electrical characteristics	**Power consumption typical**	2 W
		Power consumption maximum	3 W
	Cabling	Cable type:: Low metal content, single-mode fiber-optic, complying with ITU-T G.652 and ISO/IEC 793-2 Type B1; Maximum distance: • 10 km	
		Cable length	2m to 10km with 9/125 ìm single-mode cable
		Fiber type	Single Mode
	Notes	Conditioning patch cord cables are not supported For fiber patch cords, use Ultra Physical Contact (UPC) surface termination/polish. Angled Physical Contact (APC) is not recommended	
	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 X131 10G X2 SC LRM Transceiver (J9144A) An X2 form-factor transceiver that supports the 10-Gigabit LRM standard, providing 10-Gigabit connectivity up to 220 m on legacy multimode fiber.	**Ports**	1 SC 10-GbE port (IEEE 802.3aq Type 10GBASE-LRM); Duplex: full only	
	Physical characteristics	**Dimensions**	3.54(d) x 1.59(w) x 0.7(h) in. (9.0 x 4.05 x 1.78 cm)
		Weight	0.35 lb. (0.16 kg)
		Transceiver form factor	X2
	Environment	**Operating temperature**	32ºF to 158ºF (0ºC to 70ºC)
		Operating relative humidity	0% to 95%, noncondensing
		Nonoperating/Storage temperature	-40ºF to 185ºF (-40ºC to 85ºC)
		Altitude	up to 10,000 ft. (3 km)
	Electrical characteristics	**Power consumption typical**	3.2 W
		Power consumption maximum	4.2 W
	Cabling	Cable type: 62.5/125 µm or 50/125 µm (core/cladding) diameter, graded-index, low metal content, multimode fiber optic, complying with ITU-T G.651 and ISO/IEC 793-2 Type A1b or A1a, respectively (a mode conditioning patch cord may be needed in some multimode fiber installations); Maximum distance: • 0.5-220m with 62.5 µm multimode cable @ 160/500 MHz*km	

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		• 0.5-220m with 62.5 µm multimode cable @ 200/500 MHz*km • 0.5-100m with 50 µm multimode cable @ 400/400 MHz*km • 0.5-220m with 50 µm multimode cable @ 500/500 MHz*km • 0.5-220m with 50 µm multimode cable @ 1500/500 MHz*km	
		Cable length	.5m to 220m
		Fiber type	Multi Mode
	Notes	Wavelength: 1310nm For OM3 cable (50 ìm multimode @ 1500/500 MHz*km), a mode-conditioning patch cord is not required. Other multimode cables may require mode-conditioning patch cords to achieve the maximum distances listed above. For supported platforms and minimum software requirements to support this product, see the document titled "Support for the J9144A 10-GbE X2-SC LRM Optic" on the "HP 10-GbE Transceivers" Manuals Web page. Power Consumption: 4W Max	
	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 X112 100M SFP LC BX-D Transceiver (J9099B) A small form-factor pluggable (SFP) 100-Megabit BX (bi-directional) "downstream" transceiver that provides 100 Mbps full-duplex connectivity up to 10 km on one strand of singlemode fiber. The J9099B connects to the J9100B "upstream" transceiver, or to any IEEE-standard 100BASE-BX10-U ("upstream") device.	**Ports**	1 LC 100BASE-BX10 port (IEEE 802.3ah Type 100BASE-BX10-D); Duplex: full only	
	Physical characteristics	**Dimensions**	2.7(d) x 0.55(w) x 0.48(h) in. (6.86 x 1.39 x 1.22 cm)
		Weight	0.04 lb. (0.03 kg)
	Environment	**Operating temperature**	32ºF to 158ºF (0ºC to 70ºC)
		Operating relative humidity	0% to 95%, noncondensing
		Nonoperating/Storage temperature	-40ºF to 185ºF (-40ºC to 85ºC)
	Cabling	Type: Single-mode fiber optic, complying with ITU-T G.652; Maximum distance: • 0.5-10,000 m (single-mode fiber)	
	Notes	Transmit wavelength: 1550 nm. Receive wavelength: 1310 nm. Power consumption is 1.1 watt maximum. For supported platforms and minimum software requirements to support this product, see the document titled "Support for the HP BX Transceivers" on the "HP Mini-GBICs and SFPs" Manuals Web page. The J9099B connects to the J9100B "upstream" transceiver, or to any IEEE-standard 100BASE-BX10-U ("upstream") device. (A 100-BX-D transceiver can only connect to a 100-BX-U product. You cannot connect two 100-BX-D transceivers together.)	
	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.	

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HP X112 100M SFP LC BX-U Transceiver (J9100B) A small form-factor pluggable (SFP) 100-Megabit BX (bi-directional) "upstream" transceiver that provides 100 Mbps full-duplex connectivity up to 10 km on one strand of singlemode fiber. The J9100B connects to the J9099B "downstream" transceiver, or to any IEEE-standard 100BASE-BX10-D ("downstream") device.	**Ports**	1 LC 100BASE-BX10 port (IEEE 802.3ah Type 100BASE-BX10-U); Duplex: full only	
	Physical characteristics	**Dimensions**	2.7(d) x 0.55(w) x 0.48(h) in. (6.86 x 1.39 x 1.22 cm)
		Weight	0.07 lb. (.03 kg)
	Environment	**Operating temperature**	32ºF to 158ºF (0ºC to 70ºC)
		Operating relative humidity	0% to 95%, noncondensing
		Nonoperating/Storage temperature	-40ºF to 185ºF (-40ºC to 85ºC)
	Cabling	Type: Single-mode fiber optic, complying with ITU-T G.652; Maximum distance: • 0.5-10,000 m (single-mode fiber)	
	Notes	For supported platforms and minimum software requirements to support this product, see the document titled "Support for the HP BX Transceivers" on the "HP Mini-GBICs and SFPs" Manuals Web page. The J9100B connects to the J9099B "downstream" transceiver, or to any IEEE-standard 100BASE-BX10- D ("downstream") device. (A 100-BX-U transceiver can only connect to a 100-BX-D product. You cannot connect two 100-BX-U transceivers together.) Transmit wavelength: 1310 nm. Receive wavelength: 1550 nm. Power consumption is 1.1 watts maximum.	
	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 X132 10G SFP+ LC SR Transceiver (J9150A) A 10-Gigabit transceiver in SFP+ form-factor that supports the 10-Gigabit SR standard, providing 10-Gigabit connectivity up to 300 m on multimode fiber.	**Ports**	1 LC 10-GbE port (IEEE 802.3ae Type 10Gbase-SR); Duplex: full only	
	Connectivity	**Connector type**	LC
		Wavelength	850 nm
	Physical characteristics	**Dimensions**	2.19(d) x 0.54(w) x 0.47(h) in. (5.57 x 1.38 x 1.19 cm)
		Weight	0.04 lb. (0.02 kg)
		Transceiver form factor	SFP+
	Environment	**Operating temperature**	32°F to 158°F (0°C to 70°C)
		Operating relative humidity	0% to 85%, noncondensing
		Nonoperating/Storage temperature	-40°F to 185°F (-40°C to 85°C)
		Altitude	up to 10,000 ft. (3 km)
	Electrical characteristics	**Power consumption typical**	0.6 W
		Power consumption maximum	0.8 W

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	Cabling		Cable type: 62.5/125 µm or 50/125 µm (core/cladding) diameter, graded-index, low metal content, multimode fiber optic, complying with ITU-T G.651 and ISO/IEC 793-2 Type A1b or A1a, respectively; Maximum distance: • 2-26m with 62.5 µm multimode cable @ 160 MHz*km • 2-33m with 62.5 µm multimode cable @ 200 MHz*km • 2-66m with 50 µm multimode cable @ 400 MHz*km • 2-82m with 50 µm multimode cable @ 500 MHz*km • 2-300m with 50 µm multimode cable @ 2000 MHz*km
		Cable length	2-300m
		Fiber type	Multi Mode
	Notes		For fiber patch cords, use Ultra Physical Contact (UPC) surface termination/polish. Angled Physical Contact (APC) is not recommended.
	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 X132 10G SFP+ LC LR Transceiver (J9151A) A 10-Gigabit transceiver in SFP+ form-factor that supports the 10-Gigabit LR standard, providing 10-Gigabit connectivity up to 10 km on single-mode fiber.	**Ports**		1 LC 10-GbE port (IEEE 802.3ae Type 10Gbase-LR); Duplex: full only
	Connectivity	**Connector type**	LC
		Wavelength	1310 nm
	Physical characteristics	**Dimensions**	2.19(d) x 0.54(w) x 0.47(h) in. (5.57 x 1.38 x 1.19 cm)
		Weight	0.04 lb. (.02 kg)
		Transceiver form factor	SFP+
	Environment	**Operating temperature**	32°F to 158°F (0°C to 70°C)
		Operating relative humidity	0% to 85%, noncondensing
		Nonoperating/Storage temperature	-40°F to 185°F (-40°C to 85°C)
		Altitude	up to 10,000 ft. (3 km)
	Electrical characteristics	**Power consumption typical**	0.9 W
		Power consumption maximum	1 W
	Cabling		Cable type: Low metal content, single-mode fiber-optic, complying with ITU-T G.652 and ISO/IEC 793-2 Type B1; Maximum distance: • 2m-10km with 9/125 µm single-mode cable
		Cable length	2m to 10km
		Fiber type	Single Mode
	Notes		Conditioning patch cord cables are not supported.

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			For fiber patch cords, use Ultra Physical Contact (UPC) surface termination/polish. Angled Physical Contact (APC) is not recommended.
	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 X132 10G SFP+ LC LRM Transceiver (J9152A) A 10-Gigabit transceiver in SFP+ form-factor that supports the 10-Gigabit LRM standard, for 10-Gigabit connectivity up to 220 m on legacy multimode fiber.	**Ports**		1 LC 10-GbE port (IEEE 802.3aq Type 10Gbase-LRM); Duplex: full only
	Connectivity	**Connector type**	LC
		Wavelength	1310 nm
	Physical characteristics	**Dimensions**	2.19(d) x 0.54(w) x 0.47(h) in. (5.57 x 1.38 x 1.19 cm)
		Weight	0.04 lb. (.02 kg)
		Transceiver form factor	SFP+
	Environment	**Operating temperature**	32°F to 158°F (0°C to 70°C)
		Operating relative humidity	0% to 85%, noncondensing
		Nonoperating/Storage temperature	-40°F to 185°F (-40°C to 85°C)
		Altitude	up to 10,000 ft. (3 km)
	Electrical characteristics	**Power consumption typical**	0.7 W
		Power consumption maximum	1 W
	Cabling		Cable type: 62.5/125 µm or 50/125 µm (core/cladding) diameter, graded-index, low metal content, multimode fiber optic, complying with ITU-T G.651 and ISO/IEC 793-2 Type A1b or A1a, respectively (a mode conditioning patch cord may be needed in some multimode fiber installations); Maximum distance: • 0.5-220m with 62.5 µm multimode cable @ 160/500 MHz*km • 0.5-220m with 62.5 µm multimode cable @ 200/500 MHz*km • 0.5-100m with 50 µm multimode cable @ 400/400 MHz*km • 0.5-220m with 50 µm multimode cable @ 500/500 MHz*km • 0.5-220m with 50 µm multimode cable @ 1500/500 MHz*km
		Cable length	0.5m to 220m
		Fiber type	Multi Mode
	Notes		For OM3 cable (50 µm multimode @ 1500/500 MHz*km), a mode-conditioning patch cord is not required. Other multimode cables may require mode-conditioning patch cords to achieve the maximum distances listed above. For fiber patch cords, use Ultra Physical Contact (UPC) surface termination/polish. Angled Physical Contact (APC) is not recommended.
	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.

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HP X121 1G SFP LC LH Transceiver (J4860C) A small form-factor pluggable (SFP) Gigabit LH transceiver that provides a full-duplex Gigabit solution up to 70 km on single-mode fiber.	**Ports**	1 LC 1000BASE-LH port (no IEEE standard exists for 1550 nm optics); Duplex: full only
	Physical characteristics	Dimensions: 2.17(d) x 0.60(w) x 0.46(h) in. (5.5 x 1.53 x 1.18 cm) Weight: 0.04 lb. (0.02 kg)
	Environment	Operating temperature: -40°F to 185°F (-40°C to 85°C) Operating relative humidity: 0% to 95% @ 77°F (25°C), noncondensing Nonoperating/Storage temperature: -40°F to 185°F (-40°C to 85°C) Altitude: up to 10,000 ft. (3 km)
	Cabling	Cable type: • Low metal content, single-mode fiber-optic, complying with ITU-T G.652 and ISO/IEC 793-2 Type B1; Maximum distance: • 10-70,000 m (single-mode fiber)
	Notes	Power consumption is 0.8 watts typical with 1 watt maximum at 100% utilization. For distances less than 20 km, a 10 dB attenuator must be used. For distances between 20 km and 40 km, a 5 dB attenuator must be used. Attenuators can be purchased from most cable vendors.
	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 X121 1G SFP LC SX Transceiver (J4858C) A small form-factor pluggable (SFP) Gigabit SX transceiver that provides a full-duplex Gigabit solution up to 550 m on multimode fiber.	**Ports**	1 LC 1000BASE-SX port; Duplex: full only
	Physical characteristics	Dimensions: 2.24(d) x 0.54(w) x 0.48(h) in. (5.69 x 1.37 x 1.22 cm) Weight: 0.04 lb. (0.02 kg) Transceiver form factor: SFP
	Environment	Operating temperature: 32°F to 158°F (0°C to 70°C) Operating relative humidity: 5% to 85%, noncondensing Nonoperating/Storage temperature: -40°F to 203°F (-40°C to 85°C) Altitude: up to 10,000 ft. (3 km)
	Electrical characteristics	Power consumption typical: 0.4 W Power consumption maximum: 0.7 W
	Cabling	Type: • 62.5/125 µm or 50/125 µm (core/cladding) diameter, graded-index, low metal content, multimode fiber optic, complying with ITU-T G.651 and ISO/IEC 793-2 Type A1b or A1a, respectively; Maximum distance: • 2-220 m (62.5 µm core diameter, 160 MHz*km bandwidth • 2-275 m (62.5 µm core diameter, 200 MHz*km bandwidth • 2-500 m (50 µm core diameter, 400 MHz*km bandwidth) • 2-550 m (50 µm core diameter, 500 MHz*km bandwidth) Cable length: 2-550m

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		Fiber type: Multi Mode
	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 X121 1G SFP LC LX Transceiver (J4859C) HP X121 1G SFP LC LX Transceiver: An SFP format gigabit transceiver with LC connectors using LX technology.	**Ports**	1 LC 1000BASE-LX port (IEEE 802.3z Type 1000BASE-LX); Duplex: full only
	Physical characteristics	Dimensions: 2.24(d) x 0.54(w) x 0.486(h) in. (5.69 x 1.37 x 1.23 cm) Weight:0.04 lb. (0.02 kg)
	Environment	Operating temperature: 32°F to 158°F (0°C to 70°C) Operating relative humidity: 0% to 85%, noncondensing Nonoperating/Storage temperature: -40°F to 212°F (-40°C to 100°C) Altitude: up to 10,000 ft. (3 km)
	Cabling	Type: • Either single mode or multimode; 62.5/125 µm or 50/125 µm (core/cladding) diameter, graded-index, low metal content, multimode fiber optic, complying with ITU-T G.651 and ISO/IEC 793-2 Type A1b or A1a, respectively; Low metal content, single-mode fiber-optic, complying with ITU-T G.652 and ISO/IEC 793-2 Type B1; Maximum distance: • 2-550 m (multimode 62.5 µm core diameter, 500 MHz*km bandwidth) • 2-550 m (multimode 50 µm core diameter, 400 MHz*km bandwidth) • 2-550 m (multimode 50 µm core diameter, 500 MHz*km bandwidth) • 2-10,000 m (single-mode fiber)
	Notes	A mode conditioning patch cord may be needed in some multimode fiber installations. Wavelength: 1310nm Power Consumption: < 500mW Typical
	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 X121 1G SFP RJ45 T Transceiver (J8177C) HP X121 1G SFP RJ45 T Transceiver: An SFP format gigabit transceiver with RJ45 connectors using 1000BaseT technology.	**Ports**	1 RJ-45 1000BASE-T port (IEEE 802.3ab Type 1000BASE-T); Duplex: full only
	Physical characteristics	Dimensions: 2.71(d) x 0.54(w) x 0.55(h) in. (6.88 x 1.37 x 1.4 cm) Weight: 0.06 lb. (0.03 kg)
	Environment	Operating temperature: 32°F to 158°F (0°C to 70°C); with 100 LFM airflow over the SFP module Operating relative humidity: 0% to 95% @ 75°F (25°C), noncondensing Nonoperating/Storage temperature: -40°F to 185°F (-40°C to 85°C) Nonoperating/Storage relative humidity: 0% to 95% @ 77°F (25°C), noncondensing Altitude: up to 10,000 ft. (3000 km)

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	Cabling	Cable type: 1000BASE-T: Category 5 (5E or better recommended), 100 Ù differential 4-pair unshielded twisted pair (UTP) or shielded twisted pair (STP) balanced, complying with IEEE 802.3ab 1000BASE-T; Maximum distance: • 100 m
	Notes	Power consumption is nominally 1 watt. For supported platforms and minimum software requirements to support this product, see the document titled "Support for the J8177C 1000Base-T Mini-GBIC" on the "HP Mini-GBICs and SFPs" Manuals Web page. The J8177C Gigabit copper mini-GBIC is not supported on dual-personality ports. The J8177C is capable of 100 Mb operation. This is supported on only the HP 8200zl, 5400zl, and HP 6200-24G-mGBIC yl Switches using software version K.12.21 or later. Use the "auto-100" port setting to enable 100 Mb operation. Important: The earlier J8177B does not support 100 Mb operation. When used in the Switch gl 20-Port 10/100/1000 Module (J4908A), the J8177C mini-GBIC can be installed in either the upper or lower mini-GBIC port, but will block access to the other port.
	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 X122 1G SFP LC BX-D Transceiver (J9142B) A small form-factor pluggable (SFP) Gigabit-BX (bi-directional) "downstream" transceiver that provides a full-duplex Gigabit solution up to 10 km on one strand of single-mode fiber. The J9142B connects to the J9143B "upstream" transceiver, or to any IEEE-standard 1000BASE-BX10-U ("upstream") device.	**Ports**	1 LC 1000BASE-BX10 port (IEEE 802.3ah Type 1000BASE-BX10-D); Duplex: full only
	Physical characteristics	**Dimensions** 2.19(d) x 0.54(w) x 0.46(h) in. (5.57 x 1.37 x 1.18 cm) **Weight** 0.04 lb. (0.02 kg)
	Environment	**Operating temperature** 32ºF to 158ºF (0ºC to 70ºC) **Operating relative humidity** 0% to 95%, non-condensing **Non-operating/ Storage temperature** –40ºF to 185ºF –40ºC to 85ºC)
	Cabling	Type: Single-mode fiber optic, complying with ITU-T G.652; Maximum distance: • 0.5-10,000 m (single-mode fiber)
	Notes	Transmit wavelength: 1490 nm. Receive wavelength: 1310 nm. Power consumption is 1 watt maximum. For supported platforms and minimum software requirements to support this product, see the document titled "Support for the HP BX Transceivers" on the "HP Mini-GBICs and SFPs" Manuals Web page. The J9142B connects to the J9143B "upstream" transceiver, or to any IEEE-standard 1000BASE-BX10-U ("upstream") device. (A 1000-BX-D

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		transceiver can only connect to a 1000-BX-U product. You cannot connect two 1000-BX-D transceivers together.)	
	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 X122 1G SFP LC BX-U Transceiver (J9143B) A small form-factor pluggable (SFP) Gigabit-BX (bi-directional) "upstream" transceiver that provides a full-duplex Gigabit solution up to 10 km on one strand of single-mode fiber. The J9143B connects to the J9142B "downstream" transceiver, or to any IEEE-standard 1000BASE-BX10-D ("downstream") device.	**Ports**	1 LC 1000BASE-BX10 port (IEEE 802.3ah Type 1000BASE-BX10-U); Duplex: full only	
	Physical characteristics	**Dimensions**	2.19(d) x 0.54(w) x 0.46(h) in. (5.57 x 1.37 x 1.18 cm)
		Weight	0.04 lb. (0.02 kg)
	Environment	**Operating temperature**	32ºF to 158ºF (0ºC to 70ºC)
		Operating relative humidity	0% to 95%, non-condensing
		Non-operating/ Storage temperature	–40ºF to 185ºF –40ºC to 85ºC)
	Cabling	Type: Single-mode fiber optic, complying with ITU-T G.652; Maximum distance: • 0.5-10,000 m (single-mode fiber)	
	Notes	Transmit wavelength: 1310 nm. Receive wavelength: 1490 nm. For supported platforms and minimum software requirements to support this product, see the document titled "Support for the HP BX Transceivers" on the "HP Mini-GBICs and SFPs" Manuals Web page. The J9143B connects to the J9142B "downstream" transceiver, or to any IEEE-standard 1000BASE-BX10-D ("downstream") device. (A 1000-BX-U transceiver can only connect to a 1000-BX-D product. You cannot connect two 1000-BX-U transceivers together.) Power consumption is 1 watt maximum.	
	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 X132 10G SFP+ LC ER Transceiver (J9153A)	**Ports**	1 LC 10-GbE port (IEEE 802.3ae Type 10GBASE-ER); Duplex: full only	
	Connectivity	**Connector type**	LC
		Wavelength	1550 nm
	Physical characteristics	**Dimensions**	2.22(d) x 0.55(w) x 0.47(h) in. (5.65 x 1.39 x 1.19 cm)
		Weight	.04 lb., Fully loaded
		Transceiver form factor	SFP+
	Environment	**Operating temperature**	32°F to 158°F (0°C to 70°C)
		Operating relative humidity	5% to 95%, noncondensing
		Nonoperating/Storage temperature	-40°F to 185°F (-40°C to 85°C)

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		Nonoperating/Storage relative humidity	5% to 95%, noncondensing
		Altitude	up to 10,000 ft. (3 km)
	Electrical characteristics	**Power consumption typical**	1.3 W
		Power consumption maximum	1.5 W
	Cabling	Cable type: Single-mode fiber optic, complying with ITU-T G.652; Maximum distance: • 40km	
		Fiber type	Single Mode
	Notes	Check switch release notes for minimum version of software required to support this transceiver. Some switches have limits as to how many of this particular transceiver can be installed. See the release notes of the switch software/firmware being used for more details.	
	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 X242 SFP+ SFP+ 1 m Direct Attach Cable (J9281B)	**Connectivity**	Length	3.28 ft. (1 m)
	Physical characteristics	Weight	0.24 lb. (0.11 kg) the cable with an SFP+ transceiver at each end of the cable
	Environment	Operating temperature	32ºF to 158ºF (0ºC to 70ºC)
		Operating relative humidity	5% to 95%, noncondensing
		Nonoperating/Storage temperature	14ºF to 185ºF (-10ºC to 85ºC)
		Nonoperating/Storage relative humidity	5% to 95%, noncondensing
		Altitude	up to 10,000 ft. (3 km)
	Electrical characteristics	Notes	0.04 watts maximum per transceiver end
	Notes	Electrical Properties • Cable Characteristic Impedance: 100 ohms • Crosstalk between pairs: 2% max • Time delay: 1.31 nsec/ft Physical Properties • Cable Diameter: 0.180" • Minimum Cable Bend Radius: 1.0"	
	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.	

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HP X242 SFP+ SFP+ 3 m Direct Attach Cable (J9283B)	**Connectivity**	Length	10 ft. (3 m)
	Physical characteristics	Weight	.49 lb. (0.22 kg), Fully loaded the cable with an SFP+ transceiver at each end of the cable
	Environment	Operating temperature	32ºF to 158ºF (0ºC to 70ºC)
		Operating relative humidity	5% to 95%, noncondensing
		Nonoperating/Storage temperature	14ºF to 185ºF (-10ºC to 85ºC)
		Nonoperating/Storage relative humidity	5% to 95%, noncondensing
		Altitude	up to 10,000 ft. (3 km)
	Electrical characteristics	Notes	0.04 watts maximum per transceiver end
	Notes	Electrical Properties • Cable Characteristic Impedance: 100 ohms • Crosstalk between pairs: 2% max • Time delay: 1.31 nsec/ft Physical Properties • Cable Diameter: 0.180" • Minimum Cable Bend Radius: 1.0"	
	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 X242 SFP+ SFP+ 7 m Direct Attach Cable (J9285B)	**Connectivity**	Length	22.97 ft. (7 m)
	Physical characteristics	Weight	1.02 lb., Fully loaded the cable with an SFP+ transceiver at each end of the cable
	Environment	Operating temperature	32ºF to 158ºF (0ºC to 70ºC)
		Operating relative humidity	5% to 95%, noncondensing
		Nonoperating/Storage temperature	14ºF to 185ºF (-10ºC to 85ºC)
		Nonoperating/Storage relative humidity	5% to 95%, noncondensing
		Altitude	up to 10,000 ft. (3 km)
	Electrical characteristics	Notes	0.04 watts maximum per transceiver end
	Notes	Electrical Properties • Cable Characteristic Impedance: 100 ohms • Crosstalk between pairs: 2% max • Time delay: 1.31 nsec/ft Physical Properties • Cable Diameter: 0.180" • Minimum Cable Bend Radius: 1.0"	
	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.	

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HP X244 XFP SFP+ 1 m Direct Attach Cable (J9300A) A 1m direct attach copper cable with an XFP connector attached on one end and an SFP+ connector attached on the other end. This cable provides a low price connectivity option between switches/servers/ storage to interconnect XFP and SFP+ form factors.	**Connectivity**	Length	3.28 ft. (1 m)
	Physical characteristics	Weight	.27 lb. (0.12 kg), Fully loaded cable with XFP transcevier on one end and SFP+ on the other end
	Environment	Operating temperature	32ºF to 158ºF (0ºC to 70ºC)
		Operating relative humidity	5% to 95%, noncondensing
		Nonoperating/Storage temperature	32ºF to 158ºF (0ºC to 70ºC)
		Nonoperating/Storage relative humidity	5% to 95%, noncondensing
		Altitude	up to 10,000 ft. (3 km)
	Notes	XFP end consumes 2 watts SFP+ end consumes 0.036 watts	
	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 X244 XFP SFP+ 3 m Direct Attach Cable (J9301A) A 3m direct attach copper cable with an XFP connector attached on one end and an SFP+ connector attached on the other end. This cable provides a low price connectivity option between switches/servers/ storage to interconnect XFP and SFP+ form factors.	**Connectivity**	Length	9.84 ft. (3 m)
	Physical characteristics	Weight	.51 lb. (0.23 kg), Fully loaded cable with XFP transcevier on one end and SFP+ on the other end
	Environment	Operating temperature	32ºF to 158ºF (0ºC to 70ºC)
		Operating relative humidity	5% to 95%, noncondensing
		Nonoperating/Storage temperature	32ºF to 158ºF (0ºC to 70ºC)
		Nonoperating/Storage relative humidity	5% to 95%, noncondensing
		Altitude	up to 10,000 ft. (3 km)
	Cabling	Maximum distance: • 3m Direct Attach Cable	
	Notes	XFP end consumes 2 watts SFP+ end consumes 0.036 watts	
	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 X244 XFP SFP+ 5 m Direct Attach Cable (J9302A) A 5m direct attach copper cable with an XFP connector attached on one end and an SFP+ connector attached on the other end. This cable provides a low price connectivity option	**Connectivity**	Length	16.4 ft. (5 m)
	Physical characteristics	Weight	.74 lb. (0.34 kg), Fully loaded cable with XFP transcevier on one end and SFP+ on the other end
	Environment	Operating temperature	32ºF to 158ºF (0ºC to 70ºC)
		Operating relative humidity	5% to 95%, noncondensing
		Nonoperating/Storage temperature	32ºF to 158ºF (0ºC to 70ºC)
		Nonoperating/Storage relative humidity	5% to 95%, noncondensing

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between switches/servers/ storage to interconnect XFP and SFP+ form factors.		Altitude up to 10,000 ft. (3 km)
	Notes	XFP end consumes 2 watts SFP+ end conumes 0.036 watts
	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 0.5 m Multimode OM3 LC/LC Optical Cable (AJ833A)	**Cabling**	**Cable type**: 50/125 µm (core/cladding) diameter, mulitimode fiber optic, with effective modal bandwidth of 2000 MHz/km as detailed in TIA-492AAAC for distances of up to 300 m **Maximum distance**: 10Gbps Transfer Rate (Ethernet): 300m
	Notes	Cable Specs: Tight buffered duplex fiber optic multimode OM3 50/125 um fiber optic cable and Ethernet assembly with LC duplex connectors on one end and LC duplex connectors on other end. • Dimensions: Core diameter: 50 ± 3.0um Cladding diameter: 125 ± 2.0um Coating diameter: 245 ± 10um • Optical glass: Bandwidth: For LED sources: 1500/500 MHz-km @850/1300nm. • Optical glass: Bandwidth: For Laser sources: 2000/500 MHz-km @850/1300nm. VCSEL Laser sources: 600 / 600 meters @850/1300nm for Gigabit Ethernet compliant links. • CABLE: The cable is duplex zipcord graded index 50/125um multimode optical fiber and designed to work in both the 850 and 1300 nm wavelength windows. • BULK CABLE & CABLE ASSEMBLY CONFIGURATION: • Jacket Material: Riser Grade - Low Smoke Zero Halogen thermoplastic. • Jacket Color: Aqua for OM3 multimode per TIA 598 • Boot Color: White • Insertion Loss: less than 0.5 dB @ 850 with LED source, 0.003 dB/M added for lengths > 30 meters. • Maximum Cable attenuation: 3.0 dB/km @ 850 nm, 1.0 dB/Km @ 1310 nm @ 23°C as tested in accordance with EIA 455-46. • Weight: Air Packed Weight: 1 LB Net Weight: 0.454Kg
	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 1 m Multimode OM3 LC/LC Optical Cable (AJ834A)	**Cabling**	**Cable type**: 50/125 µm (core/cladding) diameter, mulitimode fiber optic, with effective modal bandwidth of 2000 MHz/km as detailed in TIA-492AAAC for distances of up to 300 m **Maximum distance**: 10Gbps Transfer Rate (Ethernet): 300m
	Notes	Cable Specs: Tight buffered duplex fiber optic multimode OM3 50/125 um

		fiber optic cable and Ethernet assembly with LC duplex connectors on one end and LC duplex connectors on other end. • Dimensions: Core diameter: 50 ± 3.0um Cladding diameter: 125 ± 2.0um Coating diameter: 245 ± 10um • Optical Glass Bandwidth: For LED sources: 1500/500 MHz-km @850/1300nm. • Optical Glass: For Laser sources: 2000/500 MHz-km @850/1300nm. VCSEL Laser sources: Shall achieve 600 / 600 meters @850/1300nm for Gigabit Ethernet compliant links. • CABLE: The cable is duplex zipcord graded index 50/125um multimode optical fiber. The cable is designed to work in both the 850 and 1300 nm wavelength windows. • BULK CABLE & CABLE ASSEMBLY CONFIGURATION: • Jacket Material: Riser Grade - Low Smoke Zero Halogen thermoplastic. • Jacket Color: Aqua for OM3 multimode per TIA 598 • Boot Color: White • Insertion Loss: less than 0.5 dB @ 850 with LED source, 0.003 dB/M added for lengths > 30 meters. • Maximum Cable attenuation: 3.0 dB/km @ 850 nm, 1.0 dB/Km @ 1310 nm @ 23°C as tested in accordance with EIA 455-46. • Weight: Air Packed Weight: 1 LB Net Weight: 0.454Kg
	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 2 m Multimode OM3 LC/LC Optical Cable (AJ835A)	**Cabling**	**Cable type**: 50/125 µm (core/cladding) diameter, mulitimode fiber optic, with effective modal bandwidth of 2000 MHz/km as detailed in TIA-492AAAC for distances of up to 300 m; **Maximum distance**: 10Gbps Transfer Rate (Ethernet): 300m
	Notes	Cable Specs: Tight buffered duplex fiber optic multimode OM3 50/125 um fiber optic cable and Ethernet assembly with LC duplex connectors on one end and LC duplex connectors on other end. • Dimensions: Core diameter: 50 ± 3.0um Cladding diameter: 125 ± 2.0um Coating diameter: 245 ± 10um • Optical Glass Bandwidth: For LED sources: 1500/500 MHz-km @850/1300nm. • Optical Glass: For Laser sources: 2000/500 MHz-km @850/1300nm. VCSEL Laser sources: Shall achieve 600 / 600 meters @850/1300nm for Gigabit Ethernet compliant links. • CABLE: The cable is duplex zipcord graded index 50/125um multimode optical fiber. The cable is designed to work in both the 850 and 1300 nm wavelength windows. • BULK CABLE & CABLE ASSEMBLY CONFIGURATION: • Jacket Material: Riser Grade - Low Smoke Zero Halogen thermoplastic.

		• Jacket Color: Aqua for OM3 multimode per TIA 598 • Boot Color: White • Insertion Loss: less than 0.5 dB @ 850 with LED source, 0.003 dB/M added for lengths > 30 meters. • Maximum Cable attenuation: 3.0 dB/km @ 850 nm, 1.0 dB/Km @ 1310 nm @ 23°C as tested in accordance with EIA 455-46. • Weight: Air Packed Weight: 1 LB Net Weight: 0.454Kg
	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 5 m Multimode OM3 LC/LC Optical Cable (AJ836A)	**Cabling**	**Cable type**: 50/125 µm core/cladding) diameter, mulitimode fiber optic, with effective modal bandwidth of 2000 MHz/km as detailed in TIA-492AAAC for distances of up to 300 m; **Maximum distance**: 10Gbps Transfer Rate (Ethernet): 300m
	Notes	Cable Specs: This specification defines the detail requirements for a tight buffered duplex fiber optic multimode OM3 50/125 um fiber optic cable and Ethernet assembly with LC duplex connectors on one end and LC duplex connectors on other end. • Dimensions: Core diameter: 50 ± 3.0um Cladding diameter: 125 ± 2.0um Coating diameter: 245 ± 10um • Optical Glass Bandwidth: For LED sources: 1500/500 MHz-km @850/1300nm. • Optical Glass: For Laser sources: 2000/500 MHz-km @850/1300nm. VCSEL Laser sources: Shall achieve 600 / 600 meters @850/1300nm for Gigabit Ethernet compliant links. • CABLE: The cable is duplex zipcord graded index 50/125um multimode optical fiber. The cable is designed to work in both the 850 and 1300 nm wavelength windows. • BULK CABLE & CABLE ASSEMBLY CONFIGURATION: • Jacket Material: Riser Grade - Low Smoke Zero Halogen thermoplastic. • Jacket Color: Aqua for OM3 multimode per TIA 598 • Boot Color: White • Insertion Loss: less than 0.5 dB @ 850 with LED source, 0.003 dB/M added for lengths > 30 meters. • Maximum Cable attenuation: 3.0 dB/km @ 850 nm, 1.0 dB/Km @ 1310 nm @ 23°C as tested in accordance with EIA 455-46. • Weight: Air Packed Weight: 1 LB Net Weight: 0.454Kg
	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 15 m Multimode OM3 LC/LC Optical Cable	**Cabling**	**Cable type**: 50/125 µm (core/cladding) diameter, mulitimode fiber optic, with effective

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(AJ837A)		modal bandwidth of 2000 MHz/km as detailed in TIA-492AAAC for distances of up to 300 m; **Maximum distance**: 10Gbps Transfer Rate (Ethernet): 300m
	Notes	Cable Specs: Tight buffered duplex fiber optic multimode OM3 50/125 um fiber optic cable and Ethernet assembly with LC duplex connectors on one end and LC duplex connectors on other end. • Dimensions: Core diameter: 50 ± 3.0um Cladding diameter: 125 ± 2.0um Coating diameter: 245 ± 10um • Optical Glass Bandwidth: For LED sources: 1500/500 MHz-km @850/1300nm. • Optical Glass: For Laser sources: 2000/500 MHz-km @850/1300nm. VCSEL Laser sources: Shall achieve 600 / 600 meters @850/1300nm for Gigabit Ethernet compliant links. • CABLE: The cable is duplex zipcord graded index 50/125um multimode optical fiber. The cable is designed to work in both the 850 and 1300 nm wavelength windows. • BULK CABLE & CABLE ASSEMBLY CONFIGURATION: • Jacket Material: Riser Grade - Low Smoke Zero Halogen thermoplastic. • Jacket Color: Aqua for OM3 multimode per TIA 598 • Boot Color: White • Insertion Loss: less than 0.5 dB @ 850 with LED source, 0.003 dB/M added for lengths > 30 meters. • Maximum Cable attenuation: 3.0 dB/km @ 850 nm, 1.0 dB/Km @ 1310 nm @ 23°C as tested in accordance with EIA 455-46. • Weight: Air Packed Weight: 1 LB Net Weight: 0.454Kg
	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 30 m Multimode OM3 LC/LC Optical Cable (AJ838A)	**Cabling**	**Cable type**: 50/125 µm (core/cladding) diameter, mulitimode fiber optic, with effective modal bandwidth of 2000 MHz/km as detailed in TIA-492AAAC for distances of up to 300 m; **Maximum distance**: 10Gbps Transfer Rate (Ethernet): 300m
	Notes	Cable Specs: Tight buffered duplex fiber optic multimode OM3 50/125 um fiber optic cable and Ethernet assembly with LC duplex connectors on one end and LC duplex connectors on other end. • Dimensions: Core diameter: 50 ± 3.0um Cladding diameter: 125 ± 2.0um Coating diameter: 245 ± 10um • Optical Glass Bandwidth: For LED sources: 1500/500 MHz-km @850/1300nm. • Optical Glass: For Laser sources: 2000/500 MHz-km @850/1300nm. VCSEL Laser sources: Shall achieve 600 / 600 meters @850/1300nm for Gigabit Ethernet compliant links.

		• CABLE: The cable is duplex zipcord graded index 50/125um multimode optical fiber. The cable is designed to work in both the 850 and 1300 nm wavelength windows. • BULK CABLE & CABLE ASSEMBLY CONFIGURATION: • Jacket Material: Riser Grade - Low Smoke Zero Halogen thermoplastic. • Jacket Color: Aqua for OM3 multimode per TIA 598 • Boot Color: White • Insertion Loss: less than 0.5 dB @ 850 with LED source, 0.003 dB/M added for lengths > 30 meters. • Maximum Cable attenuation: 3.0 dB/km @ 850 nm, 1.0 dB/Km @ 1310 nm @ 23°C as tested in accordance with EIA 455-46. • Weight: Air Packed Weight: 1 LB Net Weight: 0.454Kg
	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 50 m Multimode OM3 LC/LC Optical Cable (AJ839A)	**Cabling**	**Cable type**: 50/125 µm (core/cladding) diameter, mulitimode fiber optic, with effective modal bandwidth of 2000 MHz/km as detailed in TIA-492AAAC for distances of up to 300 m; **Maximum distance**: 10Gbps Transfer Rate (Ethernet): 300m
	Notes	Cable Specs: Tight buffered duplex fiber optic multimode OM3 50/125 um fiber optic cable and Ethernet assembly with LC duplex connectors on one end and LC duplex connectors on other end. • Dimensions: Core diameter: 50 ± 3.0um Cladding diameter: 125 ± 2.0um Coating diameter: 245 ± 10um • Optical Glass Bandwidth: For LED sources: 1500/500 MHz-km @850/1300nm. • Optical Glass: For Laser sources: 2000/500 MHz-km @850/1300nm. VCSEL Laser sources: Shall achieve 600 / 600 meters @850/1300nm for Gigabit Ethernet compliant links. • CABLE: The cable is duplex zipcord graded index 50/125um multimode optical fiber. The cable is designed to work in both the 850 and 1300 nm wavelength windows. • BULK CABLE & CABLE ASSEMBLY CONFIGURATION: • Jacket Material: Riser Grade - Low Smoke Zero Halogen thermoplastic. • Jacket Color: Aqua for OM3 multimode per TIA 598 • Boot Color: White • Insertion Loss: less than 0.5 dB @ 850 with LED source, 0.003 dB/M added for lengths > 30 meters. • Maximum Cable attenuation: 3.0 dB/km @ 850 nm, 1.0 dB/Km @ 1310 nm @ 23°C as tested in accordance with EIA 455-46. • Weight: Air Packed Weight: 1 LB Net Weight: 0.454Kg
	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 Premier Flex LC/LC Multi-mode OM4 2 fiber 1m Cable (QK732A)	**Notes**	Cable Specs: Graded-index, "bendable" fiber optic multimode OM3+ 50/125um duplex cable and Ethernet assembly with LC duplex connectors on each end. • Core Diameter: 50um ±3um, Cladding diameter: 125um ±2um; Coating diameter: 245 ± 10um • Bandwidth: 3000 MHz-km @ 850nm (Laser) • Jacket Color: Blue • Jacket Material: Riser Grade – Low Smoke Zero Halogen (LSZH) thermoplastic • Boot Color: White • Outer Jacket Print: HP PremierFlex OM3+ Fiber Optic Cable, 50/125um, Type OFNR (UL), LSZH, cUL, OFN FT4, ROHS. Cable also has a longitudinal white stripe that runs the entire length of the cable. • Insertion Loss: Less than 0.5dB @ 850nm with LED source, 0.003dB/m added for lengths >30m • Maximum Cable Attenuation: 3.0 dB/km @ 850nm, 1.0 dB/km @ 1310nm @ 23°C as tested in accordance with EIA 455-45
	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 Premier Flex LC/LC Multi-mode OM4 2 fiber 2m Cable (QK733A)	**Notes**	Cable Specs: Graded-index, "bendable" fiber optic multimode OM3+ 50/125um duplex cable and Ethernet assembly with LC duplex connectors on each end. • Core diameter: 50um ±3um, Cladding diameter: 125um ±2um; Coating diameter: 245 ± 10um • Bandwidth: 3000 MHz-km @ 850nm (Laser) • Jacket Color: Blue • Jacket Material: Riser Grade – Low Smoke Zero Halogen (LSZH) thermoplastic • Boot Color: White • Outer Jacket Print: HP PremierFlex OM3+ Fiber Optic Cable, 50/125um, Type OFNR (UL), LSZH, cUL, OFN FT4, ROHS. Cable also has a longitudinal white stripe that runs the entire length of the cable. • Insertion Loss: Less than 0.5dB @ 850nm with LED source, 0.003dB/m added for lengths >30m • Maximum Cable Attenuation: 3.0 dB/km @ 850nm, 1.0 dB/km @ 1310nm @ 23°C as tested in accordance with EIA 455-45
	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 Premier Flex LC/LC Multi-mode OM4 2 fiber 5m Cable (QK734A)	**Notes**	Cable Specs: Graded-index, "bendable" fiber optic multimode OM3+ 50/125um duplex cable and Ethernet assembly with LC duplex connectors on each end. • Core diameter: 50um ±3um, Cladding diameter: 125um ±2um; Coating

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		diameter: 245 ± 10um • Bandwidth: 3000 MHz-km @ 850nm (Laser) • Jacket Color: Blue • Jacket Material: Riser Grade – Low Smoke Zero Halogen (LSZH) thermoplastic • Boot Color: White • Outer Jacket Print: HP PremierFlex OM3+ Fiber Optic Cable, 50/125um, Type OFNR (UL), LSZH, cUL, OFN FT4, ROHS. Cable also has a longitudinal white stripe that runs the entire length of the cable. • Insertion Loss: Less than 0.5dB @ 850nm with LED source, 0.003dB/m added for lengths >30m • Maximum Cable Attenuation: 3.0 dB/km @ 850nm, 1.0 dB/km @ 1310nm @ 23°C as tested in accordance with EIA 455-45
	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 Premier Flex LC/LC Multi-mode OM4 2 fiber 15m Cable (QK735A)	**Notes**	Cable Specs: Graded-index, "bendable" fiber optic multimode OM3+ 50/125um duplex cable and Ethernet assembly with LC duplex connectors on each end. • Core diameter: 50um ±3um, Cladding diameter: 125um ±2um; Coating diameter: 245 ± 10um • Bandwidth: 3000 MHz-km @ 850nm (Laser) • Jacket Color: Blue • Jacket Material: Riser Grade – Low Smoke Zero Halogen (LSZH) thermoplastic • Boot Color: White • Outer Jacket Print: HP PremierFlex OM3+ Fiber Optic Cable, 50/125um, Type OFNR (UL), LSZH, cUL, OFN FT4, ROHS. Cable also has a longitudinal white stripe that runs the entire length of the cable. • Insertion Loss: Less than 0.5dB @ 850nm with LED source, 0.003dB/m added for lengths >30m • Maximum Cable Attenuation: 3.0 dB/km @ 850nm, 1.0 dB/km @ 1310nm @ 23°C as tested in accordance with EIA 455-45
	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 Premier Flex LC/LC Multi-mode OM4 2 fiber 30m Cable (QK736A)	**Notes**	Cable Specs: Graded-index, "bendable" fiber optic multimode OM3+ 50/125um duplex cable and Ethernet assembly with LC duplex connectors on each end. • Core diameter: 50um ±3um, Cladding diameter: 125um ±2um; Coating diameter: 245 ± 10um • Bandwidth: 3000 MHz-km @ 850nm (Laser) • Jacket Color: Blue • Jacket Material: Riser Grade – Low Smoke Zero Halogen (LSZH) thermoplastic • Boot Color: White • Outer Jacket Print: HP PremierFlex OM3+ Fiber Optic Cable, 50/125um, Type OFNR (UL), LSZH, cUL, OFN FT4, ROHS. Cable also has a longitudinal

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			white stripe that runs the entire length of the cable. • Insertion Loss: Less than 0.5dB @ 850nm with LED source, 0.003dB/m added for lengths >30m • Maximum Cable Attenuation: 3.0 dB/km @ 850nm, 1.0 dB/km @ 1310nm @ 23°C as tested in accordance with EIA 455-45
	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 Premier Flex LC/LC Multi-mode OM4 2 fiber 50m Cable (QK737A)	**Notes**		Cable Specs: Graded-index, "bendable" fiber optic multimode OM3+ 50/125um duplex cable and Ethernet assembly with LC duplex connectors on each end. • Core diameter: 50um ±3um, Cladding diameter: 125um ±2um; Coating diameter: 245 ± 10um • Bandwidth: 3000 MHz-km @ 850nm (Laser) • Jacket Color: Blue • Jacket Material: Riser Grade – Low Smoke Zero Halogen (LSZH) thermoplastic • Boot Color: White • Outer Jacket Print: HP PremierFlex OM3+ Fiber Optic Cable, 50/125um, Type OFNR (UL), LSZH, cUL, OFN FT4, ROHS. Cable also has a longitudinal white stripe that runs the entire length of the cable. • Insertion Loss: Less than 0.5dB @ 850nm with LED source, 0.003dB/m added for lengths >30m • Maximum Cable Attenuation: 3.0 dB/km @ 850nm, 1.0 dB/km @ 1310nm @ 23°C as tested in accordance with EIA 455-45
	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 1500 W PoE+ zl Power Supply ((J9306A)	**Physical characteristics**	**Dimensions**	6.05(d) x 7.45(w) x 5.1(h) in. (15.37 x 18.92 x 12.95 cm)
		Weight	7.5 lb. (3.2 kg)
	Environment	**Operating temperature**	32°F to 131°F (0°C to 55°C)
		Operating relative humidity	15% to 95% @ 131°F (55°C), noncondensing
		Nonoperating/Storage temperature	-40°F to 158°F (-40°C to 70°C)
		Nonoperating/Storage relative humidity	15% to 95% @ 158°F (70°C), noncondensing
		Altitude	up to 10,000 ft. (3 km)
	Electrical characteristics	**AC voltage**	110-127/200-240 VAC
		Current	13/10 A
		Maximum power rating	1768 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

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			PoE (if equipped), 100% traffic, all ports plugged in, and all modules populated. The Maximum Power Rating at 120 volts is 1114 watts and at 240 volts is 1768 watts.
	Notes		Each J9306A supplies 600 W chassis power, 300 W of PoE/PoE+ power at 110-127 volts, and 900 W of PoE/PoE+ power at 200-240 volts. One J9306A can power the J8697A chassis. One J9306A can power the J9477A chassis. Two J9306A supplies are required to power the J8698A chassis. Two J9306A supplies are required to power the J8715A chassis.
	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 1500 W zl Power Supply (J8713A)	**Physical characteristics**	**Dimensions**	6.05(d) x 7.45(w) x 5.1(h) in. (15.37 x 18.92 x 12.95 cm)
		Weight	7.5 lb. (3.2 kg)
	Environment	**Operating temperature**	32°F to 131°F (0°C to 55°C)
		Operating relative humidity	15% to 95% @ 131°F (55°C), noncondensing
		Nonoperating/Storage temperature	-40°F to 158°F (-40°C to 70°C)
		Nonoperating/Storage relative humidity	15% to 95% @ 158°F (70°C), noncondensing
		Altitude	up to 10,000 ft. (3 km)
	Electrical characteristics	**AC voltage**	200-240 VAC
		Current	10 A
		Maximum power rating	1800 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.
	Notes		200–240 V only. Installation of the J8713A reduces the chassis altitude specification to 10,000 ft. (3677m). • J8713A supplies 600 W chassis power and 900 W PoE power. See the Ordering Guide for more details on power supply selection for PoE power. Units shipped to North America include a NEMA L6-20P twist lock power cord. Non-locking NEMA 6-20P optionally available - see the Ordering Guide for more details. When used in the J8714A power shelf, the following specs apply (at full load): • Heat dissipation: 450 BTU/hr (475 kJ/hr) @ 220V • Maximum current: 5.1 A @ 220 V
	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.

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HP 875 W zl Power Supply (J8712A)	**Physical characteristics**	**Dimensions**	6.05(d) x 7.45(w) x 5.1(h) in. (15.37 x 18.92 x 12.95 cm)
		Weight	7.05 lb. (3.2 kg)
	Environment	**Operating temperature**	32°F to 131°F (0°C to 55°C)
		Operating relative humidity	15% to 95% @ 131°F (55°C), noncondensing
		Nonoperating/Storage temperature	-40°F to 158°F (-40°C to 70°C)
		Nonoperating/Storage relative humidity	15% to 95% @ 158°F (70°C), noncondensing
		Altitude	up to 10,000 ft. (3 km)
	Electrical characteristics	**AC voltage**	100-127/200-240 VAC
		Current	12/5.7 A
		Maximum power rating	1050 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.
	Notes	J8712A supplies 600 W chassis power and 273 W PoE power. One J8712A can power the J8697A chassis. Two J8712A supplies are required to power the J8698A chassis. Two J8712A supplies are required to power the J8715A chassis. See the Ordering Guide for more details on power supply selection for PoE power. When used in the J8714A power shelf, the following specs apply (at full load): • Heat dissipation: 250 BTU/hr (263 kJ/hr) @ 110 V, 210 BTU/hr (222 kJ/hr) @ 220 V • Maximum current: 3.2 A @ 110 V, 1.7 A @ 220 V	
	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 zl Power Supply Shelf (J8714A)	**Ports**	2 external power supply ports Restrictions: PoE power available depends on power supplies installed.	
	Physical characteristics	**Dimensions**	9.73(d) x 17.44(w) x 5.2(h) in. (24.71 x 44.3 x 13.2 cm) (3U height)
		Weight	9.26 lb. (4.2 kg) (no power supplies installed)
	Environment	**Operating temperature**	32°F to 131°F (0°C to 55°C)
		Operating relative humidity	15% to 95% @ 104°F (40°C), noncondensing
		Nonoperating/Storage temperature	-40°F to 158°F (-40°C to 70°C)
		Nonoperating/Storage relative humidity	15% to 95% @ 104°F (40°C), noncondensing

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		Altitude	up to 10,000 ft. (3 km)
		Acoustic	Power: 52.9 dB Pressure: 42.9 dB
	Electrical characteristics	**Description**	Power draw and heat dissipation for the power shelf are dependent on the power supplies installed.
		Notes	For heat dissipation and power requirements of the power shelf, find and add together these figures for the 1 or 2 power supplies actually installed.
	Safety	CSA 22.2 No. 60950; UL 60950; IEC 60950; EN 60950	
	Emissions	FCC Class A; VCCI Class A; EN 55022/CISPR 22 Class A	
	Immunity	**EN**	EN 55024, CISPR 24
		ESD	IEC 61000-4-2; 4 kV CD, 8 kV AD
		Radiated	IEC 61000-4-3; 3 V/m
		EFT/Burst	IEC 61000-4-4; 1.0 kV (power line), 0.5 kV (signal line)
		Surge	IEC 61000-4-5; 1 kV/2 kV AC
		Conducted	IEC 61000-4-6; 3 V
		Power frequency magnetic field	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
		Harmonics	EN 61000-3-2, IEC 61000-3-2
		Flicker	EN 61000-3-3, IEC 61000-3-3
	Notes	The HP ProCurve Switch zl Power Supply Shelf has two slots for zl power supplies. It supplies PoE power only to zl switches. For yl switches, see the HP ProCurve 620 Redundant/External Power Supply. Power shelf depth includes 0.75 in. (1.9 cm) due to the power supply handles. Power supplies not included.	
	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 5400 zl Premium License (J8994A)	**Services**	3-Year, 9x5 SW phone support, software updates (UT481E) 3-year, 24x7 SW phone support, software updates (UT482E) 4-year, 24x7 SW phone support, software updates (UT458E) 5-year, 24x7 SW phone support, software updates (UT459E) 1-year, 24x7 software phone support, software updates (HS532E) 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.	

Summary of Changes

Date	Version History	Action	Description of Change:
01-Dec-2014	From Version 37 to 38	Changed	Feature updates, Changes made on the entire document.
09-Oct-2014	From Version 36 to 37	Removed	SKU J8439A removed
		Changed	Accessory Product Details revised
10-Jun-2014	From Version 35 to 36	Changed	Updated Configuration Information to add the zl2 Switch Series information.
17-Feb-2014	From Version 33 to 35	Changed	SFP+ Transceivers were revised.
17-Jan-2014	From Version 32 to 33	Changed	Corrected a part number in the Accessories section.
09-Dec-2013	From Version 31 to 32	Changed	Build to Order, Box Level Integrated CTO Models, Rack Level Integrated CTO Models, Internal Power Supplies, Modules, and Cables were revised.
19-Aug-2013	From Version 30 to 31	Added	HP 5406 8p10GT 8p10GE Swch and Psw was added to Configuration
15-Jul-2013	From Version 29 to 30	Changed	Updated the BTO section of the new Configuration section.
12-Jul-2013	From Version 28 to 29	Added	Configuration was added.
10-Jun-2013	From Version 27 to 28	Added	OM4 cables were added.
24-Sep-2012	From Version 26 to 27	Changed	The Features and Benefits section, Introduction, and Accessories sections were updated. Minor changes were made to each model's technical specifications.
27-Aug-2012	From Version 25 to 26	Changed	Updated the specifications for the HP 8-port 10 GbE SFP+ v2 zl Module in Accessory Product Details.
25-Jun-2012	From Version 24 to 25	Changed	The Features and Benefits section, Models section, Introduction, and Accessories sections were updated. Minor changes were made to each model's technical specifications.
30-Mar-2012	From Version 23 to 24	Changed	The Features and Benefits section and Model names were updated.
27-Mar-2012	From Version 22 to 23	Added	HP X242 SFP+ to SFP+ 10m Direct Attach Copper Cable and HP X242 SFP+ to SFP+ 15m Direct Attach Copper Cable were added.
29-Nov-2011	From Version 21 to 22	Changed	The Features and Benefits section was updated.
09-Nov-2011	From Version 20 to 21	Changed	The names of the product series and models were updated throughout the document.
30-Sep-2011	From Version 19 to 20	Added	Accessory Product Details was added.
20-Jun-2011	From Version 17 to 19	Changed	The QuickSpec was completely revised, including removing models.
15-Apr-2011	From Version 16 to 17	Removed	Removed the remaining mentions of ProCurve in the QS.
10-Dec-2010	From Version 15 to 16	Added	Added the two chassis models and also several new accessories.
15-Nov-2010	From Version 14 to 15	Changed	The QuickSpec was completely revised, including adding several new models.
15-Sep-2010	From Version 13 to 14	Changed	The QuickSpec was completely revised, including changing the title.

Summary of Changes

02-Jun-2010	From Version 12 to 13	Changed	Updated the Notes section of Technical Specifications. Updated Standards and Protocols Added new cables to the Accessories section.
19-Feb-2010	From Version 11 to 12	Removed	Removed an incompatible product from the Accessories section.
10-Feb-2010	From Version 10 to 11	Changed	The features, accessories, specifications: Notes have changed for this product.
02-Oct-2009	From Version 9 to 10	Added	Added 2 new service part numbers for the HP ProCurve 5406zl-48G-PoE + Switch and HP ProCurve 5412-96G-PoE + Switch
01-Sep-2009	From Version 8 to 9	Added	All mentions of the HP ProCurve 5406zl-48G-PoE + Switch and HP ProCurve 5412-96G-PoE + Switch
		Changed	Updates were made throughout the QuickSpec.
28-Apr-2009	From Version 7 to 8	Added	Added several new products to the Accessories section.
17-Mar-2009	From Version 6 to 7	Changed	Changes were made throughout the entire QuickSpec. Note the title has changed.
19-Jan-2009	From Version 5 to 6	Changed	Changes included updating the Standards and Protocols for all Switch specifications in the document, Features and Benefits within the Overview section and completely revising the Accessories section, adding IPv6 throughout the document and IEEE 802.1ad Q-in-Q to Layer 2 Switching and General Protocols
06-Feb-2008	From Version 4 to 5	Removed	Removed a reference to RFC 2784 from the document.
01-Dec-2007	From Version 3 to 4	Changed	This QuickSpec was completely revised.
22-Feb-2007	From Version 2 to 3	Changed	Changes included updating the Standards and Protocols for all Switch specifications in the document, adding several new services, and adding several new modules to the Modules and RPS sections.
18-Aug-2006	From Version 1 to 2	Changed	Changes made throughout the QuickSpec.

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