Overview

HP 6600 Switch Series

HP 6600-24G-4XG Switch J9264A

Key features

- Enhanced for data center server access layer
- Front-to-back, reversible airflow
- Redundant, hot-swappable power supplies and fans
- 64K MAC address scalability
- Consistent ProVision ASIC-based switch fabric

Product overview

The HP 6600 Switch Series consists of advanced data center server edge switches. The 6600 Switch Series includes 10/100/1000BASE-T and 10GbE SFP+ 1U rackmount switches enhanced for server edge connectivity with front-to-back (reversible) airflow, redundant hot-swappable power, and redundant hot-swappable fans. The foundation for the switch series is a purpose-built, programmable 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 a variety of connectivity interfaces and expanded buffering, the HP 6600 Switch Series offers excellent investment protection, flexibility, and scalability, as well as ease of deployment and reduced operational expense.

Features and benefits

NEW Software-defined networking

- **OpenFlow**
  is a key technology enabling software-defined networking by allowing the separation of data (packet forwarding) and control (routing decision) paths

Quality of Service (QoS)

- **Layer 4 prioritization**
  enables prioritization based on TCP/UDP port numbers
- **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
- **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
  - **Reduced bandwidth**: provides per-port, per-queue egress-based reduced bandwidth
- **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
- **Traffic prioritization**
  allows real-time traffic classification into eight priority levels mapped to eight queues

Data center optimized

- **Front-to-back airflow**
  designed to be collocated at the top of a server rack, the 6600 Switch Series supports front-to-back airflow (mechanically reversible) to support hot aisle/cold aisle configurations; the N+N fan tray is also hot-swappable, allowing easy replacement in the rack

Overview

- **Modular internal power supplies**
  support redundant, hot-swappable power supply configurations (units ship with one supply); power load is shared across dual supplies
- **Server-to-switch distributed trunking**
  supports Layer 2 LACP groups from a single server across two different switches for active-active server NIC teaming configurations
- **Power down idle ports**
  save power by powering down blocks of idle Gigabit and 10GbE ports; idle ports can be reinitialized without rebooting; available on 6600-24XG and 6600-48G-4XG models
- **Out-of-band management**
  remotely monitors and manages switch via Ethernet out-of-band management port; eliminates the need for terminal server network; available on 6600-24XG and 6600-48G-4XG models
- **Deployment/Serviceability**
  data connectivity and management ports are all front-side accessible, and power supplies and fan trays are rear-side accessible, allowing for easy maintenance and in-rack serviceability

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, 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
- **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
- **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
- **Management simplicity**
  provided by common networking features and CLI implementation (common across HP 8200 zl, 6600, 6200 yl, 5400 zl, and 3500 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
- **Multiple configuration files**
  can be stored to the flash image
- **Dual flash images**
  provide independent primary and secondary operating system files for backup while upgrading
- **NEW Comware CLI**
  - **Comware-compatible CLI**
    bridges the experience of HP Comware CLI users who are using the HP ProVision software CLI
  - **Display and fundamental Comware CLI commands**
    are embedded in the switch CLI as native commands; display output is formatted as on Comware-based switches, and fundamental commands provide a Comware-familiar initial switch setup
  - **Configuration Comware CLI commands**
    when Comware commands are entered, CLI help is elicited to formulate the correct ProVision software CLI command

Connectivity

- **Auto-MDIX**

Overview

automatically adjusts for straight-through or crossover cables on all 10/100 and 10/100/1000 ports

- **Jumbo frames**
  on Gigabit Ethernet and 10-Gigabit Ethernet ports, jumbo frames allow high-performance remote backup and disaster-recovery services
- **IPv6**:
  - **IPv6 host**: 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

Performance

- **High-speed, high-capacity architecture**
  based on the purpose-built ProVision ASICs to provide superior system performance and scalability
- **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

- **IEEE 802.3ad Link Aggregation Control Protocol** (LACP) **and HP port trunking**
  support up to 60 trunks, each with up to eight links (ports) per trunk
- **IEEE 802.1s Multiple Spanning Tree**
- provides high link availability in multiple VLAN environments by allowing multiple spanning trees; provides legacy support for IEEE 802.1d and IEEE 802.1w
- **Virtual Router Redundancy Protocol** (requires Premium License)
  allows groups of two routers to dynamically back each other up to create highly available routed environments
- **Spares simplicity**
  is made possible through the use of common power supplies, fan trays, and transceivers
- **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
- **Uplink Failure Detection**
  provides active-standby network path redundancy for servers that are configured for active-standby NIC teaming

Layer 2 switching

- **HP switch meshing**
  dynamically load balances across multiple active redundant links to increase available aggregate bandwidth
- **GARP VLAN Registration Protocol**
  allows automatic learning and dynamic assignment of VLANs
- **IEEE 802.1ad Q-in-Q** (requires Premium License)
  increases the scalability of an Ethernet network by providing a hierarchical structure; connects multiple LANs on a high-speed campus or metro network
- **IEEE 802.1v protocol VLANs**
  isolate select non-IPv4 protocols automatically into their own VLANs
- **Rapid Per-VLAN Spanning Tree** (RPVST+)
  allows each VLAN to build a separate spanning tree to improve link bandwidth usage; is compatible with PVST+

Layer 3 services

Overview

- **Loopback interface address**
  defines an address in Routing Information Protocol (RIP) and Open Standard Path First (OSPF), improving diagnostic capability
- **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
- **Route maps**
  provide more control during route redistribution; allow filtering and altering of route metrics

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** (requires Premium License)
  provides OSPFv2 for IPv4 routing and OSPFv3 for IPv6 routing
- **BGP** (requires Premium License): provides IPv4 Border Gateway routing protocol that is scalable, robust, and flexible

Security

- **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
- **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
- **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
- **Secure FTP**
  allows secure file transfer to and from the switch; protects against unwanted file downloads or unauthorized copying of a switch configuration file
- **Switch management logon security**
  can require either RADIUS or TACACS+ authentication for secure switch CLI logon
- **Secure management access**
  securely encrypts all access methods (CLI, GUI, or MIB) through SSHv2, SSL, and/or SNMPv3
- **ICMP throttling**
  defeats ICMP denial-of-service attacks by enabling any switch port to automatically throttle ICMP traffic
- **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
- **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
- **DHCP protection**
  blocks DHCP packets from unauthorized DHCP servers, preventing denial-of-service attacks
- **Dynamic ARP protection**
  blocks ARP broadcasts from unauthorized hosts, preventing eavesdropping or theft of network data
- **USB Secure Autorun** (requires HP PCM+)

Overview

deploys, diagnoses, and updates a switch using a USB flash drive; works with a secure credential to prevent tampering

- **STP Root Guard**
  protects the root bridge from malicious attack or configuration mistakes
- **Management Interface Wizard**
  helps secure management interfaces such as SNMP, telnet, SSH, SSL, Web, and USB at the desired level
- **Access control lists** (ACLs)
  provide filtering based on the IP field, source/destination IP address/subnet, and source/destination TCP/UDP port number on a per-VLAN or per-port basis
- **Multiple user authentication methods**:
  - **Multiple IEEE 802.1X users per port**: authenticates multiple IEEE 802.1X users per port
  - **Web-based authentication**: authenticates from Web browser for clients that do not support IEEE 802.1X supplicant
  - **MAC-based authentication**: client is authenticated with the RADIUS server based on 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
- **Switch CPU protection**
  provides automatic protection against malicious network traffic trying to shut down the switch
- **Identity-driven ACL**
  enables implementation of a highly granular and flexible access security policy specific to each authenticated network user
- **Secure Sockets Layer** (SSL)
  encrypts all HTTP traffic, allowing secure access to the browser-based management GUI in the switch
- **Security banner**
  displays a customized security policy when users log in to the switch

Multicast support

- **IP multicast routing** (requires Premium License)
  includes PIM Sparse and Dense modes to route IP multicast traffic
- **IP multicast snooping** (data-driven IGMP)
  automatically prevents flooding of IP multicast traffic

Convergence

- **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

Warranty and support

- **Lifetime warranty**
  for as long as you own the product with advance replacement and next-business-day delivery (available in most countries)†
- **Electronic and telephone support**
  limited electronic and telephone support is available from HP; to reach our support centers, refer to www.hp.com/networking/contact-support; for details on the duration of support provided with your product purchase, refer to www.hp.com/networking/warrantysummary
- **Software releases**
  to find software for your product, refer to www.hp.com/networking/support; for details on the software releases available with your product purchase, refer to www.hp.com/networking/warrantysummary

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†HP warranty includes repair or replacement of hardware for as long as you own the product, with next business day advance replacement (available in most countries). The disk drive included with HP AllianceOne Advanced Services and Services zl Modules, HP Threat Management Services zl Module, HP AllianceOne Extended zl Module with Riverbed Steelhead, HP MSM765zl Mobility Controller and HP Survivable Branch Communication zl Module powered by Microsoft Lync has a five-year hardware warranty. For details, refer to the Software license and hardware warranty statements at www.hp.com/networking/warranty.

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 6600-24G-4XG Switch — J9264A

- 20 autosensing 10/100/1000 port
- 4 open mini-GBIC slots
- 4 open 10-GbE SFP+ transceiver slots
- min=0 \ max=4 SFP+ Transceivers
- 1 - J9269A HP E6600 Switch Power Supply Included
- 1U - Height

See Configuration Note:1, 2, 3, 4

PDU Cable NA/MEX/TW/JP — J9264A#B2B

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

PDU Cable ROW — J9264A#B2C

- C15 PDU Jumper Cord (ROW)

Configuration Rules:

Note 1 — The following SFP+ Transceivers install into this switch:

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 3 — Localization required. (See Localization Menu for list.)

Configuration

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

Remarks:

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)

Rack Level Integration CTO Models

HP 6600-24G-4XG Switch — J9264A

- 20 autosensing 10/100/1000 port
- 4 open mini-GBIC slots
- min=0 \ max=4 SFP Transceivers
- 4 open 10-GbE SFP+ transceiver slots
- min=0 \ max=4 SFP+ Transceivers
- 2 - Power Supply Slots
- 1 - J9269A HP E6600 Switch Power Supply Included
- 1U - Height

See Configuration Note:1, 2, 3

HP 6600-24G-4XG Factory Integ Switch — J9264AZ

See Configuration Note:1, 2, 3

PDU Cable NA/MEX/TW/JP — J9264AZ#B2B

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

PDU Cable ROW — J9264AZ#B2C

- C15 PDU Jumper Cord (ROW)

HP 6600-24XG Switch — J9265A

- 24 open 10-GbE SFP+ transceiver slots
- min=0 \ max=24 SFP+ Transceivers
- 2 - Power Supply Slots
- 1 - J9269A HP E6600 Switch Power Supply Included
- 1U - Height

See Configuration Note:1, 3

Configuration Rules:

Note 1 The following SFP+ Transceivers install into this switch:

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

Configuration

	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 SFP 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 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 3	If switch is ordered #0D1 then 464794-B21#0D1 - 10K Rack Kit Assembly is required.	

Remarks:

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)

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

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

SFP+ Transceivers

Configuration

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+ SFP+ 1m DAC Cable	J9281B
HP X242 10G SFP+ SFP+ 3m DAC Cable	J9283B
HP X242 10G SFP+ SFP+ 7m DAC Cable	J9285B
HP X244 10G XFP SFP+ 1m DAC Cable	J9300A
HP X244 10G XFP SFP+ 3m DAC Cable	J9301A
HP X244 10G XFP SFP+ 5m DAC Cable	J9302A
HP X242 10G SFP+ 10m DAC Cable	J9286B
HP X242 10G SFP+ 15m DAC Cable	J9287B

Internal Power Supplies

See Models for number of slots and what's included with each base.

HP 6600 Switch Power Supply	J9269A See Configuration Note:1, 2, 3
HP 6600 Fact Integ Switch Power Supply	J9269AZ See Configuration Note:1
PDU Cable NA/MEX/TW/JP • C15 PDU Jumper Cord (NA/MEX/TW/JP)	J9269AZ#B2B
PDU Cable ROW • C15 PDU Jumper Cord (ROW)	J9269AZ#B2C

Configuration Rules:

Note 1 If 2 or more power supplies are selected they must be the same Sku number.

Note 2 Localization required. (See Localization Menu for list.)

Configuration

Note 3 Localization required on orders without #B2B or #B2C options.

Remarks:

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)

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

E6600 Fan Tray

HP 6600 Switch Fan Tray	J9271A
HP 6600 Factory Integ Switch Fan Tray	J9271AZ

License

HP 6600 Switch Premium License	J9305A

Configuration

Mounting Kit

HP 6600 Series Switch Rack Kit	J9469A See Configuration Note:1

Rack Mounting Kit

HP Factory Rack mount Shelf Kit	AB469A See Configuration Note:2
HP 2610 Rail Kit	464794-B21 See Configuration Note:2
HP 6600-24XG/48G/48G-4XG Swch AirPlm Kit	J9480A
HP 6600-24XG/48G/48G-4XG Integ AirPlm Kt	J9480AZ
HP 6600-24G/24G-4XG Swch Air Plenum Kit	J9481A
HP 6600-24G/24G-4XG Swch Air Plenum Kit	J9481AZ

Cofiguration Rules:

Note 1 For field racking of the 6600 series switches the J9469A is required. (Not supported for Factory Racking).

Note 2 For factory racking of the 6600 series switches the AB469A and 464794-B21 are required. One shelf is required for every 10 Switches. Exceptions may apply if switches are stacked on top of server or storage devices.

Technical Specifications

HP 6600-24G-4XG Switch (J9264A)	**Ports**		20 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 dual-personality ports each port can be used as either an RJ-45 10/100/1000 port (IEEE 802.3 Type 10BASE-T; IEEE 802.3u Type 100BASE-TX; IEEE 802.3ab 1000BASE-T Gigabit Ethernet) or an open mini-GBIC slot (for use with mini-GBIC transceivers)
			4 SFP+ 10-GbE ports; Duplex: full only
			1 RS-232C DB-9 console port
	Power supplies		2 power supply slots includes: 1 x J9269A (HP 6600 Switch Power Supply)
	Fan tray		includes: 1 x J9271A 1 fan tray slot Fan tray supports N+N fans for added redundancy.
	Physical characteristics	**Dimensions**	17.42(w) x 21.5(d) x 1.7(h) in (44.25 x 54.61 x 4.32 cm) (1U height)
		Weight	17.2 lb (7.8 kg)
	Memory and processor		Freescale PowerPC 8540 @ 666 MHz, 4 MB flash, 256 MB compact flash, 256 MB DDR SDRAM; packet buffer size: 36 MB QDR SDRAM total (18 MB for 1 GbE/10 GbE ports)
	Mounting		Includes hardware for 2-post telco rack or equipment cabinet; horizontal surface mounting only. The 6600 Series Rack Kit (J9469A) is required for mounting in 4-post server/networking rack.
	Performance	**1000 Mb Latency**	< 3.4 µs (FIFO 64-byte packets)
		10 Gbps Latency	< 2.4 µs (FIFO 64-byte packets)
		Throughput	up to 75.7 million pps (64-byte packets)
		Routing/Switching capacity	101.8 Gbps
		Switch fabric speed	105.6 Gbps
		Routing table size	10000 entries
		MAC address table size	64000 entries
	Environment	**Operating temperature**	41°F to 104°F (5°C to 40°C)
		Operating relative humidity	15% to 80% @ 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
		Alitude	up to 10,000 ft (3 km)
		Acoustic	Power: 68 dB, Pressure: 59.5 dB ISO 7779, ISO 9296
	Electrical characteristics		Achieved Miercom Certified Green Award
			* Products within this series have achieved sufficient scores in each of the rated criteria to achieve the Miercom Certified Green distinction Award. See the Specifications section of this series for more information.
		Description	The switch automatically adjusts to any voltage

		between 100-120 and 200-240 V with either 50 or 60 Hz.
	Maximum heat dissipation	697 BTU/hr (735.33 kJ/hr)
	Voltage	100-120/200-240 VAC
	Idle power	167.6 W
	Maximum power rating	204.3 W
	Frequency	50/60 Hz
	Notes	Idle power is the actual power consumption of the device with no ports connected. Maximum power rating and maximum heat dissipation are the worst-case theoretical maximum numbers provided for planning the infrastructure with fully loaded PoE (if equipped), 100% traffic, all ports plugged in, and all modules populated.
Safety	CSA 22.2 No. 60950; EN 60950/IEC 60950; UL 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
	Radiated	IEC 61000-4-3
	EFT/Burst	IEC 61000-4-4
	Surge	IEC 61000-4-5
	Conducted	IEC 61000-4-6
	Power frequency magnetic field	IEC 61000-4-8
	Voltage dips and interruptions	IEC 61000-4-11
	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	
Notes	Supported 1G SFP transceivers are revision "B" or later (product number ends with the letter "B" or later, for example, J9142B, J8177C).	
Services	3-year, 4-hour onsite, 13x5 coverage for hardware (U2855E) 3-year, 4-hour onsite, 24x7 coverage for hardware (U2856E) 3-year, 4-hour onsite, 24x7 coverage for hardware, 24x7 SW phone support and SW updates (U6304E) 3-year, 24x7 SW phone support, software updates (UE262E) 1-year, post-warranty, 4-hour onsite, 13x5 coverage for hardware (HR889E) 1-year, post-warranty, 4-hour onsite, 24x7 coverage for hardware (HR890E) 1-year, post-warranty, 4-hour onsite, 24x7 coverage for hardware, 24x7 software phone support (HR891E) Installation with minimum configuration, system-based pricing (U4826E) Installation with HP-provided configuration, system-based pricing (U4830E) 4-year, 4-hour onsite, 13x5 coverage for hardware (UR868E)	

4-year, 4-hour onsite, 24x7 coverage for hardware (UR869E)
4-year, 4-hour onsite, 24x7 coverage for hardware, 24x7 software phone (UR870E)
4-year, 24x7 SW phone support, software updates (UR871E)
5-year, 4-hour onsite, 13x5 coverage for hardware (UR872E)
5-year, 4-hour onsite, 24x7 coverage for hardware (UR873E)
5-year, 4-hour onsite, 24x7 coverage for hardware, 24x7 software phone (UR874E)
5-year, 24x7 SW phone support, software updates (UR875E)
3 Yr 6 hr Call-to-Repair Onsite (UW356E)
4 Yr 6 hr Call-to-Repair Onsite (UW357E)
5 Yr 6 hr Call-to-Repair Onsite (UW358E)
1-year, 6 hour Call-To-Repair Onsite for hardware (HR893E)
1-year, 24x7 software phone support, software updates (HR892E)
1-year, 24x7 software phone support, software updates + Next Business Day Hardware Exchange (HS610E)
1-year, 24x7 software phone support, software updates + 4 hour hardware exchange (HS611E)
3-year, 24x7 software phone support, software updates + Next Business Day Hardware Exchange (HS612E)
3-year, 24x7 software phone support, software updates + 4 hour Hardware Exchange (HS613E)
4-year, 24x7 software phone support, software updates + Next Business Day Hardware Exchange (HS614E)
4-year, 24x7 software phone support, software updates + 4 hour Hardware Exchange (HS615E)
5-year, 24x7 software phone support, software updates + Next Business Day Hardware Exchange (HS616E)
5-year, 24x7 software phone support, software updates + 4 hour Hardware Exchange (HS617E)

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

Standards and protocols (applies to all products in series)

BGP
RFC 1997 BGP Communities Attribute
RFC 2918 Route Refresh Capability
RFC 4271 A Border Gateway Protocol 4 (BGP-4)
RFC 4456 BGP Route Reflection: An Alternative to Full Mesh Internal BGP (IBGP)
RFC 5492 Capabilities Advertisement with BGP-4

Device management
RFC 1591 DNS (client)
HTML and telnet management

General protocols
IEEE 802.1ad Q-in-Q
IEEE 802.1AX-2008 Link Aggregation
IEEE 802.1D MAC Bridges
IEEE 802.1p Priority
IEEE 802.1Q VLANs
IEEE 802.1s Multiple Spanning Trees
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

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 802.3x 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 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 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 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 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 2933 IGMP MIB

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
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 6600 Switch Series accessories	**Modules**	
	HP 6600 Switch Fan Tray	J9271A
	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 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 X122 1G SFP LC BX-D Transceiver	J9142B
	HP X122 1G SFP LC BX-U Transceiver	J9143B
	HP X132 10G SFP+ LC ER Transceiver	J9153A
	Cables	
	HP X242 10G SFP+ to SFP+ 1m Direct Attach Copper Cable	J9281B
	HP X242 10G SFP+ to SFP+ 3m Direct Attach Copper Cable	J9283B
	HP X242 10G SFP+ to SFP+ 7m Direct Attach Copper Cable	J9285B
	HP X244 10G XFP to SFP+ 1m Direct Attach Copper Cable	J9300A
	HP 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
	HP BladeSystem c-Class 10GbE SFP+ to SFP+ 0.5m Direct Attach Copper Cable	487649-B21
	HP BladeSystem c-Class 10GbE SFP+ to SFP+ 1m Direct Attach Copper Cable	487652-B21
	HP BladeSystem c-Class 10GbE SFP+ to SFP+ 3m Direct Attach Copper Cable	487655-B21
	HP BladeSystem c-Class 10GbE SFP+ to SFP+ 5m Direct Attach Copper Cable	537963-B21
	HP BladeSystem c-Class 10GbE SFP+ to SFP+ 7m Direct Attach Copper Cable	487658-B21
	HP X242 10G SFP+ to SFP+ 10m Direct Attach Copper Cable	J9286B
	HP X242 10G SFP+ to SFP+ 15m Direct Attach Copper Cable	J9287B
	Power Supply	
	HP 6600 Switch Power Supply	J9269A
	Mounting Kit	
	HP 6600 Series Switch Rack Kit	J9469A
	HP 6600-24XG	J9480A
	HP E6600-24G and 24G-4XG Air Plenum Kit	J9481A

Accessories

License	
HP 6600 Switch Premium License	J9305A

Accessory Product Details

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

HP 6600 Switch Fan Tray (J9271A)	**Physical characteristics**	**Dimensions**	5(d) x 5(w) x 5(h) in. (12.7 x 12.7 x 12.7 cm)
	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)	**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**	32°F to 158°F (0°C to 70°C)
		Operating relative humidity	5% to 95%
		Nonoperating/Storage temperature	-40°F to 185°F (-40°C to 85°C)
		Nonoperating/Storage relative humidity	5% to 85%
		Altitude	up to 10,000 ft. (3 km)
	Cabling	Cable type: 62.5/125 ìm or 50/125 ìm (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 "ProCurve 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 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	**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:	

Accessory Product Details

J9100B "upstream" transceiver, or to any IEEE-standard 100BASE-BX10-U ("upstream") device.		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.	
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.	

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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
	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	0% to 85%, noncondensing

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		humidity	
		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. 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.
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)	**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

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A small form-factor pluggable (SFP) Gigabit SX transceiver that provides a full-duplex Gigabit solution up to 550 m on multimode fiber.	**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 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)

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	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 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 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	**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:

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J9142B "downstream" transceiver, or to any IEEE-standard 1000BASE-BX10-D ("downstream") device.		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) The SFP+ ER Transceiver will transmit 10Gbps over up to 40km using standard OM3 fiber cable. This product expands the HP Networking transceiver portfolio for connections from 0m to 40km. Use only genuine HP transceivers with your HP Networking equipment to ensure reliability and support.	**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)
		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	

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		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.	
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"	

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		• 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.	
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	**Connectivity**	Length	9.84 ft. (3 m)

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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.	**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 between switches/servers/ storage to interconnect XFP and SFP+ form factors.	**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
		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 (AJ837A)	**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 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	**Cabling**	**Cable type**: 50/125 µm (core/cladding) diameter, mulitimode fiber optic, with effective

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(AJ839A)		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

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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 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 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	**Notes**	Cable Specs: Graded-index, "bendable" fiber optic multimode OM3+ 50/125um duplex cable and Ethernet assembly with LC duplex connectors

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15m Cable (QK735A)		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 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

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		• 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 BLc SFP+ 0.5m 10GbE Copper Cable (487649-B21)	**Connectivity**	Length	1.64 ft. (0.5 m)
	Physical characteristics	Weight	.18 lb. (0.08 kg) the cable with an SFP+ transceiver at each end of the cable
	Environment	Operating temperature	32°F to 158°F (0°C to 70°C)
		Operating relative humidity	5% to 95%, noncondensing
		Nonoperating/Storage temperature	14°F to 185°F (-10°C to 85°C)
		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 BLc SFP+ 1m 10GbE Copper Cable (487652-B21)	**Connectivity**	Length	3.28 ft. (1 m)
	Physical characteristics	Weight	.24 lb. (0.11 kg) the cable with an SFP+ transceiver at each end of the cable
	Environment	Operating temperature	32°F to 158°F (0°C to 70°C)
		Operating relative humidity	5% to 95%, noncondensing
		Nonoperating/Storage temperature	14°F to 185°F (-10°C to 85°C)
		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	

Accessory Product Details

		• 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 BLc SFP+ 3m 10GbE Copper Cable (487655-B21)	**Connectivity**	Length	9.84 ft. (3 m)
	Physical characteristics	Weight	0.49 lb. (0.22 kg) the cable with an SFP+ transceiver at each end of the cable
	Environment	Operating temperature	32°F to 158°F (0°C to 70°C)
		Operating relative humidity	5% to 95%, noncondensing
		Nonoperating/Storage temperature	14°F to 185°F (-10°C to 85°C)
		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 BLc SFP+ 5m 10GbE Copper Cable (537963-B21)	**Connectivity**	Length	16.40 ft. (5 m)
	Physical characteristics	Weight	0.75 lb. (0.34 kg) the cable with an SFP+ transceiver at each end of the cable
	Environment	Operating temperature	32°F to 158°F (0°C to 70°C)
		Operating relative humidity	5% to 95%, noncondensing
		Nonoperating/Storage temperature	14°F to 185°F (-10°C to 85°C)
		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	

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		• 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 BLc SFP+ 7m 10GbE Copper Cable (487658-B21)	**Connectivity**	Length	22.96 ft. (7 m)
	Physical characteristics	Weight	1.01 lb. (0.46 kg) the cable with an SFP+ transceiver at each end of the cable
	Environment	Operating temperature	32°F to 158°F (0°C to 70°C)
		Operating relative humidity	5% to 95%, noncondensing
		Nonoperating/Storage temperature	14°F to 185°F (-10°C to 85°C)
		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 6600 Switch Power Supply (J9269A)	**Physical characteristics**	**Dimensions**	9.37(d) x 3.39(w) x 1.5(h) in. (23.8 x 8.6 x 3.8 cm)
		Weight	2.45 lb. (1.11 kg)
	Environment	**Operating temperature**	41ºF to 104ºF (5ºC to 40ºC)
		Operating relative humidity	15% to 80% @ 104ºF (40ºC), non-condensing
		Non-operating/ Storage temperature	-40ºF to 158ºF (-40ºC to 70ºC)
		Non-operating/ Storage relative humidity	15% to 90% @ 104ºF (40ºC), non-condensing
		Altitude	up to 10,000 ft. (3 km)
	Electrical characteristics	**Notes**	Notes: Power draw and heat dissipation are dependent on the number of power supplies installed.
	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 6600 Series Rack Kit (J9469A)	**Notes**	Rack kit can be used to mount any of the E6600 switches (J9263A, J9264A, J9265A, J9451A, and J9452A) in HP 10K or other 3rd party 4-post racks. Shipping weight: 5 lbs.
	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 6600 Switch Premium License (J9305A)	**Services**	3-Year, 9x5 SW phone support, software updates (UT479E) 3-year, 24x7 SW phone support, software updates (UT480E) 4-year, 24x7 SW phone support, software updates (UT456E) 5-year, 24x7 SW phone support, software updates (UT457E) 1-year, 24x7 software phone support, software updates (HS531E) 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:
02-Dec-2014	From Version 20 to 21	Changed	SKU J9054B changes to J9054C
04-Feb-2014	From Version 19 to 20	Removed	Removed two EOL models.
22-Nov-2013	From Version 18 to 19	Changed	Notes were revised in Configuration.
12-Nov-2013	From Version 17 to 18	Changed	Build to Order, Rack Level Integration CTO Models, Internal Power Supplies, and Cables were revised in Configuration.
12-Jul-2013	From Version 16 to 17	Added	Configuration was added.
10-Jun-2013	From Version 15 to 16	Added	OM4 cables were added.
24-Sep-2012	From Version 14 to 15	Changed	Updated Features and Benefits, Introduction, the specifications, and Accessories.
25-Jun-2012	From Version 13 to 14	Changed	Updated Features and Benefits, Introduction, the specifications, and Accessories.
27-Mar-2012	From Version 12 to 13	Added	Added two new cables to the Accessories section.
26-Sep-2011	From Version 11 to 12	Changed	Accessories were revised and Accessory Product Details was added.
05-Jul-2011	From Version 10 to 11	Removed	Removed two cables from the Accessories section.
20-Jun-2011	From Version 9 to 10	Changed	Accessories were revised.
25-Oct-2010	From Version 8 to 9	Changed	The QuickSpec was rewritten, including changing the title.
02-Jun-2010	From Version 7 to 8	Changed	Updated the Notes section of Technical Specifications. Updated Standards and Protocols Added new cables to the Accessories section.
10-Feb-2010	From Version 6 to 7	Changed	The document was completely revised.
23-Oct-2009	From Version 5 to 6	Changed	Updated the part numbers for the Direct Attach Cables.
20-Aug-2009	From Version 4 to 5	Changed	Updated the warranty note and reordered the Accessories section.
13-Jul-2009	From Version 3 to 4	Changed	Standards and Protocols were updated in the specifications for each model.
22-Jun-2009	From Version 2 to 3	Changed	In the Accessories, ProCurve Manager was updated to version 3.0.
04-Jun-2009	From Version 1 to 2	Changed	The Introduction, Accessories, and the Management and Notes sections of Technical Specifications were updated.

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