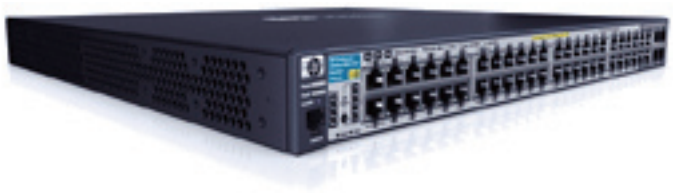
Data sheet

HP 3500 and 3500 yl Switch Series



Key features

- Advanced access layer and small distribution
- Enterprise-class performance and security
- Intelligent edge feature set with L2 to L4 support
- Scalable 10/100/1000 PoE+ and 10/100 PoE
- Unified core-to-edge HP ProVision software

Product overview

The HP 3500 Switch Series consists of advanced intelligent-edge switches, available in 24-port and 48-port fixed-port models. The foundation for these switches 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 a variety of Gigabit Ethernet and 10/100 interfaces; integrated PoE+, PoE, and non-PoE options; and versatile 10GbE connectivity (CX4, X2, and SFP+) on Gigabit Ethernet switches, the 3500 Switch Series offers excellent investment protection, flexibility, and scalability, as well as ease of deployment, operation, and maintenance.

Features and benefits

Software-defined networking

- NEW **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)

- **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 maximum bandwidth
  - **Classifier-based rate limiting**
    uses an access control list (ACL) to enforce maximum bandwidth for ingress traffic on each port
  - **Guaranteed minimum**
    provides per-port, per-queue egress-based guaranteed minimum 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, 6200 yl, 5400 zl, or 3500 Switch 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)**
  automated device discovery protocol provides easy mapping of 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**
  common software features and CLI implementation across all 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
- 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

- **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 (PoE+)**
  provides up to 30 W per port to IEEE 802.3 for devices that use PoE/PoE+, 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 list of supported devices in the product FAQs at www.hp.com/networking
- **Jumbo frames**
  on Gigabit Ethernet and 10-Gigabit 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**
    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/capacity architecture**
  up to 153.6 Gbps crossbar switching fabric provides intra- and inter-module switching with up to 111.5 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

- **Virtual Router Redundancy Protocol (requires Premium License)**
  allows groups of two routers to dynamically back each other up to create highly available routed environments
- **IEEE 802.1s multiple Spanning Tree Protocols**
  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
- **Uplink Failure Detection**
  provides active-standby network path redundancy for servers that are configured for active-standby NIC teaming

Layer 2 switching

- **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
- **HP switch meshing**
  dynamically load-balances across multiple active redundant links to increase available aggregate bandwidth
- **VLAN support and tagging**
  supports the IEEE 802.1Q standard and 2,048 VLANs simultaneously
- **IEEE 802.1v protocol VLANs**
  isolate select non-IPv4 protocols automatically into their own VLANs
- **GARP VLAN Registration Protocol**
  allows automatic learning and dynamic assignment of VLANs
- **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

- **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 OSPF, improving diagnostic capability
- **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
- **Border Gateway Routing Protocol (requires Premium License)**
  provides IPv4 Border Gateway Routing Protocol that 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 a 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 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 authentication
  - **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
- **USB Secure Autorun (requires HP PCM+)**
  deploys, diagnoses, and updates a switch using a USB flash drive; works with a secure credential to prevent tampering
- **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 (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
- **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

- **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**

†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**.

HP 3500 and 3500 yl Switch Series

Specifications

			
	HP 3500-48G-PoE+ yl Switch (J9311A)	**HP 3500-24G-PoE+ yl Switch (J9310A)**	**HP 3500-48G-PoE yl Switch (J8693A)**
Ports	1 open module slot 44 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 1 RJ-45 serial console port 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) with PoE or an open mini-GBIC slot (for use with mini-GBIC transceivers) Supports a maximum of 4 10-GbE ports, with optional module	1 open module slot 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 1 RJ-45 serial console port 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) with PoE or an open mini-GBIC slot (for use with mini-GBIC transceivers) Supports a maximum of 4 10-GbE ports, with optional module	1 open module slot 44 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) with PoE or an open mini-GBIC slot (for use with mini-GBIC transceivers) Supports a maximum of 4 10-GbE ports, with optional module
Physical characteristics			
	17.44(w) x 16.93(d) x 1.73(h) in (44.3 x 43.0 x 4.4 cm) (1U height)	17.44(w) x 15.43(d) x 1.73(h) in (44.3 x 39.2 x 4.4 cm) (1U height)	17.44(w) x 16.93(d) x 1.73(h) in (44.3 x 43.0 x 4.4 cm) (1U height)
Weight	15.54 lb (7.05 kg)	13.86 lb (6.29 kg)	16.09 lb (7.3 kg)
Memory and processor			
10G module	ARM9 @ 200 MHz; packet buffer size: 36 Mb QDR SDRAM	ARM9 @ 200 MHz; packet buffer size: 36 Mb QDR SDRAM	ARM9 @ 200 MHz; packet buffer size: 36 Mb QDR SDRAM
Management module	Stackable memory and processor: Freescale PowerPC 8540 @ 666 MHz, 4 MB flash, 128 MB compact flash, 256 MB DDR SDRAM	Stackable memory and processor: Freescale PowerPC 8540 @ 666 MHz, 4 MB flash, 128 MB compact flash, 256 MB DDR SDRAM	Stackable memory and processor: Freescale PowerPC 8540 @ 666 MHz, 4 MB flash, 128 MB compact flash, 256 MB DDR SDRAM
Mounting	Mounts in an EIA-standard 19 in. telco rack or equipment cabinet (hardware included); horizontal surface mounting only	Mounts in an EIA-standard 19 in. telco rack or equipment cabinet (hardware included); horizontal surface mounting only	Mounts in an EIA-standard 19 in. telco rack or equipment cabinet (hardware included); horizontal surface mounting only
Performance			
1000 Mb Latency	< 3.4 µs (FIFO 64-byte packets)	< 3.4 µs (FIFO 64-byte packets)	< 3.4 µs (FIFO 64-byte packets)
10 Gbps Latency	< 2.1 µs (FIFO 64-byte packets)	< 2.1 µs (FIFO 64-byte packets)	< 2.1 µs (FIFO 64-byte packets)
Throughput	up to 111.5 million pps	up to 75.7 million pps	up to 111.5 million pps
Routing/Switching capacity	149.8 Gbps	101.8 Gbps	149.8 Gbps
Switch fabric speed	153.6 Gbps	105.6 Gbps	153.6 Gbps
Routing table size	10000 entries	10000 entries	10000 entries
MAC address table size	64000 entries	64000 entries	64000 entries
Environment			
Operating temperature	32°F to 131°F (0°C to 55°C); 32°F to 104°F (40°C) when used with any SFP+ 10-GbE	32°F to 131°F (0°C to 55°C); 32°F to 104°F (40°C) when used with any X2 10-GbE	32°F to 131°F (0°C to 55°C); 32°F to 104°F (40°C) when used with any X2 10-GbE
Operating relative humidity	15% to 95% @ 104°F (40°C), noncondensing	15% to 95% @ 104°F (40°C), noncondensing	15% to 95% @ 104°F (40°C), noncondensing
Nonoperating/Storage temperature	-40°F to 158°F (-40°C to 70°C)	-40°F to 158°F (-40°C to 70°C)	-40°F to 158°F (-40°C to 70°C)
Nonoperating/Storage relative humidity	15% to 95% @ 149°F (65°C), noncondensing	15% to 90% @ 149°F (65°C), noncondensing	15% to 95% @ 149°F (65°C), noncondensing
Altitude	up to 15,000 ft (4.6 km)	up to 15,000 ft (4.6 km)	up to 15,000 ft (4.6 km)
Acoustic	Power: 58.0 dB, Pressure: 42.0 dB ISO 7779, ISO 9296	Power: 57.0 dB, Pressure: 40.5 dB ISO 7779, ISO 9296	Power: 55.6 dB, Pressure: 45.3 dB ISO 7779, ISO 9296
Electrical characteristics			
			Achieved Miercom Certified Green Award
Description	The switch automatically adjusts to any voltage between 100-127 and 200-240 V with either 50 or 60 Hz.	The switch automatically adjusts to any voltage between 100-127 and 200-240 V with either 50 or 60 Hz.	The switch automatically adjusts to any voltage between 100-127 and 200-240 V with either 50 or 60 Hz.
Maximum heat dissipation	1144 BTU/hr (1206.9 kJ/hr)	865 BTU/hr (912.9 kJ/hr)	1144 BTU/hr (1206.9 kJ/hr)
Voltage	100-127/200-240 VAC	100-127/200-240 VAC	100-127/200-240 VAC
Current	7.3/3.3 A	6.6/3.0 A	10.0/5.0 A
Idle power	132 W	94 W	142 W
Maximum power rating	638 W	616 W	705 W
PoE power	398 W	398 W	398 W
Frequency	50/60 Hz	50/60 Hz	50/60 Hz

HP 3500 and 3500 yl Switch Series

Specifications (continued)

	HP 3500-48G-PoE+ yl Switch (J9311A)	HP 3500-24G-PoE+ yl Switch (J9310A)	HP 3500-48G-PoE yl Switch (J8693A)
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. The amount of PoE power delivered is dependent on the number and type of power supplies connected. The switches offer optional external power supplies (EPS) for maximum PoE power.	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. The amount of PoE power delivered is dependent on the number and type of power supplies connected. The switches offer optional external power supplies (EPS) for maximum PoE power.	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. The amount of PoE power delivered is dependent on the number and type of power supplies connected. The switches offer optional external power supplies (EPS) for maximum PoE power.
Safety	CSA 22.2 No. 60950; UL 60950; IEC 60950; EN 60950	CSA 22.2 No. 60950; UL 60950; IEC 60950; EN 60950	CSA 22.2 No. 60950; UL 60950; IEC 60950; EN 60950
Emissions	FCC Class A; VCCI Class A; EN 55022/CISPR 22 Class A	FCC Class A; VCCI Class A; EN 55022/CISPR 22 Class A	FCC Class A; VCCI Class A; EN 55022/CISPR 22 Class A
Immunity			
EN	EN 55024, CISPR 24	EN 55024, CISPR 24	EN 55024, CISPR 24
ESD	IEC 61000-4-2; 4 kV CD, 8 kV AD	IEC 61000-4-2; 4 kV CD, 8 kV AD	IEC 61000-4-2; 4 kV CD, 8 kV AD
Radiated	IEC 61000-4-3; 3 V/m	IEC 61000-4-3; 3 V/m	IEC 61000-4-3; 3 V/m
EFT/Burst	IEC 61000-4-4; 1.0 kV (power line), 0.5 kV (signal line)	IEC 61000-4-4; 1.0 kV (power line), 0.5 kV (signal line)	IEC 61000-4-4; 1.0 kV (power line), 0.5 kV (signal line)
Surge	IEC 61000-4-5; 1 kV/2 kV AC	IEC 61000-4-5; 1 kV/2 kV AC	IEC 61000-4-5; 1 kV/2 kV AC
Conducted	IEC 61000-4-6; 3 V	IEC 61000-4-6; 3 V	IEC 61000-4-6; 3 V
Power frequency magnetic field	IEC 61000-4-8; 1 A/m, 50 or 60 Hz	IEC 61000-4-8; 1 A/m, 50 or 60 Hz	IEC 61000-4-8; 1 A/m, 50 or 60 Hz
Voltage dips and interruptions	IEC 61000-4-11; >95% reduction, 0.5 period; 30% reduction, 25 periods	IEC 61000-4-11; >95% reduction, 0.5 period; 30% reduction, 25 periods	IEC 61000-4-11; >95% reduction, 0.5 period; 30% reduction, 25 periods
Harmonics	EN 61000-3-2, IEC 61000-3-2	EN 61000-3-2, IEC 61000-3-2	EN 61000-3-2, IEC 61000-3-2
Flicker	EN 61000-3-3, IEC 61000-3-3	EN 61000-3-3, IEC 61000-3-3	EN 61000-3-3, IEC 61000-3-3
Management	HP PCM+; HP PCM (included); command-line interface; Web browser; configuration menu; out-of-band management (serial RS-232C)	HP PCM+; HP PCM (included); command-line interface; Web browser; configuration menu; out-of-band management (serial RS-232C)	HP PCM+; HP PCM (included); command-line interface; Web browser; configuration menu; out-of-band management (serial RS-232C)
Notes	J8177B Gigabit 1000BASE-T mini-GBIC is not supported on the 3500 series switches. Supported 1G SFP transceivers are revision "B" or later (product number ends with the letter "B" or later, for example, J9142B, J8177C).	J8177B Gigabit 1000BASE-T mini-GBIC is not supported on the 3500 series switches. Supported 1G SFP transceivers are revision "B" or later (product number ends with the letter "B" or later, for example, J9142B, J8177C).	J8177B Gigabit 1000BASE-T mini-GBIC is not supported on the 3500 series switches. 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 (H4496E)	3-year, 4-hour onsite, 13x5 coverage for hardware (U2855E)	3-year, 4-hour onsite, 13x5 coverage for hardware (H4496E)
	3-year, 4-hour onsite, 24x7 coverage for hardware (H2893E)	3-year, 4-hour onsite, 24x7 coverage for hardware (U2856E)	3-year, 4-hour onsite, 24x7 coverage for hardware (H2893E)
	3-year, 4-hour onsite, 24x7 coverage for hardware, 24x7 SW phone support and SW updates (U6319E)	3-year, 4-hour onsite, 24x7 coverage for hardware, 24x7 SW phone support and SW updates (U6304E)	3-year, 4-hour onsite, 24x7 coverage for hardware, 24x7 SW phone support and SW updates (U6319E)
	3-year, 24x7 SW phone support, software updates (UE264E)	3-year, 24x7 SW phone support, software updates (UE262E)	3-year, 24x7 SW phone support, software updates (UE264E)
	1-year, post-warranty, 4-hour onsite, 13x5 coverage for hardware (HR894E)	1-year, post-warranty, 4-hour onsite, 13x5 coverage for hardware (HR889E)	1-year, post-warranty, 4-hour onsite, 13x5 coverage for hardware (HR894E)
	1-year, post-warranty, 4-hour onsite, 24x7 coverage for hardware (HR895E)	1-year, post-warranty, 4-hour onsite, 24x7 coverage for hardware (HR890E)	1-year, post-warranty, 4-hour onsite, 24x7 coverage for hardware (HR895E)
	Installation with minimum configuration, system-based pricing (U4826E)	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)	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 (UR884E)	Installation with HP-provided configuration, system-based pricing (U4830E)	4-year, 4-hour onsite, 13x5 coverage for hardware (UR884E)
	4-year, 4-hour onsite, 24x7 coverage for hardware (UR885E)	4-year, 4-hour onsite, 13x5 coverage for hardware (UR868E)	4-year, 4-hour onsite, 24x7 coverage for hardware (UR885E)
	4-year, 4-hour onsite, 24x7 coverage for hardware, 24x7 software phone (UR886E)	4-year, 4-hour onsite, 24x7 coverage for hardware (UR869E)	4-year, 4-hour onsite, 24x7 coverage for hardware, 24x7 software phone (UR886E)
	4-year, 24x7 SW phone support, software updates (UR887E)	4-year, 4-hour onsite, 24x7 coverage for hardware, 24x7 software phone (UR870E)	4-year, 24x7 SW phone support, software updates (UR887E)
	5-year, 4-hour onsite, 13x5 coverage for hardware (UR888E)	4-year, 24x7 SW phone support, software updates (UR871E)	5-year, 4-hour onsite, 13x5 coverage for hardware (UR888E)
	5-year, 4-hour onsite, 24x7 coverage for hardware (UR889E)	5-year, 4-hour onsite, 13x5 coverage for hardware (UR872E)	5-year, 4-hour onsite, 24x7 coverage for hardware (UR889E)

HP 3500 and 3500 yl Switch Series

Specifications (continued)

	HP 3500-48G-PoE+ yl Switch (J9311A)	HP 3500-24G-PoE+ yl Switch (J9310A)	HP 3500-48G-PoE yl Switch (J8693A)
	5-year, 4-hour onsite, 24x7 coverage for hardware, 24x7 software phone (UR890E)	5-year, 4-hour onsite, 24x7 coverage for hardware (UR873E)	5-year, 4-hour onsite, 24x7 coverage for hardware, 24x7 software phone (UR890E)
	5-year, 24x7 SW phone support, software updates (UR891E)	5-year, 4-hour onsite, 24x7 coverage for hardware, 24x7 software phone (UR874E)	5-year, 24x7 SW phone support, software updates (UR891E)
	3 Yr 6 hr Call-to-Repair Onsite (UW365E)	5-year, 24x7 SW phone support, software updates (UR875E)	3 Yr 6 hr Call-to-Repair Onsite (UW365E)
	4 Yr 6 hr Call-to-Repair Onsite (UW366E)	3 Yr 6 hr Call-to-Repair Onsite (UW356E)	4 Yr 6 hr Call-to-Repair Onsite (UW366E)
	5 Yr 6 hr Call-to-Repair Onsite (UW367E)	4 Yr 6 hr Call-to-Repair Onsite (UW357E)	5 Yr 6 hr Call-to-Repair Onsite (UW367E)
	1-year, 6 hour Call-To-Repair Onsite for hardware (HR898E)	5 Yr 6 hr Call-to-Repair Onsite (UW358E)	1-year, 6 hour Call-To-Repair Onsite for hardware (HR898E)
	1-year, 24x7 software phone support, software updates (HR897E)	1-year, 6 hour Call-To-Repair Onsite for hardware (HR893E)	1-year, 4-hour onsite, 24x7 coverage for hardware, 24x7 software phone support and software updates (HR896E)
	1-year, 4-hour onsite, 24x7 coverage for hardware, 24x7 software phone support and software updates (HR896E)	1-year, 24x7 software phone support, software updates (HR892E)	1-year, 24x7 software phone support, software updates + 4 hour hardware exchange (HS618E)
	1-year, 24x7 software phone support, software updates + 4 hour hardware exchange (HS618E)	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 (HS619E)
	1-year, 24x7 software phone support, software updates + 4 hour hardware exchange (HS619E)	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 (HS620E)
	3-year, 24x7 software phone support, software updates + Next Business Day Hardware Exchange (HS620E)	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 (HS621E)
	3-year, 24x7 software phone support, software updates + 4 hour Hardware Exchange (HS621E)	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 (HS622E)
	4-year, 24x7 software phone support, software updates + Next Business Day Hardware Exchange (HS622E)	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 (HS623E)
	4-year, 24x7 software phone support, software updates + 4 hour Hardware Exchange (HS623E)	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 (HS624E)
	5-year, 24x7 software phone support, software updates + Next Business Day Hardware Exchange (HS624E)	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 (HS625E)
	5-year, 24x7 software phone support, software updates + 4 hour Hardware Exchange (HS625E)	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.
	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.	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 3500 and 3500 yl Switch Series

Specifications (continued)

	HP 3500-48G-PoE+ yl Switch (J9311A)	HP 3500-24G-PoE+ yl Switch (J9310A)	HP 3500-48G-PoE yl Switch (J8693A)
Standards and protocols (applies to all products in series)	**BGP** RFC 1997 BGP Communities Attribute RFC 2918 Route Refresh Capability RFC 4271 A Border Gateway Protocol 4 (BGP-4) RFC 4456 BGP Route Reflection: An Alternative to Full Mesh Internal BGP (IBGP) RFC 5492 Capabilities Advertisement with BGP-4 **Device management** RFC 1591 DNS (client) HTML and telnet management **General protocols** IEEE 802.1ad Q-in-Q IEEE 802.1AX-2008 Link Aggregation IEEE 802.1D MAC Bridges IEEE 802.1p Priority IEEE 802.1Q VLANs IEEE 802.1s Multiple Spanning Trees IEEE 802.1v VLAN classification by Protocol and Port IEEE 802.1w Rapid Reconfiguration of Spanning Tree IEEE 802.3ad Link Aggregation Control Protocol (LACP) IEEE 802.3af Power over Ethernet IEEE 802.3x Flow Control RFC 768 UDP RFC 783 TFTP Protocol (revision 2) RFC 792 ICMP RFC 793 TCP RFC 826 ARP RFC 854 TELNET RFC 868 Time Protocol RFC 951 BOOTP RFC 1058 RIPv1 RFC 1350 TFTP Protocol (revision 2) RFC 1519 CIDR RFC 1542 BOOTP Extensions RFC 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 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

HP 3500 and 3500 yl Switch Series

Specifications (continued)

			
	HP 3500-24G-PoE yl Switch (J8692A)	**HP 3500-48-PoE Switch (J9473A)**	**HP 3500-24-PoE Switch (J9471A)**
Ports	1 open module slot 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) with PoE or an open mini-GBIC slot (for use with mini-GBIC transceivers) Supports a maximum of 4 10-GbE ports, with optional module	44 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 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) with PoE or an open mini-GBIC slot (for use with mini-GBIC transceivers) 1 RS-232C DB-9 console port	20 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 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) 1 RS-232C DB-9 console port
Physical characteristics			
	17.44(w) x 15.43(d) x 1.73(h) in (44.3 x 39.2 x 4.4 cm) (1U height)	17.44(w) x 16.93(d) x 1.73(h) in (44.3 x 43.0 x 4.4 cm) (1U height)	17.44(w) x 15.43(d) x 1.73(h) in (44.3 x 39.2 x 4.4 cm) (1U height)
Weight	14.11 lb (6.4 kg)	14.99 lb (6.8 kg)	13.23 lb (6 kg)
Memory and processor			
10G module	ARM9 @ 200 MHz; packet buffer size: 36 Mb QDR SDRAM		
Management module	Stackable memory and processor: Freescale PowerPC 8540 @ 666 MHz, 4 MB flash, 128 MB compact flash, 256 MB DDR SDRAM	Stackable memory and processor: Freescale PowerPC 8540 @ 666 MHz, 4 MB flash, 128 MB compact flash, 256 MB DDR SDRAM	Stackable memory and processor: Freescale PowerPC 8540 @ 666 MHz, 4 MB flash, 128 MB compact flash, 256 MB DDR SDRAM
Mounting	Mounts in an EIA-standard 19 in. telco rack or equipment cabinet (hardware included); horizontal surface mounting only	Mounts in an EIA-standard 19 in. telco rack or equipment cabinet (hardware included); horizontal surface mounting only	Mounts in an EIA-standard 19 in. telco rack or equipment cabinet (hardware included); horizontal surface mounting only
Performance			
100 Mb Latency		< 3.4 µs (LIFO 64-byte packets)	< 3.4 µs (LIFO 64-byte packets)
1000 Mb Latency	< 3.4 µs (FIFO 64-byte packets)	< 2.9 µs (LIFO 64-byte packets)	< 2.9 µs (LIFO 64-byte packets)
10 Gbps Latency	< 2.1 µs (FIFO 64-byte packets)		
Throughput	up to 75.7 million pps	up to 12.5 million pps (64-byte packets)	up to 8.9 million pps (64-byte packets)
Routing/Switching capacity	101.8 Gbps	16.8 Gbps	12 Gbps
Switch fabric speed	105.6 Gbps		
Routing table size	10000 entries	10000 entries	10000 entries
MAC address table size	64000 entries	64000 entries	64000 entries
Environment			
Operating temperature	32°F to 131°F (0°C to 55°C); 32°F to 104°F (40°C) when used with any X2 10-GbE	32°F to 131°F (0°C to 55°C)	32°F to 131°F (0°C to 55°C)
Operating relative humidity	15% to 95% @ 104°F (40°C), noncondensing	15% to 95% @ 104°F (40°C), noncondensing	15% to 95% @ 104°F (40°C), noncondensing
Nonoperating/Storage temperature	-40°F to 158°F (-40°C to 70°C)	-40°F to 158°F (-40°C to 70°C)	-40°F to 158°F (-40°C to 70°C)
Nonoperating/Storage relative humidity	15% to 90% @ 149°F (65°C), noncondensing	15% to 95% @ 149°F (65°C), noncondensing	15% to 90% @ 149°F (65°C), noncondensing
Altitude	up to 15,000 ft (4.6 km)	up to 15,000 ft (4.6 km)	up to 15,000 ft (4.6 km)
Acoustic	Power: 55.1 dB, Pressure: 44.8 dB ISO 7779, ISO 9296	Power: 55.6 dB, Pressure: 45.3 dB ISO 7779, ISO 9296	Power: 55.1 dB, Pressure: 44.8 dB ISO 7779, ISO 9296
Electrical characteristics			
Description	The switch automatically adjusts to any voltage between 100-127 and 200-240 V with either 50 or 60 Hz.	The switch automatically adjusts to any voltage between 100-127 and 200-240 V with either 50 or 60 Hz.	The switch automatically adjusts to any voltage between 100-127 and 200-240 V with either 50 or 60 Hz.
Maximum heat dissipation	865 BTU/hr (912.9 kJ/hr)	611 BTU/hr (644.6 kJ/hr)	435 BTU/hr (458.92 kJ/hr)
Voltage	100-127/200-240 VAC	100-127/200-240 VAC	100-127/200-240 VAC
Current	10.0/5.0 A	7.3/3.3 A	6.6/3.0 A
Idle power	98 W	133.2 W	91 W
Maximum power rating	623 W	548.8 W	497 W
PoE power	398 W	398 W	398 W
Frequency	50/60 Hz	50/60 Hz	50/60 Hz

HP 3500 and 3500 yl Switch Series

Specifications (continued)

	HP 3500-24G-PoE yl Switch (J8692A)	HP 3500-48-PoE Switch (J9473A)	HP 3500-24-PoE Switch (J9471A)
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. The amount of PoE power delivered is dependent on the number and type of power supplies connected. The switches offer optional external power supplies (EPS) for maximum PoE power.	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. The amount of PoE power delivered is dependent on the number and type of power supplies connected. The switches offer optional external power supplies (EPS) for maximum PoE power.	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. The amount of PoE power delivered is dependent on the number and type of power supplies connected. The switches offer optional external power supplies (EPS) for maximum PoE power.
Safety	CSA 22.2 No. 60950; UL 60950; IEC 60950; EN 60950	EN 60950/IEC 60950; CAN/CSA 22.2 No. 60950; UL 60950; IEC 60950	EN 60950/IEC 60950; CAN/CSA 22.2 No. 60950; EN 60825; UL 60950
Emissions	FCC Class A; VCCI Class A; EN 55022/CISPR 22 Class A	FCC Class A; VCCI Class A; EN 55022/CISPR 22 Class A	FCC Class A; VCCI Class A; EN 55022/CISPR 22 Class A
Immunity			
EN	EN 55024, CISPR 24	EN 55024, CISPR 24	EN 55024, CISPR 24
ESD	IEC 61000-4-2; 4 kV CD, 8 kV AD	IEC 61000-4-2; 4 kV CD, 8 kV AD	IEC 61000-4-2; 4 kV CD, 8 kV AD
Radiated	IEC 61000-4-3; 3 V/m	IEC 61000-4-3; 3 V/m	IEC 61000-4-3; 3 V/m
EFT/Burst	IEC 61000-4-4; 1.0 kV (power line), 0.5 kV (signal line)	IEC 61000-4-4; 1.0 kV (power line), 0.5 kV (signal line)	IEC 61000-4-4; 1.0 kV (power line), 0.5 kV (signal line)
Surge	IEC 61000-4-5; 1 kV/2 kV AC	IEC 61000-4-5; 1 kV/2 kV AC	IEC 61000-4-5; 1 kV/2 kV AC
Conducted	IEC 61000-4-6; 3 V	IEC 61000-4-6; 3 V	IEC 61000-4-6; 3 V
Power frequency magnetic field	IEC 61000-4-8; 1 A/m, 50 or 60 Hz	IEC 61000-4-8; 1 A/m, 50 or 60 Hz	IEC 61000-4-8; 1 A/m, 50 or 60 Hz
Voltage dips and interruptions	IEC 61000-4-11; >95% reduction, 0.5 period; 30% reduction, 25 periods	IEC 61000-4-11; >95% reduction, 0.5 period; 30% reduction, 25 periods	IEC 61000-4-11; >95% reduction, 0.5 period; 30% reduction, 25 periods
Harmonics	EN 61000-3-2, IEC 61000-3-2	EN 61000-3-2, IEC 61000-3-2	EN 61000-3-2, IEC 61000-3-2
Flicker	EN 61000-3-3, IEC 61000-3-3	EN 61000-3-3, IEC 61000-3-3	EN 61000-3-3, IEC 61000-3-3
Management	HP PCM+; HP PCM (included); command-line interface; Web browser; configuration menu; out-of-band management (serial RS-232C)	HP PCM+; HP PCM (included); command-line interface; Web browser; configuration menu; out-of-band management (serial RS-232C)	HP PCM+; HP PCM (included); command-line interface; Web browser; configuration menu; out-of-band management (serial RS-232C)
Notes	J8177B Gigabit 1000BASE-T mini-GBIC is not supported on the 3500 series switches. Supported 1G SFP transceivers are revision "B" or later (product number ends with the letter "B" or later, for example, J9142B, J8177C).	J8177B Gigabit 1000BASE-T mini-GBIC is not supported on the 3500 series switches. Supported 1G SFP transceivers are revision "B" or later (product number ends with the letter "B" or later, for example, J9142B, J8177C).	J8177B Gigabit 1000BASE-T mini-GBIC is not supported on the 3500 series switches. 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)	3-year, 4-hour onsite, 13x5 coverage for hardware (H4496E) 3-year, 4-hour onsite, 24x7 coverage for hardware (H2893E) 3-year, 4-hour onsite, 24x7 coverage for hardware, 24x7 SW phone support and SW updates (U6319E) 3-year, 24x7 SW phone support, software updates (UE264E) 1-year, post-warranty, 4-hour onsite, 13x5 coverage for hardware (HR894E) 1-year, post-warranty, 4-hour onsite, 24x7 coverage for hardware (HR895E) 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 (UR884E) 4-year, 4-hour onsite, 24x7 coverage for hardware (UR885E) 4-year, 4-hour onsite, 24x7 coverage for hardware, 24x7 software phone (UR886E) 4-year, 24x7 SW phone support, software updates (UR887E) 5-year, 4-hour onsite, 13x5 coverage for hardware (UR888E)	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)

HP 3500 and 3500 yl Switch Series

Specifications (continued)

	HP 3500-24G-PoE yl Switch (J8692A)	HP 3500-48-PoE Switch (J9473A)	HP 3500-24-PoE Switch (J9471A)
	5-year, 4-hour onsite, 13x5 coverage for hardware (UR872E)	5-year, 4-hour onsite, 24x7 coverage for hardware (UR889E)	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 (UR890E)	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 (UR891E)	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 (UW365E)	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 (UW366E)	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 (UW367E)	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 (HR898E)	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 (HR897E)	1-year, 6 hour Call-To-Repair Onsite for hardware (HR893E)
	1-year, 24x7 software phone support, software updates (HR892E)	1-year, 4-hour onsite, 24x7 coverage for hardware, 24x7 software phone support and software updates (HR896E)	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 (HS618E)	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)	1-year, 24x7 software phone support, software updates + 4 hour hardware exchange (HS619E)	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 + Next Business Day Hardware Exchange (HS620E)	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)	3-year, 24x7 software phone support, software updates + 4 hour Hardware Exchange (HS621E)	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 + Next Business Day Hardware Exchange (HS622E)	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)	4-year, 24x7 software phone support, software updates + 4 hour Hardware Exchange (HS623E)	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 + Next Business Day Hardware Exchange (HS624E)	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)	5-year, 24x7 software phone support, software updates + 4 hour Hardware Exchange (HS625E)	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.	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.	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 3500 and 3500 yl Switch Series

Specifications (continued)

	HP 3500-24G-PoE yl Switch (J8692A)	HP 3500-48-PoE Switch (J9473A)	HP 3500-24-PoE Switch (J9471A)
Standards and protocols (applies to all products in series)	**BGP** RFC 1997 BGP Communities Attribute RFC 2918 Route Refresh Capability RFC 4271 A Border Gateway Protocol 4 (BGP-4) RFC 4456 BGP Route Reflection: An Alternative to Full Mesh Internal BGP (IBGP) RFC 5492 Capabilities Advertisement with BGP-4 **Device management** RFC 1591 DNS (client) HTML and telnet management **General protocols** IEEE 802.1ad Q-in-Q IEEE 802.1AX-2008 Link Aggregation IEEE 802.1D MAC Bridges IEEE 802.1p Priority IEEE 802.1Q VLANs IEEE 802.1s Multiple Spanning Trees IEEE 802.1v VLAN classification by Protocol and Port IEEE 802.1w Rapid Reconfiguration of Spanning Tree IEEE 802.3ad Link Aggregation Control Protocol (LACP) IEEE 802.3af Power over Ethernet IEEE 802.3x Flow Control RFC 768 UDP RFC 783 TFTP Protocol (revision 2) RFC 792 ICMP RFC 793 TCP RFC 826 ARP RFC 854 TELNET RFC 868 Time Protocol RFC 951 BOOTP RFC 1058 RIPv1 RFC 1350 TFTP Protocol (revision 2) RFC 1519 CIDR RFC 1542 BOOTP Extensions RFC 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 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

HP 3500 and 3500 yl Switch Series

Specifications (continued)

		
	HP 3500-48 Switch (J9472A)	**HP 3500-24 Switch (J9470A)**
Ports	44 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 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) with PoE, or an open mini-GBIC slot (for use with mini-GBIC transceivers) 1 RS-232C DB-9 console port	20 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 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) 1 RS-232C DB-9 console port
Physical characteristics		
	17.44(w) x 16.93(d) x 1.73(h) in (44.3 x 43.0 x 4.4 cm) (1U height)	17.44(w) x 15.43(d) x 1.73(h) in (44.3 x 39.2 x 4.4 cm) (1U height)
Weight	13.45 lb (6.1 kg)	11.9 lb (5.4 kg)
Memory and processor		
Management module	Stackable memory and processor: Freescale PowerPC 8540 @ 666 MHz, 4 MB flash, 128 MB compact flash, 256 MB DDR SDRAM	Stackable memory and processor: Freescale PowerPC 8540 @ 666 MHz, 4 MB flash, 128 MB compact flash, 256 MB DDR SDRAM
Mounting	Mounts in an EIA-standard 19 in. telco rack or equipment cabinet (hardware included); horizontal surface mounting only	Mounts in an EIA-standard 19 in. telco rack or equipment cabinet (hardware included); horizontal surface mounting only
Performance		
100 Mb Latency	< 3.4 µs (LIFO 64-byte packets)	< 3.4 µs (LIFO 64-byte packets)
1000 Mb Latency	< 2.9 µs (LIFO 64-byte packets)	< 2.9 µs (LIFO 64-byte packets)
Throughput	up to 12.5 million pps (64-byte packets)	up to 8.9 million pps (64-byte packets)
Routing/Switching capacity	16.8 Gbps	12 Gbps
Routing table size	10000 entries	10000 entries
MAC address table size	64000 entries	64000 entries
Environment		
Operating temperature	32°F to 131°F (0°C to 55°C)	32°F to 131°F (0°C to 55°C)
Operating relative humidity	15% to 95% @ 104°F (40°C), noncondensing	15% to 95% @ 104°F (40°C), noncondensing
Nonoperating/Storage temperature	-40°F to 158°F (-40°C to 70°C)	-40°F to 158°F (-40°C to 70°C)
Nonoperating/Storage relative humidity	15% to 95% @ 149°F (65°C), noncondensing	15% to 90% @ 149°F (65°C), noncondensing
Altitude	up to 15,000 ft (4.6 km)	up to 15,000 ft (4.6 km)
Acoustic	Power: 55.8 dB, Pressure: 43.5 dB ISO 7779, ISO 9296	Power: 53.1 dB, Pressure: 42.6 dB ISO 7779, ISO 9296
Electrical characteristics		
Description	The switch automatically adjusts to any voltage between 100-127 and 200-240 V with either 50 or 60 Hz.	The switch automatically adjusts to any voltage between 100-127 and 200-240 V with either 50 or 60 Hz.
Maximum heat dissipation	465 BTU/hr (490.58 kJ/hr)	268 BTU/hr (282.8 kJ/hr)
Voltage	100-127/200-240 VAC	100-127/200-240 VAC
Current	1.6/0.8 A	1.1/0.6 A
Idle power	96 W	68.2 W
Maximum power rating	136.2 W	78.7 W
Frequency	50/60 Hz	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.	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	EN 60950/IEC 60950; CAN/CSA 22.2 No. 60950; UL 60950; IEC 60950	CSA 22.2 No. 60950; UL 60950; IEC 60950; EN 60950
Emissions	FCC Class A; VCCI Class A; EN 55022/CISPR 22 Class A	FCC Class A; VCCI Class A; EN 55022/CISPR 22 Class A
Immunity		
EN	EN 55024, CISPR 24	EN 55024, CISPR 24
ESD	IEC 61000-4-2; 4 kV CD, 8 kV AD	IEC 61000-4-2; 4 kV CD, 8 kV AD
Radiated	IEC 61000-4-3; 3 V/m	IEC 61000-4-3; 3 V/m
EFT/Burst	IEC 61000-4-4; 1.0 kV (power line), 0.5 kV (signal line)	IEC 61000-4-4; 1.0 kV (power line), 0.5 kV (signal line)
Surge	IEC 61000-4-5; 1 kV/2 kV AC	IEC 61000-4-5; 1 kV/2 kV AC
Conducted	IEC 61000-4-6; 3 V	IEC 61000-4-6; 3 V
Power frequency magnetic field	IEC 61000-4-8; 1 A/m, 50 or 60 Hz	IEC 61000-4-8; 1 A/m, 50 or 60 Hz
Voltage dips and interruptions	IEC 61000-4-11; >95% reduction, 0.5 period; 30% reduction, 25 periods	IEC 61000-4-11; >95% reduction, 0.5 period; 30% reduction, 25 periods
Harmonics	EN 61000-3-2, IEC 61000-3-2	EN 61000-3-2, IEC 61000-3-2
Flicker	EN 61000-3-3, IEC 61000-3-3	EN 61000-3-3, IEC 61000-3-3

HP 3500 and 3500 yl Switch Series

Specifications (continued)

	HP 3500-48 Switch (J9472A)	HP 3500-24 Switch (J9470A)
Management	HP PCM+; HP PCM (included); command-line interface; Web browser; configuration menu; out-of-band management (serial RS-232C)	HP PCM+; HP PCM (included); command-line interface; Web browser; configuration menu; out-of-band management (serial RS-232C)
Notes	J8177B Gigabit 1000BASE-T mini-GBIC is not supported on the 3500 series switches. Supported 1G SFP transceivers are revision "B" or later (product number ends with the letter "B" or later, for example, J9142B, J8177C).	J8177B Gigabit 1000BASE-T mini-GBIC is not supported on the 3500 series switches. 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 (H4496E)	3-year, 4-hour onsite, 13x5 coverage for hardware (U2855E)
	3-year, 4-hour onsite, 24x7 coverage for hardware (H2893E)	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 (U6319E)	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 (UE264E)	3-year, 24x7 SW phone support, software updates (UE262E)
	1-year, post-warranty, 4-hour onsite, 13x5 coverage for hardware (HR894E)	1-year, post-warranty, 4-hour onsite, 13x5 coverage for hardware (HR889E)
	1-year, post-warranty, 4-hour onsite, 24x7 coverage for hardware (HR895E)	1-year, post-warranty, 4-hour onsite, 24x7 coverage for hardware (HR890E)
	Installation with minimum configuration, system-based pricing (U4826E)	1-year, post-warranty, 4-hour onsite, 24x7 coverage for hardware, 24x7 software phone support (HR891E)
	Installation with HP-provided configuration, system-based pricing (U4830E)	Installation with minimum configuration, system-based pricing (U4826E)
	4-year, 4-hour onsite, 13x5 coverage for hardware (UR884E)	Installation with HP-provided configuration, system-based pricing (U4830E)
	4-year, 4-hour onsite, 24x7 coverage for hardware (UR885E)	4-year, 4-hour onsite, 13x5 coverage for hardware (UR868E)
	4-year, 4-hour onsite, 24x7 coverage for hardware, 24x7 software phone (UR886E)	4-year, 4-hour onsite, 24x7 coverage for hardware (UR869E)
	4-year, 24x7 SW phone support, software updates (UR887E)	4-year, 4-hour onsite, 24x7 coverage for hardware, 24x7 software phone (UR870E)
	5-year, 4-hour onsite, 13x5 coverage for hardware (UR888E)	4-year, 24x7 SW phone support, software updates (UR871E)
	5-year, 4-hour onsite, 24x7 coverage for hardware (UR889E)	5-year, 4-hour onsite, 13x5 coverage for hardware (UR872E)
	5-year, 4-hour onsite, 24x7 coverage for hardware, 24x7 software phone (UR890E)	5-year, 4-hour onsite, 24x7 coverage for hardware (UR873E)
	5-year, 24x7 SW phone support, software updates (UR891E)	5-year, 4-hour onsite, 24x7 coverage for hardware, 24x7 software phone (UR874E)
	3 Yr 6 hr Call-to-Repair Onsite (UW365E)	5-year, 24x7 SW phone support, software updates (UR875E)
	4 Yr 6 hr Call-to-Repair Onsite (UW366E)	3 Yr 6 hr Call-to-Repair Onsite (UW356E)
	5 Yr 6 hr Call-to-Repair Onsite (UW367E)	4 Yr 6 hr Call-to-Repair Onsite (UW357E)
	1-year, 6 hour Call-To-Repair Onsite for hardware (HR898E)	5 Yr 6 hr Call-to-Repair Onsite (UW358E)
	1-year, 24x7 software phone support, software updates (HR897E)	1-year, 6 hour Call-To-Repair Onsite for hardware (HR893E)
	1-year, 4-hour onsite, 24x7 coverage for hardware, 24x7 software phone support and software updates (HR896E)	1-year, 24x7 software phone support, software updates (HR892E)
	1-year, 24x7 software phone support, software updates + 4 hour hardware exchange (HS618E)	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 (HS619E)	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 (HS620E)	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 (HS621E)	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 (HS622E)	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 (HS623E)	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 (HS624E)	5-year, 24x7 software phone support, software updates + Next Business Day Hardware Exchange (HS616E)
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HP 3500 and 3500 yl Switch Series

Specifications (continued)

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Standards and protocols (applies to all products in series)	**BGP** RFC 1997 BGP Communities Attribute RFC 2918 Route Refresh Capability RFC 4271 A Border Gateway Protocol 4 (BGP-4) RFC 4456 BGP Route Reflection: An Alternative to Full Mesh Internal BGP (IBGP) RFC 5492 Capabilities Advertisement with BGP-4 **Device management** RFC 1591 DNS (client) HTML and telnet management **General protocols** IEEE 802.1ad Q-in-Q IEEE 802.1AX-2008 Link Aggregation IEEE 802.1D MAC Bridges IEEE 802.1p Priority IEEE 802.1Q VLANs IEEE 802.1s Multiple Spanning Trees IEEE 802.1v VLAN classification by Protocol and Port IEEE 802.1w Rapid Reconfiguration of Spanning Tree IEEE 802.3ad Link Aggregation Control Protocol (LACP) IEEE 802.3af Power over Ethernet IEEE 802.3x Flow Control RFC 768 UDP RFC 783 TFTP Protocol (revision 2) RFC 792 ICMP RFC 793 TCP RFC 826 ARP RFC 854 TELNET RFC 868 Time Protocol RFC 951 BOOTP RFC 1058 RIPv1 RFC 1350 TFTP Protocol (revision 2) RFC 1519 CIDR RFC 1542 BOOTP Extensions RFC 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 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

HP 3500 and 3500 yl Switch Series accessories

Modules

HP 10GbE 2-port X2/2-port CX4 yl Module (J8694A)
HP 10GbE 2-port SFP+/2-port CX4 yl Module (J9312A)

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 X130 CX4 Optical Media Converter (J8439A)
HP X131 10G X2 CX4 Transceiver (J8440C)
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)
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)

Cables

HP X242 10G SFP+ to SFP+ 1m Direct Attach Copper Cable (J9281B)
HP X242 10G SFP+ to SFP+ 3m Direct Attach Copper Cable (J9283B)
HP X242 10G SFP+ to SFP+ 7m Direct Attach Copper Cable (J9285B)
HP X244 10G XFP to SFP+ 1m Direct Attach Copper Cable (J9300A)
HP X244 10G XFP to SFP+ 3m Direct Attach Copper Cable (J9301A)
HP X244 10G XFP to SFP+ 5m Direct Attach Copper Cable (J9302A)
HP 0.5 m Multimode OM3 LC/LC Optical Cable (AJ833A)
HP 1 m Multimode OM3 LC/LC Optical Cable (AJ834A)
HP 2 m Multimode OM3 LC/LC Optical Cable (AJ835A)
HP 5 m Multimode OM3 LC/LC Optical Cable (AJ836A)
HP 15 m Multimode OM3 LC/LC Optical Cable (AJ837A)
HP 30 m Multimode OM3 LC/LC Optical Cable (AJ838A)
HP 50 m Multimode OM3 LC/LC Optical Cable (AJ839A)
HP 0.5 m PremierFlex OM3+ LC/LC Optical Cable (BK837A)
HP 1 m PremierFlex OM3+ LC/LC Optical Cable (BK838A)
HP 2 m PremierFlex OM3+ LC/LC Optical Cable (BK839A)
HP 5 m PremierFlex OM3+ LC/LC Optical Cable (BK840A)
HP 15 m PremierFlex OM3+ LC/LC Optical Cable (BK841A)
HP 30 m PremierFlex OM3+ LC/LC Optical Cable (BK842A)
HP 50 m PremierFlex OM3+ LC/LC Optical Cable (BK843A)
HP X242 10G SFP+ to SFP+ 10m Direct Attach Copper Cable (J9286B)
HP X242 10G SFP+ to SFP+ 15m Direct Attach Copper Cable (J9287B)

EPS/RPS

HP 620 Redundant/External Power Supply (J8696A)
HP 630 Redundant and/or External Power Supply (J9443A)

Mounting Kit

HP X410 1U Universal 4-post Rack Mounting Kit (J9583A)

License

HP 3500 yl Premium License (J8993A)

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.

To learn more, visit hp.com/networking

4AA2-6758ENW, Created June 2009; Updated September 2012, Rev. 8