



HP 12500 Switch Series



Key features

- Advanced architecture: midplane, CLOS
- 13.32 Tb switching capacity
- High-density 10GbE with 288 1:1, 576 4:1 ports
- 40/100 GbE ready
- Redundant switching fabric, power supply, fan tray

Product overview

The HP 12500 Switch Series is a family of powerful, next-generation routing switches with outstanding capacity for the network core or data center. Besides innovative Intelligent Resilient Framework (IRF) technology that provides unprecedented levels of performance and high availability, the 12500 switch series incorporate Open Application Architecture (OAA), which enables flexible deployment options for new services. These switches also have energy-efficiency features that drive down operational expenses. The 12500 switch series is ideal for organizations contemplating large-scale data center consolidations, business continuity and disaster recovery sites, metropolitan area network deployments, and other applications requiring a robust, high-performance switching platform.

Features and benefits

Quality of Service (QoS)

- **Virtual Output Queue (VOQ)**
prevents head-of-line (HOL) blocking per port at peak time and distributes it over a period of time, increasing the switch performance
- **IEEE 802.1p prioritization**
delivers data to devices based on the priority and type of traffic
- **Layer 4 prioritization**
enables prioritization based on TCP/UDP port numbers
- **Broadcast control**
allows limitation of broadcast traffic rate to cut down on unwanted network broadcast traffic
- **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
- **Bandwidth shaping**
 - **Port-based rate limiting**
provides per-port ingress-/egress-enforced maximum bandwidth
 - **Classifier-based rate limiting**
uses access control lists (ACLs) to enforce maximum bandwidth for ingress/egress traffic on each port

Data center optimized

- **Very high performance without compromise**
leveraging the latest generation of ASICs, the 12500 switch series offers outstanding performance and density to build next-generation data centers; a routing/switching capacity of up to 13.32 Tbps and a throughput of 4320 Mpps (12518 switch), 6.12 Tbps and 1920 Mpps (12508 switch), or 3.24 Tbps and 960 Mpps (12504 switch)
- **Very high density 10GbE connectivity**
the 12518 switch supports up to 576 10GbE (4:1) or 288 10GbE (1:1) per physical rack (44RU); the 12508 switch supports up to 256 10GbE (4:1) or 128 10GbE (1:1); with two 12508 switches per physical rack (44RU), the density becomes 512 10GbE (4:1) or 256 10GbE (1:1); the 12504 switch supports up to 128 10GbE (4:1) or 64 10GbE (1:1)
- **Very high density GbE connectivity**
the 12518 switch supports up to 864 1-GbE (1:1) in a physical (44RU) rack; the 12508 switch supports up to 384 1-GbE (1:1); with two 12508 switches per physical rack (44RU), the density becomes 768 1-GbE (1:1); the 12504 switch supports up to 192 1-GbE (1:1)
- **Four-chassis IRF**
allows the building of large-scale nonblocking, loop-free, metro Layer 2 networks, providing more server access and ultrahigh reliability

- **Scalable system design**

The 12500 switch series is built using the latest switching architectures and technologies (CLOS architecture, midplane design), providing the flexibility and scalability for future higher 10GbE density modules as well as 40 GbE/100 GbE interfaces

- **Ultramodern architecture**

using the latest evolution in switching design, CLOS architecture, the 12500 switch series combines performance and ultimate flexibility to provide a smooth evolution path to 25 Tbps; no other switching architecture (shared memory/crossbar) scales to these levels of performance

- **Jumbo frames**

to accelerate the level of performances, the 12500 switch series supports jumbo frames (9K) for intra-data-center communication, or for data center to data center traffic (disaster recovery), reducing the amount of time required for data backup and recovery

- **NLB Multicast ARP**

Microsoft® NLB co-works with Multicast ARP to provide servers with load balancing and fault switchover, which lowers costs and investment

Compartmentalization

- **Department protection**

using network virtualization standards (QinQ, VRF, and MPLS), the 12500 switch series allows organizations to isolate different business units with different resources (VRFs); using standard-based mechanisms, the network is completely virtualized, reducing cost and operations

- **IEEE 802.1ah Provider Backbone Bridge (Mac in Mac)**

Provider Backbone Bridge (PBB) is a Layer 2 VPN technology that allows a complete separation of customer and provider domains by sealing the user MAC in the service provider MAC, which enhances the scalability of an Ethernet network

Management

- **sFlow**

provides scalable, ASIC-based network monitoring and accounting; this allows network operators to gather a variety of sophisticated network statistics and information for capacity planning and real-time network monitoring purposes

- **IEEE 802.1ab LLDP discovery**

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

- **USB support**

- **File copy**
allows users to copy switch files to and from a USB flash drive

- **Multiple configuration files**

can be stored to the flash image

- **Command-line interface (CLI)**

provides a secure, easy-to-use CLI for configuring the module via SSH or a switch console; provides direct real-time session visibility

- **Logging**
provides local and remote logging of events via SNMP (v2c and v3) and syslog; provides log throttling and log filtering to reduce the number of log events generated
- **Management interface control**
each of the following interfaces can be enabled or disabled depending on security preferences: console port, telnet port, and SSH port
- **Out-of-band interface**
isolates management traffic from user data plane traffic for complete isolation and total reachability, no matter what happens in the data plane
- **Network management**
Intelligent Management Console (IMC) centrally configures, updates, monitors, and troubleshoots
- **Network management**
SNMP v2c/v3 MIB-II with traps
- **RADIUS accounting**
logs all session details that can be used to generate usage reports or interface to a billing system
- **RMON**
provides advanced monitoring and reporting capabilities for statistics, history, alarms, and events
- **Remote Intelligent Mirroring**
mirrors ingress ACL-selected traffic from a switch port or VLAN to a local or remote switch port anywhere on the network

Connectivity

- **IPv6 native support**
 - **IPv6 host**
enables switches to be managed and deployed at the IPv6 network's edge
 - **Dual stack (IPv4 and IPv6)**
transitions from IPv4 to IPv6, supporting connectivity for both protocols
 - **Multicast Listener Discovery (MLD) snooping**
forwards IPv6 multicast traffic to the appropriate interface
 - **IPv6 ACL/QoS**
supports ACL and QoS for IPv6 network traffic, preventing traffic flooding
 - **IPv6 routing**
supports IPv6 static routes and IPv6 versions of RIP and OSPF routing protocols

Performance

- **13.32 Tbps (12518 switch) 6.12 Tbps (12508 switch) and 3.24 Tbps (12504 switch) fully nonblocking CLOS architecture**
includes a high-performance switch design with a nonblocking architecture

- **High-performance bandwidth**
with up to 13.32 Tbps capacity, providing nonblocking throughput for 288 10GbE ports at Layer 2 and Layer 3 IPv4, Layer 3 IPv6, and MPLS (12518 switch), 128 10GbE ports (12508 switch), or 64 10GbE ports (12504 switch)
- **Hardware-based wire-speed access control lists (ACLs)**
feature-rich ACL implementation (TCAM-based) helps provide high levels of security and ease of administration without impacting network performance
- **High-performance processor system**
the supervisory module uses three different processors to isolate key tasks: control plane (STP, OSPF, BGP, MPLS, etc.), fast recovery protocols (RRPP, BFD, etc.), and chassis management (temperature, power, etc.)

Resiliency and high availability

- **Intelligent Resilient Framework (IRF)**
creates virtual resilient switching fabrics, where two or more switches perform as a single L2 switch and L3 router; switches do not have to be co-located and can be part of a disaster recovery system; servers or switches can be attached using standard LACP for automatic load balancing and high availability; can eliminate the need for complex protocols like Spanning Tree Protocol, Equal-Cost Multipath (ECMP), or VRRP, thereby simplifying network operation
- **Ultrafast protocol convergence**
enables link connectivity monitoring and reduces network convergence time for RIP, OSPF, BGP, IS-IS, VRRP, MPLS, and IRF
- **Device Link Detection Protocol (DLDP)**
monitors link connectivity and shuts down ports at both ends if unidirectional traffic is detected, preventing loops in STP-based networks
- **Complete set of routing protocols (Layer 3 IPv4 and IPv6)**
virtually all existing routing protocols (RIP, OSPF, IS-IS, and BGP) are supported for both Layer 3 IPv4 and Layer 3 IPv6; complete support of PIM-DM, PIM-SM, PIM-SSM, and MSDP
- **Hot patching**
the 12500 switch series supports hot patching, allowing in-service patching for some isolated software problems
- **Non Stop Forwarding/Graceful Restart (NSF/GR)**
using standardized-based IETF protocols, the 12500 switch series provides nonstop forwarding (switching/routing) for Layer 3 routing protocols (control plane - OSPF, BGP, and MPLS), providing hitless failover
- **Ultrareliable architecture**
combining hardware redundancy at every layer (power supplies, fans, supervisory modules, etc.) and a multilayered software approach based on the Resilient Virtual Switching Fabric concept (using the IRF technology), the 12500 switch series is able to provide the highest level of availability; by following design guidelines from HP, customers can build data centers providing an end-to-end availability reaching five 9s

- **Rapid Ring Protection Protocol (RRPP)**
provides fast recovery for ring Ethernet-based topology

Layer 2 switching

- **Multiple VLAN Registration Protocol (MVRP)**
helps to maintain VLAN configuration dynamically based on current network configurations
- **GARP VLAN Registration Protocol**
allows automatic learning and dynamic assignment of VLANs
- **IP multicast snooping and data-driven IGMP**
automatically prevents flooding of IP multicast traffic
- **IEEE 802.1ad QinQ**
increases the scalability of an Ethernet network by providing a hierarchical structure; connects multiple LANs on a high-speed campus or metro network
- **Bridge Protocol Data Unit (BPDU) tunneling**
transmits Spanning Tree Protocol BPDUs transparently, allowing correct tree calculations across service providers, WANs, or MANs
- **VLAN support and tagging**
supports IEEE 802.1Q (4K VLAN IDs)
- **Spanning Tree**
the 12500 switch series supports the entire set of STP protocols (STP, RSTP, and MSTP), facilitating a complete integration with standard networks

Layer 3 routing

- **Layer 3 IPv4 routing**
provides routing of IPv4 at media speed; supports static routes, RIP and RIPv2, OSPF, IS-IS, and BGP
- **RIP and RIPv2 support**
provides complete support of RIP for both IPv4 and IPv6
- **OSPF and OSPFv3 support**
provides complete support of OSPF for both IPv4 and IPv6
- **IS-IS and IS-ISv6 support**
provides complete support of IS-IS for both IPv4 and IPv6
- **Equal-Cost Multipath (ECMP)**
enables multiple equal-cost links in a routing environment to increase link redundancy and scale bandwidth
- **Layer 3 IPv6 routing**
provides routing of IPv6 at media speed; supports static routes, RIPv2, OSPFv3, IS-ISv6, and BGP4+
- **IPv6 tunneling**
allows a smooth transition from IPv4 to IPv6 by encapsulating IPv6 traffic over an existing IPv4 infrastructure
- **Complete multicast protocol stack**
PIM-DM, PIM-SM, PIM-SSM, MSDP, and extensions to BGP provide one of the most complete multicast protocol stacks

- **Policy routing**
allows custom filters for increased performance and security; supports ACLs, IP prefix, AS paths, community lists, and aggregate policies
- **MPLS support**
provides extended support of MPLS, including MPLS VPNs and MPLS Traffic Engineering (MPLS TE)
- **VPLS support**
provides extended support of VPLS for data center to data center communication at Layer 2; provides support of hierarchical VPLS for scalability

Security

- **Control Plane Policing (CoPP)**
provides protection against DoS attacks at infrastructure routers and switches and ease of configuration for control plane policies
- **IEEE 802.1X and RADIUS network logins**
control port-based access for authentication and accountability
- **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
- **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
- **Secure Shell (SSHv2)**
encrypts all transmitted data for secure, remote CLI access over IP networks
- **Secure management access**
securely encrypts all access methods (CLI, GUI, or MIB) through SSHv2 and SNMPv3
- **Access control lists (ACLs)**
provide IPv4 and IPv6 filtering based on source/destination IP address/subnet and source/destination TCP/UDP port number
- **Media access control (MAC) authentication**
provides simple authentication based on a user's MAC address; supports local or RADIUS-based authentication

Convergence

- **Layer 2, 3, and 4 QoS mechanisms**
support DiffServ priority tagging based on IP address, IP Type of Service (ToS), Layer 3 protocol, TCP/UDP port number, and source port

- **IP multicast snooping and data-driven IGMP**
automatically prevent flooding of IP multicast traffic
- **LLDP-MED**
is a standard extension that automatically configures network devices, including LLDP-capable IP phones
- **Internet Group Management Protocol (IGMP)**
is used by IP hosts to establish and maintain multicast groups; supports IGMPv1, v2, and v3; utilizes Any-Source Multicast (ASM) or Source-Specific Multicast (SSM) to manage IPv4 multicast networks
- **Protocol Independent Multicast (PIM)**
is used for IPv4 and IPv6 multicast applications; supports PIM Dense Mode (PIM-DM), Sparse Mode (PIM-SM), and Source-Specific Mode (PIM-SSM)
- **Multicast Source Discovery Protocol (MSDP)**
is used for inter-domain multicast applications, allowing multiple PIM-SM domains to interoperate
- **Multicast VLAN**
allows multiple VLANs to receive the same IPv4 or IPv6 multicast traffic, lessening network bandwidth demand by reducing or eliminating multiple streams to each VLAN

Monitor and diagnostics

- **Port mirroring**
enables traffic on a port to be simultaneously sent to a network analyzer for monitoring
- **CFD (IEEE 802.1ag)**
connectivity fault detection (CFD) provides a Layer 2 link Operations, Administration and Maintenance (OAM) mechanism used for link connectivity detection and fault locating

Investment protection

- **Modular switch fabric**
provides investment protection by enabling future performance upgrades and increased port density
- **Environmentally friendly**
ROHS support and low power consumption based on the latest technology provide outstanding power efficiency

Warranty and support

- **1-year warranty**
with advance replacement and 10-calendar-day delivery (available in most countries)
- **Electronic and telephone support**
limited electronic and telephone support is available from HP; to reach our support centers, refer to www.hp.com/networking/contact-support; for details on the duration of support provided with your product purchase, refer to www.hp.com/networking/warrantysummary

- **Software releases**
to find software for your product, refer to www.hp.com/networking/support; for details on the software releases available with your product purchase, refer to www.hp.com/networking/warrantysummary

HP 12500 Switch Series

Specifications



	HP 12504 AC Switch Chassis (JC654A) HP 12504 DC Switch Chassis (JC655A)	HP 12508 AC Switch Chassis (JF431C) HP 12508 DC Switch Chassis (JC652A)	HP 12518 AC Switch Chassis (JF430C) HP 12518 DC Switch Chassis (JC653A)
Ports	4 open module slots 2 MPU (for management modules) slots 4 switch fabric slots Supports a maximum of 128 10-GbE ports or 192 Gigabit ports, or a combination	8 open module slots 2 MPU (for management modules) slots 9 switch fabric slots Supports a maximum of 256 10-GbE ports or 384 Gigabit ports, or a combination	18 open module slots 2 MPU (for management modules) slots 9 switch fabric slots Supports a maximum of 576 10-GbE ports or 864 Gigabit ports, or a combination
Physical characteristics	17.4(w) x 27.87(d) x 17.4(h) in (44.2 x 70.8 x 44.2 cm) (10U height)	17.4(w) x 29.13(d) x 38.39(h) in (44.2 x 73.99 x 97.51 cm) (22U height)	17.4(w) x 29.13(d) x 66.38(h) in (44.2 x 73.99 x 168.61 cm) (38U height)
Weight	132.28 lb (60 kg)	209.44 lb (95 kg)	352.74 lb (160 kg)
Full configuration weight	220.46 lb (100 kg)	374.78 lb (170 kg)	639.33 lb (290 kg)
Memory and processor			
Gigabit module	PowerPC @ 667 MHz, 1 GB RAM; packet buffer size: 512 MB (Ingress, shared by 24 1-GbE ports)	PowerPC @ 667 MHz, 1 GB RAM; packet buffer size: 512 MB (Ingress, shared by 24 1-GbE ports)	PowerPC @ 667 MHz, 1 GB RAM; packet buffer size: 512 MB (Ingress, shared by 24 1-GbE ports)
10G module	PowerPC @ 667 MHz, 1 GB RAM; packet buffer size: 512 MB (Ingress/shared by 2 10GbE ports)	PowerPC @ 667 MHz, 1 GB RAM; packet buffer size: 512 MB (Ingress/shared by 2 10GbE ports)	PowerPC @ 667 MHz, 1 GB RAM; packet buffer size: 512 MB (Ingress/shared by 2 10GbE ports)
Management module	Primary CPU: PowerPC @ 1000 MHz, 128 MB flash, 256 MB compact flash, 4 GB RAM	Primary CPU: PowerPC @ 1000 MHz, 128 MB flash, 256 MB compact flash, 4 GB RAM	Primary CPU: PowerPC @ 1000 MHz, 128 MB flash, 256 MB compact flash, 4 GB RAM
Fabric	PowerPC @ 400 MHz, 128 MB RAM	PowerPC @ 400 MHz, 128 MB RAM	PowerPC @ 400 MHz, 128 MB RAM
Mounting	Mounts in an EIA-standard 19 in. telco rack or equipment cabinet	Mounts in an EIA-standard 19 in. telco rack or equipment cabinet	Mounts in an EIA-standard 19 in. telco rack or equipment cabinet
Performance			
Throughput	960 million pps	1920 million pps	4320 million pps
Routing/Switching capacity	3240 Gbps	6120 Gbps	13320 Gbps
Environment			
Operating temperature	32°F to 104°F (0°C to 40°C)	32°F to 104°F (0°C to 40°C)	32°F to 104°F (0°C to 40°C)
Operating relative humidity	5% to 95%, noncondensing	5% to 95%, noncondensing	5% to 95%, 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	5% to 95%, noncondensing	5% to 95%, noncondensing	5% to 95%, noncondensing
Electrical characteristics			
Description		Achieved Miercom Certified Green Award 10GbE modules consume half the power compared to competitive products; redundant, scalable, 90% efficient power supplies deliver high reliability in the data center; new ASIC technology has low power consumption when providing rich features.	
Maximum heat dissipation	8123 BTU/hr (8569.77 kJ/hr)	14587 BTU/hr (15389.29 kJ/hr)	32859 BTU/hr (34666.24 kJ/hr)
Voltage	100-120/200-240 VAC	100-120/200-240 VAC	100-120/200-240 VAC
DC voltage	-48 to -60, rated/-40 to -72, maximum, VDC	-48 to -60, rated/-40 to -72, maximum, VDC	-48 to -60, rated/-40 to -72, maximum, VDC
Maximum power rating	2380 W	4750 W	10700 W
Frequency	50/60 Hz	50/60 Hz	50/60 Hz
Notes	Maximum power rating and maximum heat dissipation are the worst-case theoretical maximum numbers provided for planning the infrastructure with fully loaded PoE (if equipped), 100% traffic, all ports plugged in, and all modules populated.	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.	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	CE Labeled; cUL Certified; UL Listed; EN 60825-1 Safety of Laser Products-Part 1; EN 60825-2 Safety of Laser Products-Part 2; IEC 60825; IEC 60950-1:2001 (with CB Report); CAN/CSA-C22.2 No. 60950-1-03; Anatel; ULAR; GOST; EN 60950-1/A11; FDA 21 CFR Subchapter J; NOM; UL 60950-1:2003; EN 60950-1:2001; ROHS Compliance	CE Labeled; cUL Certified; UL Listed; EN 60825-1 Safety of Laser Products-Part 1; EN 60825-2 Safety of Laser Products-Part 2; IEC 60825; IEC 60950-1:2001 (with CB Report); CAN/CSA-C22.2 No. 60950-1-03; Anatel; ULAR; GOST; EN 60950-1/A11; FDA 21 CFR Subchapter J; NOM; UL 60950-1:2003; EN 60950-1:2001; ROHS Compliance	CE Labeled; cUL Certified; UL Listed; EN 60825-1 Safety of Laser Products-Part 1; EN 60825-2 Safety of Laser Products-Part 2; IEC 60825; IEC 60950-1:2001 (with CB Report); CAN/CSA-C22.2 No. 60950-1-03; Anatel; ULAR; GOST; EN 60950-1/A11; FDA 21 CFR Subchapter J; NOM; UL 60950-1:2003; EN 60950-1:2001; ROHS Compliance
Emissions	VCCI Class A; EN 55022 Class A; VCCI V-3/2000.04; ICES-003 Class A; AS/NZS CISPR22 Class A; EMC Directive 2004/108/EC; FCC (CFR 47, Part 15) Class A	VCCI Class A; EN 55022 Class A; VCCI V-3/2000.04; ICES-003 Class A; AS/NZS CISPR22 Class A; EMC Directive 2004/108/EC; FCC (CFR 47, Part 15) Class A	VCCI Class A; EN 55022 Class A; VCCI V-3/2000.04; ICES-003 Class A; AS/NZS CISPR22 Class A; EMC Directive 2004/108/EC; FCC (CFR 47, Part 15) Class A
Immunity			
Generic	ETSI EN 300 386 V1.3.3	ETSI EN 300 386 V1.3.3	ETSI EN 300 386 V1.3.3

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Specifications (continued)

	HP 12504 AC Switch Chassis (JC654A) HP 12504 DC Switch Chassis (JC655A)	HP 12508 AC Switch Chassis (JF431C) HP 12508 DC Switch Chassis (JC652A)	HP 12518 AC Switch Chassis (JF430C) HP 12518 DC Switch Chassis (JC653A)
EN	EN 55024:1998+ A1:2001 + A2:2003	EN 55024:1998+ A1:2001 + A2:2003	EN 55024:1998+ A1:2001 + A2:2003
ESD	EN 61000-4-2; IEC61000-4-2	EN 61000-4-2; IEC61000-4-2	EN 61000-4-2; IEC61000-4-2
Radiated	EN 61000-4-3; IEC61000-4-3	EN 61000-4-3; IEC61000-4-3	EN 61000-4-3; IEC61000-4-3
EFT/Burst	EN 61000-4-4; IEC61000-4-4	EN 61000-4-4; IEC61000-4-4	EN 61000-4-4; IEC61000-4-4
Surge	EN 61000-4-5; IEC61000-4-5	EN 61000-4-5; IEC61000-4-5	EN 61000-4-5; IEC61000-4-5
Conducted	EN 61000-4-6; IEC61000-4-6	EN 61000-4-6; IEC61000-4-6	EN 61000-4-6; IEC61000-4-6
Power frequency magnetic field	IEC 61000-4-8; EN61000-4-8	IEC 61000-4-8; EN61000-4-8	IEC 61000-4-8; EN61000-4-8
Voltage dips and interruptions	EN 61000-4-11; IEC61000-4-11	EN 61000-4-11; IEC61000-4-11	EN 61000-4-11; IEC61000-4-11
Harmonics	EN 61000-3-2, IEC 61000-3-2	EN 61000-3-2, IEC 61000-3-2	EN 61000-3-2, IEC 61000-3-2
Flicker	EN 61000-3-3, IEC 61000-3-3	EN 61000-3-3, IEC 61000-3-3	EN 61000-3-3, IEC 61000-3-3
Management	IMC - Intelligent Management Center; command-line interface; out-of-band management (serial RS-232C); SNMP Manager; Telnet; RMON1; FTP; in-line and out-of-band; terminal interface (serial RS-232C); modem interface	IMC - Intelligent Management Center; command-line interface; out-of-band management (serial RS-232C); SNMP Manager; Telnet; RMON1; FTP; in-line and out-of-band; terminal interface (serial RS-232C); modem interface	IMC - Intelligent Management Center; command-line interface; out-of-band management (serial RS-232C); SNMP Manager; Telnet; RMON1; FTP; in-line and out-of-band; terminal interface (serial RS-232C); modem interface
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.	3-year, 4-hour onsite, 13x5 coverage for hardware (UW984E) 3-year, 4-hour onsite, 24x7 coverage for hardware (UW987E) 3-year, 4-hour onsite, 24x7 coverage for hardware, 24x7 SW phone support and SW updates (UW990E) 3-year, 24x7 SW phone support, software updates (UW993E) Installation with minimum configuration, system-based pricing (UX034E) 4-year, 4-hour onsite, 13x5 coverage for hardware (UW985E) 4-year, 4-hour onsite, 24x7 coverage for hardware (UW988E) 4-year, 4-hour onsite, 24x7 coverage for hardware, 24x7 software phone (UW991E) 4-year, 24x7 SW phone support, software updates (UW994E) 5-year, 4-hour onsite, 13x5 coverage for hardware (UW986E) 5-year, 4-hour onsite, 24x7 coverage for hardware (UW989E) 5-year, 4-hour onsite, 24x7 coverage for hardware, 24x7 software phone (UW992E) 5-year, 24x7 SW phone support, software updates (UW995E) 3 Yr 6 hr Call-to-Repair Onsite (UW996E) 4 Yr 6 hr Call-to-Repair Onsite (UW997E) 5 Yr 6 hr Call-to-Repair Onsite (UW998E) 1-year, 4-hour onsite, 13x5 coverage for hardware (HR494E) 1-year, 4-hour onsite, 24x7 coverage for hardware (HR495E) 1-year, 6 hour Call-To-Repair Onsite for hardware (HR498E) 1-year, 24x7 software phone support, software updates (HR497E) 1-year, 4-hour onsite, 24x7 coverage for hardware, 24x7 software phone support and software updates (HR496E)	3-year, 4-hour onsite, 13x5 coverage for hardware (UX046E) 3-year, 4-hour onsite, 24x7 coverage for hardware (UX049E) 3-year, 4-hour onsite, 24x7 coverage for hardware, 24x7 SW phone support and SW updates (UX052E) 3-year, 24x7 SW phone support, software updates (UX055E) Installation with minimum configuration, system-based pricing (UX034E) 4-year, 4-hour onsite, 13x5 coverage for hardware (UX047E) 4-year, 4-hour onsite, 24x7 coverage for hardware (UX050E) 4-year, 4-hour onsite, 24x7 coverage for hardware, 24x7 software phone (UX053E) 4-year, 24x7 SW phone support, software updates (UX056E) 5-year, 4-hour onsite, 13x5 coverage for hardware (UX048E) 5-year, 4-hour onsite, 24x7 coverage for hardware (UX051E) 5-year, 4-hour onsite, 24x7 coverage for hardware, 24x7 software phone (UX054E) 5-year, 24x7 SW phone support, software updates (UX057E) 3 Yr 6 hr Call-to-Repair Onsite (UX058E) 4 Yr 6 hr Call-to-Repair Onsite (UX059E) 5 Yr 6 hr Call-to-Repair Onsite (UX060E) 1-year, 4-hour onsite, 13x5 coverage for hardware (HR489E) 1-year, 4-hour onsite, 24x7 coverage for hardware (HR490E) 1-year, 6 hour Call-To-Repair Onsite for hardware (HR493E) 1-year, 24x7 software phone support, software updates (HR492E) 1-year, 4-hour onsite, 24x7 coverage for hardware, 24x7 software phone support and software updates (HR491E)

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	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 12500 Switch Series

Specifications (continued)

	HP 12504 AC Switch Chassis (JC654A) HP 12504 DC Switch Chassis (JC655A)	HP 12508 AC Switch Chassis (JF431C) HP 12508 DC Switch Chassis (JC652A)	HP 12518 AC Switch Chassis (JF430C) HP 12518 DC Switch Chassis (JC653A)
Standards and protocols (applies to all products in series)	<p>BGP</p> <p>RFC 1657 Definitions of Managed Objects for BGPv4 RFC 1771 BGPv4 RFC 1772 Application of the BGP RFC 1773 Experience with the BGP-4 Protocol RFC 1774 BGP-4 Protocol Analysis RFC 1965 BGP4 confederations RFC 1997 BGP Communities Attribute RFC 1998 PPP Gandalf FZA Compression Protocol RFC 2385 BGP Session Protection via TCP MD5 RFC 2439 BGP Route Flap Damping RFC 2796 BGP Route Reflection RFC 2842 Capability Advertisement with BGP-4 RFC 2858 BGP-4 Multi-Protocol Extensions RFC 2918 Route Refresh Capability</p> <p>Denial of service protection</p> <p>RFC 2267 Network Ingress Filtering Automatic Filtering of well known Denial of Service Packets CPU DoS Protection Rate Limiting by ACLs</p> <p>Device management</p> <p>RFC 1155 Structure and Mgmt Information (SMIv1) RFC 1157 SNMPv1/v2c RFC 1305 NTPv3 RFC 1945 Hypertext Transfer Protocol -- HTTP/1.0 RFC 2271 FrameWork RFC 2452 MIB for TCP6 RFC 2454 MIB for UDP6 RFC 2573 (SNMPv3 Applications) RFC 2578-2580 SMIv2 RFC 2579 (SMIv2 Text Conventions) RFC 2580 (SMIv2 Conformance) RFC 2819 (RMON groups Alarm, Event, History and Statistics only) RFC 2819 RMON RFC 3417 (SNMP Transport Mappings) SNMP v3 and RMON RFC support SSHv1/SSHv2 Secure Shell TACACS/TACACS+</p> <p>General protocols</p> <p>IEEE 802.1ad Q-in-Q IEEE 802.1ag Service Layer OAM IEEE 802.1ah Provider Backbone Bridges 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 802.1X PAE IEEE 802.3ab 1000BASE-T IEEE 802.3ad Link Aggregation (LAG) IEEE 802.3ae 10-Gigabit Ethernet IEEE 802.3ah Ethernet in First Mile over Point to Point Fiber - EFMF IEEE 802.3i 10BASE-T IEEE 802.3u 100BASE-X IEEE 802.3x Flow Control IEEE 802.3z 1000BASE-X RFC 768 UDP RFC 783 TFTP Protocol (revision 2) RFC 791 IP RFC 792 ICMP RFC 793 TCP RFC 826 ARP RFC 854 TELNET RFC 868 Time Protocol RFC 903 RARP RFC 951 BOOTP</p>	<p>RFC 959 File Transfer Protocol (FTP) RFC 1027 Proxy ARP RFC 1042 IP Datagrams RFC 1350 TFTP Protocol (revision 2) RFC 1519 CIDR RFC 1542 BOOTP Extensions RFC 1812 IPv4 Routing RFC 2131 DHCP RFC 2338 VRRP RFC 2784 Generic Routing Encapsulation (GRE) RFC 2865 Remote Authentication Dial In User Service (RADIUS)</p> <p>IP multicast</p> <p>RFC 1112 IGMP RFC 2236 IGMPv2 RFC 2283 Multiprotocol Extensions for BGP-4 RFC 2362 PIM Sparse Mode RFC 2934 Protocol Independent Multicast MIB for IPv4 RFC 3376 IGMPv3 RFC 3618 Multicast Source Discovery Protocol (MSDP) RFC 4601 PIM Sparse Mode</p> <p>IPv6</p> <p>RFC 1350 TFTP RFC 1981 IPv6 Path MTU Discovery RFC 2080 RIPng for IPv6 RFC 2460 IPv6 Specification RFC 2461 IPv6 Neighbor Discovery RFC 2462 IPv6 Stateless Address Auto-configuration RFC 2463 ICMPv6 RFC 2473 Generic Packet Tunneling in IPv6 RFC 2475 IPv6 DiffServ Architecture RFC 2529 Transmission of IPv6 Packets over IPv4 RFC 2710 Multicast Listener Discovery (MLD) for IPv6 RFC 2740 OSPFv3 for IPv6 RFC 2893 Transition Mechanisms for IPv6 Hosts and Routers RFC 2925 Definitions of Managed Objects for Remote Ping, Traceroute, and Lookup Operations (Ping only) RFC 3315 DHCPv6 (client only) RFC 3484 Default Address Selection for IPv6 RFC 3513 IPv6 Addressing Architecture RFC 3587 IPv6 Global Unicast Address Format RFC 3810 Multicast Listener Discovery Version 2 (MLDv2) for IPv6 RFC 4251 SSHv6 Architecture RFC 4252 SSHv6 Authentication RFC 4253 SSHv6 Transport Layer RFC 4254 SSHv6 Connection RFC 4541 IGMP & MLD Snooping Switch RFC 4862 IPv6 Stateless Address Auto-configuration</p> <p>MIBs</p> <p>IEEE8023-LAG-MIB RFC 1213 MIB II RFC 1229 Interface MIB Extensions RFC 1286 Bridge MIB RFC 1493 Bridge MIB RFC 1573 SNMP MIB II RFC 1643 Ethernet MIB RFC 1657 BGP-4 MIB RFC 1724 RIPv2 MIB RFC 1757 Remote Network Monitoring MIB RFC 1850 OSPFv2 MIB RFC 2011 SNMPv2 MIB for IP RFC 2012 SNMPv2 MIB for TCP RFC 2013 SNMPv2 MIB for UDP RFC 2021 RMONv2 MIB RFC 2096 IP Forwarding Table MIB RFC 2233 Interfaces MIB RFC 2273 SNMP-NOTIFICATION-MIB</p>	<p>RFC 2452 IPV6-TCP-MIB RFC 2454 IPV6-UDP-MIB RFC 2465 IPV6 MIB RFC 2466 ICMPv6 MIB RFC 2571 SNMP Framework MIB RFC 2572 SNMP-MPD MIB RFC 2573 SNMP-Target MIB RFC 2613 SMON MIB RFC 2618 RADIUS Client MIB RFC 2620 RADIUS Accounting MIB RFC 2665 Ethernet-Like-MIB RFC 2674 802.1p and IEEE 802.1Q Bridge MIB RFC 2737 Entity MIB (Version 2) RFC 2787 VRRP MIB RFC 2819 RMON MIB RFC 2863 The Interfaces Group MIB RFC 2925 Ping MIB RFC 2932IP (Multicast Routing MIB) RFC 2933 IGMP MIB RFC 3273 HC-RMON MIB RFC 3414 SNMP-User based-SM MIB RFC 3415 SNMP-View based-ACM MIB RFC 3418 MIB for SNMPv3 RFC 3621 Power Ethernet MIB RFC 3813 MPLS LSR MIB RFC 3814 MPLS FTN MIB RFC 3815 MPLS LDP MIB RFC 3826 AES for SNMP's USM MIB RFC 4133 Entity MIB (Version 3) LLDP-EXT-DOT1-MIB LLDP-EXT-DOT3-MIB LLDP-MIB</p> <p>MPLS</p> <p>RFC 2205 Resource ReSerVation Protocol (RSVP) - Version 1 Functional Specification RFC 2209 Resource ReSerVation Protocol (RSVP) RFC 2702 Requirements for Traffic Engineering Over MPLS RFC 2858 Multiprotocol Extensions for BGP-4 RFC 3031 Multiprotocol Label Switching Architecture RFC 3032 MPLS Label Stack Encoding RFC 3036 LDP Specification RFC 3107 Carrying Label Information in BGP-4 RFC 3209 RSVP-TE: Extensions to RSVP for LSP Tunnels RFC 3479 Fault Tolerance for the Label Distribution Protocol (LDP) RFC 3487 Graceful Restart Mechanism for LDP RFC 4090 Fast Reroute Extensions to RSVP-TE for LSP Tunnels RFC 4364 BGP/MPLS IP Virtual Private Networks (VPNs) RFC 4379 Detecting Multi-Protocol Label Switched (MPLS) Data Plane Failures RFC 4447 Pseudowire Setup and Maintenance Using LDP RFC 4448 Encapsulation Methods for Transport of Ethernet over MPLS Networks RFC 4664 Framework for Layer 2 Virtual Private Networks RFC 4665 Service Requirements for Layer 2 Provider Provisioned Virtual Private Networks RFC 4761 Virtual Private LAN Service (VPLS) Using BGP for Auto-Discovery and Signaling RFC 4762 Virtual Private LAN Service (VPLS) Using Label Distribution Protocol (LDP) Signaling</p> <p>Network management</p> <p>IEEE 802.1AB Link Layer Discovery Protocol (LLDP) IEEE 802.1D (STP) RFC 1155 Structure of Management Information RFC 1157 SNMPv1 RFC 1215 SNMP Generic traps RFC 1757 RMON 4 groups: Stats, History, Alarms and</p>

HP 12500 Switch Series

Specifications (continued)

	HP 12504 AC Switch Chassis (JC654A) HP 12504 DC Switch Chassis (JC655A)	HP 12508 AC Switch Chassis (JF431C) HP 12508 DC Switch Chassis (JC652A)	HP 12518 AC Switch Chassis (JF430C) HP 12518 DC Switch Chassis (JC653A)
Standards and protocols (applies to all products in series)	RFC 2211 Controlled-Load Network RFC 2272 SNMPv3 Management Protocol RFC 2273 SNMPv3 Applications RFC 2274 USM for SNMPv3 RFC 2571 SNMP Management Frameworks RFC 2572 SNMPv3 Message Processing RFC 2573 SNMPv3 Applications RFC 2576 Coexistence between SNMP versions RFC 2578 SMIv2 RFC 2819 Four groups of RMON: 1 (statistics), 2 (history), 3 (alarm) and 9 (events) RFC 3164 BSD syslog Protocol RFC 3415 SNMPv3 View-based Access Control Model (VACM) ANSI/TIA-1057 LLDP Media Endpoint Discovery (LLDP-MED) SNMPv1/v2c/v3 OSPF RFC 1245 OSPF protocol analysis RFC 1246 Experience with OSPF RFC 1587 OSPF NSSA RFC 1765 OSPF Database Overflow RFC 1850 OSPFv2 Management Information Base (MIB),	traps RFC 2328 OSPFv2 RFC 2370 OSPF Opaque LSA Option RFC 3101 OSPF NSSA RFC 3623 Graceful OSPF Restart QoS/CoS IEEE 802.1P (CoS) RFC 2212 Guaranteed Quality of Service RFC 2474 DS Field in the IPv4 and IPv6 Headers RFC 2475 DiffServ Architecture RFC 2597 DiffServ Assured Forwarding (AF) RFC 2598 DiffServ Expedited Forwarding (EF) RFC 2697 A Single Rate Three Color Marker RFC 2698 A Two Rate Three Color Marker Bi-directional Rate Shaping Security IEEE 802.1X Port Based Network Access Control RFC 1321 The MD5 Message-Digest Algorithm RFC 2082 RIP-2 MD5 Authentication	RFC 2104 Keyed-Hashing for Message Authentication RFC 2716 PPP EAP-TLS Authentication Protocol RFC 2865 RADIUS Authentication RFC 2866 RADIUS Accounting RFC 2867 RADIUS Accounting Modifications for Tunnel Protocol Support RFC 2868 RADIUS Attributes for Tunnel Protocol Support RFC 2869 RADIUS Extensions RFC 3567 Intermediate System (IS) to IS Cryptographic Authentication Access Control Lists (ACLs) Guest VLAN for 802.1x MAC Authentication SSHv2 Secure Shell Web Authentication IKEv1 RFC 2865 - Remote Authentication Dial In User Service (RADIUS)

HP 12500 Switch Series accessories

Modules

HP 12500 Main Processing Unit (JC072B)
HP 12500 48-port Gig-T LEB Module (JC074B)
HP 12500 48-port Gig-T LEC Module (JC065B)
HP 12500 48-port GbE SFP LEB Module (JC075B)
HP 12500 48-port GbE SFP LEC Module (JC069B)
HP 12500 48-port GbE SFP LEF Module (JC660A)
HP 12500 8-port 10GbE XFP LEB Module (JC073B)
HP 12500 8-port 10GbE XFP LEC Module (JC068B)
HP 12500 8-port 10GbE SFP+ LEB Module (JC780A)
HP 12500 8-port 10GbE SFP+ LEC Module (JC781A)
HP 12500 8-port 10GbE SFP+ LEF Module (JC659A)
HP 12500 16-port 10GbE SFP+ LEB Module (JC782A)
HP 12500 16-port 10GbE SFP+ LEC Module (JC783A)
HP 12500 32-port 10GbE SFP+ REB Module (JC064B)
HP 12500 32-port 10GbE SFP+ REC Module (JC476B)
HP 12500 Power Monitor Module (JC502A)

Transceivers

HP X120 100M/1G SFP LC LX Transceiver (JF832A)
HP X114 100M SFP LC FX Transceiver (JF833A)
HP X125 1G SFP LC LH40 1310nm Transceiver (JD061A)
HP X120 1G SFP LC LH40 1550nm Transceiver (JD062A)
HP X125 1G SFP LC LH70 Transceiver (JD063B)
HP X120 1G SFP RJ45 T Transceiver (JD089B)
HP X120 1G SFP LC BX 10-U Transceiver (JD098B)
HP X120 1G SFP LC BX 10-D Transceiver (JD099B)
HP X120 1G SFP LC LH100 Transceiver (JD103A)
HP X170 1G SFP LC LH70 1550 Transceiver (JD109A)
HP X170 1G SFP LC LH70 1570 Transceiver (JD110A)
HP X170 1G SFP LC LH70 1590 Transceiver (JD111A)
HP X170 1G SFP LC LH70 1610 Transceiver (JD112A)
HP X170 1G SFP LC LH70 1470 Transceiver (JD113A)
HP X170 1G SFP LC LH70 1490 Transceiver (JD114A)
HP X170 1G SFP LC LH70 1510 Transceiver (JD115A)
HP X170 1G SFP LC LH70 1530 Transceiver (JD116A)
HP X120 1G SFP LC SX Transceiver (JD118B)
HP X120 1G SFP LC LX Transceiver (JD119B)
HP X130 10G XFP LC ZR Transceiver (JD107A)
HP X130 10G XFP LC LR Transceiver (JD108B)
HP X130 10G XFP LC SR Transceiver (JD117B)
HP X135 10G XFP LC ER Transceiver (JD121A)
HP X180 10G XFP LC LH 80km 1538.98nm DWDM Transceiver (JG226A)
HP X180 10G XFP LC LH 80km 1539.77nm DWDM Transceiver (JG227A)
HP X180 10G XFP LC LH 80km 1540.56nm DWDM Transceiver (JG228A)
HP X180 10G XFP LC LH 80km 1542.14nm DWDM Transceiver (JG229A)
HP X180 10G XFP LC LH 80km 1542.94nm DWDM Transceiver (JG230A)

HP X180 10G XFP LC LH 80km 1558.98nm DWDM Transceiver (JG231A)
HP X180 10G XFP LC LH 80km 1559.79nm DWDM Transceiver (JG232A)
HP X180 10G XFP LC LH 80km 1560.61nm DWDM Transceiver (JG233A)
HP X130 10G SFP+ LC SR Transceiver (JD092B)
HP X130 10G SFP+ LC LRM Transceiver (JD093B)
HP X130 10G SFP+ LC LR Transceiver (JD094B)
HP X130 10G SFP+ LC ER 40km Transceiver (JG234A)
HP X240 10G SFP+ to SFP+ 3m Direct Attach Copper Cable (JD097C)
HP X240 10G SFP+ to SFP+ 5m Direct Attach Copper Cable (JG081C)
HP X240 10G SFP+ SFP+ 7m Direct Attach Copper Cable (JC784C)

Cables

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)

Mounting Kit

HP X421 Chassis Universal 4-post Rack Mounting Kit (JC665A)

Appliance

HP 12500 VPN Firewall Module (JC635A)

Memory

HP X600 1G Compact Flash Card (JC684A)
HP 12500 additional 1 GB SDRAM DDR2 (JC071A)

HP 12504 AC Switch Chassis (JC654A)

HP 1250x G2 Fabric Module (JC658A)
HP 12500 AC Power Entry Module (JF426A)
HP 12500 2000W AC Power Supply (JF429A)
HP 12504 Fan Assembly (JC664A)

HP 12504 DC Switch Chassis (JC655A)

HP 1250x G2 Fabric Module (JC658A)
HP X210 10-meter JG Connector to Bare 6AWG 37800 Watt 72V DC Power Cable (JG280A)
HP 12500 1800W DC Power Supply (JC651A)
HP 12504 Fan Assembly (JC664A)

HP 12508 AC Switch Chassis (JF431C)

HP 12508 Fabric Module (JC067B)
HP 1250x G2 Fabric Module (JC658A)
HP 12508 Top and Bottom Cable Guides for AC Powered Switch (JC785A)
HP 12500 Side Cable Management Guide (JC084A)
HP 12500 2000W AC Power Supply (JF429A)
HP 12500 AC Power Entry Module (JF426A)
HP 12508 Fan Assembly (JC081A)
HP 12508 Optional Air Filter (JC082A)

HP 12500 Switch Series accessories (continued)

HP 12508 DC Switch Chassis (JC652A)

HP 12508 Fabric Module (JC067B)
HP 1250x G2 Fabric Module (JC658A)
HP 12508 Top and Bottom Cable Guides for DC Powered Switch (JC787A)
HP 12500 Side Cable Management Guide (JC084A)
HP X210 10-meter JG Connector to Bare 6AWG 37800 Watt 72V DC Power Cable (JG280A)
HP 12500 1800W DC Power Supply (JC651A)
HP 12508 Fan Assembly (JC081A)
HP 12508 Optional Air Filter (JC082A)

HP 12518 AC Switch Chassis (JF430C)

HP 12518 G2 Fabric Module (JC657A)
HP 12518 Fabric Module (JC066A)
HP 12518 Top and Bottom Cable Guides for AC Powered Switch (JC786A)
HP 12500 Side Cable Management Guide (JC084A)
HP 12500 2000W AC Power Supply (JF429A)
HP 12500 AC Power Entry Module (JF426A)
HP 12518 Fan Assembly (JC080A)
HP 12518 Optional Air Filter (JC083A)

HP 12518 DC Switch Chassis (JC653A)

HP 12518 G2 Fabric Module (JC657A)
HP 12518 Fabric Module (JC066A)
HP 12518 Top and Bottom Cable Guides for DC Powered Switch (JC788A)
HP 12500 Side Cable Management Guide (JC084A)
HP X210 10-meter JG Connector to Bare 6AWG 37800 Watt 72V DC Power Cable (JG280A)
HP 12500 1800W DC Power Supply (JC651A)
HP 12518 Fan Assembly (JC080A)
HP 12518 Optional Air Filter (JC083A)



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.

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