HPE 10500 TAA-Compliant Switch Series

Product overview

The HPE 10500 TAA-Compliant Switch Series sets a new benchmark for performance, reliability, and scalability with next-generation Clos architecture.

Designed for enterprise campus core networks, the HPE 10500 TAA-compliant Switch Series enables a cloud-connected and media-rich infrastructure. The switches provide industry-leading 10GbE/40GbE port density, 3-microsecond latency, and very low energy consumption. With HPE Intelligent Resilient Framework (IRF) technology, the scalability and resiliency of the HPE 10500 switches can be extended and virtualized across up to four chassis with a single management interface, enabling flatter, more agile networks.

The HPE 10500 TAA-compliant Switch Series, along with the entire HPE FlexNetwork architecture, can be seamlessly managed through the single-pane-of-glass HPE Intelligent Management Center (IMC).

A summary of the highlights of the 10500 TAA-Compliant Switch Series
• Advanced, next-generation Clos architecture

• More than 11 terabits-per-second switching capacity

• Feature-rich, with IPv6 and MPLS functionality

• HPE IRF technology, which virtualizes up to four chassis

• Ultra-high 1/10/40GbE density; 100GbE ready

Features and benefits

Product architecture
• Advanced Comware modular operating system

  Brings native high stability, independent process monitoring, and restart through the modular design and multiple processes of HPE Comware v7 software; allows individual software modules to be upgraded for higher availability; and supports enhanced serviceability functions

• In-service software upgrade (ISSU)

  Enables upgrade of the entire chassis or an individual task or process, with zero packet loss

• Distributed architecture with separation of data and control

  Delivers enhanced fault tolerance; and facilitates continuous operation and zero service disruption during planned or unplanned control-plane events

Data center optimized
• Multitenant Device Context (MDC)

  Virtualizes a physical switch into multiple logical devices, enabling multi-tenancy, with each logical switch having its own tenants

Performance
• High-speed, fully distributed architecture

  Provides up to 11.52 Tb/s switching capacity with released line cards and up to 13.72 Tb/s switching fabric capacity with Type D fabric; the modules provide non-blocking wire-speed 10GbE/40GbE performance; with four fabrics, the switch delivers up to 8.571 billion pps throughput; all switching and routing is performed in the I/O modules; meets the demand of bandwidth-intensive applications today and in the future

• Scalable system design

  Provides investment protection to support future technologies and higher-speed connectivity, as the switch is designed for increased backplane bandwidth

• Flexible chassis selection

  Enables you to tailor product selections to your budget with a choice of four chassis: the HPE 10504 Switch (four open-module slots), HPE 10508 Switch (eight open-module slots), HPE 10508-V Switch (eight vertical open-module slots), and HPE 10512 Switch (12 open-module slots)

Connectivity
• High-density port connectivity

  Offers up to 12 interface module slots; and provides up to 96 40GbE ports, 576 10GbE ports, and 576 gigabit fiber/electrical ports per system

• Jumbo frames

  Allow high-performance backups and disaster-recovery systems; and provide a maximum frame size of 9K bytes

• Loopback

  Supports internal loopback testing for maintenance purposes and an increase in availability; loopback detection protects against incorrect cabling or network configurations, and it can be enabled on a per-port or per-VLAN basis for added flexibility

• Ethernet operations, administration, and maintenance (OAM)

  Detects data link-layer problems that occurred in the "last mile," using the IEEE 802.3ah OAM standard; and monitors the status of the link between two devices

- Flexible port selection

  Provides a combination of fiber and copper interface modules, 100/1000BASE-X auto-speed selection, 10/100/1000BASE-T auto-speed detection, as well as auto duplex and MDI/MDI-X

- Monitor link

  Collects statistics on performance and errors on physical links, increasing system availability (Comware v5 only)

- Dual-personality functionality

  Includes four 10/100/1000 ports or SFP slots for optional fiber connectivity, such as Gigabit- SX, -LX, and -LH or 100-FX

- Packet storm protection

  Protects against unknown broadcast, unknown multicast, or unicast storms with user-defined thresholds

- Flow control

  Provides back pressure using standard IEEE 802.3x, reducing congestion in heavy-traffic situations

Quality of Service (QoS)

- IEEE 802.1p prioritization

  Delivers data to devices, based on the priority and type of traffic

- Class of Service (CoS)

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

- Bandwidth shaping

  – Port-based rate limiting

    Provides per-port ingress/egress-enforced increased bandwidth

  – Classifier-based rate limiting

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

  – Reduced bandwidth

    Provides per-port, per-queue egress-based reduced bandwidth

- Traffic policing

  Supports committed access rate (CAR) and line rate

- Weighted random early detection (WRED)/random early detection (RED)

  Delivers congestion avoidance capabilities through the use of queue management algorithms

- Powerful QoS feature

  Supports the following congestion actions: strict priority (SP) queuing, weighted round robin (WRR), weighted fair queuing (WFQ), and WRED

Resiliency and high availability

- Redundant/load-sharing fabrics, management, fan assemblies, and power supplies Increase total performance and power availability, while providing hitless, stateful failover

- Hot-swappable modules

  Allows replacement of modules without any impact on other modules

- Separate data and control paths

  Separates control from services and keeps service processing isolated; and increases security and performance

- Passive design system

  Delivers increased system reliability as the backplane has no active components

- 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 Link Aggregation Control Protocol (LACP) for automatic load balancing and high availability; can eliminate the need for complex protocols such as Spanning Tree Protocol (STP), Equal-Cost Multipath (ECMP), or VRRP—thereby simplifying network operation

- IRF capability

  Provides single IP address management for a resilient virtual switching fabric of up to four switches

- Rapid Ring Protection Protocol (RRPP)

  Provides standard sub-100ms recovery for ring-based Ethernet topology (Comware v5 only)

- Virtual Router Redundancy Protocol (VRRP)

  Allows groups of two routers to dynamically back each other up to create highly available routed environments

- Device Link Detection Protocol (DLDP)

  Monitors link connectivity and shuts down ports at both ends if unidirectional traffic is detected, helping prevent loops in STP-based networks

- Hitless patch upgrades

  Allows patches and new service features to be installed without restarting the equipment, increasing network uptime and facilitating maintenance

- IEEE 802.3ad Link Aggregation Control Protocol (LACP)

  Supports up to 128 trunks, each with eight links per trunk; and supports static or dynamic groups and a user-selectable hashing algorithm

- Graceful restart

  Supports graceful restart for open shortest path first (OSPF), intermediate system to intermediate system (IS-IS), Border Gateway Protocol (BGP), Label Distribution Protocol (LDP), and RSVP; the network remains stable during the active-standby switchover; after the switchover, the device quickly learns the network routes by communicating with adjacent routers; forwarding remains uninterrupted during the switchover to achieve nonstop forwarding (NSF)

- Ultrafast protocol convergence (subsecond) with standard-based failure detection—Bidirectional Forwarding Detection (BFD)

  Enables link connectivity monitoring; and reduces network convergence time for Routing Information Protocol (RIP), OSPF, BGP, IS-IS, VRRP, MPLS, and IRF

- Smart link

  Allows 100 ms failover between links (Comware v5 only)

- Multiple internal power supplies

Provides high reliability; the 10504 switch provides 3+1 redundancy; and the 10508, 10508-V, and 10512 switches provide 5+1 redundancy

- In-Service Software Upgrade (ISSU)

Applies patches and new service features to be installed without restarting the system, increasing network uptime and simplifying maintenance. Requires use of IRF, and R7169P01 or later releases.

Virtual private network (VPN)

- IPSec

Provides secure tunneling over an untrusted network, such as the Internet or a wireless network; and offers data confidentiality, authenticity, and integrity between two network endpoints

- Generic Routing Encapsulation (GRE)

Transports L2 connectivity over an L3 path in a secured way; and enables the segregation of traffic from site to site

- Manual or automatic Internet Key Exchange (IKE)

Provides both manual or automatic key exchange required for the algorithms used in encryption or authentication; auto-IKE allows automated management of the public key exchange, providing the highest levels of encryption

- **NEW** Virtual Extensible LAN (VXLAN):

Network virtualization enabling IP-based networks to support many VLAN overlays for use as private collaboration network, or a single, end-to-end VLAN for Wi-Fi. Requires Comware v7 with specific hardware only. Refer to the hardware manuals for details.

Management

- Management interface control

Enables or disables each of the following interfaces, depending on security preferences: console port, telnet port, or reset button

- Industry-standard CLI with a hierarchical structure

Reduces training time and expenses; and increases productivity in multivendor installations

- Management security

Restricts access to critical configuration commands; and offers multiple privilege levels with password protection; ACLs provide telnet and SNMP access; and local and remote syslog capabilities allow logging of all access

- SNMPv1, v2, and v3

Provide complete support of SNMP and full support of industry-standard Management Information Base (MIB) plus private extensions; SNMPv3 supports increased security, using encryption

- sFlow® (RFC 3176)

Provides scalable ASIC-based wire-speed network monitoring and accounting with no impact on network performance; this allows network operators to gather a variety of sophisticated network statistics and information for capacity planning and real-time network monitoring purposes

- Remote monitoring (RMON)

Uses standard SNMP to monitor essential network functions; and supports events, alarm, history, and a statistics group as well as a private alarm extension group

• FTP, Trivial FTP (TFTP), and Secure File Transfer Protocol (SFTP) support

Offers different mechanisms for configuration updates; FTP allows bidirectional transfers over a TCP/IP network; TFTP is a simpler method using User Datagram Protocol (UDP); and SFTP runs over an SSH tunnel to provide additional security

• Debug and sampler utility

Supports ping and traceroute for both IPv4 and IPv6

• Network Time Protocol (NTP)

Synchronizes timekeeping among distributed time servers and clients; and maintains consistent timekeeping among all clock-dependent devices within the network—so that the devices can provide diverse applications, based on the consistent time

• Network Quality Analyzer (NQA)

Analyzes network performance and service quality by sending test packets; provides network performance and service quality parameters such as jitter, TCP, or FTP connection delays and file transfer rates; and allows a network manager to determine the overall network performance and to diagnose and locate network congestion points or failures

• Information center

Provides a central repository for system and network information; aggregates all logs, traps, and debugging information generated by the system and maintains them in the order of severity; and sends out the network information to multiple channels, based on user-defined rules

• IEEE 802.1AB Link Layer Discovery Protocol (LLDP)

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

• Dual flash images

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

• Multiple configuration files

Stores easily to the flash image

L2 switching
• VLAN

Supports up to 4,094 port-based or IEEE 802.1Q-based VLANs; also supports media access control (MAC)-based VLANs, protocol-based VLANs, and IP-subnet-based VLANs for added flexibility (Comware v7 only supports port-based VLANs)

• Port isolation

Increases security by isolating ports within a VLAN, while still allowing them to communicate with other VLANs

• Bridge Protocol Data Unit (BPDU) tunneling

Transmits STP BPDUs transparently, allowing correct tree calculations across service providers, WANs, or MANs

• GARP VLAN Registration Protocol

Allows automatic learning and dynamic assignment of VLANs (Comware v5 only)

• Port mirroring

Duplicates port traffic (ingress and egress) to a local or remote monitoring port; and supports four mirroring groups, with an unlimited number of ports per group

- STP

  Supports standard IEEE 802.1D STP, IEEE 802.1w Rapid STP (RSTP) for faster convergence, and IEEE 802.1s Multiple STP (MSTP)

- Internet Group Management Protocol (IGMP) and Multicast Listener Discovery (MLD) protocol snooping

  Controls and manages the flooding of multicast packets in an L2 network

- IEEE 802.1ad Q-in-Q and selective Q-in-Q

  Increase the scalability of an Ethernet network by providing a hierarchical structure; and connect multiple LANs on a high-speed campus or metro network

- Per-VLAN Spanning Tree Plus (PVST+)

  Allows each VLAN to build a separate spanning tree to improve link bandwidth usage in network environments with multiple VLANs (Comware v5 only)

- Isolation at data-link layer with private VLANs

  Provides—through a two-tier VLAN structure—an additional layer of protection, simplifying network configuration while saving VLAN resources

Layer 3 services
- Address Resolution Protocol (ARP)

  Determines the MAC address of another IP host in the same subnet; and supports static ARPs; gratuitous ARP allows detection of duplicate IP addresses; and proxy ARP allows normal ARP operation between subnets or when subnets are separated by an L2 network

- User Datagram Protocol (UDP) helper

  Redirects UDP broadcasts to specific IP subnets to help prevent server spoofing

- Dynamic Host Configuration Protocol (DHCP)

  Simplifies the management of large IP networks; and supports the client and server; DHCP Relay enables DHCP operation across subnets

- Domain Name System (DNS)

  Provides a distributed database that translates domain names and IP addresses, which simplifies network design; and supports the client and server

L3 routing
- Static IPv4 routing

  Provides simple manually configured IPv4 routing

- Routing Information Protocol (RIP)

  Uses a distance vector algorithm with UDP packets for route determination; supports RIPv1 and RIPv2 routing; and includes loop protection

- Open shortest path first (OSPF)

  Delivers faster convergence; and uses the link-state routing Interior Gateway Protocol (IGP), which supports ECMP, NSSA, and MD5 authentication for increased security and graceful restart for faster failure recovery

- IS-IS

  Uses a path vector IGP, which is defined by the ISO organization for IS-IS routing and extended by IETF RFC 1195 to operate in both TCP/IP and the OSI reference model (integrated IS-IS)

- BGP-4

  Delivers an implementation of the Exterior Gateway Protocol (EGP), utilizing path vectors; uses TCP for enhanced reliability for the route discovery process; reduces bandwidth consumption by advertising only incremental updates; supports extensive policies for increased flexibility; and scales to very large networks

- Policy-based routing

  Makes routing decisions, based on policies set by the network administrator

- IP performance optimization

  Provides a set of tools to improve the performance of IPv4 networks; and includes directed broadcasts, customization of TCP parameters, support of ICNP error packets, and extensive display capabilities

- Unicast Reverse Path Forwarding (uRPF)

  Limits erroneous or malicious traffic, in accordance with RFC 3074

- Static IPv6 routing

  Provides simple manually configured IPv6 routing

- Dual IP stack

  Maintains separate stacks for IPv4 and IPv6 to ease the transition from an IPv4-only network design to an IPv6-only network design

- Routing Information Protocol next generation (RIPng)

  Extends RIPv2 to support IPv6 addressing

- OSPFv3

  Provides OSPF support for IPv6

- IS-IS for IPv6

  Extends IS-IS to support IPv6 addressing

- BGP+

  Extends BGP-4 to support Multiprotocol BGP (MBGP), including support for IPv6 addressing

- Multiprotocol Label Switching (MPLS)

  Uses BGP to advertise routes across Label Switched Paths (LSPs); but uses simple labels to forward packets from any L2 or L3 protocol, which reduces complexity and increases performance; enables graceful restart for reduced failure impact; and supports LSP tunneling and multilevel stacks

- Multiprotocol Label Switching (MPLS) L3 VPN

  Allows L3 VPNs across a provider network; uses MBGP to establish private routes for increased security; and supports RFC 2547bis multiple autonomous system VPNs for added flexibility

- Multiprotocol Label Switching (MPLS) L2 VPN

  Establishes simple L2 point-to-point VPNs across a provider network, using only MPLS LDP; requires no routing, and therefore decreases complexity, increases performance, and allows VPNs of non-routable protocols; uses no routing information for increased security; and supports Circuit Cross Connect (CCC), Static Virtual Circuits (SVCs), Martini draft, and Kompella-draft technologies

- Virtual Private LAN Service (VPLS)

  Establishes point-to-multipoint L2 VPNs across a provider network

- Super VLAN

  Saves the IP address space, using the RFC 3069 standard (also called VLAN Aggregation)

- Equal-Cost Multipath (ECMP)

  Enables multiple equal-cost links in a routing environment to increase link redundancy and scale bandwidth

- IPv6 tunneling

  Is an important element for the transition from IPv4 to IPv6; allows IPv6 packets to traverse IPv4-only networks by encapsulating the IPv6 packet into a standard IPv4 packet; and supports manually configured, 6-to-4, Intra-Site Automatic Tunnel Addressing Protocol (ISATAP) tunnels and IPv6 on VPN to Provider Edge (6VPE) router tunnels

Security

- Access control list (ACL)

  Supports powerful ACLs for both IPv4 and IPv6; ACLs are used for filtering traffic to help prevent unauthorized users from accessing the network or for controlling network traffic to save resources; rules can either deny or permit traffic to be forwarded; rules can be based on an L2 header or an L3 protocol header; and rules can be set to operate on specific dates or times

- Remote Authentication Dial-In User Service (RADIUS)

  Eases switch security access administration by using a password authentication server

- Terminal Access Controller Access-Control System (TACACS+)

  Delivers an authentication tool, using TCP with encryption of the full authentication request, providing additional security

- Switch management logon security

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

- Secure shell (SSHv2)

  Uses external servers to securely log in to a remote device; with authentication and encryption, it protects against IP spoofing and plain-text password interception; and increases the security of SFTP transfers

- DHCP snooping

  Helps ensure that DHCP clients receive IP addresses from authorized DHCP servers and maintain a list of DHCP entries for trusted ports; and helps prevent reception of fake IP addresses and reduces ARP attacks, improving security

- IP Source Guard

  Filters packets on a per-port basis, which helps prevent illegal packets from being forwarded

- ARP attack protection

  Protects against attacks that use a large number of ARP requests by using a host-specific, user-selectable threshold

- Port security

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

- IEEE 802.1X support

  Provides port-based user authentication with support for Extensible Authentication Protocol (EAP) MD5, TLS, TTLS, and PEAP with choice of AES, TKIP, and static or dynamic WEP encryption—for protecting wireless traffic between authenticated clients and the access point

- Media access control (MAC) authentication

  Provides simple authentication, based on a user's MAC address; and supports local or RADIUS-based authentication

- Multiple user authentication methods

  – IEEE 802.1X

    Uses an IEEE 802.1X supplicant on the client, in conjunction with a RADIUS server, to authenticate in accordance with industry standards

  – Web-based authentication

    Provides a browser-based environment, similar to IEEE 802.1X, to authenticate clients that do not support the IEEE 802.1X supplicant

  – MAC-based authentication

    Authenticates the client with the RADIUS server, based on the client's MAC address

- DHCP protection

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

- Endpoint Admission Defense (EAD)

  Assigns security policies to users accessing a network

- Port isolation

  Secures and adds privacy; and helps prevent malicious attackers from obtaining user information

Convergence

- LLDP-MED (Media Endpoint Discovery)

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

- Multicast Source Discovery Protocol (MSDP)

  Allows multiple PIM-SM domains to interoperate; is used for inter-domain multicast applications

- Internet Group Management Protocol (IGMP)

  Utilizes Any-Source Multicast (ASM) or Source-Specific Multicast (SSM) to manage IPv4 multicast networks; and supports IGMPv1, v2, and v3

- Protocol Independent Multicast (PIM)

  Defines modes of Internet IPv4 and IPv6 multicasting to allow one-to-many and many-to-many transmission of information; and supports PIM Dense Mode (DM), Sparse Mode (SM), and Source-Specific Mode (SSM)

- Multicast Border Gateway Protocol

  Allows multicast traffic to be forwarded across BGP networks and kept separate from unicast traffic

- MLD protocol

  Establishes, maintains, and manages IPv6 multicast groups and networks; supports v1 and v2; and utilizes Any-Source Multicast (ASM) or Source-Specific Multicast (SSM)

- Multicast VLAN

  Allows multiple VLANs to receive the same IPv4 or IPv6 multicast traffic, lessening network bandwidth demand by mitigating multiple streams to each VLAN

• Voice VLAN

Automatically assigns VLAN and priority for IP phones, simplifying network configuration and maintenance (Comware v5 only)

Integration
• Open Application Architecture (OAA)

Provides high-performance application-specific modules fully integrated with the switching architecture; uses the chassis high-speed backplane to access network-related data; and increases performance, reduces costs, and simplifies network management

• VPN 20Gbps 10500 Firewall module

Provides enhanced stateful packet inspection and filtering; supports flexible security zones and virtual firewall containment; delivers advanced VPN services with 3DES and AES encryption at high performance and low latency; and offers Web content filtering and application prioritization and optimization

Software-defined networking
• **NEW** OpenFlow 1.3

Enables SDN to provide an end-to-end solution to automate the network, allowing for rapid application deployments (Comware v7 only)

Additional information
• Green initiative support

Provides support for RoHS and WEEE regulations

• OPEX savings

Simplifies and streamlines deployment, management, and training through the use of a common operating system—thereby cutting costs as well as reducing the risk of human errors associated with having to manage multiple operating systems across different platforms and network layers

• Unified HPE Comware operating system with modular architecture

Provides an easy-to-enhance-and-extend feature set, which doesn't require whole-scale changes; all switching, routing, and security platforms leverage the Comware OS, a common unified modular operating system

Warranty and support
– 1-year Warranty

See **hpe.com/networking/warrantysummary** for warranty and support information included with your product purchase.

– Software releases

To find software for your product, refer to **hpe.com/networking/support**; for details on the software releases available with your product purchase, refer to **hpe.com/networking/warrantysummary**

HPE 10500 TAA-compliant Switch Series

Specifications

	HPE 10512 SWITCH TAA-COMPLIANT CHASSIS (JG823A)	HPE 10508-V SWITCH TAA-COMPLIANT CHASSIS (JG822A)
I/O ports and slots	2 MPU (for management modules) slots 4 switch fabric slots 12 I/O module slots Supports a maximum of 576 10GbE ports or 576 Gigabit Ethernet ports or 576 SFP ports or 96 40GbE ports, or a combination	2 MPU (for management modules) slots 4 switch fabric slots 8 I/O module slots Supports a maximum of 384 10GbE ports or 384 Gigabit Ethernet ports or 384 SFP ports or 64 40GbE ports, or a combination
Power supplies	6 power supply slots 1 minimum power supply required (ordered separately)	6 power supply slots 1 minimum power supply required (ordered separately)
Fan tray	includes: 1 x JC758A, JC773A 2 fan tray slots	includes: 1 x JC634A 1 fan tray slot
Physical characteristics Weight Full configuration weight	17.32(w) x 25.98(d) x 31.38(h) in (44.0 x 66.0 x 79.7 cm) (18U height) 166.23 lb (75.4 kg) chassis 380.95 lb (172.8 kg)	17.32(w) x 25.98(d) x 31.38(h) in (44.0 x 66.0 x 79.7 cm) (18U height) 169.53 lb (76.9 kg) chassis 331.31 lb (150.28 kg)
Memory and processor Management module	Dual Core MIPS @ 1.2 GHz, 512 MB flash, 8 GB DDR2 SDRAM.	Dual Core MIPS @ 1.2 GHz, 512 MB flash, 8 GB DDR2 SDRAM
Mounting and enclosure	Mounts in an EIA standard 19-inch rack or other equipment cabinet (hardware included); horizontal surface mounting only	Mounts in an EIA standard 19-inch rack or other equipment cabinet (hardware included); horizontal surface mounting only
Reliability Availability	99.999%	99.999%
Environment Operating temperature Operating relative humidity Nonoperating/Storage temperature Nonoperating/Storage relative humidity Altitude Acoustic	32°F to 113°F (0°C to 45°C) 10% to 95%, noncondensing -40°F to 158°F (-40°C to 70°C) 5% to 95%, noncondensing up to 13,123 ft (4 km) Low-speed fan: 66 dB, High-speed fan: 79 dB	32°F to 113°F (0°C to 45°C) 10% to 95%, noncondensing -40°F to 158°F (-40°C to 70°C) 5% to 95%, noncondensing up to 13,123 ft (4 km) Low-speed fan: 61.6 dB, High-speed fan: 72.6 dB

	HPE 10512 SWITCH TAA-COMPLIANT CHASSIS (JG823A)	HPE 10508-V SWITCH TAA-COMPLIANT CHASSIS (JG822A)
Electrical characteristics		
Frequency	50/60 Hz	50/60 Hz
AC voltage	100–120/200–240 VAC	100–120/200–240 VAC
DC voltage	-48 to -60 VDC	-48 to -60 VDC
Current	16/60 A	16/60 A
Power output	2500 W	2500 W
	Notes	
	Based on common power supply 2,500 W (AC)	Based on common power supply 2,500 W (AC)
Safety	CAN/CSA 22.2 No. 60950-1; FCC Part 15, Subpart B; FDA 21 CFR Subchapter J; ROHS Compliance; IEC 60950-1 :Second Edition ; EN 60950-1:2006 + A11:2009; AS/NZS 60950-1; IEC 60825-1; UL 60950-1, 2nd Edition; EN60825-2:2004+A1:2007	CAN/CSA 22.2 No. 60950-1; FCC Part 15, Subpart B; FDA 21 CFR Subchapter J; ROHS Compliance; IEC 60950-1 :Second Edition ; EN 60950-1:2006 + A11:2009; AS/NZS 60950-1; IEC 60825-1; UL 60950-1, 2nd Edition; EN60825-2:2004+A1:2007
Emissions	VCCI Class A; EN 55022 Class A; CISPR 22 Class A; IEC/EN 61000-3-2; IEC/EN 61000-3-3; ICES-003 Class A; AS/NZS CISPR 22 Class A; FCC (CFR 47, Part 15) Class A; GB9254	VCCI Class A; EN 55022 Class A; CISPR 22 Class A; IEC/EN 61000-3-2; IEC/EN 61000-3-3; ICES-003 Class A; AS/NZS CISPR 22 Class A; FCC (CFR 47, Part 15) Class A; GB9254
Immunity		
Generic	Directive 2004/108/EC	Directive 2004/108/EC
EN	EN 55024:1998+ A1:2001 + A2:2003; ETSI EN 300 386 V1.3.3	EN 55024:1998+ A1:2001 + A2:2003; ETSI EN 300 386 V1.3.3
ESD	EN 61000-4-2	EN 61000-4-2
Radiated	EN 61000-4-3	EN 61000-4-3
EFT/Burst	EN 61000-4-4	EN 61000-4-4
Surge	EN 61000-4-5	EN 61000-4-5
Conducted	EN 61000-4-6	EN 61000-4-6
Power frequency magnetic field	IEC 61000-4-8	IEC 61000-4-8
Voltage dips and interruptions	EN 61000-4-11	EN 61000-4-11
Harmonics	EN 61000-3-2, IEC 61000-3-2	EN 61000-3-2, IEC 61000-3-2
Flicker	EN 61000-3-3, IEC 61000-3-3	EN 61000-3-3, IEC 61000-3-3
Management	IMC - Intelligent Management Center; command-line interface; out-of-band management (serial RS-232C); SNMP Manager; Telnet; terminal interface (serial RS-232C); modem interface; IEEE 802.3 Ethernet MIB; Ethernet Interface MIB	IMC - Intelligent Management Center; command-line interface; out-of-band management (serial RS-232C); SNMP Manager; Telnet; terminal interface (serial RS-232C); modem interface; IEEE 802.3 Ethernet MIB; Ethernet Interface MIB
Notes	RFCs supported only in Comware v7: 1541,1542,1981,2080,2460,2464,2473,2474,2545,2711,2863,2868,3315,3413,3416, 3484,3575,3736,3810,3956,4123,4271,4291,4292,4293,4443,4552,4607,4659, 4798,4861,4862,5080,5095,5340,5492,5905 and 6192 Throughput: Up to 8.6BPPS Type D/2.9BPPS Type B Fabric; Switching Capacity: Up to 13.8Tbps Type D/6.0Tbps Type B Fabric; Routing Table: Up to 256K/64K IPv4/IPv6 with the EC LPU; MAC Address Table: Up to 256K with the EC LPU	RFCs supported only in Comware v7: 1541,1542,1981,2080,2460,2464,2473,2474,2545,2711,2863,2868,3315,3413,3416, 3484,3575,3736,3810,3956,4123,4271,4291,4292,4293,4443,4552,4607,4659, 4798,4861,4862,5080,5095,5340,5492,5905 and 6192 Throughput: Up to 5.7BPPS Type D/1.9BPPS Type B Fabric; Switching Capacity: Up to 9.3Tbps Type D/4.2Tbps Type B Fabric; Routing Table: Up to 256K/64K IPv4/IPv6 with the EC LPU; MAC Address Table: Up to 256K with the EC LPU
Services	Refer to the Hewlett Packard Enterprise website at **hpe.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 HPE sales office.	Refer to the Hewlett Packard Enterprise website at **hpe.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 HPE sales office.

	HPE 10508 SWITCH TAA-COMPLIANT CHASSIS (JG821A)	HPE 10504 SWITCH TAA-COMPLIANT CHASSIS (JG820A)
I/O ports and slots	2 MPU (for management modules) slots 4 switch fabric slots 8 I/O module slots Supports a maximum of 384 10GbE ports or 384 Gigabit Ethernet ports or 384 SFP ports or 64 40GbE ports, or a combination	2 MPU (for management modules) slots 4 switch fabric slots 4 I/O module slots Supports a maximum of 192 10GbE ports or 192 Gigabit Ethernet ports or 192 SFP ports or 32 40GbE ports, or a combination
Power supplies	6 power supply slots 1 minimum power supply required (ordered separately)	4 power supply slots 1 minimum power supply required (ordered separately)
Fan tray	includes: 1 x JC633A 1 fan tray slot	includes: 1 x JC632A 1 fan tray slot
Physical characteristics Weight Full configuration weight	17.32(w) x 25.98(d) x 24.41(h) in (43.99 x 65.99 x 62 cm) (14U height) 125 lb (56.7 kg) chassis 285.34 lb (129.43 kg)	17.32(w) x 25.98(d) x 13.9(h) in (43.99 x 65.99 x 35.31 cm) (8U height) 85.32 lb (38.7 kg) chassis 183.14 lb (83.07 kg)
Memory and processor Management module	Dual Core MIPS @ 1.2 GHz, 512 MB flash, 8 GB DDR2 SDRAM.	Dual Core MIPS @ 1.2 GHz, 512 MB flash, 8 GB DDR2 SDRAM
Mounting and enclosure	Mounts in an EIA standard 19-inch rack or other equipment cabinet (hardware included); horizontal surface mounting only	Mounts in an EIA standard 19-inch rack or other equipment cabinet (hardware included); horizontal surface mounting only
Reliability Availability	99.999%	99.999%
Environment Operating temperature Operating relative humidity Nonoperating/Storage temperature Nonoperating/Storage relative humidity Altitude Acoustic	32°F to 113°F (0°C to 45°C) 10% to 95%, noncondensing -40°F to 158°F (-40°C to 70°C) 5% to 95%, noncondensing up to 13,123 ft (4 km) Low-speed fan: 63 dB, High-speed fan: 75.8 dB	32°F to 113°F (0°C to 45°C) 10% to 95%, noncondensing -40°F to 158°F (-40°C to 70°C) 5% to 95%, noncondensing up to 13,123 ft (4 km) Low-speed fan: 62.3 dB, High-speed fan: 75.5 dB

	HPE 10508 SWITCH TAA-COMPLIANT CHASSIS (JG821A)	HPE 10504 SWITCH TAA-COMPLIANT CHASSIS (JG820A)
Electrical characteristics		
Frequency	50/60 Hz	50/60 Hz
AC voltage	100–120/200–240 VAC	100–120/200–240 VAC
DC voltage	-48 to -60 VDC	-48 to -60 VDC
Current	16/60 A	16/60 A
Power output	2500 W	2500 W
	Notes	
	Based on common power supply 2,500 W (AC)	Based on common power supply 2,500 W (AC)
Safety	CAN/CSA 22.2 No. 60950-1; FCC Part 15, Subpart B; FDA 21 CFR Subchapter J; ROHS Compliance; IEC 60950-1 :Second Edition ; EN 60950-1:2006 + A11:2009; AS/NZS 60950-1; IEC 60825-1; UL 60950-1, 2nd Edition; EN60825-2:2004+A1:2007	CAN/CSA 22.2 No. 60950-1; FCC Part 15, Subpart B; FDA 21 CFR Subchapter J; ROHS Compliance; IEC 60950-1 :Second Edition ; EN 60950-1:2006 + A11:2009; AS/NZS 60950-1; IEC 60825-1; UL 60950-1, 2nd Edition; EN60825-2:2004+A1:2007
Emissions	VCCI Class A; EN 55022 Class A; CISPR 22 Class A; IEC/EN 61000-3-2; IEC/EN 61000-3-3; ICES-003 Class A; AS/NZS CISPR 22 Class A; FCC (CFR 47, Part 15) Class A; GB9254	VCCI Class A; EN 55022 Class A; CISPR 22 Class A; IEC/EN 61000-3-2; IEC/EN 61000-3-3; ICES-003 Class A; AS/NZS CISPR 22 Class A; FCC (CFR 47, Part 15) Class A; GB9254
Immunity		
Generic	Directive 2004/108/EC	Directive 2004/108/EC
EN	EN 55024:1998+ A1:2001 + A2:2003; ETSI EN 300 386 V1.3.3	EN 55024:1998+ A1:2001 + A2:2003; ETSI EN 300 386 V1.3.3
ESD	EN 61000-4-2	EN 61000-4-2
Radiated	EN 61000-4-3	EN 61000-4-3
EFT/Burst	EN 61000-4-4	EN 61000-4-4
Surge	EN 61000-4-5	EN 61000-4-5
Conducted	EN 61000-4-6	EN 61000-4-6
Power frequency magnetic field	IEC 61000-4-8	IEC 61000-4-8
Voltage dips and interruptions	EN 61000-4-11	EN 61000-4-11
Harmonics	EN 61000-3-2, IEC 61000-3-2	EN 61000-3-2, IEC 61000-3-2
Flicker	EN 61000-3-3, IEC 61000-3-3	EN 61000-3-3, IEC 61000-3-3
Management	IMC-Intelligent Management Center; command-line interface; out-of-band management (serial RS-232C); SNMP Manager; Telnet; terminal interface (serial RS-232C); modem interface; IEEE 802.3 Ethernet MIB; Ethernet Interface MIB	IMC-Intelligent Management Center; command-line interface; out-of-band management (serial RS-232C); SNMP Manager; Telnet; terminal interface (serial RS-232C); modem interface; IEEE 802.3 Ethernet MIB; Ethernet Interface MIB
Notes	RFCs supported only in Comware v7: 1541,1542,1981,2080,2460,2464,2473,2474,2545,2711,2863,2868,3315,3413,3416, 3484,3575,3736,3810,3956,4123,4271,4291,4292,4293,4443,4552,4607,4659, 4798,4861,4862,5080,5095,5340,5492,5905 and 6192 Throughput: Up to 5.7BPPS Type D/1.9BPPS Type B Fabric; Switching Capacity: Up to 9.3Tbps Type D/4.2Tbps Type B Fabric; Routing Table: Up to 256K/64K IPv4/IPv6 with the EC LPU; MAC Address Table: Up to 256K with the EC LPU	RFCs supported only in Comware v7: 1541,1542,1981,2080,2460,2464,2473,2474,2545,2711,2863,2868,3315,3413,3416, 3484,3575,3736,3810,3956,4123,4271,4291,4292,4293,4443,4552,4607,4659, 4798,4861,4862,5080,5095,5340,5492,5905 and 6192 Throughput: Up to 2.9 BPPS Type D and 1.9 BPPS Type B Fabric; Switching Capacity: Up to 4.8Tbps Type D and 3.5 Tbps Type B Fabric; Routing Table size: Up to 256K/64K IPv4/IPv6 with the EC LPU; MAC Address Table: Up to 512K with the EC LPU
Services	Refer to the Hewlett Packard Enterprise website at **hpe.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 HPE sales office.	Refer to the Hewlett Packard Enterprise website at **hpe.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 HPE sales office.

STANDARDS AND PROTOCOLS
(Applies to all products in series)

BGP	RFC 1771 BGPv4	RFC 2858 BGP-4 Multi-Protocol Extensions	RFC 4275 BGP-4 MIB Implementation Survey
	RFC 1772 Application of the BGP	RFC 2918 Route Refresh Capability	RFC 4276 BGP-4 Implementation Report
	RFC 1997 BGP Communities Attribute	RFC 3065 Autonomous System Confederations	RFC 4277 Experience with the BGP-4 Protocol
	RFC 1998 PPP Gandalf FZA Compression	for BGP	RFC 4360 BGP Extended Communities Attribute
	Protocol	RFC 3392 Capabilities Advertisement with	RFC 4456 BGP Route Reflection: An Alternative
	RFC 2385 BGP Session Protection via TCP MD5	BGP-4	to Full Mesh Internal BGP (IBGP)
	RFC 2439 BGP Route Flap Damping	RFC 4271 A Border Gateway Protocol 4 (BGP-4)	RFC 5291 Outbound Route Filtering Capability
	RFC 2796 BGP Route Reflection	RFC 4272 BGP Security Vulnerabilities Analysis	for BGP-4
		RFC 4273 Definitions of Managed Objects for	RFC 5292 Address-Prefix-Based Outbound
		BGP-4	Route Filter for BGP-4
		RFC 4274 BGP-4 Protocol Analysis	RFC 5492 Capabilities Advertisement with BGP-4
Denial of service protection	RFC 2267 Network Ingress Filtering	Automatic filtering of well-known denial-of-service packets	Rate Limiting by ACLs
		CPU DoS Protection	
Device management	RFC 1157 SNMPv1/v2c	RFC 2579 (SMIv2 Text Conventions)	Multiple Configuration Files
	RFC 1305 NTPv3	RFC 2580 (SMIv2 Conformance)	Multiple Software Images
	RFC 1902 (SNMPv2)	RFC 2580 (SMIv2 Conformance) telnet	SSHv1/SSHv2 Secure Shell
		RFC 2819 (RMON groups Alarm, Event, History	TACACS/TACACS+
		and Statistics only)	
		HTTP, SSHv1, and Telnet	
General protocols	IEEE 802.1ad Q-in-Q	RFC 1042 IP Datagrams	RFC 2464 Transmission of IPv6 Packets over
	IEEE 802.1ag Service Layer OAM	RFC 1058 RIPv1	Ethernet Networks
	IEEE 802.1AX-2008 Link Aggregation	RFC 1142 OSI IS-IS Intra-domain Routing Protocol	RFC 2474 Definition of the Differentiated Services
	IEEE 802.1p Priority	RFC 1195 OSI ISIS for IP and Dual Environments	Field (DS Field) in the IPv4 and IPv6 Headers
	IEEE 802.1Q VLANs	RFC 1213 Management Information Base	RFC 2644 Directed Broadcast Control
	IEEE 802.1s Multiple Spanning Trees	for Network Management of TCP/IP-based internets	RFC 2711 IPv6 Router Alert Option
	IEEE 802.1w Rapid Reconfiguration of	RFC 1256 ICMP Router Discovery Protocol (IRDP)	RFC 2763 Dynamic Name-to-System ID
	Spanning Tree	RFC 1293 Inverse Address Resolution Protocol	mapping support
	IEEE 802.1X PAE	RFC 1305 NTPv3	RFC 2784 Generic Routing Encapsulation (GRE)
	IEEE 802.3ab 1000BASE-T	RFC 1350 TFTP Protocol (revision 2)	RFC 2865 Remote Authentication Dial In User
	IEEE 802.3ac (VLAN Tagging Extension)	RFC 1393 Traceroute Using an IP Option	Service (RADIUS)
	IEEE 802.3ad Link Aggregation Control	RFC 1519 CIDR	RFC 2868 RADIUS Attributes for Tunnel Protocol
	Protocol (LACP)	RFC 1531 Dynamic Host Configuration	Support
	IEEE 802.3ae 10-Gigabit Ethernet	Protocol	RFC 2966 Domain-wide Prefix Distribution with
	IEEE 802.3ah Ethernet in First Mile over Point	RFC 1533 DHCP Options and BOOTP Vendor	Two-Level IS-IS
	to Point Fiber—EFMF	Extensions	RFC 2973 IS-IS Mesh Groups
	IEEE 802.3ba 40 and 100 Gigabit Ethernet	RFC 1591 DNS (client only)	RFC 3022 Traditional IP Network Address
	Architecture	RFC 1624 Incremental Internet Checksum	Translator (Traditional NAT)
	IEEE 802.3x Flow Control	RFC 1701 Generic Routing Encapsulation	RFC 3277 IS-IS Transient Blackhole Avoidance
	IEEE 802.3z 1000BASE-X	RFC 1721 RIP-2 Analysis	RFC 3413 Simple Network Management
	RFC 768 UDP	RFC 1723 RIP v2	Protocol (SNMP) Applications
	RFC 783 TFTP Protocol (revision 2)	RFC 1812 IPv4 Routing	RFC 3416 Protocol Operations for SNMP
	RFC 791 IP	RFC 2030 Simple Network Time Protocol	RFC 3484 Default Address Selection for
	RFC 792 ICMP	(SNTP) v4	Internet Protocol version 6 (IPv6)
	RFC 793 TCP	RFC 2082 RIP-2 MD5 Authentication	RFC 3567 Intermediate System to Intermediate
	RFC 826 ARP	RFC 2091 Trigger RIP	System (IS-IS) Cryptographic Authentication
	RFC 854 TELNET	RFC 2131 DHCP	RFC 3575 IANA Considerations for RADIUS
	RFC 894 IP over Ethernet	RFC 2138 Remote Authentication Dial In User	RFC 3719 Recommendations for Interoperable
	RFC 903 RARP	Service (RADIUS)	Networks using Intermediate System to
	RFC 906 TFTP Bootstrap	RFC 2236 IGMP Snooping	Intermediate System (IS-IS)
	RFC 925 Multi-LAN Address Resolution	RFC 2338 VRRP	RFC 3736 Stateless Dynamic Host
	RFC 950 Internet Standard Subnetting	RFC 2453 RIPv2	Configuration Protocol (DHCP) Service for IPv6
	Procedure	RFC 2460 IPv6	RFC 3784 IS-IS TE support
	RFC 959 File Transfer Protocol (FTP)		RFC 3786 Extending the Number of IS-IS LSP
	RFC 1027 Proxy ARP		Fragments Beyond the 256 Limit
	RFC 1035 Domain Implementation and		
	Specification		

STANDARDS AND PROTOCOLS

(Applies to all products in series)

General protocols	RFC 3787 Recommendations for Interoperable IP Networks using Intermediate System to Intermediate System (IS-IS) RFC 3847 Restart signaling for IS-IS RFC 3956 Embedding the Rendezvous Point (RP) Address in an IPv6 Multicast Address RFC 4123: Session Initiation Protocol (SIP)-H.323 Interworking Requirements RFC 4251 The Secure Shell (SSH) Protocol Architecture RFC 4271 A Border Gateway Protocol 4 (BGP-4) RFC 4291 IP Version 6 Addressing Architecture RFC 4292 IP Forwarding Table MIB RFC 4293 Management Information Base for the Internet Protocol (IP)	RFC 4443 Internet Control Message Protocol (ICMPv6) for the Internet Protocol Version 6 (IPv6) Specification RFC 4486 Subcodes for BGP Cease Notification Message RFC 4552 Authentication/Confidentiality for OSPFv3 RFC 4607 Source-Specific Multicast for IP RFC 4659 BGP-MPLS IP Virtual Private Network (VPN) Extension for IPv6 VPN RFC 4798 Connecting IPv6 Islands over IPv4 MPLS Using IPv6 Provider Edge Routers (6PE) RFC 4861 Neighbor Discovery for IP version 6 (IPv6)	RFC 4862 IPv6 Stateless Address Autoconfiguration RFC 4884 Extended ICMP to Support Multi-Part Messages RFC 4941 Privacy Extensions for Stateless Address Auto-configuration in IPv6 RFC 5095 Deprecation of Type 0 Routing Headers in IPv6 RFC 5130 A Policy Control Mechanism in IS-IS Using Administrative Tags RFC 5340 OSPF for IPv6 RFC 5492 Capabilities Advertisement with BGP-4 RFC 5905 Network Time Protocol Version 4: Protocol and Algorithms Specification
IP multicast	RFC 2236 IGMPv2 RFC 2283 Multiprotocol Extensions for BGP-4 RFC 2362 PIM Sparse Mode RFC 3376 IGMPv3	RFC 3446 Anycast Rendezvous Point (RP) mechanism using Protocol Independent Multicast (PIM) and Multicast Source Discovery Protocol (MSDP) RFC 3618 Multicast Source Discovery Protocol (MSDP) RFC 3973 PIM Dense Mode RFC 4541 Considerations for Internet Group Management Protocol (IGMP) and Multicast Listener Discovery (MLD) Snooping Switches RFC 4601 PIM Sparse Mode	RFC 4604 Using Internet Group Management Protocol Version 3 (IGMPv3) and Multicast Listener Discovery Protocol Version 2 (MLDv2) for Source-Specific Multicast RFC 4605 IGMP/MLD Proxying RFC 4607 Source-Specific Multicast for IP RFC 5059 Bootstrap Router (BSR) Mechanism for Protocol Independent Multicast (PIM)
IPv6	RFC 1886 DNS Extension for IPv6 RFC 1887 IPv6 Unicast Address Allocation Architecture RFC 1981 IPv6 Path MTU Discovery RFC 2080 RIPng for IPv6 RFC 2081 RIPng Protocol Applicability Statement RFC 2292 Advanced Sockets API for IPv6 RFC 2373 IPv6 Addressing Architecture RFC 2375 IPv6 Multicast Address Assignments RFC 2460 IPv6 Specification RFC 2461 IPv6 Neighbor Discovery RFC 2462 IPv6 Stateless Address Autoconfiguration	RFC 2463 ICMPv6 RFC 2464 Transmission of IPv6 over Ethernet Networks RFC 2473 Generic Packet Tunneling in IPv6 RFC 2526 Reserved IPv6 Subnet Anycast Addresses RFC 2529 Transmission of IPv6 Packets over IPv4 RFC 2545 Use of MP-BGP-4 for IPv6 RFC 2553 Basic Socket Interface Extensions for IPv6 RFC 2710 Multicast Listener Discovery (MLD) for IPv6 RFC 2740 OSPFv3 for IPv6 RFC 2767 Dual stacks IPv4 & IPv6 RFC 2893 Transition Mechanisms for IPv6 Hosts and Routers	RFC 3056 Connection of IPv6 Domains via IPv4 Clouds RFC 3307 IPv6 Multicast Address Allocation RFC 3315 DHCPv6 (client and relay) RFC 3484 Default Address Selection for IPv6 RFC 3513 IPv6 Addressing Architecture RFC 3736 Stateless Dynamic Host Configuration Protocol (DHCP) Service for IPv6 RFC 3810 MLDv2 for IPv6 RFC 4214 Intra-Site Automatic Tunnel Addressing Protocol (ISATAP) RFC 4861 IPv6 Neighbor Discovery RFC 4862 IPv6 Stateless Address Autoconfiguration
MIBs	RFC 1156 (TCP/IP MIB) RFC 1157 A Simple Network Management Protocol (SNMP) RFC 1215 A Convention for Defining Traps for use with the SNMP RFC 1229 Interface MIB Extensions RFC 1493 Bridge MIB RFC 1573 SNMP MIB II RFC 1643 Ethernet MIB RFC 1657 BGP-4 MIB RFC 1724 RIPv2 MIB RFC 1907 SNMPv2 MIB RFC 2011 SNMPv2 MIB for IP RFC 2012 SNMPv2 MIB for TCP RFC 2013 SNMPv2 MIB for UDP RFC 2096 IP Forwarding Table MIB RFC 2233 Interface MIB	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-Notification MIB RFC 2573 SNMP-Target MIB RFC 2578 Structure of Management Information Version 2 (SMIv2) RFC 2580 Conformance Statements for SMIv2 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 2787 VRRP MIB RFC 2819 RMON MIB	RFC 2925 Ping MIB RFC 2932IP (Multicast Routing MIB) RFC 2933 IGMP MIB RFC 2934 Protocol Independent Multicast MIB for IPv4 RFC 3414 SNMP-User based-SM MIB RFC 3415 SNMP-View based-ACM MIB RFC 3417 Simple Network Management Protocol (SNMP) over IEEE 802 Networks RFC 3418 MIB for SNMPv3 RFC 3595 Textual Conventions for IPv6 Flow Label 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) RFC 4444 Management Information Base for Intermediate System to Intermediate System (IS-IS)

STANDARDS AND PROTOCOLS

(Applies to all products in series)

MPLS	RFC 2205 Resource ReSerVation Protocol RFC 2209 Resource ReSerVation Protocol (RSVP) RFC 2702 Requirements for Traffic Engineering Over MPLS RFC 2858 Multiprotocol Extensions for BGP-4 RFC 2961 RSVP Refresh Overhead Reduction Extensions RFC 3031 Multiprotocol Label Switching Architecture RFC 3032 MPLS Label Stack Encoding RFC 3107 Carrying Label Information in BGP-4	RFC 3212 Constraint-Based LSP Setup using LDP RFC 3479 Fault Tolerance for the Label Distribution Protocol (LDP) RFC 3487 Graceful Restart Mechanism for LDP RFC 3564 Requirements for Support of Differentiated Service-aware MPLS Traffic Engineering 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 RFC 5036 LDP Specification
Network management	IEEE 802.1AB Link Layer Discovery Protocol (LLDP) RFC 1155 Structure of Management Information RFC 1157 SNMPv1	RFC 1448 Protocol Operations for version 2 of the Simple Network Management Protocol (SNMPv2) RFC 2211 Controlled-Load Network RFC 2819 Four groups of RMON: 1 (statistics), 2 (history), 3 (alarm) and 9 (events) RFC 3176 sFlow	RFC 3411 SNMP Management Frameworks RFC 3412 SNMPv3 Message Processing RFC 3414 SNMPv3 User-based Security Model (USM) RFC 3415 SNMPv3 View-based Access Control Model VACM)
OSPF	RFC 1245 OSPF protocol analysis RFC 1246 Experience with OSPF RFC 1765 OSPF Database Overflow RFC 1850 OSPFv2 Management Information Base (MIB), traps RFC 2154 OSPF w/ Digital Signatures (Password, MD-5) RFC 2328 OSPFv2 RFC 2370 OSPF Opaque LSA Option	RFC 3101 OSPF NSSA RFC 3137 OSPF Stub Router Advertisement RFC 3623 Graceful OSPF Restart RFC 3630 Traffic Engineering Extensions to OSPFv2 RFC 4061 Benchmarking Basic OSPF Single Router Control Plane Convergence RFC 4062 OSPF Benchmarking Terminology and Concepts	RFC 4063 Considerations When Using Basic OSPF Convergence Benchmarks RFC 4222 Prioritized Treatment of Specific OSPF Version 2 Packets and Congestion Avoidance RFC 4577 OSPF as the Provider/Customer Edge Protocol for BGP/MPLS IP Virtual Private Networks (VPNs) RFC 4811 OSPF Out-of-Band LSDB Resynchronization RFC 4812 OSPF Restart Signaling RFC 4813 OSPF Link-Local Signaling RFC 4940 IANA Considerations for OSPF
QoS/CoS	IEEE 802.1P (CoS) RFC 1349 Type of Service in the Internet Protocol Suite	RFC 2211 Specification of the Controlled-Load Network Element Service RFC 2212 Guaranteed Quality of Service RFC 2474 DSCP DiffServ	RRFC 2475 DiffServ Architecture RFC 2597 DiffServ Assured Forwarding (AF) RFC 2598 DiffServ Expedited Forwarding (EF)
Security	IEEE 802.1X Port Based Network Access Control RFC 1321 The MD5 Message-Digest Algorithm RFC 1334 PPP Authentication Protocols (PAP) RFC 1492 TACACS+ RFC 1994 PPP Challenge Handshake Authentication Protocol (CHAP)	RFC 2082 RIP-2 MD5 Authentication RFC 2104 Keyed-Hashing for Message Authentication RFC 2408 Internet Security Association and Key Management Protocol (ISAKMP) RFC 2409 The Internet Key Exchange (IKE) RFC 2716 PPP EAP TLS Authentication Protocol RFC 2865 RADIUS Authentication	RFC 2866 RADIUS Accounting RFC 2868 RADIUS Attributes for Tunnel Protocol Support RFC 2869 RADIUS Extensions Access Control Lists (ACLs) Guest VLAN for 802.1x MAC Authentication Port Security RFC 5080: Common Remote Authentication Dial In User Service (RADIUS) Implementation issues and Suggested Fixes
VPN	RFC 2403-HMAC-MD5-96 RFC 2404-HMAC-SHA1-96	RFC 2405-DES-CBC Cipher algorithm RFC 2407-Domain of interpretation RFC 2547 BGP/MPLS VPNs	RFC 2917 A Core MPLS IP VPN Architecture RFC 3947-Negotiation of NAT-Traversal in the IKE RFC 4302-IP Authentication Header (AH)
IPSec	RFC 1828 IP Authentication using Keyed MD5 RFC 1829 The ESP DES-CBC Transform	RFC 2085 HMAC-MD5 IP Authentication with Replay Prevention RFC 2401 IP Security Architecture RFC 2402 IP Authentication Header	RFC 2406 IP Encapsulating Security Payload RFC 2410-The NULL Encryption Algorithm and its use with IPSec RFC 2411 IP Security Document Roadmap

HPE 10500 TAA-compliant Switch Series accessories

Modules	HPE 10500 44-port GbE (SFP,LC)/4-port 10GbE SFP+ (SFP+,LC) SE TAA Module (JH199A) HPE 10500 48-port Gig-T (RJ45) SE TAA Module (JH200A) HPE 10500 24-port 10GbE SFP+ (SFP+,LC) EC TAA Module (JH202A) HPE 10500 6-port 40GbE QSFP+ EC TAA Module (JH203A) HPE 10500 48-port 10GbE SFP+ (SFP+,LC) SG TAA Module (JH205A) HPE 10500 Type D Main Processing Unit with Comware v7 Operating System TAA Module (JH206A) HPE 10500 Type D Fabric Module TAA (JG339A) HPE 10500 24-port 1/10GBASE-T SF TAA-compliant Module (JG395A) HPE 10500 32-port 10GbE SFP+ SF TAA-compliant Module (JG344A) HPE 10500 48-port 10GbE SFP+ SF TAA-compliant Module (JG345A) HPE 7500 4-port 40GbE CFP SC Module (JG373A) HPE 10500 8-port 40GbE QSFP+ SF TAA-compliant Module (JG393A) HPE 10500 4-port 40GbE CFP SF TAA-compliant Module (JG397A
Transceivers	HPE X110 100M SFP LC FX Transceiver (JD102B) HPE X110 100M SFP LC LX Transceiver (JD120B) HPE X110 100M SFP LC LH40 Transceiver (JD090A) HPE X110 100M SFP LC LH80 Transceiver (JD091A) HPE X115 100M SFP LC BX 10-D Transceiver (JD101A) HPE X115 100M SFP LC BX 10-U Transceiver (JD100A) HPE X120 1G SFP RJ45 T Transceiver (JD089B) HPE X120 1G SFP LC SX Transceiver (JD118B) HPE X120 1G SFP LC LX Transceiver (JD119B) HPE X125 1G SFP LC LH40 1310nm Transceiver (JD061A) HPE X120 1G SFP LC LH40 1550nm Transceiver (JD062A) HPE X125 1G SFP LC LH70 Transceiver (JD063B) HPE X120 1G SFP LC LH100 Transceiver (JD103A) HPE X120 1G SFP LC BX 10-D Transceiver (JD099B) HPE X120 1G SFP LC BX 10-U Transceiver (JD098B) HPE X170 1G SFP LC LH70 1470 Transceiver (JD113A) HPE X170 1G SFP LC LH70 1490 Transceiver (JD114A) HPE X170 1G SFP LC LH70 1510 Transceiver (JD115A) HPE X170 1G SFP LC LH70 1530 Transceiver (JD116A) HPE X170 1G SFP LC LH70 1550 Transceiver (JD109A) HPE X170 1G SFP LC LH70 1570 Transceiver (JD110A) HPE X170 1G SFP LC LH70 1590 Transceiver (JD111A) HPE X170 1G SFP LC LH70 1610 Transceiver (JD112A) HPE X130 10G SFP+ LC SR Transceiver (JD092B) HPE X130 10G SFP+ LC LRM Transceiver (JD093B) HPE X130 10G SFP+ LC LR Transceiver (JD094B) HPE X130 10G SFP+ LC ER 40km Transceiver (JG234A) HPE X240 10G SFP+ to SFP+ 0.65m Direct Attach Copper Cable (JD095C) HPE X240 10G SFP+ to SFP+ 1.2m Direct Attach Copper Cable (JD096C) HPE X240 10G SFP+ to SFP+ 3m Direct Attach Copper Cable (JD097C) HPE X240 10G SFP+ to SFP+ 5m Direct Attach Copper Cable (JG081C) HPE X240 10G SFP+ SFP+ 7m Direct Attach Copper Cable (JC784C) HPE X130 10G XFP LC SR Transceiver (JD117B) HPE X130 10G XFP LC LR Transceiver (JD108B) HPE X135 10G XFP LC ER Transceiver (JD121A) HPE X130 10G XFP LC ZR Transceiver (JD107A) HPE X180 10G XFP LC LH 80km 1538.98nm DWDM Transceiver (JG226A) HPE X180 10G XFP LC LH 80km 1539.77nm DWDM Transceiver (JG227A) HPE X180 10G XFP LC LH 80km 1540.56nm DWDM Transceiver (JG228A) HPE X180 10G XFP LC LH 80km 1542.14nm DWDM Transceiver (JG229A) HPE X180 10G XFP LC LH 80km 1542.94nm DWDM Transceiver (JG230A) HPE X180 10G XFP LC LH 80km 1558.98nm DWDM Transceiver (JG231A) HPE X180 10G XFP LC LH 80km 1559.79nm DWDM Transceiver (JG232A) HPE X180 10G XFP LC LH 80km 1560.61nm DWDM Transceiver (JG233A)

HPE 10500 TAA-compliant Switch Series accessories (continued)

Transceivers	HPE X140 40G CSR4 QSFP+ MPO MMF 300m/400m 850nm Transceiver (JG709A) HPE X140 40G SR4 QSFP+ MPO MMF 300m 850nm Transceiver (JG325B) HPE X240 40G QSFP+ to QSFP+ 1m Direct Attach Copper Cable (JG326A) HPE X240 40G QSFP+ to QSFP+ 3m Direct Attach Copper Cable (JG327A) HPE X240 40G QSFP+ to QSFP+ 5m Direct Attach Copper Cable (JG328A) HPE X240 40G QSFP+ to 4x10G SFP+ 1m Direct Attach Copper Splitter Cable (JG329A) HPE X240 40G QSFP+ to 4x10G SFP+ 3m Direct Attach Copper Splitter Cable (JG330A) HPE X240 40G QSFP+ to 4x10G SFP+ 5m Direct Attach Copper Splitter Cable (JG331A) HPE X140 40G CFP LC LR4 10km SM Transceiver (JC857A) HPE X140 40G QSFP+ LC LR4 SM 10km 1310nm Transceiver (JG661A) HPE X140 40G QSFP+ LC BiDi 100m MM Transceiver (JL251A)
Power Supply	HPE 10500 2500W AC Power Supply (JC610A) HPE 10500 2400W DC Power Supply (JC747A)
Mounting Kit	HPE X421 Chassis Universal 4-post Rack Mounting Kit (JC665A)
Power cords	HPE 10500 -48V 3m DC Power Supply Cable (JG390A) HPE 10500 -48V 15m DC Power Supply Cable (JG391A)
HPE 10512 Switch TAA-compliant Chassis (JG823A)	HPE 10512 1.52Tbps Type B Fabric TAA-compliant Module (JG338A) HPE 10512 Spare Top Fan Tray Assembly (JC758A) HPE 10512 Spare Bottom Fan Tray Assembly (JC773A)
HPE 10508-V Switch TAA-compliant Chassis (JG822A)	HPE 10508/10508-V 1.04Tbps Type B Fabric TAA-compliant Module (JG342A) HPE 10508/10508-V 2.32Tbps Type D Fabric TAA-compliant Module (JG343A) HPE 10508-V Spare Fan Assembly (JC634A)
HPE 10508 Switch TAA-compliant Chassis (JG821A)	HPE 10508/10508-V 1.04Tbps Type B Fabric TAA-compliant Module (JG342A) HPE 10508/10508-V 2.32Tbps Type D Fabric TAA-compliant Module (JG343A) HPE 10508 Spare Fan Assembly (JC633A)
HPE 10504 Switch TAA-compliant Chassis (JG820A)	HPE 10504 880Gbps Type B Fabric TAA-compliant Module (JG340A) HPE 10504 1.2Tbps Type D Fabric TAA-compliant Module (JG341A) HPE 10504 Spare Fan Assembly (JC632A)

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