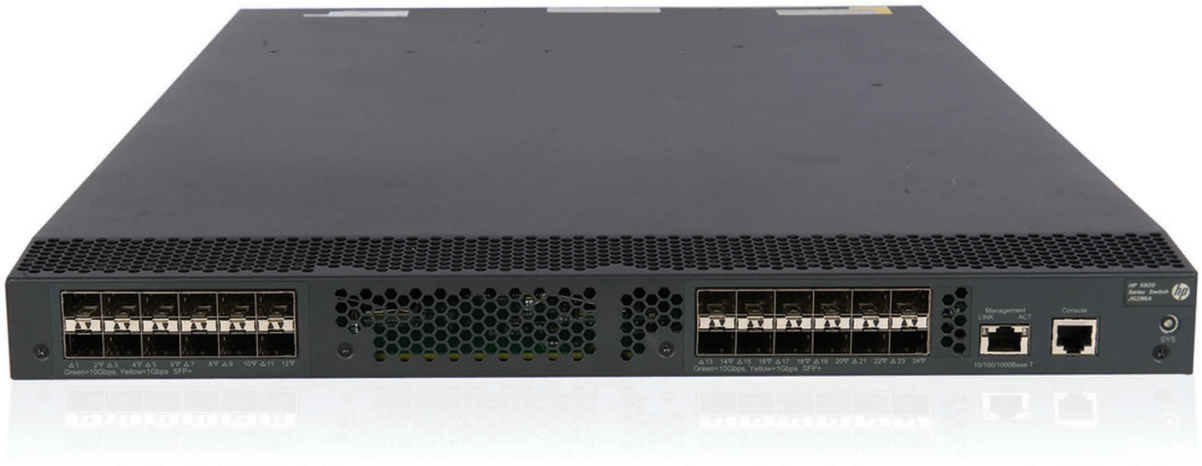
Hewlett Packard Enterprise

Data sheet

HPE 5920 Switch Series



Key features

- Ultra-deep packet buffering
- HPE IRF for virtualization and a 2-tier architecture
- High 10GbE ToR port density
- IPv6 support in ToR with full L2/L3 features
- TRILL and VEPA readiness for virtualized networks

Product overview

The HPE 5920 Switch Series is made up of high-density 10GbE, ultra-deep packet buffering, top-of-rack (ToR) switches. These switches are part of the HPE FlexNetwork architecture's HPE FlexFabric solution module and are ideally suited for deployments at the server access layer of large enterprise data centers. The HPE 5920 Switch Series is also designed for content delivery networks, especially when they are used to reduce network congestion at the I/O that is associated with the heavy use of server virtualization, as well as bursty multimedia, storage applications, and other critical services. With the increase in virtualized applications and server-to-server traffic, businesses now require ToR switch innovations that will meet their needs for higher-performance server connectivity, convergence of Ethernet and storage traffic, the capability to handle virtual environments, and ultra-deep packet buffering all in a single device.

Features and benefits

Quality of Service (QoS)

- **Powerful QoS features**
  - **Flexible classification** creates traffic classes based on access control lists (ACLs), IEEE 802.1p precedence, IP, and DSCP or Type of Service (ToS) precedence; supports filter, redirect, mirror, remark, and logging
  - **Feature support** provides support for Strict Priority Queuing (SP), Weighted Fair Queuing (WFQ), Weighted Deficit Round Robin (WDRR), SP+WDRR together, configurable buffers, Explicit Congestion Notification (ECN), and Weighted Random Early Detection (WRED)

Data center optimized

- **High-performance 10GbE switching** enables you to scale your server-edge 10GbE ToR deployments with 24 high-density 10GbE ports delivered in a 1RU design; delivers a 480 Gbps (357.12 Mpps) switching capacity in addition to incorporating 3.6 GB of packet buffers
- **Ultra-deep packet buffering** provides up to a 3.6 GB packet buffer to reduce network congestion at the I/O that is associated with the heavy use of server virtualization, as well as bursty multimedia, storage applications, and other critical services
- **Higher scalability** HPE Intelligent Resilient Framework (IRF) technology simplifies the architecture of server access networks; up to four HPE 5920 switches can be combined to deliver unmatched scalability of virtualized access layer switches and flatter, two-tier FlexFabric networks using IRF, which reduces cost and complexity
- **Advanced modular operating system** Comware v7 software's modular design and multiple processes deliver native high stability, independent process monitoring, and restart; the OS also allows individual software modules to be upgraded for higher availability and supports enhanced serviceability functions like hitless software upgrades with single-chassis ISSU
- **TRILL and EVB/VEPA** Transparent Interconnection of Lots of Links (TRILL) is supported to increase the scale of enterprise data centers; EVB/VEPA provides connectivity into the virtual environment for a data center-ready environment
- **Reversible airflow** switches are enhanced for data center hot/cold aisle deployments with reversible front-to-back or back-to-front airflow
- **Redundant fans and power supplies** 1+1 internal redundant and hot-pluggable power supplies and dual fan trays enhance reliability and availability
- **Lower OPEX and greener data center** provide reversible airflow and advanced chassis power management
- **Data Center Bridging (DCB) protocols** support IEEE 802.1Qbb Priority Flow Control (PFC), Data Center Bridging Exchange (DCBX), and IEEE 802.1Qaz Enhanced Transmission Selection (ETS) for converged applications
- **FCoE support** provides support for FCoE, including expansion, fabric, trunk VF and N ports, aggregation of E-port, N-port virtualization; fabric services such as name server, registered state change notification, and login services; per-VSAN fabric services, FSPF, soft and hard zoning, Fibre Channel traceroute, ping, debugging, and FIP snooping
- **Jumbo frames** with frame sizes of up to 10,000 bytes on Gigabit Ethernet and 10-Gigabit ports, high-performance remote backup and disaster-recovery services can be enabled

Management

- **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
- **SNMPv1, v2c, and v3** facilitate centralized discovery, monitoring, and secure management of networking devices
- **Port mirroring** enables traffic on a port to be simultaneously sent to a network analyzer for monitoring
- **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

- **Remote configuration and management** is available through a secure command-line interface (CLI) over Telnet and SSH; Role-Based Access Control (RBAC) provides multiple levels of access; Configuration Rollback and multiple configurations on the flash provide ease of operation; remote visibility with sFlow and SNMP v1/v2/v3 is fully supported in HPE Intelligent Management Center (IMC)
- **ISSU and hot patching** provides hitless software upgrades with single-unit In Services Software Upgrade (ISSU) and hitless patching of modular OS
- **Autoconfiguration** provides automatic configuration via DHCP autoconfiguration
- **Network Time Protocol (NTP) and Secure Network Time Protocol (SNTP)** synchronizes timekeeping among distributed time servers and clients; keeps consistent timekeeping among all clock-dependent devices within the network so that the devices can provide diverse applications based on the consistent time

Resiliency and high availability

- **Intelligent Resilient Framework (IRF)** HPE IRF technology enables an HPE FlexFabric to deliver resilient, scalable, and secured data center networks for physical and virtualized environments; up to four 5920 switches can be grouped together in an IRF configuration, which allows them to be configured and managed as a single switch with a single IP address; this simplifies ToR deployment and management, reducing data center deployment and operating expenses

Layer 2 switching

- **Address Resolution Protocols (ARP)** supports static, dynamic, and reverse ARP and ARP proxy
- **Flow Control** IEEE 802.3x Flow Control provides intelligent congestion management via PAUSE frames
- **Ethernet Link Aggregation** IEEE 802.3ad Link Aggregation of up to 128 groups of 16 ports; support for LACP, LACP Local Forwarding First, and LACP Short Timeout provide a fast, resilient environment that is ideal for the data center
- **Spanning Tree Protocol (STP)** STP (IEEE 802.1D), Rapid STP (RSTP, IEEE 802.1w), and Multiple STP (MSTP, IEEE 802.1s) provide loop avoidance
- **VLAN support** provides support for 4,096 VLANs based on port, MAC address, IPv4 subnet, protocol, and guest VLAN; supports VLAN mapping
- **IGMP support** provides support for IGMP Snooping, Fast-Leave, Group-Policy, and IPv6; IGMP Snooping provides Layer 2 optimization of multicast traffic
- **DHCP support at Layer 2** provides full DHCP Snooping support, including DHCP Snooping Option 82, DHCP Relay Option 82, DHCP Snooping Trust, and DHCP Snooping Item Backup

Layer 3 services

- **Address Resolution Protocol (ARP)** determines the MAC address of another IP host in the same subnet; supports static ARPs; gratuitous ARP allows detection of duplicate IP addresses; proxy ARP allows normal ARP operation between subnets or when subnets are separated by a Layer 2 network
- **Operations, administration and maintenance (OAM) support** provides support for Connectivity Fault Management (IEEE 802.1AG) and Ethernet in the First Mile (IEEE 802.3AH); provides additional monitoring that can be used for fast fault detection and recovery

Layer 3 routing

- **Virtual Router Redundancy Protocol (VRRP) and VRRP Extended** allow quick failover of router ports
- **Policy-based routing** makes routing decisions based on policies set by the network administrator
- **Equal-Cost Multipath (ECMP)** enables multiple equal-cost links in a routing environment to increase link redundancy and scale bandwidth
- **Layer 3 IPv4 routing** provides routing of IPv4 at media speed; supports static routes, RIP and RIPv2, OSPF, BGP, and IS-IS
- **Layer 3 IPv6 routing** provides routing of IPv6 at media speed; supports RIPng, OSPFv3, BGP4+ for IPv6, and IS-ISv6

Additional information

- **Green IT and power** use the latest advances in silicon development, shut off unused ports, and use variable-speed fans to improve energy efficiency
- **Low power consumption** is rated to have one of the lowest power usages in the industry by Miercom independent tests

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 HPE; to reach our support centers, refer to **hpe.com/networking/support**; for details on the duration of support provided with your product purchase, refer to **hpe.com/networking/warrantysummary**
- **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 5920 Switch Series

Specifications

HPE 5920AF-24XG Switch (JG296A)

Ports	24 fixed 1000/10000 SFP+ ports 1 RJ-45 serial console port 1 RJ-45 out-of-band management port
Power supplies	2 power supply slots 1 minimum power supply required (ordered separately)
Fan tray	2 fan tray slots The customer must order fan trays, as fan trays are not included with the switch. This system requires two same-direction airflow fan trays to function properly. The system should not be operated with only one fan tray for more than 24 hours. The system should not be operated without a fan tray more than two minutes. The system should not be operated outside of the temperature range of 32°F (0°C) to 113°F (45°C). Failure to comply with these operating requirements may void the product warranty.
Physical characteristics	
	17.32(w) x 25.98(d) x 1.72(h) in (43.99 x 65.99 x 4.37 cm) (1U height)
Weight	28.66 lb (13 kg)
Memory and processor	256 MB flash, 2 GB SDRAM; packet buffer size: 3.6 GB
Performance	
10 Gbps Latency	< 1.7 µs (64-byte packets)
Throughput	367 million pps
Routing/Switching capacity	480 Gbps
Routing table size	16000 entries (IPv4)
MAC address table size	128000 entries
Environment	
Operating temperature	32°F to 113°F (0°C to 45°C)
Operating relative humidity	10% to 90%, noncondensing
Nonoperating/Storage temperature	-40°F to 158°F (-40°C to 70°C)
Nonoperating/Storage relative humidity	5% to 95%, noncondensing
Acoustic	Low-speed fan: 62.1 dB, High-speed fan: 76.7 dB
Electrical characteristics	
Maximum heat dissipation	1249 BTU/hr (1317.7 kJ/hr)
Voltage	100-240 VAC
DC voltage	-36 to -72 VDC
Maximum power rating	366 W
Idle power	343 W
Frequency	50/60 Hz
Notes	Idle power is the actual power consumption of the device with no ports connected. Maximum power rating and maximum heat dissipation are the worst-case theoretical maximum numbers provided for planning the infrastructure with fully loaded PoE (if equipped), 100% traffic, all ports plugged in, and all modules populated.
Safety	UL 60950-1; EN 60825-1 Safety of Laser Products-Part 1; EN 60825-2 Safety of Laser Products-Part 2; IEC 60950-1; CAN/CSA-C22.2 No. 60950-1; Anatel; ULAR; GOST; EN 60950-1/A11; FDA 21 CFR Subchapter J; NOM; ROHS Compliance
Emissions	VCCI Class A; EN 55022 Class A; ICES-003 Class A; ANSI C63.4 2003; AS/NZS CISPR 22 Class A; EN 61000-3-2:2006; EN 61000-3-3:1995 +A1:2001+A2:2005; EMC Directive 2004/108/EC; FCC (CFR 47, Part 15) Class A

HPE 5920 Switch Series

Specifications (continued)

	HPE 5920AF-24XG Switch (JG296A)
Immunity	
Generic	ETSI EN 300 386 V1.3.3
EN	EN 55024:1998+ A1:2001 + A2:2003
ESD	EN 61000-4-2; IEC 61000-4-2
Radiated	EN 61000-4-3; IEC 61000-4-3
EFT/Burst	EN 61000-4-4; IEC 61000-4-4
Surge	EN 61000-4-5; IEC 61000-4-5
Conducted	EN 61000-4-6; IEC 61000-4-6
Power frequency magnetic field	EN 61000-4-8; IEC 61000-4-8
Voltage dips and interruptions	EN 61000-4-11; IEC 61000-4-11
Harmonics	EN 61000-3-2; IEC 61000-3-2
Flicker	EN 61000-3-3; IEC 61000-3-3
Management	IMC—Intelligent Management Center; command-line interface; out-of-band management; SNMP Manager; Telnet; FTP
Notes	The customer must order a power supply, as the device does not come with a PSU. At least one JC680A or JC681A is required.
Services	3-year, parts only, global next-day advance exchange (U1V72E) 3-year, 4-hour onsite, 13x5 coverage for hardware (U1V62E) 3-year, 4-hour onsite, 24x7 coverage for hardware (U1V64E) 3-year, 4-hour onsite, 24x7 coverage for hardware, 24x7 SW phone support and SW updates (U6A03E) 3-year, 24x7 SW phone support, software updates (U1V70E) 4-year, 4-hour onsite, 13x5 coverage for hardware (U6A05E) 4-year, 4-hour onsite, 24x7 coverage for hardware (U6A07E) 4-year, 4-hour onsite, 24x7 coverage for hardware, 24x7 software phone (U6A15E) 4-year, 24x7 SW phone support, software updates (U6A13E) 5-year, 4-hour onsite, 13x5 coverage for hardware (U6A17E) 5-year, 4-hour onsite, 24x7 coverage for hardware (U6A19E) 5-year, 4-hour onsite, 24x7 coverage for hardware, 24x7 software phone (U6A27E) 5-year, 24x7 SW phone support, software updates (U6A25E) 3 Yr 6 hr Call-to-Repair Onsite (U1V67E) 4 Yr 6 hr Call-to-Repair Onsite (U6A10E) 5 Yr 6 hr Call-to-Repair Onsite (U6A22E) 1-year, 4-hour onsite, 13x5 coverage for hardware (U1V96E) 1-year, 4-hour onsite, 24x7 coverage for hardware (U1V98E) 1-year, 6 hour Call-To-Repair Onsite for hardware (U1W00E) 1-year, 4-hour onsite, 24x7 coverage for hardware, 24x7 software phone support and software updates (U1V60E) Refer to the HPE 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 5920 Switch Series

Specifications (continued)

HPE 5920AF-24XG Switch (JG296A)

Standards and protocols
(applies to all products in series)

BGP
RFC 1163 Border Gateway Protocol (BGP)
RFC 1771 BGPv4
RFC 1997 BGP Communities Attribute
RFC 2918 Route Refresh Capability
RFC 3392 Capabilities Advertisement with BGP-4
RFC 4271 A Border Gateway Protocol 4 (BGP-4)
RFC 4360 BGP Extended Communities Attribute
RFC 4456 BGP Route Reflection: An Alternative to Full Mesh Internal BGP (IBGP)
RFC 4760 Multiprotocol Extensions for BGP-4

Device management
RFC 1157 SNMPv1/v2c
RFC 1305 NTPv3
RFC 1591 DNS (client)
RFC 1902 (SNMPv2)
RFC 1908 (SNMP v1/2 Coexistence)
RFC 2573 (SNMPv3 Applications)
RFC 2576 (Coexistence between SNMP V1, V2, V3)
Multiple Configuration Files
Multiple Software Images
SSHv1/SSHv2 Secure Shell
TACACS/TACACS+

General protocols
IEEE 802.1D MAC Bridges
IEEE 802.1p Priority
IEEE 802.1Q VLANs
IEEE 802.1s Multiple Spanning Trees
IEEE 802.1w Rapid Reconfiguration of Spanning Tree
IEEE 802.3ad Link Aggregation Control Protocol (LACP) IEEE 802.3ae 10-Gigabit Ethernet
IEEE 802.3ag Ethernet OAM
IEEE 802.3ah Ethernet in First Mile over Point to Point
Fiber—EFMF
IEEE 802.3x Flow Control
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 856 TELNET
RFC 868 Time Protocol
RFC 896 Congestion Control in IP/TCP Internetworks
RFC 903 RARP
RFC 950 Internet Standard Subnetting Procedure
RFC 959 File Transfer Protocol (FTP)
RFC 1058 RIPv1
RFC 1091 Telnet Terminal-Type Option
RFC 1141 Incremental updating of the Internet checksum
RFC 1142 OSI IS-IS Intra-domain Routing Protocol
RFC 1191 Path MTU discovery
RFC 1213 Management Information Base for Network Management of TCP/IP-based internets
RFC 1253 (OSPF v2)
RFC 1350 TFTP Protocol (revision 2)
RFC 1531 Dynamic Host Configuration Protocol
RFC 1533 DHCP Options and BOOTP Vendor Extensions
RFC 1534 DHCP/BOOTP Interoperation
RFC 1541 DHCP
RFC 1591 DNS (client only)
RFC 1624 Incremental Internet Checksum
RFC 1723 RIP v2
RFC 1812 IPv4 Routing
RFC 2131 DHCP
RFC 2236 IGMP Snooping
RFC 2338 VRRP
RFC 2453 RIPv2
RFC 2581 TCP Congestion Control
RFC 2644 Directed Broadcast Control
RFC 3046 DHCP Relay Agent Information Option
RFC 3768 Virtual Router Redundancy Protocol (VRRP)
RFC 4250 The Secure Shell (SSH) Protocol Assigned Numbers
RFC 4251 The Secure Shell (SSH) Protocol Architecture
RFC 4252 The Secure Shell (SSH) Authentication Protocol
RFC 4253 The Secure Shell (SSH) Transport Layer Protocol
RFC 4254 The Secure Shell (SSH) Connection Protocol
RFC 4364 BGP/MPLS IP Virtual Private Networks (VPNs)
RFC 4419 Diffie-Hellman Group Exchange for the Secure Shell (SSH) Transport Layer Protocol
RFC 4594 Configuration Guidelines for DiffServ Service Classes
RFC 4941 Privacy Extensions for Stateless Address Autoconfiguration in IPv6

IPv6
RFC 2080 RIPng for IPv6
RFC 2460 IPv6 Specification
RFC 2711 IPv6 Router Alert Option
RFC 2740 OSPFv3 for IPv6
RFC 3315 DHCPv6 (client only)
RFC 4291 IP Version 6 Addressing Architecture
RFC 4862 IPv6 Stateless Address Auto-configuration
RFC 5095 Deprecation of Type 0 Routing Headers in IPv6

MIBs
RFC 1213 MIB II
RFC 1907 SNMPv2 MIB
RFC 2571 SNMP Framework MIB
RFC 2572 SNMP-MPD MIB
RFC 2573 SNMP-Notification MIB
RFC 2573 SNMP-Target MIB
RFC 2574 SNMP USM MIB
RFC 2737 Entity MIB (Version 2)
RFC 3414 SNMP-User based-SM MIB
RFC 3415 SNMP-View based-ACM MIB
LLDP-EXT-DOT1-MIB
LLDP-EXT-DOT3-MIB
LLDP-MIB

Network management
IEEE 802.1AB Link Layer Discovery Protocol (LLDP) IEEE 802.1D (STP)
RFC 3164 BSD syslog Protocol
RFC 3176 sFlow
SNMPv1/v2c/v3

OSPF
RFC 1587 OSPF NSSA
RFC 2328 OSPFv2
RFC 3101 OSPF NSSA
RFC 3137 OSPF Stub Router Advertisement
RFC 3623 Graceful OSPF Restart
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 5340 OSPFv3 for IPv6

QoS/CoS
IEEE 802.1P (CoS)
RFC 1349 Type of Service in the Internet Protocol Suite
RFC 2474 DiffServ Precedence, including 8 queues/port
RFC 2475 DiffServ Architecture
RFC 2597 DiffServ Assured Forwarding (AF)
RFC 3168 The Addition of Explicit Congestion Notification (ECN) to IP
RFC 3247 Supplemental Information for the New Definition of the EF PHB (Expedited Forwarding Per-Hop Behavior)
RFC 3260 New Terminology and Clarifications for DiffServ
Ingress Rate Limiting

Security
IEEE 802.1X Port Based Network Access Control
RFC 1492 TACACS+
Access Control Lists (ACLs)
Guest VLAN for 802.1x
Port Security
SSHv1/SSHv2 Secure Shell

HPE 5920 Switch Series accessories

Transceivers

HPE X125 1 G SFP LC LH40 1310 nm Transceiver (JD061A)
HPE X120 1 G SFP LC LH40 1550 nm Transceiver (JD062A)
HPE X125 1 G SFP LC LH70 Transceiver (JD063B)
HPE X120 1 G SFP LC BX 10-U Transceiver (JD098B)
HPE X120 1 G SFP LC BX 10-D Transceiver (JD099B)
HPE X120 1 G SFP LC SX Transceiver (JD118B)
HPE X120 1 G SFP LC LX Transceiver (JD119B)
HPE X120 1 G SFP RJ45 T Transceiver (JD089B)
HPE X130 10 G SFP+ LC SR Transceiver (JD092B)
HPE X130 10 G SFP+ LC LRM Transceiver (JD093B)
HPE X130 10 G SFP+ LC LR Transceiver (JD094B)
HPE X130 10 G SFP+ LC ER 40 km Transceiver (JG234A)
HPE X240 10 G SFP+ to SFP+ 0.65 m Direct Attach Copper Cable (JD095C)
HPE X240 10 G SFP+ to SFP+ 1.2 m Direct Attach Copper Cable (JD096C)
HPE X240 10 G SFP+ to SFP+ 3 m Direct Attach Copper Cable (JD097C)
HPE X240 10 G SFP+ to SFP+ 5 m Direct Attach Copper Cable (JG081C)
HPE X240 10 G SFP+ SFP+ 7 m Direct Attach Copper Cable (JC784C)

Power Supply

HPE 58x0AF 650W AC Power Supply (JC680A)
HPE 58x0AF 650W DC Power Supply (JC681A)

Fan Tray

HPE 5920AF-24XG Back (power-side) to Front (port-side) Airflow Fan Tray (JG297A)
HPE 5920AF-24XG Front (port-side) to Back (power-side) Airflow Fan Tray (JG298A)

Learn more at
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