

HP FlexFabric 5930 Switch Series



Product overview

The HP FlexFabric 5930 Switch Series is a family of high performance and ultra-low-latency 40 GbE top-of-rack (ToR) data center switches. The switch series is part of the HP FlexFabric data center solution, which is a cornerstone of the FlexNetwork architecture.

The FlexFabric 5930 Switch Series is ideally suited for deployment at the aggregation or server access layer of large enterprise data centers, or at the core layer of medium-sized enterprises data centers.

With the increase pace of deploying virtualized applications, adopting software-defined networking, and the server-to-server traffic, many data centers now require spine and ToR switch innovations that will meet their requirements. The HP FlexFabric 5930 is optimized to meet the increasing requirements for higher-performance server connectivity, convergence of Ethernet and storage traffic, the capability to handle virtual environments, and ultra-low-latency.

A summary of the highlights of the FlexFabric 5930 Switch Series:

- VXLAN and NVGRE hardware support for overlay networks
- OpenFlow support for investment protection and SDN environments
- High-density 40 GbE for spine-and-leaf deployments
- Unify management of virtual and physical network with VEPA and IMC
- Data center convergence and resiliency with DCB, FCoE, IRF and TRILL

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; and 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

- Flexible high port density

The FlexFabric 5930 Switch Series enables scaling of the server edge, with 40GbE spine and ToR deployments, to new heights—with high-density 32-port solutions delivered in a 1RU design; each 40 GbE QSFP+ port can also be configured as four 10GbE ports by using a 40GbE-to-10GbE splitter cable.
- High-performance switching

Cut-through and nonblocking architecture delivers low latency (1 microsecond for 10GbE) for very demanding enterprise applications; the switch delivers high-performance switching capacity and wire-speed packet forwarding
- Higher scalability

The HP Intelligent Resilient Framework (IRF) technology simplifies the architecture of server access networks; up to four 5930 switches can be combined to deliver unmatched scalability of virtualized access layer switches and flatter two-tier networks using IRF, which reduces cost and complexity
- Advanced modular operating system

Comware v7 software's modular design and multiple processes bring 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 such as 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; And Edge Virtual Bridging with Virtual Ethernet Port Aggregator (EVB/VEPA) provides connectivity into the virtual environment for a data-center-ready environment
- Reversible airflow

Enhanced for data center hot-cold aisle deployment with reversible airflow—for either 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) protocol

Provides support for 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 Fibre Channel over Ethernet (FCoE), FIP snooping, NPV and NPIV modes
- 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 are enabled
- VXLAN and NVGRE hardware support
Supports, in hardware, VXLAN and NVGRE overlay technologies

Manageability

- Full-featured console
Provides complete control of the switch with a familiar command-line interface (CLI)
- Troubleshooting
 - Ingress and egress port monitoring
Enable network problem solving
 - Traceroute and ping
Enable testing of network connectivity
- Multiple configuration files
Allow multiple configuration files to be stored to a flash image
- sFlow (RFC 3176)
Provides wire-speed traffic accounting and monitoring
- SNMP v1, v2c and v3
Facilitate centralized discovery, monitoring, and secure management of networking devices
- 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
Delivered through a secure 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 is provided with sFlow and SNMP v1/v2/v3 and is fully supported in the HP Intelligent Management Center (IMC)
- ISSU and hot patching
Provides hitless software upgrades with single-unit In Services Software Upgrade (ISSU) and hitless patching of the modular operating system
- Autoconfiguration
Provides automatic configuration via DHCP autoconfiguration
- Network Time Protocol (NTP) and Secure Network Time Protocol (SNTP)
Synchronize timekeeping among distributed time servers and clients; maintain 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

- HP IRF technology

Enables a FlexFabric solution to deliver resilient, scalable, and secured data center networks for physical and virtualized environments; groups up to four 5930 switches in an IRF configuration, allowing them to be configured and managed as a single switch with a single IP address; and simplifies ToR deployment and management, reducing data center deployment and operating expenses

- IEEE 802.1w Rapid Convergence Spanning Tree Protocol

Increases network uptime through faster recovery from failed links

- IEEE 802.1s Multiple Spanning Tree

Provides high link availability in multiple VLAN environments by allowing multiple spanning trees

- Virtual Router Redundancy Protocol (VRRP)

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

- Hitless patch upgrades

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

- Ultrafast protocol convergence (< 50 ms) with standard-based failure detection—Bidirectional Forwarding Detection (BFD)

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, helping prevent loops in STP-based networks

- Graceful restart

Allows routers to indicate to others their capability to maintain a routing table during a temporary shutdown and significantly reduces convergence times upon recovery; and supports OSPF, BGP, and IS-IS

L2 switching

- MAC-based VLAN

Provides granular control and security; and uses RADIUS to map a MAC address/user to specific VLANs

- Address Resolution Protocol (ARP)

Supports static, dynamic, and reverse ARP and ARP proxy

- IEEE 802.3x Flow Control

Provides intelligent congestion management via PAUSE frames

- Ethernet Link Aggregation

Provides IEEE 802.3ad Link Aggregation of up to 128 groups of 16 ports; and support for LACP, LACP Local Forwarding First, and LACP Short-time provides a fast, resilient environment that is ideal for the data center

- Spanning Tree Protocol (STP)

Supports STP (IEEE 802.1D), Rapid STP (RSTP, IEEE 802.1w), and Multiple STP (MSTP, IEEE 802.1s)

- VLAN support

Provides support for 4,096 VLANs based on the port, MAC address, IPv4 subnet, protocol, and guest VLAN; and supports VLAN mapping

- IGMP support

Provides support for IGMP Snooping, Fast-Leave, and Group-Policy; IPv6 IGMP Snooping provides L2 optimization of multicast traffic

- DHCP support at L2

Provides full DHCP Snooping support for DHCP Snooping Option 82, DHCP Relay Option 82, DHCP Snooping Trust, and DHCP Snooping Item Backup

L3 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 an L2 network

- Dynamic Host Configuration Protocol (DHCP)

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

- Operations, administration and maintenance (OAM) support

Provides support for Connectivity Fault Management (IEEE 802.1AG) and Ethernet in the First Mile (IEEE 802.3AH); and provides additional monitoring that can be used for fast fault detection and recovery

L3 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

- L3 IPv4 routing

Provides routing of IPv4 at media speeds; and supports static routes, RIP and RIPv2, OSPF, BGP, and IS-IS

- Open shortest path first (OSPF)

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

- Border Gateway Protocol 4 (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

- Intermediate system to intermediate system (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)

- 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 to an IPv6-only network design
- Routing Information Protocol next generation (RIPng)
Extends RIPv2 to support IPv6 addressing
- OSPFv3
Provides OSPF support for IPv6
- BGP+
Extends BGP-4 to support Multiprotocol BGP (MBGP), including support for IPv6 addressing
- IS-IS for IPv6
Extends IS-IS to support IPv6 addressing
- IPv6 tunneling
Allows IPv6 packets to traverse IPv4-only networks by encapsulating the IPv6 packet into a standard IPv4 packet; supports manually configured, 6-to-4, and Intra-Site Automatic Tunnel Addressing Protocol (ISATAP) tunnels; and is an important element for the transition from IPv4 to IPv6
- Policy routing
Allows custom filters for increased performance and security; and supports ACLs, IP prefix, AS paths, community lists, and aggregate policies
- Bidirectional Forwarding Detection (BFD)
Enables link connectivity monitoring and reduces network convergence time for RIP, OSPF, BGP, IS-IS, VRRP, MPLS, and IRF
- Multicast Routing PIM Dense and Sparse modes
Provides robust support of multicast protocols
- L3 IPv6 routing
Provides routing of IPv6 at media speeds; and supports static routing, RIPng, OSPFv3, BGP4+ for IPv6, and IS-ISv6

Additional information

- Green IT and power
Improves energy efficiency through the use of the latest advances in silicon development; and shuts off unused ports and utilizes variable-speed fans, reducing energy costs
- Low maximum power consumption
Uses just 409 W of AC or 399 W of DC power

Management

- USB support
 - File copy
Allows users to copy switch files to and from a USB flash drive
- Multiple configuration files
Stores easily to the flash image
- SNMPv1, v2c, and v3
Facilitate centralized discovery, monitoring, and secure management of networking devices

- Network Time Protocol (NTP)
Synchronizes timekeeping among distributed time servers and clients; maintains consistent timekeeping among all clock-dependent devices within the network, so that the devices can provide diverse applications based on the consistent time
- 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
- Port mirroring
Enables traffic on a port to be simultaneously sent to a network analyzer for monitoring
- Remote configuration and management
Is available through a CLI
- 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
- sFlow (RFC 3176)
Provides scalable ASIC-based wirespeed 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
- Command authorization
Leverages RADIUS to link a custom list of CLI commands to an individual network administrator's login; an audit trail documents activity
- Dual flash images
Provides independent primary and secondary operating system files for backup while upgrading
- Command Line Interface (CLI)
Provides a secure, easy-to-use CLI for configuring the module via SSH or a switch console; and provides direct real-time session visibility
- Logging
Provides local and remote logging of events via SNMP (v2c and v3) and syslog; and provides log throttling and log filtering to reduce the number of log events generated
- Management interface control
Provides management access through a modem port and terminal interface, as well as in-band and out-of-band Ethernet ports; and provides access through the terminal interface, telnet, or secure shell (SSH)
- 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, while local and remote syslog capabilities allow logging of all access

- 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

- Network management

IMC centrally configures, updates, monitors, and troubleshoots

- Remote intelligent mirroring

Mirrors ingress/egress ACL-selected traffic from a switch port or VLAN to a local or remote switch port anywhere on the network

Security

- ACLs

Provide IP L3 filtering based on the source/destination IP address/subnet and source/destination TCP/UDP port number

- RADIUS/TACACS+

Eases switch management security administration by using a password authentication server

- Secure shell

Encrypts all transmitted data for secure remote CLI access over IP networks

- IEEE 802.1X and RADIUS network logins

Controls port-based access for authentication and accountability

- Port security

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

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

Warranty and support

- 1-year warranty

Advance hardware replacement with 10-calendar-day delivery (please consult your HP representative for regional support details.)

- Electronic and telephone support

Limited electronic and business-hour telephone support is available from HP for the entire warranty period; to reach our support centers, visit hp.com/networking/contact-support; for details on the duration of support provided with your product purchase, visit hp.com/networking/warrantysummary

- Software releases

To find software for your product, visit hp.com/networking/support; for details on the software releases available with your product purchase, visit hp.com/networking/warrantysummary

HP FlexFabric 5930 Switch Series

Specifications



HP FlexFabric 5930-32QSFP+ Switch (JG726A)

I/O ports and slots

32 QSFP+ 40GbE ports
 1 RJ-45 serial console port
 1 RJ-45 out-of-band management port
 1 USB 2.0

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 for 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

Weight 17.32(w) x 25.98(d) x 1.72(h) in (44.00 x 66.0 x 4.37 cm)
 28.66 lb (13 kg) shipping weight

Memory and processor

512 MB flash, 4 GB SDRAM; packet buffer size: 12.2 MB

Performance

10 Gb/s Latency < 1 μ s (64-byte packets)
 Throughput 1905 Mpps
 Routing/Switching capacity 2560 Gb/s
 Routing table size 16000 entries (IPv4), 8000 entries (IPv6)
 MAC address table size 288000 entries

Environment

Operating temperature 32°F to 113°F (0°C to 45°C)
 Operating relative humidity 10% to 90%, noncondensing
 Acoustic Low-speed fan: 65.7 dB, High-speed fan: 70.6 dB

Electrical characteristics

Maximum heat dissipation 1,396 BTU/hr (1472.78 kJ/hr)
 AC voltage 100 - 240 VAC
 DC voltage -36 to -72 VDC
 Maximum power rating 409 W
 Idle power 175 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.

HP FlexFabric 5930-32QSFP+ Switch (JG726A)

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

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 IEC 61000-4-8; EN 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 one. At least one JC680A or JC681A is required.

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

Standards and Protocols
 (applies to all products in series)

BGP	RFC 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)
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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+
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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 950 Internet Standard Subnetting Procedure RFC 1027 Proxy ARP	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 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 2030 Simple Network Time Protocol (SNTP) v4 RFC 2131 DHCP RFC 2236 IGMP Snooping RFC 2338 VRRP RFC 2453 RIPv2	RFC 2581 TCP Congestion Control RFC 2644 Directed Broadcast Control RFC 2767 Dual Stacks IPv4 & IPv6 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 2461 IPv6 Neighbor Discovery RFC 2462 IPv6 Stateless Address Auto-configuration RFC 2463 ICMPv6	RFC 2464 Transmission of IPv6 over Ethernet Networks RFC 2473 Generic Packet Tunneling in IPv6 RFC 2545 Use of MP-BGP-4 for IPv6 RFC 2563 ICMPv6 RFC 2711 IPv6 Router Alert Option RFC 2740 OSPFv3 for IPv6	RFC 2767 Dual stacks IPv4 & IPv6 RFC 3315 DHCPv6 (client and relay) 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		RFC 3164 BSD syslog Protocol	
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
QoS/CoS	IEEE 802.1P (CoS) RFC 2475 DiffServ Architecture RFC 2597 DiffServ Assured Forwarding (AF)	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
Security		Access Control Lists (ACLs)	SSHv2 Secure Shell

HP FlexFabric 5930 Switch Series accessories

Transceivers

HP X140 40G QSFP+ MPO SR4 Transceiver (JG325A)
HP X240 40G QSFP+ to QSFP+ 1m Direct Attach Copper Cable (JG326A)
HP X240 40G QSFP+ to QSFP+ 3m Direct Attach Copper Cable (JG327A)
HP X240 40G QSFP+ to QSFP+ 5m Direct Attach Copper Cable (JG328A)
HP X240 40G QSFP+ to 4x10G SFP+ 1m Direct Attach Copper Splitter Cable (JG329A)
HP X240 40G QSFP+ to 4x10G SFP+ 3m Direct Attach Copper Splitter Cable (JG330A)
HP X240 40G QSFP+ to 4x10G SFP+ 5m Direct Attach Copper Splitter Cable (JG331A)
HP X140 40G QSFP+ LC LR4 SM 10km 1310nm Transceiver (JG661A)

Power Supply

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

Fan Tray

HP X711 Front (port side) to Back (power side) Airflow High Volume Fan Tray (JG552A)
HP X712 Back (power side) to Front (port side) Airflow High Volume Fan Tray (JG553A)

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