HPE FlexFabric 5940 Switch Series

Key features

- L2/L3 VXLAN and EVPN support for virtualized environments
- OpenFlow support for investment protection and SDN environments
- High-density 10GbE, 40GbE with 40 G or 100 G uplink for spine and leaf deployments
- Unify management of virtual and physical network with VEPA and IMC
- HPE FlexFabric Network Analytics solution capability for real-time microburst detection

Product overview

The HPE FlexFabric 5940 Switch Series is a family of high-performance and low-latency 10GbE, 40GbE top-of-rack (ToR) data center switches. The switch series also includes 100 G and 40 G uplink technology and is part of the HPE FlexFabric data center solution, which is a cornerstone of the FlexNetwork architecture.

Features and benefits

Quality of Service (QoS)
- Powerful QoS features
  - Flexible queue scheduling
    - Including strict priority (SP), WRR, WDRR, WFO, SP+WRR, SP+WDRR, SP+WFO, configurable buffer, time range, queue shaping, CAR with 8 Kbps granularity
Packet filtering and remarking
Packet filtering at L2 through L4; flow classification based on source MAC address, destination MAC address, source IP (IPv4/IPv6) address, destination IP (IPv4/IPv6) address, port, protocol, and VLAN

Data center optimized
• Flexible high-port density
The 5940 Switch Series enables customers to scale their server-edge 10/40/100GbE ToR deployments to new heights with high-density 48 fixed x 10GbE with 6 ports of 40 G; 48 fixed x 10GbE with 6 ports of 100 G, and 32 fixed x 40GbE, all delivered in a 1 RU design. The 5940 32 ports of 40 G switch can also be configured as a 96 x 10GbE port device by using a 40 G to 10GbE splitter cable that can turn 24 of the 40GbE ports into four 10GbE ports. The 48-port models come in SFP+ or BASE-T.

The 5940 Switch Series also includes 2-slot (1 RU) and 4-slot (2 RU) options which allow for customization of ports at the ToR. Module options include 8 x 40 G ports; 2 x 40 G and 2 x 100 G ports; 24 x 10 G (SFP+ or BASE-T) with 2 x 40 G ports (MACsec and FC options available).

• High-performance switching
Cut-through and non-blocking 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
HPE Intelligent Resilient Fabric (IRF) technology simplifies the architecture of server access networks; up to nine HPE 5940 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.

• 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
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.

• Jumbo frames
With frame sizes of up to 10,000 bytes on Gigabit Ethernet and 10-Gigabit ports, allows high-performance remote backup and disaster recovery services to be enabled.

• VXLAN hardware support
VXLAN L2 and L3 gateway support for up to 4K tunnels.

• Dynamic VXLAN configuration
OVSD and ML2 support for dynamic VXLAN configuration.

• EVPN
Control plane protocol for VXLAN based on industry standards. It enables L2 and L3 control-plane learning of end-host reachability information, enabling organizations to scale their VXLAN infrastructure better. Integration with OpenStack® Neutron plug-in for overlay automation or orchestration.

Manageability
• The HPE FlexFabric Network Analytics solution with real-time telemetry analysis provides insight into data center network operation
  • Tracks all the accounting associated with the admission and allocation process of all the buffers and queues across the ingress and egress ports
  • Microburst congestion detection
  • Rich congestion analytics
  • Buffer congestion state and statistics
  • For more information, see the HPE FlexFabric Network Analytics data sheet and HPE FlexFabric Network Analytics white paper.

• Full-featured console
Provides complete control of the switch with a familiar CLI.
• Troubleshooting
  – Ingress and egress port monitoring enable network problem solving
  – Traceroute and ping Enable testing of network connectivity

• Multiple configuration files
  Allows multiple configuration files to be stored to a flash image

• SNMPv1, v2c, and v3
  Facilitates 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 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 is provided with sFlow® and SNMPv1, v2, or v3, and is fully supported in HPE Intelligent Management Center (IMC)

• ISSU and hot patching
  In Services Software Upgrade (ISSU) provides software upgrades and hitless patching of the modular operating system

• Auto-configuration
  Provides automatic configuration via DHCP auto-configuration

• NTP, SNTP
  Synchronizes timekeeping among distributed time servers and clients; support for network time protocol (NTP); secure network time protocol (SNTP)

• 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 back each other up dynamically 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, and IRF

• Device Link Detection Protocol (DLDP)
  Monitors link connectivity and shuts down ports at both ends if unidirectional traffic is detected, preventing loops in STP-based networks

• 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; supports OSPF, BGP, and IS-IS

Layer 2 switching
• MAC-based VLAN
  Provides granular control and security; 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 16 ports per group and up to 128 groups; support for LACP, LACP Local Forwarding First, and LACP short time provides a fast, resilient environment that is ideal for the data center

• IRF technology
  Enables an HPE FlexFabric to deliver resilient, scalable, and secured data center networks for physical and virtualized environments; groups up to nine HPE 5940 switches in an IRF configuration, allowing them to be configured and managed as a single switch with a single IP address; simplifies ToR deployment and management, reducing data center deployment and operating expenses

Resiliency and high availability
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• **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 4,094 VLANs based on port, MAC address, IPv4 subnet, protocol, and guest VLAN; 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**
  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**
  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 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); provides additional monitoring that can be used for fast fault detection and recovery

L3 routing

• **VRRP and VRRP Extended**
  Allows 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 speed; supports static routes, RIP and RIPv2, OSPF, BGP, and IS-IS

• **Open shortest path first (OSPF)**
  Delivers faster convergence; uses this link-state routing Interior Gateway Protocol (IGP), which supports ECMP, NSSA, and MDS 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; 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; is an important element for the transition from IPv4 to IPv6
• Policy routing
  Allows custom filters for increased performance and security; 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 and IRF

• Multicast Routing PIM Dense and Sparse Modes
  Provides robust support of multicast protocols

• L3 IPv6 routing
  Provides routing of IPv6 at media speed; supports static routing, RIPng, OSPFv3, BGP-4+ for IPv6, and IS-ISv6

Additional information
• Green IT and power
  Improves energy efficiency through the use of the latest advances in silicon development; shuts off unused ports, and utilizes variable speed fans, reducing energy costs

Management
• USB support
  – File copy
    Allows users to copy switch files to and from a USB flash drive
  – 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 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

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

• Logging
  Provides local and remote logging of events via SNMP (v2c and v3) and syslog; provides log throttling and log filtering to reduce the number of log events generated

• Management interface control
  Provides management access through a modem port and terminal interface, as well as in-band and out-of-band Ethernet ports; provides access through terminal interface, Telnet, or 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; offers multiple privilege levels with password protection; ACLs provide Telnet and SNMP access; 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 order of severity; outputs the network information to multiple channels based on user-defined rules

• Network management
  HPE 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
- Access control lists (ACLs)
  Provide IP L3 filtering based on source or destination IP address or subnet and source or 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 Media Endpoint Discovery
  Defines a standard extension of LLDP that stores values for parameters such as QoS and VLAN to configure network devices automatically such as IP phones

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 FlexFabric 5940 Switch Series

### Specifications

<table>
<thead>
<tr>
<th>I/O ports and slots</th>
<th>48 fixed 1000/10000 SFP+ ports</th>
<th>32 QSFP+ 40GbE ports</th>
<th>48 1/10GBASE-T ports 6 QSFP+ 40GbE ports</th>
</tr>
</thead>
<tbody>
<tr>
<td>Additional ports and slots</td>
<td>1 RJ-45 and 1 Mini USB 2.0 serial console port 1 RJ-45 out-of-band management port 1 USB 2.0</td>
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<tr>
<td>Power supplies</td>
<td>2 power supply slots (ordered separately)</td>
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<tr>
<td>Fan tray</td>
<td>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.</td>
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</tr>
<tr>
<td>Physical characteristics</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Dimensions</td>
<td>17.32(w) x 18.11(d) x 1.72(h) in. (44 x 46 x 4.36 cm)</td>
<td>17.32(w) x 25.98(d) x 1.74(h) in. (44 x 66 x 4.42 cm)</td>
<td>17.32(w) x 25.98(d) x 1.72(h) in. (44 x 66 x 4.36 cm)</td>
</tr>
<tr>
<td>Weight</td>
<td>22.05 lb (10 kg) shipping weight</td>
<td>35.27 lb (16 kg) shipping weight</td>
<td>28.66 lb (13 kg) shipping weight</td>
</tr>
<tr>
<td>Memory and processor</td>
<td>512 MB flash; Packet buffer size: 16 MB, 2 GB SDRAM</td>
<td>1 GB flash; Packet buffer size: 16 MB, 4 GB SDRAM</td>
<td>512 MB flash; Packet buffer size: 16 MB, 2 GB SDRAM</td>
</tr>
<tr>
<td>Performance</td>
<td>&lt; 1 µs (64-byte packets)</td>
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</tr>
<tr>
<td>Throughput</td>
<td>Up to 1071 Mpps</td>
<td>Up to 1904 Mpps</td>
<td>Up to 1071 Mpps</td>
</tr>
<tr>
<td>Routing/Switching capacity</td>
<td>1440 Gbps</td>
<td>2560 Gbps</td>
<td>1440 Gbps</td>
</tr>
<tr>
<td>Throughput</td>
<td>250K entries (IPv4), 64K entries (IPv6)</td>
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</tr>
<tr>
<td>MAC address table size</td>
<td>288K entries</td>
<td>288K entries</td>
<td>288K entries</td>
</tr>
<tr>
<td>Environment</td>
<td>32°F to 113°F (0°C to 45°C) 10% to 90%, noncondensing Low-Speed: 59.4 dB, High-Speed: 72.4 dB</td>
<td>32°F to 113°F (0°C to 45°C) 10% to 90%, noncondensing Low-Speed: 62.6 dB, High-Speed: 74.4 dB</td>
<td>32°F to 113°F (0°C to 45°C) 10% to 90%, noncondensing Low-Speed: 65 dB, High-Speed: 78 dB</td>
</tr>
<tr>
<td>Acoustic</td>
<td>Low-Speed: 59.4 dB, High-Speed: 72.4 dB</td>
<td>Low-Speed: 62.6 dB, High-Speed: 74.4 dB</td>
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### Specifications (continued)

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<tr>
<th>HPE FlexFabric 5940 48SFP+ 6QSFP+ Switch (JH395A)</th>
<th>HPE FlexFabric 5940 32QSFP+ Switch (JH396A)</th>
<th>HPE FlexFabric 5940 48XGT 6QSFP+ Switch (JH394A)</th>
</tr>
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<tbody>
<tr>
<td><strong>Electrical characteristics</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Frequency</td>
<td>50/60 Hz</td>
<td>50/60 Hz</td>
</tr>
<tr>
<td>Maximum heat dissipation</td>
<td>512 BTU/hr (540.19 kJ/hr)</td>
<td>1027 BTU/hr (1083.54 kJ/hr)</td>
</tr>
<tr>
<td>Voltage</td>
<td>100–240 VAC, rated</td>
<td>100–240 VAC, rated</td>
</tr>
<tr>
<td>Maximum power rating</td>
<td>150W</td>
<td>Maximum power rating</td>
</tr>
<tr>
<td>Notes</td>
<td>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.</td>
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</tr>
<tr>
<td><strong>Safety</strong></td>
<td>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</td>
<td>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</td>
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<tbody>
<tr>
<td>EN</td>
<td>EN 61000-4-2; IEC 61000-4-2</td>
<td>EN 61000-4-3; IEC 61000-4-3</td>
<td>EN 61000-4-3; IEC 61000-4-3</td>
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<td>Radiated</td>
<td>EN 61000-4-3; IEC 61000-4-3</td>
<td>EN 61000-4-3; IEC 61000-4-3</td>
<td>EN 61000-4-3; IEC 61000-4-3</td>
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<tr>
<td>EFT/Burst</td>
<td>EN 61000-4-4; IEC 61000-4-4</td>
<td>EN 61000-4-4; IEC 61000-4-4</td>
<td>EN 61000-4-4; IEC 61000-4-4</td>
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<tr>
<td>Surge</td>
<td>EN 61000-4-5; IEC 61000-4-5</td>
<td>EN 61000-4-5; IEC 61000-4-5</td>
<td>EN 61000-4-5; IEC 61000-4-5</td>
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<td>Conducted</td>
<td>EN 61000-4-6; IEC 61000-4-6</td>
<td>EN 61000-4-6; IEC 61000-4-6</td>
<td>EN 61000-4-6; IEC 61000-4-6</td>
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<tr>
<td>Power frequency magnetic field</td>
<td>IEC 61000-4-8; EN 61000-4-8</td>
<td>IEC 61000-4-8; EN 61000-4-8</td>
<td>IEC 61000-4-8; EN 61000-4-8</td>
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<tr>
<td>Voltage dips and interruptions</td>
<td>EN 61000-4-11; IEC 61000-4-11</td>
<td>EN 61000-4-11; IEC 61000-4-11</td>
<td>EN 61000-4-11; IEC 61000-4-11</td>
</tr>
<tr>
<td>Harmonics</td>
<td>EN 61000-3-2; IEC 61000-3-2</td>
<td>EN 61000-3-2; IEC 61000-3-2</td>
<td>EN 61000-3-2; IEC 61000-3-2</td>
</tr>
<tr>
<td>Flicker</td>
<td>EN 61000-3-3; IEC 61000-3-3</td>
<td>EN 61000-3-3; IEC 61000-3-3</td>
<td>EN 61000-3-3; IEC 61000-3-3</td>
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| Management | IMC—Intelligent Management Center; Command-line interface; Out-of-band management; SNMP manager; Telnet; FTP | IMC—Intelligent Management Center; Command-line interface; Out-of-band management; SNMP manager; Telnet; FTP | 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 JH336A is required. | The customer must order a power supply, as the device does not come with one. At least one JC680A or JH336A is required. | The customer must order a power supply, as the device does not come with one. At least one JC680A or JH336A is required. |

| Services | Refer to the Hewlett Packard Enterprise website at [hpe.com/networking/services](http://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 Hewlett Packard Enterprise sales office. | Refer to the Hewlett Packard Enterprise website at [hpe.com/networking/services](http://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 Hewlett Packard Enterprise sales office. | Refer to the Hewlett Packard Enterprise website at [hpe.com/networking/services](http://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 Hewlett Packard Enterprise sales office. |
## HPE FlexFabric 5940 Switch Series

### Specifications (continued)

<table>
<thead>
<tr>
<th>I/O ports and slots</th>
<th>48 fixed 1000/10000 SFP+ ports</th>
<th>48 1/10GBASE-T ports</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>6 QSFP28 100GbE ports</td>
<td>6 QSFP28 100GbE ports</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Additional ports and slots</th>
<th>1 RJ-45 and 1 Mini USB serial console port</th>
<th>1 RJ-45 and 1 Mini USB serial console port</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>1 RJ-45 and 1 SFP out-of-band management port</td>
<td>1 RJ-45 and 1 SFP out-of-band management port</td>
</tr>
<tr>
<td></td>
<td>1 USB 2.0</td>
<td>1 USB 2.0</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Power supplies</th>
<th>2 power supply slots</th>
<th>2 power supply slots</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>1 minimum power supply required (ordered separately)</td>
<td>1 minimum power supply required (ordered separately)</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Fan tray</th>
<th>2 fan tray slots</th>
<th>2 fan tray slots</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>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.</td>
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</tr>
</tbody>
</table>

### Physical characteristics

<table>
<thead>
<tr>
<th>Dimensions</th>
<th>17.32(w) x 18.11(d) x 1.72(h) in. (44 x 46 x 4.36 cm)</th>
<th>17.32(w) x 25.98(d) x 1.72(h) in. (44 x 66 x 4.36 cm)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Weight</td>
<td>24.25 lb (11 kg) shipping weight</td>
<td>28.66 lb (13 kg) shipping weight</td>
</tr>
</tbody>
</table>

| Memory and processor | 1 GB flash; Packet buffer size: 16 MB, 4 GB SDRAM | 1 GB flash; Packet buffer size: 16 MB, 4 GB SDRAM |

<table>
<thead>
<tr>
<th>Performance</th>
<th>10 Gbps Latency</th>
<th>&lt; 1 µs (64-byte packets)</th>
<th>&lt; 1 µs (64-byte packets)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Throughput</td>
<td>Up to 1607 Mbps</td>
<td>Up to 1607 Mbps</td>
</tr>
<tr>
<td></td>
<td>Routing/Switching capacity</td>
<td>2160 Gbps</td>
<td>2160 Gbps</td>
</tr>
<tr>
<td></td>
<td>Routing table size</td>
<td>250K entries (IPv4), 64K entries (IPv6)</td>
<td>250K entries (IPv4), 64K entries (IPv6)</td>
</tr>
<tr>
<td></td>
<td>MAC address table size</td>
<td>288K entries</td>
<td>288K entries</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Environment</th>
<th>Operating temperature</th>
<th>32°F to 113°F (0°C to 45°C)</th>
<th>32°F to 113°F (0°C to 45°C)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Operating relative humidity</td>
<td>10% to 90%, noncondensing</td>
<td>10% to 90%, noncondensing</td>
</tr>
<tr>
<td></td>
<td>Acoustic</td>
<td>Low-Speed: 60.1 dB, High-Speed: 75.9 dB</td>
<td>Low-Speed: 57.4 dB, High-Speed: 66.1 dB</td>
</tr>
</tbody>
</table>
HPE FlexFabric 5940 Switch Series
Specifications (continued)

### Electrical characteristics

- **Frequency**: 50/60 Hz
- **Maximum heat dissipation**:
  - 669 BTU/hr (705.83 kJ/hr)
- **Voltage**:
  - 100–240 VAC, rated
  - -40 to -60 VDC, rated (depending on power supply chosen)
- **Maximum power rating**:
  - 196W

**Notes**: Maximum power rating and maximum heat dissipation are the worst-case theoretical maximum numbers provided for planning the infrastructure with fully loaded PoE (if equipped), 100% traffic, all ports plugged in, and all modules populated.

### 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


### Immunity

#### Generic

- ETSI EN 300 386 V1.3.3
- EN 61000-4-2; IEC 61000-4-2
- EN 61000-4-4; IEC 61000-4-4
- EN 61000-4-6; IEC 61000-4-6

#### Radiated

- EN 61000-4-2; IEC 61000-4-2
- EN 61000-4-4; IEC 61000-4-4
- EN 61000-4-4; ETSI EN 300 386 V1.3.3

#### Conducted

- EN 61000-4-6; IEC 61000-4-6
- EN 61000-4-6; IEC 61000-4-6

### 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 JH336A is required.

### Services

Refer to the Hewlett Packard Enterprise website at [hpe.com/networking/services](http://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 Hewlett Packard Enterprise sales office.
### HPE FlexFabric 5940 Switch Series

**Specifications (continued)**

| I/O ports and slots | 2 module slots  
|                     | 2 QSFP+ 40GbE ports  
|                     | Supports a maximum of 18 40GbE ports or 48 1/10GBASE-T ports or 48 SFP+ ports or 48 Converged ports, or a combination |
|                     | 4 module slots  
|                     | Supports a maximum of 32 40GbE ports or 96 1/10GBASE-T ports or 96 SFP+ ports or 96 Converged ports, or a combination |

| Additional ports and slots | 1 RJ-45 and 1 Mini USB 2.0 serial console port  
|                           | 1 RJ-45 out-of-band management port  
|                           | 1 USB 2.0  
|                           | 1 RJ-45 and 1 Mini USB 2.0 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)  
|                | 4 power supply slots  
|                | 2 minimum power supplies 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.  
|          | 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 | Dimensions  
|                         | 17.32(w) x 25.98(d) x 1.74(h) in. (44.00 x 66.0 x 4.42 cm) (1U height)  
|                         | 17.32(w) x 25.98(d) x 3.47(h) in. (44.00 x 66.0 x 8.81 cm) (2U height)  
| Weight | 39.68 lb (18 kg) shipping weight  
|        | 66.14 lb (30 kg) shipping weight  
| Full configuration weight | 35.27 lb (16 kg)  
|                          | 59.52 lb (27 kg) |

| Memory and processor | 1 GB flash; Packet buffer size: 16 MB, 4 GB SDRAM  
|                      | 1 GB flash; Packet buffer size: 16 MB, 4 GB SDRAM |

| Performance | 10 Gbps Latency | < 1 µs (64-byte packets)  
|             | Throughput | Up to 1071 Mpps  
|             | Routing/Switching capacity | 1440 Gbps  
|             | Routing table size | 250k entries (IPv4), 64K entries (IPv6)  
|             | MAC address table size | 288K entries  
|             | 2560 Gbps  
|             | 250k entries (IPv4), 64K entries (IPv6)  
|             | 288K entries  
|             | Up to 1904 Mpps  
|             | 1 µs (64-byte packets) |

| Reliability | MTBF (years) | 47.2  
|             | MTTR (hours) | 1  
|             | 35.8  

| Environment | Operating temperature | 32°F to 113°F (0°C to 45°C)  
|             | Operating relative humidity | 10% to 90%, noncondensing  
|             | Acoustic | Low-Speed: 69.8 dB, High-Speed: 82.2 dB  
|             | 32°F to 113°F (0°C to 45°C)  
|             | 10% to 90%, noncondensing  
|             | Low-Speed: 61.3 dB, High-Speed: 78.4 dB |
# HPE FlexFabric 5940 Switch Series

## Specifications (continued)

<table>
<thead>
<tr>
<th>Electrical characteristics</th>
<th>HPE FlexFabric 5940 2-slot Switch (JH397A)</th>
<th>HPE FlexFabric 5940 4-slot Switch (JH398A)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Frequency</td>
<td>50/60 Hz</td>
<td>50/60 Hz</td>
</tr>
<tr>
<td>Maximum heat dissipation</td>
<td>2921 BTU/hr</td>
<td>1535 BTU/hr</td>
</tr>
<tr>
<td>Voltage</td>
<td>100–240 VAC, rated</td>
<td>100–240 VAC, rated</td>
</tr>
<tr>
<td>-40 to -60 VDC, rated</td>
<td>(depending on power supply chosen)</td>
<td>(depending on power supply chosen)</td>
</tr>
<tr>
<td>Maximum power rating</td>
<td>450W</td>
<td>856W</td>
</tr>
<tr>
<td>Idle power</td>
<td>105W</td>
<td>139W</td>
</tr>
<tr>
<td>Notes</td>
<td>Idle power is the actual power consumption</td>
<td>Idle power is the actual power consumption</td>
</tr>
<tr>
<td></td>
<td>of the device with no ports connected.</td>
<td>of the device with no ports connected.</td>
</tr>
<tr>
<td></td>
<td>Maximum power rating and maximum heat</td>
<td>Maximum power rating and maximum heat</td>
</tr>
<tr>
<td></td>
<td>dissipation are the worst-case theoretical</td>
<td>dissipation are the worst-case theoretical</td>
</tr>
<tr>
<td></td>
<td>maximum numbers provided for planning the</td>
<td>maximum numbers provided for planning the</td>
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<tr>
<td></td>
<td>infrastructure with fully loaded PoE (if</td>
<td>infrastructure with fully loaded PoE (if</td>
</tr>
<tr>
<td></td>
<td>equipped), 100% traffic, all ports plugged</td>
<td>equipped), 100% traffic, all ports plugged</td>
</tr>
<tr>
<td></td>
<td>in, and all modules populated.</td>
<td>in, and all modules populated.</td>
</tr>
<tr>
<td>Safety</td>
<td>UL 60950-1; EN 60825-1 Safety of Laser</td>
<td>UL 60950-1; EN 60825-1 Safety of Laser</td>
</tr>
<tr>
<td></td>
<td>Products-Part 1;</td>
<td>Products-Part 1;</td>
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<tr>
<td></td>
<td>EN 60825-2 Safety of Laser Products-Part 2;</td>
<td>EN 60825-2 Safety of Laser Products-Part 2;</td>
</tr>
<tr>
<td></td>
<td>IEC 60590-1;</td>
<td>IEC 60590-1;</td>
</tr>
<tr>
<td></td>
<td>CAN/CSA-C22.2 No. 60950-1; Anatel ULaR, GOST;</td>
<td></td>
</tr>
<tr>
<td></td>
<td>EN 60950-1/A11; FDA 21 CFR Subchapter J; NOM;</td>
<td>EN 60950-1/A11; FDA 21 CFR Subchapter J; NOM;</td>
</tr>
<tr>
<td></td>
<td>RoHS Compliance</td>
<td>RoHS Compliance</td>
</tr>
<tr>
<td>Emissions</td>
<td>VCCI Class A; EN 55022 Class A; ICES-003</td>
<td>VCCI Class A; EN 55022 Class A; ICES-003</td>
</tr>
<tr>
<td></td>
<td>Class A; ANSI C63.4 2003; AS/NZS CISPR 22</td>
<td>Class A; ANSI C63.4 2003; AS/NZS CISPR 22</td>
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<tr>
<td></td>
<td>Class A; EN 61000-3-2-2006; EN 61000-3-3:</td>
<td>Class A; EN 61000-3-2-2006; EN 61000-3-3:</td>
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<td></td>
<td>ANSI/TIA-1057 LLDP Media Endpoint Discovery</td>
<td>ANSI/TIA-1057 LLDP Media Endpoint Discovery</td>
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<tr>
<td></td>
<td>(LLDP-MED)</td>
<td>(LLDP-MED)</td>
</tr>
<tr>
<td>Immunity</td>
<td>ETSI EN 300 386 V1.3.3</td>
<td>ETSI EN 300 386 V1.3.3</td>
</tr>
<tr>
<td>Electronic Safety Devices</td>
<td>EN 61000-4-2; IEC 61000-4-2</td>
<td>EN 61000-4-2; IEC 61000-4-2</td>
</tr>
<tr>
<td>ESD</td>
<td>EN 61000-4-3; IEC 61000-4-3</td>
<td>EN 61000-4-3; IEC 61000-4-3</td>
</tr>
<tr>
<td>EFT/Burst</td>
<td>EN 61000-4-4; IEC 61000-4-4</td>
<td>EN 61000-4-4; IEC 61000-4-4</td>
</tr>
<tr>
<td>Surge</td>
<td>EN 61000-4-5; IEC 61000-4-5</td>
<td>EN 61000-4-5; IEC 61000-4-5</td>
</tr>
<tr>
<td>Conducted</td>
<td>EN 61000-4-6; IEC 61000-4-6</td>
<td>EN 61000-4-6; IEC 61000-4-6</td>
</tr>
<tr>
<td>Power frequency magnetic</td>
<td>IEC 61000-4-8; EN 61000-4-8</td>
<td>IEC 61000-4-8; EN 61000-4-8</td>
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<tr>
<td>field</td>
<td>EN 61000-4-11; IEC 61000-4-11</td>
<td>EN 61000-4-11; IEC 61000-4-11</td>
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<tr>
<td>Voltage dips and</td>
<td>EN 61000-3-2; IEC 61000-3-2</td>
<td>EN 61000-3-2; IEC 61000-3-2</td>
</tr>
<tr>
<td>interruptions</td>
<td>EN 61000-3-3; IEC 61000-3-3</td>
<td>EN 61000-3-3; IEC 61000-3-3</td>
</tr>
<tr>
<td>Harmonics</td>
<td>IMC—Intelligent Management Center, Command-line interface; SNMP manager, Telnet; FTP</td>
<td></td>
</tr>
<tr>
<td>Management</td>
<td>IMC—Intelligent Management Center, Command-line interface; SNMP manager, Telnet; FTP</td>
<td></td>
</tr>
<tr>
<td>Notes</td>
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<td></td>
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<tr>
<td>Services</td>
<td>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 Hewlett Packard Enterprise sales office.</td>
<td></td>
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<td></td>
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<td></td>
</tr>
</tbody>
</table>
### Standards and protocols

*(Applies to all products in series)*

**BGP**
- RFC 1163 Border Gateway Protocol (BGP)
- RFC 1771 BGP
- RFC 1997 BGP Communities Attribute
- RFC 2918 Route Refresh Capability
- RFC 3392 Capabilities Advertisement with BGP
- 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 (BGP-4)
- RFC 4760 Multiprotocol Extensions for BGP-4
- RFC 7432 BGP MPLS-Based Ethernet VPN

**Device management**
- RFC 1157 SNMPv1/v2
- RFC 1305 NTPv3
- RFC 1591 DNS (client)
- RFC 1902 (SNMPv2)
- RFC 1908 (SNMPv1/2 Coexistence)
- RFC 2576 (Coexistence between SNMPv1, v2, and v3)
- RFC 2819 RMON
- Multiple Configuration Files
- Multiple Software Images
- SSHv1/SSHv2 Secure Shell
- TACACS/TACACS+

**General protocols**
- IEEE 802.1ad Q-in-Q
- IEEE 802.1AX-2008 Link Aggregation
- IEEE 802.1D MAC Bridges
- IEEE 802.1p Priority
- IEEE 802.1Q VLANs
- IEEE 802.1s Multiple Spanning Trees
- IEEE 802.1w 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 793 IP
- RFC 792 ICMP
- RFC 793 TCP
- RFC 826 ARP
- RFC 854 TELNET
- RFC 856 TELNET
- RFC 868 Time Protocol
- RFC 869 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 (OSPFv2)
- RFC 1351 Dynamic Host Configuration Protocol
- RFC 1533 DHCP Options and BOOTP Vendor Extensions
- RFC 1534 DHCP/BOOTP Interoperation
- RFC 1541 DHCP
- RFC 1542 Clarifications and Extensions for the Bootstrap Protocol
- RFC 1591 DNS (client only)
- RFC 1624 Incremental Internet Checksum
- RFC 1723 RIPv2
- RFC 1812 IPv4 Routing
- RFC 2030 Simple Network Time Protocol (SNTP) v4
- RFC 2131 DHCP
- RFC 2236 IGMP Snooping
- RFC 2338 VRRP
- RFC 2453 RIPv3
- RFC 2581 TCP Congestion Control
- RFC 2644 Directed Broadcast Control
- RFC 2767 Dual Stacks IPv4 & IPv6
- RFC 2865 Remote Authentication Dial In User Service (RADIUS)
- RFC 2868 RADIUS Attributes for Tunnel Protocol Support
- RFC 2890 Key and Sequence Number Extensions to GRE
- RFC 3046 DHCP Relay Agent Information Option
- RFC 3411 an Architecture for Describing Simple Network Management Protocol (SNMP) Management Frameworks
- RFC 3412 Message Processing and Dispatching for the Simple Network Management Protocol (SNMP)
- RFC 3413 Simple Network Management Protocol (SNMP) Applications
- RFC 3416 Protocol Operations for SNMP
- RFC 3417 Transport Mappings for the Simple Network Management Protocol (SNMP)
- RFC 3418 Management Information Base (MIB) for the Simple Network Management Protocol (SNMP)
- RFC 3768 Virtual Router Redundancy Protocol (VRRP)
- RFC 4250 The Secure Shell (SSH) Protocol
- 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 4292 IP Forwarding Table MIB
- RFC 4293 Management Information Base for the Internet Protocol (IP)
- RFC 4294 BGP/MPLS IP Virtual Private Networks (VPNs)
- RFC 4594 Configuration Guidelines for DiffServ Service Classes
- RFC 4604 Using Internet Group Management Protocol Version 3 (IGMPv3) and Multicast Listener Discovery Protocol Version 2 (MLDv2) for Source-Specific Multicast
- RFC 4607 Source-Specific Multicast for IP
- RFC 4941 Privacy Extensions for Stateless Address Auto-configuration in IPv6
- RFC 5340 OSPF for IPv6
- RFC 2929 DNS IANA Considerations
### Standards and protocols

(Applies to all products in series) (continued)

| 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 2562 ICMPv6  
RFC 2563 ICMPv6  
RFC 2713 IPv6-Router Alert Option  
RFC 2740 OSPFv3 for IPv6  
RFC 2767 Dual Stack Hosts using BIS  
RFC 3315 DHCPv6 (client and relay)  
RFC 3484 Default Address Selection for IPv6  
RFC 3810 Multicast Listener Discovery Version 2 (MLDv2) for IPv6  
RFC 3879 Basic Transition Mechanisms for IPv6 Hosts and Routers  
RFC 4291 IP Version 6  
RFC 4443 ICMPv6  
RFC 4552 Authentication/Confidentiality for OSPFv3  
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-User-Based MIB  
RFC 2577 SNMP-User-Based 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 2580 Conformance Statements for SMv2  
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  
RFC 4813 OSPF Link-Local 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** | RFC 1321 The MD5 Message-Digest Algorithm  
RFC 2818 HTTP Over TLS  
RFC 6192 Partial Support—Protecting the Router Control Plane  
Access control lists (ACLs)  
SSHv2 Secure Shell  |
HPE FlexFabric 5940 Switch Series accessories

HPE FlexFabric 5940 48SFP+ 6QSFP+ Switch (JH395A)
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 X125 1G SFP LC LH40 1550nm Transceiver (JD062A)
HPE X125 1G SFP LC LH80 Transceiver (JD063B)
HPE X130 10G SFP+ LC SR Transceiver (JD092B)
HPE X130 10G SFP+ LC LR Transceiver (JD094B)
HPE X240 10G SFP+ SFP+ 3m DA Cable (JD097C)
HPE X240 SFP+ SFP+ 5m DAC Cable (JG081C)
HPE X240 10G SFP+ SFP+ 0.65m DA Cable (JD095C)
HPE X240 10G SFP+ SFP+ 1.2m DA Cable (JD096C)
HPE X2A0 10G SFP+ to SFP+ 7m Active Optical Cable (JL290A)
HPE X2A0 10G SFP+ to SFP+ 10m Active Optical Cable (JL291A)
HPE X2A0 10G SFP+ to SFP+ 20m Active Optical Cable (JL292A)
HPE X140 40G QSFP+ LC LR4 SM 10km 1310nm Transceiver (JG661A)
HPE X140 40G QSFP+ MPO MM 850nm CSR4 300m Transceiver (JG709A)
HPE X140 40G QSFP+ MPO SR4 Transceiver (JG325B)
HPE X140 40G QSFP+ LC BiDi 100m MM Transceiver (JL251A)
HPE X140 40G QSFP+ LC LR4L 2km SM Transceiver (JL286A)
HPE X140 40G QSFP+ LC ER4 40km SM Transceiver (JL306A)
HPE X2A0 40G QSFP+ QSFP+ 1m DAC Cable (JG326A)
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HPE X2A0 40G QSFP+ QSFP+ 5m DAC Cable (JG328A)
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HPE X2A0 40G QSFP+ to QSFP+ 20m Active Optical Cable (JL289A)
HPE 58x0AF Back (Power Side) to Front (Port Side) Airflow 300W AC Power Supply (JG900A)
HPE 58x0AF Back (Power Side) to Front (Port Side) Airflow 300W DC Power Supply (JG901A)
HPE 58x0AF 650W AC Power Supply (JC680A)
HPE FlexFabric Switch 650W 48V Hot Plug NEBS-compliant DC Power Supply
HPE 58x0AF Back (power side) to Front (port side) Airflow Fan Tray (JC682A)
HPE 58x0AF Front (port side) to Back (power side) Airflow Fan Tray (JC683A)
HPE X711 Front (port side) to Back (power side) Airflow High Volume Fan Tray (JG552A)
HPE X712 Back (power side) to Front (port side) Airflow High Volume Fan Tray (JG553A)

**HPE FlexFabric 5940 32QSFP+ Switch (JH396A)**
HPE X140 40G QSFP+ LC LR4 SM 10km 1310nm Transceiver (JG661A)
HPE X140 40G QSFP+ MPO MM 850nm CSR4 300m Transceiver (JG709A)
HPE X140 40G QSFP+ MPO SR4 Transceiver (JG325B)
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HPE X2A0 40G QSFP+ to QSFP+ 10m Active Optical Cable (JL288A)
HPE X2A0 40G QSFP+ to QSFP+ 20m Active Optical Cable (JL289A)
HPE 58x0AF 650W AC Power Supply (JC680A)

**HPE FlexFabric Switch 650W 48V Hot Plug NEBS-compliant DC Power Supply**
HPE X711 Front (port side) to Back (power side) Airflow High Volume Fan Tray (JG552A)
HPE X712 Back (power side) to Front (port side) Airflow High Volume Fan Tray (JG553A)

**HPE FlexFabric 5940 48XGT 6QSFP+ Switch (JH394A)**
HPE X140 40G QSFP+ LC LR4 SM 10km 1310nm Transceiver (JG661A)
HPE X140 40G QSFP+ MPO MM 850nm CSR4 300m Transceiver (JG709A)
HPE X140 40G QSFP+ MPO SR4 Transceiver (JG325B)
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HPE X140 40G QSFP+ LC LR4L 2km SM Transceiver (JL286A)
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HPE FlexFabric Switch 5940 48SFP+ 6QSFP28 Switch (JH390A)
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 X140 40G QSFP+ LC ER4 40km SM Transceiver (JL306A)
HPE X240 40G QSFP+ QSFP+ 1m DAC Cable (JG326A)
HPE X240 40G QSFP+ QSFP+ 3m DAC Cable (JG327A)
HPE X240 40G QSFP+ QSFP+ 5m DAC Cable (JG328A)
HPE X150 100G QSFP28 MPO SR4 100m MM Transceiver (JL274A)
HPE X150 100G QSFP28 LC LR4 10km SM Transceiver (JL275A)
HPE X150 100G QSFP28 LC SWDM4 100m MM Transceiver (JH419A)
HPE X150 100G QSFP28 MPO PSM4 500m SM Transceiver (JH420A)
HPE X150 100G QSFP28 CWDM4 2km SM Transceiver (JH573A)
HPE X240 100G QSFP28 to QSFP28 1m Direct Attach Copper Cable (JL271A)
HPE X240 100G QSFP28 3m DAC Cable (JL272A)
HPE X240 100G QSFP28 to QSFP28 5m Direct Attach Copper Cable (JL273A)
HPE 58x0AF Back (Power Side) to Front (Port Side) Airflow 300WAC Power Supply (JG900A)
HPE 58x0AF Back (Power Side) to Front (Port Side) Airflow 300WDC Power Supply (JG901A)
HPE 58x0AF Back (power side) to Front (port side) Airflow Fan Tray (JC682A)
HPE 58x0AF Front (port side) to Back (power side) Airflow Fan Tray (JC683A)
HPE X711 Front (port side) to Back (power side) Airflow High Volume Fan Tray (JG552A)
HPE X712 Back (power side) to Front (port side) Airflow High Volume Fan Tray (JG553A)

**HPE FlexFabric 5940 48XGT 6QSFP28 Switch (JH391A)**

HPE X140 40G QSFP+ LC LR4 SM 10km 1310nm Transceiver (JG661A)
HPE X140 40G QSFP+ MPO MM 850nm CSR4 300m Transceiver (JG709A)
HPE X140 40G QSFP+ MPO SR4 Transceiver (JG325B)
HPE X160 40G QSFP+ LC BiDi 100m MM Transceiver (JL251A)
HPE X160 40G QSFP+ LC LR4L 2km SM Transceiver (JL286A)
HPE X160 40G QSFP+ LC ER4 40km SM Transceiver (JL306A)
HPE X240 40G QSFP+ QSFP+ 1m DAC Cable (JG326A)
HPE X240 40G QSFP+ QSFP+ 3m DAC Cable (JG327A)
HPE X240 40G QSFP+ QSFP+ 5m DAC Cable (JG328A)
<table>
<thead>
<tr>
<th>Model</th>
<th>Description</th>
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<tr>
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<td>Transceiver (JL274A)</td>
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<td>HPE X150 100G QSFP28 LC LR4 10km SM</td>
<td>Transceiver (JL275A)</td>
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<td>HPE X150 100G QSFP28 LC SWDM4 100m MM</td>
<td>Transceiver (JH419A)</td>
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<td>HPE X150 100G QSFP28 MPO PSM4 500m SM</td>
<td>Transceiver (JH420A)</td>
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<td>HPE X150 100G QSFP28 CWDM4 2km SM</td>
<td>Transceiver (JH673A)</td>
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<td>HPE X240 100G QSFP28 to QSFP28 1m DAC</td>
<td>Cable (JL271A)</td>
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<td>HPE X240 100G QSFP28 to QSFP28 3m DAC</td>
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<td>HPE X240 100G QSFP28 to QSFP28 5m DAC</td>
<td>Cable (JL273A)</td>
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<tr>
<td>HPE 58x0AF 650W AC Power Supply</td>
<td>(JC680A)</td>
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<tr>
<td>HPE FlexFabric Switch 650W 48V Hot Plug</td>
<td>NEBS-compliant DC Power Supply</td>
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<tr>
<td>HPE X711 Front (port side) to Back (power</td>
<td>Airflow High Volume Fan Tray (JG552A)</td>
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<tr>
<td>HPE X712 Back (power side) to Front (port</td>
<td>Airflow High Volume Fan Tray (JG553A)</td>
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<td>side)</td>
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<td><strong>HPE FlexFabric 5940 2-slot Switch (JH397A)</strong></td>
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<td>HPE X240 10G SFP+ SFP+ 5m DAC Cable</td>
<td>(JG081C)</td>
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<td>HPE X240 10G SFP+ SFP+ 0.65m DAC Cable</td>
<td>(JD095C)</td>
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<td>HPE X130 10G SFP+ LC LH 80km Transceiver—only on ports with PHY (JG915A)</td>
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<td>HPE FlexFabric 5950 8-port QSFP28 MACsec Module</td>
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<td>HPE X125 1G SFP LC LH40 1310nm Transceiver</td>
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<td>HPE X125 1G SFP LC LH40 1550nm Transceiver</td>
<td>(JD062A)</td>
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<tr>
<td>HPE X125 1G SFP LC LH70 Transceiver</td>
<td>(JD063B)</td>
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<td>HPE X125 1G SFP RJ45 T Transceiver</td>
<td>(JD089B)</td>
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<td>HPE X120 1G SFP LC SX Transceiver</td>
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<td>HPE X240 10G SFP+ SFP+ 7m Direct Attach Copper Cable</td>
<td>(JC784C)</td>
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<tr>
<td>HPE 5930 24-port SFP+ and 2-port QSFP+ Module (JH180A)</td>
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<td>HPE 5930 24-port SFP+ and 2-port QSFP+ with MACsec Module (JH181A)</td>
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<td>HPE 5930 24-port 10GBASE-T and 2-port QSFP+ with MACsec Module (JH182A)</td>
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<td>HPE 5930 24-port Converged Port and 2-port QSFP+ Module (JH183A)</td>
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<td>HPE 5940 2-port QSFP+ and 2-port QSFP28 Module (JH409A)</td>
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<td>HPE FlexFabric 5950 8-port QSFP28 MACsec Module (JH957A)</td>
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<td>HPE X120 1G SFP LC LH40 1310nm Transceiver</td>
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<td>HPE X125 1G SFP LC LH70 Transceiver</td>
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<td>HPE X240 10G SFP+ SFP+ 7m Direct Attach Copper Cable</td>
<td>(JC784C)</td>
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**Data sheet**
HPE X130 10G SFP+ LC SR Transceiver (JD092B)

HPE X130 10G SFP+ LC LR Transceiver (JD094B)

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 X130 10G SFP+ LC ER 40km Transceiver (JG234A)

HPE X240 10G SFP+ to SFP+ 7m Active Optical Cable (JL290A)

HPE X240 10G SFP+ to SFP+ 10m Active Optical Cable (JL291A)

HPE X240 10G SFP+ to SFP+ 20m Active Optical Cable (JL292A)

HPE X140 40G QSFP+ MPO SR4 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 QSFP+ LC LR4 SM 10km 1310nm Transceiver (JG661A)

HPE X140 40G QSFP+ MPO MM 850nm CSR4 300m Transceiver (JG709A)
**HPE FlexFabric 5940 4-slot Switch (JH598A)**

- HPE X240 10G SFP+ SFP+ 5m DAC Cable (JG081C)
- HPE X240 10G SFP+ SFP+ 0.65m DAC Cable (JD095C)
- HPE X130 10G SFP+ LC LH 80km Transceiver—only on ports with PHY (JG915A)
- HPE FlexFabric Switch 650W 48V Hot Plug NEBS-compliant DC Power Supply
- HPE S930 24-port SFP+ and 2-port QSFP+ Module (JH180A)
- HPE S930 24-port SFP+ and 2-port QSFP+ with MACsec Module (JH181A)
- HPE S940 2-port QSFP+ and 2-port QSFP28 Module (JH09A)
- HPE S930 24-port 10GBASE-T and 2-port QSFP+ with MACsec Module (JH182A)
- HPE S930 8-port QSFP+ Module (JH183A)
- HPE S930 24-port Converged Port and 2-port QSFP+ Module (JH184A)
- HPE FlexFabric S950 8-port QSFP28 MACsec Module (JH957A)
- 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 RJ45 T Transceiver (JD089B)
- HPE X120 1G SFP LC SX Transceiver (JD118B)
- HPE X120 1G SFP LC LX Transceiver (JD119B)

**HPE FlexFabric 5950 8-port QSFP28 MACsec Module (JH957A)**

- HPE X240 10G SFP+ SFP+ 7m Direct Attach Copper Cable (JC784C)
- HPE X130 10G SFP+ LC SR Transceiver (JD092B)
- HPE X130 10G SFP+ LC LR Transceiver (JD094B)
- 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 X130 10G SFP+ LC ER 40km Transceiver (JG234A)
- HPE X2A0 10G SFP+ to SFP+ 7m Active Optical Cable (JL290A)
- HPE X2A0 10G SFP+ to SFP+ 10m Active Optical Cable (JL291A)
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- HPE X140 40G QSFP+ MPO SR4 Transceiver (JG325B)
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HPE X150 100G QSFP28 LC SWDM4 100m MM Transceiver (JH439A)
HPE X150 100G QSFP28 CWDM4 2km SM Transceiver (JH673A)
HPE 58x0AF 650W AC Power Supply (JC680A)

HPE FlexFabric 5930 4-slot Back (Power Side) to Front (Port Side) Airflow Fan Tray (JH185A)
HPE FlexFabric 5930 4-slot Front (Port Side) to Back (Power Side) Airflow Fan Tray (JH186A)

Switch bundles
Select HPE FlexFabric Switch 5940 models are available with power supplies and fan trays included.
HPE FlexFabric 5940 2-slot 2QSFP+ Front-to-Back AC Bundle (JQ041A): Includes (1) HPE FlexFabric 5940 2-slot Switch (JH397A), (2) power supplies (JC680A), (2) front-to-back fan trays (JG552A).
HPE FlexFabric 5940 2-slot 2QSFP+ Back-to-Front AC Bundle (JQ042A): Includes (1) HPE FlexFabric 5940 2-slot Switch (JH397A), (2) power supplies (JC680A), (2) back-to-front fan trays (JG553A)
HPE FlexFabric 5940 4-slot Front-to-Back AC Bundle (JQ043A): Includes (1) HPE FlexFabric 5940 4-slot Switch (JH398A), (4) power supplies (JC680A), (2) front-to-back fan trays (JH186A)
HPE FlexFabric 5940 4-slot Back-to-Front AC Bundle (JQ044A): Includes (1) HPE FlexFabric 5940 4-slot Switch (JH398A), (4) power supplies (JC680A), (2) back-to-front fan trays (JH185A)

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