

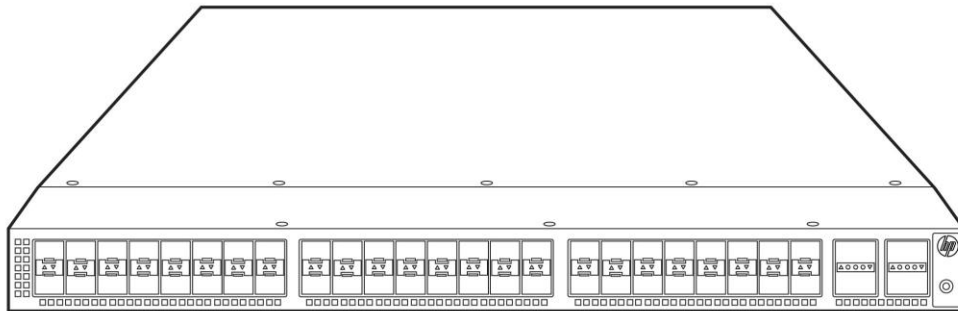
### Overview

## HP 5900 Switch Series

### Product overview

The HP 5900 Switch Series is a family of high-density, ultra-low-latency, top-of-rack (ToR) switches that is part of the HP FlexNetwork architecture's HP FlexFabric solution.

Ideally suited for deployment at the server access layer of large enterprise data centers, the HP 5900 Switch Series is also powerful enough for deployment at the data center core layer of medium-sized enterprises. With the increase in virtualized applications and server-to-server traffic, customers 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-low-latency all in a single device.



### Key features

- Cut-through with ultra low latency and wire speed
- HP Intelligent Resilient Framework (IRF) for virtualization and two-tier architecture
- High 1/10GbE ToR port density with 40 GbE uplinks
- IPv6 support in ToR with full L2/L3 features
- Convergence ready with DCB, FCoE, 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; 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**

### Overview

the HP 5900 Switch Series enables scaling of the server edge with 1 GbE and 10GbE ToR deployments to new heights with high-density 48-port solutions delivered in a 1RU design; the high server port density is backed by 40 GbE QSFP+ uplinks to deliver the availability of needed bandwidth for demanding applications; each 40 GbE QSFP+ port can also be configured as four 10GbE ports by using a 40-GbE-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**  
HP Intelligent Resilient Framework (IRF) technology simplifies the architecture of server access networks; up to nine HP 5900 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 like hitless software upgrades with single-chassis ISSU
- **SPB, TRILL, and EVB/VEPA**  
Shortest Path Bridging (SPB) and Transparent Interconnection of Lots of Links (TRILL) is supported to increase the scale of enterprise data centers; 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) protocols**  
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), including expansion, fabric, trunk VF and N ports, and aggregation of E-port and 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, allows high-performance remote backup and disaster-recovery services to be enabled

### Manageability

- **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**  
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**

### Overview

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 is provided with sFlow and SNMP v1/v2/v3, and is fully supported in 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, NETCONF and Python Scripting
- **Network Time Protocol (NTP) and Secure Network Time Protocol (SNTP)**  
synchronize timekeeping among distributed time servers and clients; keep consistent timekeeping among all clock-dependent devices within the network so that the devices can provide diverse applications based on the consistent time. Precision Time Protocol (PTP) RFC 1855 Compliant

### Resiliency and high availability

- **HP Intelligent Resilient Framework (IRF) technology**  
enables an HP FlexFabric to deliver resilient, scalable, and secured data center networks for physical and virtualized environments; groups up to nine HP 5900 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
- **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
- **Per VLAN Spanning Tree (PVST)**  
provides high link availability in multiple VLAN environments by allowing spanning tree instances per VLAN
- **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, 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, Protocol-based, and Subnet-based VLANs**  
provides granular control and security; uses RADIUS to map a MAC address/user to specific VLANs, map protocols to specific VLANs or subnets to specific VLANs.
- **Address Resolution Protocol (ARP)**  
supports static, dynamic, and reverse ARP and ARP proxy
- **Flow Control**

### Overview

- 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; 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)**  
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 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 Layer 2 optimization of multicast traffic
- **DHCP support at Layer 2**  
provides full DHCP Snooping support for 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
- **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

### 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
- **Open shortest path first (OSPF)**  
delivers faster convergence; 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; scales to very large networks
- **Intermediate system to intermediate system (IS-IS)**  
uses a path vector Interior Gateway Protocol (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

### Overview

- **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, 6to4, 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, MPLS, and IRF
- **Multicast Routing**  
provides robust support of multicast protocols PIM-SM, PIM-DM, PIM-SSM and PIM-BIDIR
- **Layer 3 IPv6 routing**  
provides routing of IPv6 at media speed; 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; shuts off unused ports and utilizes variable-speed fans, reducing energy costs
- **Low power consumption**  
is rated to have one of the lowest power usages in the industry by Miercom independent tests

### Management

- **USB support**
  - **File copy**  
allows users to copy switch files to and from a USB flash drive
- **Multiple configuration files**  
can be stored to the flash image
- **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; keeps timekeeping consistent 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 command-line interface (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

### Overview

- **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**  
provide 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; 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 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; 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**  
HP Intelligent Management Center (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 Layer 3 filtering based on 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**  
control 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)**  
is 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

### Overview

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

### Configuration

#### Build To Order:

BTO is a standalone unit with no integration. BTO products ship standalone are not part of a CTO or Rack-Shippable solution.

##### HP 5900AF-48XG-4QSFP+ Switch

- 48 fixed 1000/10000 SFP+ ports (min=0 \ max=48)
- 4 QSFP+ 40-GbE ports (min=0 \ max=4)
- Must select min 1 Power Supply
- Must select min 2 Fan Tray
- 1U - Height

JC772A

See Configuration  
Note: 1,2

##### HP 5900AF-48XG-4QSFP F-B Bundle

##### HP 5900AF-48XG-4QSFP F-B 4xUnit Bundle

- 4 - JC772A HP 5900AF-48XG-4QSFP+ Switch
- 8 - JC680A HP 58x0AF 650W AC Power Supply
- 8 - JC683A HP 58x0AF Frt(ports)-Bck(pwr) Fan Tray
- 6 - JD097C HP X240 10G SFP+ SFP+ 3m DAC Cable
- 2 - JG081C HP X240 10G SFP+ SFP+ 5m DAC Cable
- 64 - JD092B HP X130 10G SFP+ LC SR Transceiver

JG846A

See Configuration  
Note:1, 2,6

#### Each Switch:

- 48 fixed 1000/10000 SFP+ ports (System Std=20 \ max=48 User min=0 \ max=28)
- 4 QSFP+ 40-GbE ports (min=0 \ max=4) (System Std=4 \ max=4 User min=-4 \ max=0)
- 2 Power Supplies Standard (min=2 \ max=2)
- 2 Front to Back Fan Trays Standard (min=2 \ max=2)
- 1U - Height

##### PDU Cable NA/MEX/TW/JP (8 Cables)

- C15 PDU Jumper Cord (NA/MEX/TW/JP) (8 Cables)

JG846A#B2B

##### PDU Cable ROW (8 Cables)

- C15 PDU Jumper Cord (ROW) (8 Cables)

JG846A#B2C

##### HP 5900AF-48XG-4QSFP B-F Bundle

##### HP 5900AF-48XG-4QSFP B-F 4xUnit Bundle

- 4 - JC772A HP 5900AF-48XG-4QSFP+ Switch
- 8 - JC680A HP 58x0AF 650W AC Power Supply
- 8 - JC682A HP 58x0AF Bck(pwr)-Frt(ports) Fan Tray
- 6 - JD097C HP X240 10G SFP+ SFP+ 3m DAC Cable
- 2 - JG081C HP X240 10G SFP+ SFP+ 5m DAC Cable
- 64 - JD092B HP X130 10G SFP+ LC SR Transceiver

JG847A

See Configuration  
Note:1, 2, 6

#### Each Switch:



### Configuration

- 48 fixed 1000/10000 SFP+ ports (System Std=20 \ max=48 User min=0 \ max=28)
- 4 QSFP+ 40-GbE ports (min=0 \ max=4)
- 2 Power Supplies Standard (min=2 \ max=2)
- 2 Back to Front Fan Trays Standard (min=2 \ max=2)
- 1U - Height

#### PDU Cable NA/MEX/TW/JP (8 Cables)

JG847A#B2B

- C15 PDU Jumper Cord (NA/MEX/TW/JP) (8 Cables)

#### PDU Cable ROW (8 Cables)

JG847A#B2C

- C15 PDU Jumper Cord (ROW) (8 Cables)

#### HP 5900AF-48XGT-4QSFP+ Switch

JG336A

- 48 RJ-45 1/10GbE ports 4 QSFP+ 40-GbE ports (min=0 \ max=4)
- Must select min 1 Power Supply
- Must select min 2 Fan Tray
- 1U - Height

See Configuration  
Note: 2

#### HP 5900AF-48XGT-4QSFP F-B Bundle

JG850A

#### HP 5900AF-48XGT-4QSFP F-B 4xUnit Bundle

See Configuration  
Note:2, 6

- 4 - JG336A HP 5900AF-48XGT-4QSFP+ Switch
- 8 - JC680A HP 58x0AF 650W AC Power Supply
- 8 - JG552A HP X712 Frt(ports)-Bck(pwr) HV Fan Tray

#### Each Switch:

- 48 RJ-45 10GbE ports
- 4 QSFP+ 40-GbE ports (min=0 \ max=4)
- 2 Power Supplies Standard (min=2 \ max=2)
- 2 Front to Back Fan Trays Standard (min=2 \ max=2)
- 1U - Height

#### PDU Cable NA/MEX/TW/JP (8 Cables)

JG850A#B2B

- C15 PDU Jumper Cord (NA/MEX/TW/JP) (8 Cables)

#### PDU Cable ROW (8 Cables)

JG850A#B2C

- C15 PDU Jumper Cord (ROW) (8 Cables)

#### HP 5900AF-48XGT-4QSFP B-F Bundle

JG851A

#### HP 5900AF-48XGT-4QSFP F-B 4xUnit Bundle

See Configuration  
Note:2, 6

- 4 - JG336A HP 5900AF-48XGT-4QSFP+ Switch

### Configuration

- 8 - JC680A HP 58x0AF 650W AC Power Supply
- 8 - JC553A HP X712 Bck(pwr)-Frt(ports) HV Fan Tray

#### Each Switch:

- 48 RJ-45 10GbE ports
- 4 QSFP+ 40-GbE ports (min=0 \ max=4)
- 2 Power Supplies Standard (min=2 \ max=2)
- 2 Back to Front Fan Trays Standard (min=2 \ max=2)
- 1U - Height

#### PDU Cable NA/MEX/TW/JP (8 Cables)

JG851A#B2B

- C15 PDU Jumper Cord (NA/MEX/TW/JP) (8 Cables)

#### PDU Cable ROW (8 Cables)

JG851A#B2C

- C15 PDU Jumper Cord (ROW) (8 Cables)

#### HP 5900AF-48G-4XG-2QSFP+ Switch

JG510A

See Configuration  
Note: 1,2

- 48 autosensing 10/100/1000 ports (RJ45)
- 4 fixed 1000/10000 SFP+ ports (min=0 \ max=4)
- 2 QSFP+ 40-GbE ports (min=0 \ max=2)
- Must select min 1 Power Supply
- Must select min 2 Fan Tray
- 1U - Height

#### HP 5900AF-48G-4XG-2QSFP F-B Bundle

JG848A

#### HP 5900AF-48G-4XG-2QSFP F-B 4xUnt Bundle

See Configuration  
Note:1, 2, 6

- 4 - JG510A HP 5900AF-48G-4XG-2QSFP+ Switch
- 8 - JC680A HP 58x0AF 650W AC Power Supply
- 8 - JC683A HP 58x0AF Frt(ports)-Bck(pwr) Fan Tray
- 32 - JD092B HP X130 10G SFP+ LC SR Transceiver  
(16 Transceivers for the 4 Switches and 16 additional)

#### Each Switch:

- 48 autosensing 10/100/1000 ports (RJ45)
- 4 fixed 1000/10000 SFP+ ports (System Std=4 \ max=4 User min=0 \ max=0)
- 2 QSFP+ 40-GbE ports (min=0 \ max=2)
- 2 Power Supplies Standard (min=2 \ max=2)
- 2 Front to Back Fan Trays Standard (min=2 \ max=2)
- 1U - Height

#### PDU Cable NA/MEX/TW/JP (8 Cables)

JG848A#B2B

### Configuration

- C15 PDU Jumper Cord (NA/MEX/TW/JP) (8 Cables)

#### PDU Cable ROW (8 Cables)

JG848A#B2C

- C15 PDU Jumper Cord (ROW) (8 Cables)

#### HP 5900AF-48G-4XG-2QSFP B-F Bundle

JG849A

#### HP 5900AF-48G-4XG-2QSFP B-F 4xUnt Bundle

See Configuration  
Note:1, 2, 6

- 4 - JG510A HP 5900AF-48G-4XG-2QSFP+ Switch
- 8 - JC680A HP 58x0AF 650W AC Power Supply
- 8 - JC682A HP 58x0AF Bck(pwr)-Frt(ports) Fan Tray
- 32 - JD092B HP X130 10G SFP+ LC SR Transceiver  
(16 Transceivers for the 4 Switches and 16 additional)

#### Each Switch:

- 48 autosensing 10/100/1000 ports (RJ45)
- 4 fixed 1000/10000 SFP+ ports(System Std=4 \ max=4 User min=0 \ max=0)
- 2 QSFP+ 40-GbE ports (min=0 \ max=2)
- 2 Power Supplies Standard (min=2 \ max=2)
- 2 Back to Front Fan Trays Standard (min=2 \ max=2)
- 1U - Height

#### PDU Cable NA/MEX/TW/JP (8 Cables)

JG849A#B2B

- C15 PDU Jumper Cord (NA/MEX/TW/JP) (8 Cables)

#### PDU Cable ROW (8 Cables)

JG849A#B2C

- C15 PDU Jumper Cord (ROW) (8 Cables)

#### Note 1 The following Transceivers install into this switch:

HP X130 SFP+ LC SR Transceiver	JD092B
HP X130 SFP+ LC LRM Transceiver	JD093B
HP X130 SFP+ LC LR Transceiver	JD094B
HP X130 10G SFP+ LC ER 40km Transceiver	JG234A
HP X240 10G SFP+ SFP+ 0.65m DAC Cable	JD095C
HP X240 10G SFP+ SFP+ 1.2m DAC Cable	JD096C
HP X240 10G SFP+ SFP+ 3m DAC Cable	JD097C
HP X240 10G SFP+ SFP+ 5m DAC Cable	JG081C
HP X240 10G SFP+ 7m DAC Cable	JC784C
HP X125 1G SFP LC LH40 1310nm Transceiver	JD061A
HP X120 1G SFP LC LH40 1550nm Transceiver	JD062A
HP X125 1G SFP LC LH70 Transceiver	JD063B
HP X120 1G SFP RJ45 T Transceiver	JD089B
HP X120 1G SFP LC BX 10-U Transceiver	JD098B
HP X120 1G SFP LC BX 10-D Transceiver	JD099B

### Configuration

HP X125 1G SFP LC SX Transceiver	JD118B
HP X120 1G SFP LC LX Transceiver	JD119B

**Note 2** The following 40G Transceivers install into this switch:

HP X140 40G QSFP+ LC LR4 SM XCVR	JG661A
HP X140 40G QSFP+ MPO SR4 XCVR	JG325B
HP X140 40G QSFP+ CSR4 300m XCVR	JG709A
HP X240 40G QSFP+ QSFP+ 1m Direct Attach Copper Cable	JG326A
HP X240 40G QSFP+ QSFP+ 3m Direct Attach Copper Cable	JG327A
HP X240 40G QSFP+ 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

**Note 6** Localization (Wall Power Cord) required on orders without #B2B, #B2C (PDU Power Cord). (See Localization Menu)

### Box Level Integration CTO Models

<b>CTO Solution Sku</b>	HP 59xx CTO Switch Solution	JG505A
	<ul style="list-style-type: none"> <li>SSP trigger sku</li> </ul>	

<b>CTO Switch Chassis</b>	HP 5900AF-48XG-4QSFP+ Switch	JC772A
	<ul style="list-style-type: none"> <li>48 fixed 1000/10000 SFP+ ports (min=0 \ max=48)</li> <li>4 QSFP+ 40-GbE ports (min=0 \ max=4)</li> <li>Must select min 1 Power Supply</li> <li>Must select min 2 Fan Tray</li> <li>1U - Height</li> </ul>	See Configuration Note: 1,2,10

	HP 5900AF-48XGT-4QSFP+ Switch	JG336A
	<ul style="list-style-type: none"> <li>48 RJ-45 1/10GbE ports</li> <li>4 QSFP+ 40-GbE ports (min=0 \ max=4)</li> <li>min=0 \ max=4 QSFP+ Transceivers</li> <li>Must select min 1 Power Supply</li> <li>Must select min 2 Fan Tray</li> <li>1U - Height</li> </ul>	See Configuration Note: 2, 10

	HP 5900AF-48G-4XG-2QSFP+ Switch	JG510A
	<ul style="list-style-type: none"> <li>48 autosensing 10/100/1000 ports (RJ45)</li> <li>4 fixed 1000/10000 SFP+ ports (min=0 \ max=4)</li> <li>2 QSFP+ 40-GbE ports (min=0 \ max=2)</li> <li>Must select min 1 Power Supply</li> <li>Must select min 2 Fan Tray</li> <li>1U - Height</li> </ul>	See Configuration Note: 1,2,10

**Note 1** The following Transceivers install into this switch: (Use #0D1 or #B01 quoted to switch if switch is CTO) - if applicable

HP X130 SFP+ LC SR Transceiver	JD092B
HP X130 SFP+ LC LRM Transceiver	JD093B

### Configuration

HP X130 SFP+ LC LR Transceiver	JD094B
HP X130 10G SFP+ LC ER 40km Transceiver	JG234A
HP X240 10G SFP+ SFP+ 0.65m DAC Cable	JD095C
HP X240 10G SFP+ SFP+ 1.2m DAC Cable	JD096C
HP X240 10G SFP+ SFP+ 3m DAC Cable	JD097C
HP X240 10G SFP+ SFP+ 5m DAC Cable	JG081C
HP X240 10G SFP+ 7m DAC Cable	JC784C
HP X125 1G SFP LC LH40 1310nm Transceiver	JD061A
HP X120 1G SFP LC LH40 1550nm Transceiver	JD062A
HP X125 1G SFP LC LH70 Transceiver	JD063B
HP X120 1G SFP RJ45 T Transceiver	JD089B
HP X120 1G SFP LC BX 10-U Transceiver	JD098B
HP X120 1G SFP LC BX 10-D Transceiver	JD099B
HP X125 1G SFP LC SX Transceiver	JD118B
HP X120 1G SFP LC LX Transceiver	JD119B

**Note 2** The following 40G Transceivers install into this switch: (Use #0D1 or #B01 quoted to switch if switch is CTO) - if applicable

HP X140 40G QSFP+ LC LR4 SM XCVR	JG661A
HP X140 40G QSFP+ MPO SR4 XCVR	JG325B
HP X140 40G QSFP+ CSR4 300m XCVR	JG709A
HP X240 40G QSFP+ QSFP+ 1m Direct Attach Copper Cable	JG326A
HP X240 40G QSFP+ QSFP+ 3m Direct Attach Copper Cable	JG327A
HP X240 40G QSFP+ 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

**Note 10** If the Switch Chassis is to be Box Level Factory Integrated (CTO), Then the #0D1 is required on the Switch Chassis and integrated to the JG505A - HP 59xx CTO Switch Solution. (Min 1/Max 1 Switch per SSP)

### Rack Level Integration CTO Models

#### HP 5900AF-48XG-4QSFP+ Switch

- 48 fixed 1000/10000 SFP+ ports (min=0 \ max=48)
- 4 QSFP+ 40-GbE ports (min=0 \ max=4)
- Must select min 1 Power Supply
- Must select min 2 Fan Tray
- 1U - Height

JC772A

See Configuration  
Note: 1,2,11

#### HP 5900AF-48XGT-4QSFP+ Switch

- 48 RJ-45 1/10GbE ports
- 4 QSFP+ 40-GbE ports (min=0 \ max=4)
- min=0 \ max=4 QSFP+ Transceivers
- Must select min 1 Power Supply
- Must select min 2 Fan Tray

JG336A

See Configuration  
Note: 2, 11

### Configuration

- 1U - Height

#### HP 5900AF-48G-4XG-2QSFP+ Switch

- 48 autosensing 10/100/1000 ports (RJ45)
- 4 fixed 1000/10000 SFP+ ports (min=0 \ max=4)
- 2 QSFP+ 40-GbE ports (min=0 \ max=2)
- Must select min 1 Power Supply
- Must select min 2 Fan Tray
- 1U - Height

JG510A

See Configuration  
Note: 1,2,11

#### Note 1

The following Transceivers install into this switch: (Use #0D1 or #B01 quoted to switch if switch is CTO) - if applicable

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

#### Note 2

The following 40G Transceivers install into this switch: (Use #0D1 or #B01 quoted to switch if switch is CTO) - if applicable

HP X140 40G QSFP+ LC LR4 SM XCVR	JG661A
HP X140 40G QSFP+ MPO SR4 XCVR	JG325B
HP X140 40G QSFP+ CSR4 300m XCVR	JG709A
HP X240 40G QSFP+ QSFP+ 1m Direct Attach Copper Cable	JG326A
HP X240 40G QSFP+ QSFP+ 3m Direct Attach Copper Cable	JG327A
HP X240 40G QSFP+ 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

#### Note 11

If HP CTO Switch Chassis is selected for Rack Level Integration, Then the Switch needs to integrate (with #0D1) to the Rack.

#### Internal Power Supplies

(JC772A, JG554A, JG336A, JH037A, JH038A and JG510A) System (std 0 // max 2) User Selection (min 1 // max 2) per switch  
(JG846A, JG847A, JG850A, JG851A, JG848A and JG849A) System (std 2 // max 2) User Selection (min 0 // max 0) per switch

### Configuration

<p>HP 58x0AF 650W AC Power Supply</p> <ul style="list-style-type: none"> <li>includes 1 x c13, 300w</li> </ul>	<p>JC680A See Configuration Note: 1,2, 4</p>
<p>PDU Cable NA/MEX/TW/JP</p> <ul style="list-style-type: none"> <li>C15 PDU Jumper Cord (NA/MEX/TW/JP)</li> </ul>	<p>JC680A#B2B</p>
<p>PDU Cable ROW</p> <ul style="list-style-type: none"> <li>C15 PDU Jumper Cord (ROW)</li> </ul>	<p>JC680A#B2C</p>
<p>HP 58x0AF 650W DC Power Supply</p>	<p>JC681A See Configuration Note: 1, 4</p>
<p>HP A58x0AF 300W AC Power Supply</p> <ul style="list-style-type: none"> <li>C15 PDU Jumper Cord (NA/MEX/TW/JP)</li> </ul>	<p>JG900A See Configuration Note: 1, 5, 3</p>
<p>PDU Cable NA/MEX/TW/JP</p> <ul style="list-style-type: none"> <li>C15 PDU Jumper Cord (ROW)</li> </ul>	<p>JG900A#B2B</p>
<p>High Volt Switch/Router to Wall Power Cord</p> <ul style="list-style-type: none"> <li>C15 PDU Jumper Cord (ROW)</li> </ul>	<p>JG900A#B2E</p>
<p>HP A58x0AF 300W DC Power Supply</p>	<p>JG901A See Configuration Note: 1, 3</p>

#### Configuration Rules

- Note 1** If 2 power supplies are selected they must be the same Sku number.
- Note 2** Localization (Wall Power Cord) required on orders without #B2B, #B2C (PDU Power Cord). (See Localization Menu)  
REMARK: When Switches/Routers are Factory Racked, Then #B2B, or #B2C should be the Defaulted Power Cable option on the Switches/Routers.
- Note 3** Only supported on JC772A, JG554A, JG510A and JH038A.
- Note 4** Only supported on JG336A, JH037A, JC772A, JG554A, JG510A and JH038A.
- Note 5** Localization (Wall Power Cord) required on orders without #B2B, #B2C (PDU Power Cord) or #B2E. (See Localization Menu)  
REMARK: When Switches/Routers are Factory Racked, Then #B2B, #B2C should be the Defaulted Power Cable option on the Switches/Routers.
- Remarks:** Drop down under power supply should offer the following options and results:

### Configuration

Switch/Router/Power Supply to PDU Power Cord - #B2B in North America, Mexico, Taiwan, and Japan or #B2C ROW. (Watson Default B2B or B2C for Rack Level CTO)

Switch/Router/Power Supply to Wall Power Cord - Localized Option (Watson Default for BTO and Box Level CTO)

High Volt Power Electrical Module to Wall Power Cord - #B2E Option. (Offered only in North America, Mexico, Taiwan, and Japan)

NOTE\* Switches JC772A, JG554A, JG510A and JH038A should default selection of Power Supply as JC680A but allow selection of JG900A, JG901A, and JC681A.

<b>Localization</b>	HP A58x0AF 650W AC Power Supply - Chile - English localization Power Cord: Quantity : 1, CEI 23-50, C13 STRAIGHT, 250 V, 10 A, 3 meters, 9.85 feet , Part Store #: 8121-0825	JC680A#A1X
	HP A58x0AF 650W AC Power Supply - U.S. - English localization Power Cord: Quantity : 1, NEMA 5-15P, C13 STRAIGHT, 125 V, 10 A, 3 meters, 9.85 feet , Part Store #: 8121-0822	JC680A#ABA
	HP A58x0AF 650W AC Power Supply - Europe - English localization Power Cord: Quantity : 1, CEE 7-VII, C13 STRAIGHT, 250 V, 10 A, 3 meters, 9.85 feet , Part Store #: 8121-0823	JC680A#ABB
	HP A58x0AF 650W AC Power Supply - Australia - English localization Power Cord: Quantity : 1, AS/NZS 3112, C13 STRAIGHT, 250 V, 10 A, 3 meters, 9.85 feet , Part Store #: 8121-0828	JC680A#ABG
	HP A58x0AF 650W AC Power Supply - Brazil - Portuguese localization Power Cord: Quantity : 1, NBR 14136 Fig13, C13 STRAIGHT, 250 V, 2.5 A, 2.5 meters, 8.21 feet , Part Store #: 8121-1069	JC680A#AC4
	HP A58x0AF 650W AC Power Supply - Korea - English localization Power Cord: Quantity : 1, CEE 7-VII, C13 STRAIGHT, 250 V, 10 A, 3 meters, 9.85 feet , Part Store #: 8121-0823	JC680A#AC6
	HP A58x0AF 650W AC Power Supply - United Kingdom - English localization Power Cord: Quantity : 1, BS 1363/A, C13 STRAIGHT, 250 V, 10 A, 3 meters, 9.85 feet , Part Store #: 8121-0824	JC680A#ACC
	HP A58x0AF 650W AC Power Supply - Switzerland - English localization Power Cord: Quantity : 1, SEV 6534-2 Type 12, C13 STRAIGHT, 250 V, 10 A, 3 meters, 9.85 feet , Part Store #: 8121-0827	JC680A#ACD
	HP A58x0AF 650W AC Power Supply - Denmark - English localization Power Cord: Quantity : 1, DK 2-5A, C13 STRAIGHT, 250 V, 10 A, 3 meters, 9.85 feet , Part Store #: 8121-0826	JC680A#ACE
	HP A58x0AF 650W AC Power Supply - Japan - English localization Power Cord: Quantity : 1, JIS C 8303, C13 STRAIGHT, 125 V, 12 A, 2.3 meters, 7.55 feet , Part Store #: 8120-4753	JC680A#ACF
	HP A58x0AF 650W AC Power Supply - India - English localization Power Cord: Quantity : 1, IS 1293, C13 STRAIGHT, 250 V, 10 A, 3 meters, 9.85 feet , Part Store #: 8121-0928	JC680A#ACJ
	HP A58x0AF 650W AC Power Supply - South Africa - English localization Power Cord: Quantity : 1, SABS 164, C13 STRAIGHT, 250 V, 10 A, 3 meters, 9.85 feet , Part Store #: 8121-0919	JC680A#ACQ
	HP A58x0AF 650W AC Power Supply - Israel - English localization Power Cord: Quantity : 1, SI 32 90-DEG, C13 STRAIGHT, 250 V, 10 A, 2.5 meters, 8.21 feet , Part Store #: 8121-1035	JC680A#AKJ
	HP A58x0AF 650W AC Power Supply - Thailand - English localization Power Cord: Quantity : 1, NEMA 5-15P, C13 STRAIGHT, 250 V, 10 A, 2.5 meters, 8.21 feet ,	JC680A#AKL



### Configuration

Part Store #: 8121-0673	
HP A58x0AF 650W AC Power Supply - China - English localization	JC680A#AKM
Power Cord: Quantity : 1, GB 1002, C13 STRAIGHT, 250 V, 10 A, 3 meters, 9.85 feet , Part Store #: 8121-0829	
HP A58x0AF 650W AC Power Supply - Taiwan - English localization	JC680A#ARB
Power Cord: Quantity : 1, CNS 690 Type 2(1), C13 STRAIGHT, 125 V, 13 A, 3.6 meters, 11.82 feet , Part Store #: 8121-0965	
HP A58x0AF 650W AC Power Supply - Malaysia - English localization	JC680A#ARE
Power Cord: Quantity : 1, BS 1363/A, C13 STRAIGHT, 250 V, 10 A, 3 meters, 9.85 feet , Part Store #: 8121-0824	
HP A58x0AF 650W AC Power Supply - Argentina - English localization	JC680A#ARM
Power Cord: Quantity : 1, IRAM 2073, C13 STRAIGHT, 250 V, 10 A, 3 meters, 9.85 feet , Part Store #: 8121-0883	

**Enter the following menu selections as integrated to the CTO Model X server above if order is factory built.**

<b>Transceivers</b>	<b>SFP</b>	HP X125 1G SFP LC LH40 1310nm Transceiver	JD061A
	<b>Transceivers</b>	HP X120 1G SFP LC LH40 1550nm Transceiver	JD062A
		HP X125 1G SFP LC LH70 Transceiver	JD063B
		HP X120 1G SFP RJ45 T Transceiver	JD089B
		HP X120 1G SFP LC BX 10-U Transceiver	JD098B
		HP X120 1G SFP LC BX 10-D Transceiver	JD099B
		HP X120 1G SFP LC SX Transceiver	JD118B
		HP X120 1G SFP LC LX Transceiver	JD119B
	<b>SFP+</b>	HP X130 10G SFP+ LC SR Transceiver	JD092B
	<b>Transceivers</b>	HP X130 10G SFP+ LC LRM Transceiver	JD093B
		HP X130 10G SFP+ LC LR Transceiver	JD094B
		HP X240 10G SFP+ to SFP+ 0.65m Direct Attach Copper Cable	JD095C
		HP X240 10G SFP+ to SFP+ 1.2m Direct Attach Copper Cable	JD096C
		HP X240 10G SFP+ to SFP+ 3m Direct Attach Copper Cable	JD097C
		HP X240 10G SFP+ to SFP+ 5m Direct Attach Copper Cable	JG081C
		HP X240 10G SFP+ SFP+ 7m Direct Attach Copper Cable	JC784C
		HP X130 10G SFP+ LC ER 40km Transceiver	JG234A
	<b>QSFP+</b>	HP X140 40G QSFP+ LC LR4 SM 10km 1310nm Transceiver	JG661A
	<b>Transceivers</b>	HP X140 40G QSFP+ MPO SR4 Transceiver	JG325B
		HP X140 40G QSFP+ MPO MM 850nm CSR4 300m Transceiver	JG709A
		HP X240 40G QSFP+ QSFP+ 1m Direct Attach Copper Cable	JG326A
		HP X240 40G QSFP+ QSFP+ 3m Direct Attach Copper Cable	JG327A
		HP X240 40G QSFP+ 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
<b>Switch Options</b>	<b>Fan Trays</b>	(JC772A, JG336A, JH037A, JH038A and JG510A) System (std 0 // max 2) User Selection (min 2 // max 2) per switch	
		(JG846A, JG847A, JG850A, JG851A, JG848A and JG849A) System (std 2 // max 2) User Selection (min 0 // max 0) per switch	
		HP A58x0AF Back (power side) to Front (port side) Airflow Fan Tray	JC682A
			See

### Configuration

HP A58x0AF Front (port side) to Back (power side) Airflow Fan Tray	<a href="#">Configuration Note: 1,3</a> <a href="#">JC683A</a> <a href="#">See Configuration Note: 1,3</a>
HP X711 Front (port side) to Back (power side) Airflow High Volume Fan Tray	<a href="#">Configuration Note: 1,3</a> <a href="#">JG552A</a> <a href="#">See Configuration Note: 1,4</a>
HP X712 Back (power side) to Front (port side) Airflow High Volume Fan Tray	<a href="#">JG553A</a> <a href="#">See Configuration Note: 1,4</a>

#### Configuration Rules

**Note 1** Fan Trays cannot be mixed in the same switch enclosure

**Note 3** Only supported on JC772A, JG510A, JH038A and JG554A.

**Note 4** Only supported on JC772A, JG510A, JG554A, JH037A, JH038A and JG336A.

**Remarks:** Watson Blue Text:  
 If there is any empty space below the switch in a rack when using Back to Front Fan Trays, JC682A, the rack will receive an Air Plenum kit that takes up 1U of additional space in the rack. The Air Plenum kit is not required on fully configured racks. This only applies for CTO Rack Level Integration. The Air Plenum Kit is a non-saleable SKU, and is brought in automatically for CTO Factory Rack Level Integration.

#### Opacity Shield Kit System (std 0 // max 1) User Selection (min 0 // max 1)

HP 5900AF-48XG-4QSFP+ Opcty Shld Kit <ul style="list-style-type: none"> <li>• Supported on JG554A</li> </ul>	<a href="#">JG719A</a> <a href="#">See Configuration Note: 1</a>
HP 5900AF-48G-4XG-2QSFP+ Opcty Shld Kit <ul style="list-style-type: none"> <li>• Supported on JH038A</li> </ul>	<a href="#">JH063A</a> <a href="#">See Configuration Note: 1</a>
<p><b>Note 1</b> If selected with a CTO Switch Solution, Quantity 1 of JG585A#B01 must also be ordered.</p>	

#### Tamper Evidence Labels System (std 0 // max 1) User Selection (min 0 // max 1)

HP 12mm x 60mm Tmpr-Evidence (30) Lbl <ul style="list-style-type: none"> <li>• Supported on JG554A, JH038A</li> </ul>	<a href="#">JG585A</a> <a href="#">See Configuration Note: 1</a>
<p><b>Note 1</b> If selected with a CTO Switch Solution, Quantity 1 of JG719A#B01 or JH063A#B01 must also be ordered.</p>	

### Configuration

**Remarks** Each JG719A or JH063A would use 1 of JG585A.

### Technical Specifications

#### HP 5900AF-48XG-4QSFP+ Switch (JC772A)

<b>I/O ports and slots</b>	48 fixed 1000/10000 SFP+ ports 4 QSFP+ 40-GbE ports	
<b>Additional ports and slots</b>	1 RJ-45 serial console port 1 RJ-45 out-of-band management port 1 USB 2.0	
<b>Power supplies</b>	2 power supply slots 1 minimum power supply required (ordered separately)	
<b>Fan tray</b>	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.	
<b>Physical characteristics</b>	<b>Dimensions</b>	17.32(w) x 25.98(d) x 1.72(h) in (43.99 x 65.99 x 4.37 cm)
	<b>Weight</b>	28.66 lb (13 kg) shipping weight
<b>Memory and processor</b>	512 MB flash, 2 GB SDRAM; packet buffer size: 9 MB	
<b>Performance</b>	<b>10 Gbps Latency</b>	< 1.5 µs (64-byte packets)
	<b>Throughput</b>	up to 952 Mpps
	<b>Routing/Switching capacity</b>	1280 Gbps
	<b>Routing table size</b>	16000 entries (IPv4), 8000 entries (IPv6)
	<b>MAC address table size</b>	128000 entries
<b>Environment</b>	<b>Operating temperature</b>	32°F to 113°F (0°C to 45°C)
	<b>Operating relative humidity</b>	10% to 90%, noncondensing
	<b>Acoustic</b>	Low-speed fan: 65.7 dB, High-speed fan: 70.6 dB
<b>Electrical characteristics</b>	<b>Frequency</b>	50/60 Hz
	<b>Maximum heat dissipation</b>	887 BTU/hr (935.79 kJ/hr)
	<b>AC voltage</b>	100-240 VAC
	<b>DC voltage</b>	-40 to -60 VDC
	<b>Maximum power rating</b>	260 W
	<b>Idle power</b>	200 W
	<b>Notes</b>	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.
<b>Safety</b>	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	
<b>Emissions</b>	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	
<b>Immunity</b>	<b>Generic</b>	ETSI EN 300 386 V1.3.3

### Technical Specifications

	<b>EN</b>	EN 55024:1998+ A1:2001 + A2:2003
	<b>ESD</b>	EN 61000-4-2; IEC 61000-4-2
	<b>Radiated</b>	EN 61000-4-3; IEC 61000-4-3
	<b>EFT/Burst</b>	EN 61000-4-4; IEC 61000-4-4
	<b>Surge</b>	EN 61000-4-5; IEC 61000-4-5
	<b>Conducted</b>	EN 61000-4-6; IEC 61000-4-6
	<b>Power frequency magnetic field</b>	IEC 61000-4-8; EN 61000-4-8
	<b>Voltage dips and interruptions</b>	EN 61000-4-11; IEC 61000-4-11
	<b>Harmonics</b>	EN 61000-3-2, IEC 61000-3-2
	<b>Flicker</b>	EN 61000-3-3, IEC 61000-3-3
<b>Management</b>	IMC - Intelligent Management Center; command-line interface; out-of-band management; SNMP Manager; Telnet; FTP	
<b>Notes</b>	The customer must order a power supply, as the device does not come with one. At least one JC680A or JC681A is required. The HP HP 5900AF-48XG-4QSFP+ Switch is NEBS GR-1089-CORE compliant	
<b>Services</b>	Refer to the HP website at: <a href="http://www.hp.com/networking/services">www.hp.com/networking/services</a> for details on the service-level descriptions and product numbers. For details about services and response times in your area, please contact your local HP sales office.	

#### HP 5900AF-48G-4XG-2QSFP+ Switch (JG510A)

<b>I/O ports and slots</b>	48 autosensing 10/100/1000 ports (IEEE 802.3 Type 10BASE-T, IEEE 802.3u Type 100BASE-TX, IEEE 802.3ab Type 1000BASE-T) Duplex: 10BASE-T/100BASE-TX: half or full; 1000BASE-T: full only 4 fixed 1000/10000 SFP+ ports 2 QSFP+ 40-GbE ports	
<b>Additional ports and slots</b>	1 RJ-45 serial console port 1 RJ-45 out-of-band management port 1 USB 2.0	
<b>Power supplies</b>	2 power supply slots 1 minimum power supply required (ordered separately)	
<b>Fan tray</b>	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.	
<b>Physical characteristics</b>	<b>Dimensions</b>	17.32(w) x 18.11(d) x 1.72(h) in (43.99 x 46.0 x 4.37 cm) (1U height)
	<b>Weight</b>	28.66 lb (13 kg) shipping weight
<b>Memory and processor</b>	512 MB flash, 2 GB SDRAM; packet buffer size: 9 MB	
<b>Performance</b>	<b>10 Gbps Latency</b>	< 1.5 μs (64-byte packets)
	<b>Throughput</b>	up to 250 Mpps (64-byte packets)
	<b>Routing/Switching capacity</b>	336 Gbps
	<b>Routing table size</b>	16000 entries (IPv4), 8000 entries (IPv6)
	<b>MAC address table size</b>	128000 entries
<b>Environment</b>	<b>Operating temperature</b>	32°F to 113°F (0°C to 45°C)
	<b>Operating relative</b>	10% to 90%, noncondensing

### Technical Specifications

	<b>humidity</b>	
	<b>Acoustic</b>	Low-speed fan: 65.7 dB, High-speed fan: 70.6 dB
<b>Electrical characteristics</b>	<b>Frequency</b>	50/60 Hz
	<b>Maximum heat dissipation</b>	887 BTU/hr (935.79 kJ/hr)
	<b>AC Voltage</b>	100-240 VAC
	<b>DC voltage</b>	-40 to -60 VDC
	<b>Maximum power rating</b>	260 W
	<b>Idle power</b>	200 W
	<b>Notes</b>	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.
<b>Safety</b>	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	
<b>Emissions</b>	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	
<b>Immunity</b>	<b>Generic</b>	ETSI EN 300 386 V1.3.3
	<b>EN</b>	EN 55024:1998+ A1:2001 + A2:2003
	<b>ESD</b>	EN 61000-4-2; IEC 61000-4-2
	<b>Radiated</b>	EN 61000-4-3; IEC 61000-4-3
	<b>EFT/Burst</b>	EN 61000-4-4; IEC 61000-4-4
	<b>Surge</b>	EN 61000-4-5; IEC 61000-4-5
	<b>Conducted</b>	EN 61000-4-6; IEC 61000-4-6
	<b>Power frequency magnetic field</b>	IEC 61000-4-8; EN 61000-4-8
	<b>Voltage dips and interruptions</b>	EN 61000-4-11; IEC 61000-4-11
	<b>Harmonics</b>	EN 61000-3-2, IEC 61000-3-2
	<b>Flicker</b>	EN 61000-3-3, IEC 61000-3-3
<b>Management</b>	IMC - Intelligent Management Center; command-line interface; out-of-band management; SNMP Manager; Telnet; FTP	
<b>Notes</b>	The customer must order a power supply, as the device does not come with one. At least one JC680A or JC681A is required.	
<b>Services</b>	Refer to the HP website at: <a href="http://www.hp.com/networking/services">www.hp.com/networking/services</a> for details on the service-level descriptions and product numbers. For details about services and response times in your area, please contact your local HP sales office.	

#### HP 5900AF-48XGT-4QSFP+ Switch (JG336A)

<b>I/O ports and slots</b>	48 RJ-45 1/10GbE ports (IEEE 802.3an-2006 Type 10GBASE-T and IEEE 802.3ab-2008 Type 1000BASE-T) 4 QSFP+ 40-GbE ports
<b>Additional ports and slots</b>	1 RJ-45 serial console port 1 RJ-45 out-of-band management port 1 USB 2.0

### Technical Specifications

<b>Power supplies</b>	2 power supply slots 1 minimum power supply required (ordered separately)
<b>Fan tray</b>	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.
<b>Physical characteristics</b>	<b>Dimensions</b> 17.32(w) x 25.98(d) x 1.72(h) in (43.99 x 65.99 x 4.37 cm) <b>Weight</b> 28.66 lb (13 kg), Fully loaded
<b>Memory and processor</b>	512 MB flash, 2 GB SDRAM; packet buffer size: 9 MB
<b>Performance</b>	<b>10 Gbps Latency</b> < 1.5 μs (64-byte packets) <b>Throughput</b> up to 952 Mpps <b>Routing/Switching capacity</b> 1280 Gbps <b>Routing table size</b> 16000 entries (IPv4), 8000 entries (IPv6) <b>MAC address table size</b> 128000 entries
<b>Environment</b>	<b>Operating temperature</b> 32°F to 113°F (0°C to 45°C) <b>Operating relative humidity</b> 10% to 90%, noncondensing <b>Acoustic</b> Low-speed fan: 65.7 dB, High-speed fan: 70.6 dB
<b>Electrical characteristics</b>	<b>Frequency</b> 50/60 Hz <b>Maximum heat dissipation</b> 887 BTU/hr (935.79 kJ/hr) <b>AC Voltage</b> 100-240 VAC <b>DC voltage</b> -40 to -60 VDC <b>Maximum power rating</b> 260 W <b>Idle power</b> 200 W <b>Notes</b> 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.
<b>Safety</b>	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
<b>Emissions</b>	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
<b>Immunity</b>	<b>Generic</b> ETSI EN 300 386 V1.3.3 <b>EN</b> EN 55024:1998+ A1:2001 + A2:2003 <b>ESD</b> EN 61000-4-2; IEC 61000-4-2 <b>Radiated</b> EN 61000-4-3; IEC 61000-4-3 <b>EFT/Burst</b> EN 61000-4-4; IEC 61000-4-4 <b>Surge</b> EN 61000-4-5; IEC 61000-4-5 <b>Conducted</b> EN 61000-4-6; IEC 61000-4-6

### Technical Specifications

<b>Power frequency magnetic field</b>	IEC 61000-4-8; EN 61000-4-8
<b>Voltage dips and interruptions</b>	EN 61000-4-11; IEC 61000-4-11
<b>Harmonics</b>	EN 61000-3-2, IEC 61000-3-2
<b>Flicker</b>	EN 61000-3-3, IEC 61000-3-3

<b>Management</b>	IMC - Intelligent Management Center; command-line interface; out-of-band management; SNMP Manager; Telnet; FTP
<b>Notes</b>	The customer must order a power supply, as the device does not come with one. At least one JC680A or JC681A is required.
<b>Services</b>	Refer to the HP website at: <a href="http://www.hp.com/networking/services">www.hp.com/networking/services</a> 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)  
 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

#### 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



### Technical Specifications

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 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 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 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**

Access Control Lists (ACLs)  
SSHv2 Secure Shell

### Technical Specifications

RFC 4594 Configuration Guidelines for DiffServ  
Service Classes  
RFC 4941 Privacy Extensions for Stateless Address  
Autoconfiguration in IPv6

### Accessories

#### HP 5900 Switch Series accessories

##### Transceivers

HP X120 1G SFP LC LH40 1550nm Transceiver	JD062A
HP X120 1G SFP LC BX 10-U Transceiver	JD098B
HP X120 1G SFP LC BX 10-D Transceiver	JD099B
HP X120 1G SFP LC LX Transceiver	JD119B
HP X120 1G SFP RJ45 T Transceiver	JD089B
HP X120 1G SFP LC SX Transceiver	JD118B
HP X125 1G SFP LC LH40 1310nm Transceiver	JD061A
HP X125 1G SFP LC LH70 Transceiver	JD063B
HP X130 10G SFP+ LC SR Transceiver	JD092B
HP X130 10G SFP+ LC LRM Transceiver	JD093B
HP X130 10G SFP+ LC LR Transceiver	JD094B
HP X130 10G SFP+ LC ER 40km Transceiver	JG234A
HP X240 10G SFP+ to SFP+ 0.65m Direct Attach Copper Cable	JD095C
HP X240 10G SFP+ to SFP+ 1.2m Direct Attach Copper Cable	JD096C
HP X240 10G SFP+ to SFP+ 3m Direct Attach Copper Cable	JD097C
HP X240 10G SFP+ to SFP+ 5m Direct Attach Copper Cable	JG081C
HP X240 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 X240 10G SFP+ SFP+ 7m Direct Attach Copper Cable	JC784C
HP X140 40G QSFP+ LC LR4 SM 10km 1310nm Transceiver	JG661A
HP X140 40G QSFP+ MPO SR4 Transceiver	JG325B
HP X140 40G QSFP+ MPO MM 850nm CSR4 300m Transceiver	JG709A

##### Power Supply

HP 58x0AF 650W AC Power Supply	JC680A
HP 58x0AF 650W DC Power Supply	JC681A
HP 58x0AF Back (Power Side) to Front (Port Side) Airflow 300W AC Power Supply	JG900A
HP 58x0AF Back (Power Side) to Front (Port Side) Airflow 300W DC Power Supply	JG901A

##### HP 5900AF-48XG-4QSFP+ Switch (JC772A)

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
HP 58x0AF Back (power side) to Front (port side) Airflow Fan Tray	JC682A
HP 58x0AF Front (port side) to Back (power side) Airflow Fan Tray	JC683A

##### HP 5900AF-48G-4XG-2QSFP+ Switch (JG510A)

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
HP 58x0AF Back (power side) to Front (port side) Airflow Fan Tray	JC682A
HP 58x0AF Front (port side) to Back (power side) Airflow Fan Tray	JC683A

##### HP 5900AF-48XGT-4QSFP+ Switch (JG336A)

### Accessories

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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### Accessory Product Details

**NOTE:** Details are not available for all accessories. The following specifications were available at the time of publication.

<b>HP X120 1G SFP LC LH40 1550nm Transceiver (JD062A)</b>	<b>Ports</b>	1 LC 1000BASE-LH port (no IEEE standard exists for 1550 nm optics)
	<b>Connectivity</b>	<b>Connector type</b> LC <b>Wavelength</b> 1550 nm
A small form-factor pluggable (SFP) Gigabit LH40 transceiver that provides a full-duplex Gigabit solution up to 40 km on a single mode fiber.	<b>Physical characteristics</b>	<b>Dimensions</b> 2.17(d) x 0.6(w) x 0.46(h) in. (5.51 x 1.52 x 1.17 cm) <b>Full configuration weight</b> 0.04 lb. (0.02 kg)
	<b>Electrical characteristics</b>	<b>Power consumption typical</b> 0.8 W <b>Power consumption maximum</b> 1.0 W
<b>Cabling</b>	<b>Cable type:</b> Single-mode fiber optic, complying with ITU-T G.652;  <b>Maximum distance:</b> <ul style="list-style-type: none"> <li>• 40km distance</li> </ul>	
<b>Services</b>	<b>Fiber type</b> Single Mode Refer to the HP website at: <a href="http://www.hp.com/networking/services">www.hp.com/networking/services</a> 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.	

<b>HP X125 1G SFP LC LH70 Transceiver (JD063B)</b>	<b>Ports</b>	1 LC 1000BASE-LH port (no IEEE standard exists for 1550 nm optics)
	<b>Connectivity</b>	<b>Connector type</b> LC <b>Wavelength</b> 1550 nm
A small form-factor pluggable (SFP) Gigabit LH70 transceiver that provides a full-duplex Gigabit solution up to 70km on a single-mode fiber.	<b>Physical characteristics</b>	<b>Dimensions</b> 2.17(d) x 0.6(w) x 0.46(h) in. (5.51 x 1.52 x 1.17 cm) <b>Full configuration weight</b> 0.04 lb. (0.02 kg)
	<b>Electrical characteristics</b>	<b>Power consumption typical</b> 0.8 W <b>Power consumption maximum</b> 1.0 W
<b>Cabling</b>	<b>Cable type:</b> Single-mode fiber optic, complying with ITU-T G.652;  <b>Maximum distance:</b> <ul style="list-style-type: none"> <li>• 70km</li> </ul>	
<b>Services</b>	<b>Fiber type</b> Single Mode Refer to the HP website at: <a href="http://www.hp.com/networking/services">www.hp.com/networking/services</a> 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.	

<b>HP X120 1G SFP LC SX</b>	<b>Ports</b>	1 LC 1000BASE-SX port
<b>Connectivity</b>	<b>Connector type</b>	LC

### Accessory Product Details

<b>Transceiver (JD118B)</b>  A small form-factor pluggable (SFP) Gigabit SX transceiver that provides a full-duplex Gigabit solution up to 550m on a Multimode fiber.	<b>Physical characteristics</b>	<b>Wavelength</b>	850 nm
	<b>Dimensions</b>	2.17(d) x 0.6(w) x 0.46(h) in. (5.51 x 1.52 x 1.17 cm)	
	<b>Electrical characteristics</b>	<b>Full configuration weight</b>	0.04 lb. (0.02 kg)
		<b>Power consumption typical</b>	0.8 W
		<b>Power consumption maximum</b>	1.0 W
	<b>Cabling</b>	Maximum distance: • FDDI Grade distance = 220m • OM1 = 275m • OM2 = 500m • OM3 = Not Specified by standard  Cable length up to 550m Fiber type Multi Mode	
<b>Services</b>	Refer to the HP website at: <a href="http://www.hp.com/networking/services">www.hp.com/networking/services</a> 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.		

<b>HP X120 1G SFP LC LX Transceiver (JD119B)</b>  A small form-factor pluggable (SFP) Gigabit LX transceiver that provides a full duplex Gigabit solution up to 550m on MMF or 10Km on SMF	<b>Ports</b>	1 SFP 1000BASE-LX port (IEEE 802.3z Type 1000BASE-LX)		
	<b>Connectivity</b>	<b>Connector type</b>	LC	
	<b>Physical characteristics</b>	<b>Wavelength</b>	1300 nm	
		<b>Dimensions</b>	2.17(d) x 0.6(w) x 0.46(h) in. (5.51 x 1.52 x 1.17 cm)	
	<b>Electrical characteristics</b>	<b>Full configuration weight</b>	0.04 lb. (0.02 kg)	
		<b>Power consumption typical</b>	0.8 W	
	<b>Power consumption maximum</b>	1.0 W		
<b>Cabling</b>	Cable type: Either single mode or multimode;  Maximum distance: • 550m for Multimode • 10km for Singlemode  Fiber type Both			
<b>Services</b>	Refer to the HP website at: <a href="http://www.hp.com/networking/services">www.hp.com/networking/services</a> 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.			

<b>HP X125 1G SFP RJ45 T Transceiver (JD089B)</b>  A small form factor pluggable (SFP) Gigabit	<b>Ports</b>	1 RJ-45 1000BASE-T port (IEEE 802.3ab Type 1000BASE-T)		
	<b>Connectivity</b>	<b>Connector type</b>	RJ-45	
	<b>Physical characteristics</b>	<b>Dimensions</b>	2.71(d) x 0.54(w) x 0.55(h) in. (6.88 x 1.37 x 1.4 cm)	
		<b>Full configuration weight</b>	0.07 lb. (0.03 kg)	
	<b>Electrical characteristics</b>	<b>Power consumption typical</b>	0.8 W	
		<b>Power consumption maximum</b>	1.0 W	
<b>Cabling</b>	Cable type:			

### Accessory Product Details

1000Base-T transceiver that provides a full duplex Gigabit solution up to 100m on a Cat-5+ cable.

#### Services

1000BASE-T: Category 5 (5E or better recommended), 100   differential 4-pair unshielded twisted pair (UTP) or shielded twisted pair (STP) balanced, complying with IEEE 802.3ab 1000BASE-T;

Maximum distance:

- 100m

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

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### Summary of Changes

Date	Version History	Action	Description of Change:
12-Dec-2014	From Version 24 to 25	Removed	Deleted SKU JG325A
01-Dec-2014	From Version 23 to 24	Added	Accessories section added
		Changed	Changes made on the entire document
09-June-2014	From Version 22 to 23	Changed	Overview section revised.
31-Mar-2014	From Version 21 to 22	Changed	Transceivers were revised.
19-Mar-2014	From Version 20 to 21	Changed	Product descriptions, Transceivers, and notes were revised in Configuration.
04-Mar-2014	From Version 19 to 20	Changed	Transceivers and Switch Options were revised.
25-Feb-2014	From Version 18 to 19	Changed	Transceivers and Switch Options were revised.
18-Feb-2014	From Version 17 to 18	Added	HP FF 5900CP-48XG -4QSFP+ Switch was added to Configuration.
12-Nov-2013	From Version 16 to 17	Changed	Build to Order, Box Level Integration CTO Models, Rack Level Integration CTO Models, Internal Power Supplies, and Switch Options were revised.
14-Oct-2013	From Version 15 to 16	Added	Added a new Transceiver in two locations in the Configuration section.
09-Aug-2013	From Version 14 to 15	Changed	Configuration as revised.
19-Jul-2013	From Version 13 to 14	Changed	Configuration as revised.
02-Jul-2013	From Version 9 to 13	Changed	The description of model JG336A was corrected throughout.
12-Jun-2013	From Version 8 to 9	Changed	Build-to-Order was revised.
10-Jun-2013	From Version 7 to 8	Changed	Configuration was revised.
25-Mar-2013	From Version 6 to 7	Added	Added Part numbers and descriptions to the following Sections:  Build to Order  Box Level Integration CTO Models  Rack Level Integration CTO Models  Switch Options Added Notes 3, and 4 to the Switch Options Section
		Deleted	Deleted several part numbers to the Standards and Protocols Section
27-Feb-2013	From Version 5 to 6	Changed	The formatting of the new Configuration section was revised.
19-Feb-2013	From Version 3 to 5	Added	The configuration section was added. Line art was added.
		Changed	Product overview, Features and benefits, Model specifications, and Accessories were revised.
04-Dec-2012	From Version 2 to 3	Changed	Updated Features and Benefits and made minor updates to the model specifications and accessories.
02-Apr-2011	From Version 1 to 2	Changed	Part number was revised.



### Summary of Changes

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