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Data sheet

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HPE FLEXFABRIC 5900 SWITCH SERIES

FIGURE 1. HPE FlexFabric 5901AF 48G 4XG 2QSFP+ Switch

KEY FEATURES

- New SKU JL864A with high performance, improved energy efficiency of 39–45% (Max./Idle 96W/70W in 5901AF vs. 175W/115W in 5900AF), and reduced heat dissipation of 83% (327 BTU/hr in 5901AF vs. 597 BTU/hr in 5900AF)
- High-density, high-performance Top-of-Rack (ToR) switch with 48 x 10/100/1000 Mbps RJ-45 ports, 4 x 1/10 SFP+ ports, and 2 x 40 QSFP ports that bridge the gap between legacy and modern networks
- HPE Intelligent Resilient Fabric (IRF) technology and software hot patch for greater resiliency and scalability
- Cut-through with low-latency and varying wirespeed performance
- Rich feature sets with IPv4 and IPv6 support with Layer 2, Layer 3, and QoS/ACL features
- OpenFlow and NETCONF for automating manual tasks and improving service delivery
- Dual, redundant hot-pluggable power supplies help in reduced power consumption

PRODUCT OVERVIEW

The HPE FlexFabric 5900 Switch Series are high-density, low-latency Top-of-Rack (ToR) networking switches suited for deployment at the access layer and management network of medium-sized and large enterprise data centers.

To meet the increased demand for virtualization, scalability, and programmability, these switches provide high-performance switching with low-latency and user-friendly OS (Comware v7). HPE Intelligent Resilient Fabric (IRF) helps in simpler, flatter, and agile networks by combining multiple physical switches into a logical device. Network and security features coupled with dual, redundant, hot-swappable power supplies ensure investment protection, reliability, and availability and allow advanced chassis power management.

These switches also provide multi-vendor network management with HPE Intelligent Management Center (IMC) for complete network visibility.

FEATURES AND BENEFITS

Low-latency and multiple wirespeed for demanding applications in data center environment

- The HPE FlexFabric 5900 Switch Series provide multiple wirespeed of 10/100/1000BASE-T and 1/10/40G fiber ports for high-performance and flexible deployments.

- All ports support full L2/L3 features, IPv4/IPv6 dual-stack, OpenFlow, and NETCONF for high scalability and software-defined network (SDN) support.
- HPE Intelligent Resilient Fabric (IRF) stacking enables uninterrupted L2 switching and L3 forwarding to eliminate operational complexity.

High-performance data center switching

- The HPE FlexFabric 5900 Switch Series delivers 336 Gbps switching capacity for the most demanding applications.
- It supports up to 250 Mpps throughput for data-intensive environments.
- With low latency (under a 1.5 µs for 10GbE), this switch series delivers increased network throughput. It also includes two 40GbE QSFP+ ports for blazing fast uplinks.
- It supports Zero Touch Provisioning by eliminating human errors and automatically setting up network devices leading to accelerated ROI.

Simplicity and lower TCO

- The HPE FlexFabric 5900 Switch Series simplifies switch management by up to 88% (due to IRF stacking capability of nine switches resulting in 1/9th of overhead reduction)[1] with multiunit HPE Intelligent Resilient Fabric (IRF).
- Dual, redundant hot-swappable power supplies with reversible airflow (front to back/back to front) reduce power consumption.
- It supports centralized configuration, compliance and policy management, monitoring, and troubleshooting with HPE Intelligent Management Center (IMC) to provide a consistent network manageability experience.
- There are no extra hidden costs with a simple one license per switch for all OS features.
- All switch ports are active and ready to use without the need for activation licenses.

Business agility and resilience

- The HPE FlexFabric 5900 Switch Series delivers IRF < 50 ms convergence time allowing faster application response times.
- It provides In-Service Software Update (ISSU) enabling high availability with modular updates accomplished without any downtime.

Layer 2 switching and Layer 3 routing

- Supports a large number of Layer 2 devices with 32K MAC address table. Supports IEEE 802.1ad QinQ and selective QinQ that increase scalability by providing a hierarchical structure
- Supports jumbo frames with a frame size of up to 9216-byte, improving the performance of large data transfers
- Supports Device Link Detection Protocol (DLDP) that monitors link connectivity and shuts down ports at both ends if unidirectional traffic is detected, preventing loops in STP-based networks

Warranty and support

- Limited lifetime warranty

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

- Software releases

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

[1] Because of stacking capability of nine switches, there is a management overhead reduction of 1/9th (11%).

HPE FLEXFABRIC 5900 SWITCH SERIES

Specifications	HPE FlexFabric 5901AF 48G 4XG 2QSFP+ Switch (JL864A)	HPE FlexFabric 5900AF 48G 4XG 2QSFP+ Switch (JG510A)
I/O ports and slots	48 x 10/100/1000 BASE-T ports support; Duplex: 10BASE-T/100BASE-TX: half or full; 1000BASE-T: full only 4 SFP+ 1000/10000, 2 QSFP+ 40GbE ports	48 x 10/100/1000 BASE-T ports support; Duplex: 10BASE-T/100BASE-TX: half or full; 1000BASE-T: full only 4 SFP+ 1000/10000, 2 QSFP+ 40GbE ports
Additional ports and slots	1 x RJ-45 console port 1 x mini-USB port 1 x USB port 2 x out-of-band management ports (1 x SFP GbE port and one copper port)	1 x RJ-45 console port 1 x mini-USB port 1 x USB port 2 x out-of-band management ports (1 x SFP GbE port and one copper port)
Power supplies	2 power supply slots (AC/DC) 1 minimum power supply required (ordered separately)	2 power supply slots (AC/DC) 1 minimum power supply required (ordered separately)
Fan tray	2 fan tray slots **Note:** The customer must order fan trays, as they are not included with the switch. 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 23°F (–5°C) to 113°F (45°C). Failure to comply with these operating requirements may void the product warranty.	2 fan tray slots **Note:** 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 in. (w) x 14.17 in. (d) x 1.73 in. (h) 44 cm x 36 cm x 4.4 cm (1U height)	17.32 in. (w) x 18.11 in. (d) x 1.72 in. (h) 43.99 cm x 46.0 cm x 4.37 cm (1U height)
Weight	16.535 lb (< 7.5 kg)	< 10 kg
Memory and processor	1 GB flash; packet buffer size: 8 MB, 2 GB SDRAM	512 MB flash; packet buffer size: 9 MB, 2 GB SDRAM
Performance		
Latency	1GbE < 5 µs and 40GbE < 1.2 µs (64-byte packets)	10GbE: < 1.51 µs
Throughput	Up to 250 Mpps (64-byte packets)	Up to 250 Mpps (64-byte packets)
Routing/Switching capacity	336 Gbps	336 Gbps
Routing table size	16,000 entries (IPv4), 8,000 entries (IPv6)	16,000 entries (IPv4), 8,000 entries (IPv6)
MAC address table size	110,000 entries	128,000 entries
Environment		
Operating temperature	23°F to 113°F (–5°C to 45°C)	32°F to 113°F (0°C to 45°C)
Operating relative humidity	10% to 95%, noncondensing	10% to 90%, noncondensing
Acoustic	43.6/56.9 dB	Low-speed fan: 65.7 dB, high-speed fan: 70.6 dB

HPE FLEXFABRIC 5900 SWITCH SERIES (CONTINUED)

HPE FlexFabric 5901AF 48G 4XG 2QSFP+ Switch (JL864A)

Electrical characteristics		
Frequency	50/60 Hz	50/60 Hz
Maximum heat dissipation	327.6 BTU/hr (345.63 kJ/hr)	597 BTU/hr (629.86 kJ/hr)
AC voltage	100 to 240 VAC V rated	100 to 240 VAC V rated
DC voltage	–48 VDC to –60 VDC V rated (depending on power supply chosen)	–48 VDC to –60 VDC V rated (depending on power supply chosen)
Maximum power rating	96W (dual AC)	175W (dual AC)
Idle power	70W (dual AC)	115W (dual AC)
Notes	Idle power is the actual power consumption of the device with no ports connected. Maximum power rating and maximum heat dissipation are the worst-case theoretical maximum numbers provided for planning the infrastructure with a fully loaded PoE (if equipped), 100% traffic, all ports plugged in, and all modules populated.	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 a 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	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	CISPR 32:2015 Class A; VCCI Class A; EN 55032 Class A; ICES-003 Class A; AS/NZS CISPR 32 Class A; EN 61000-3-2:2014; EN 61000-3-3:2013; FCC (CFR 47, Part 15 B) Class A	VCCI Class A; EN 55022 Class A; ICES-003 Class A; ANSI C63.4 2003; AS/NZS CISPR 22 Class A; EN 61000-3-2:2006; EN 61000-3-3:1995+A1:2001+A2:2005; EMC Directive 2004/108/EC; FCC (CFR 47, Part 15) Class A

Immunity

Generic	ETSI EN 300 386 v1.6.1; ETSI EN 300 386 v2.1.1
EN	EN 55024:2010; EN55024:2010+A1:2015; CISPR 35:2016; EN55035:2017
ESD	EN 61000-4-2; IEC 61000-4-2
Radiated	EN 61000-4-3; IEC 61000-4-3
EFT/Burst	EN 61000-4-4; IEC 61000-4-4
Surge	EN 61000-4-5; IEC 61000-4-5
Conducted	EN 61000-4-6; IEC 61000-4-6
Power frequency magnetic field	IEC 61000-4-8; EN 61000-4-8
Voltage dips and interruptions	EN 61000-4-11; IEC 61000-4-11
Harmonics	EN 61000-3-2; IEC 61000-3-2
Flicker	EN 61000-3-3; IEC 61000-3-3

Generic	ETSI EN 300 386 v1.3.3
EN	EN 55024:1998+ A1:2001 + A2:2003
ESD	EN 61000-4-2; IEC 61000-4-2
Radiated	EN 61000-4-3; IEC 61000-4-3
EFT/Burst	EN 61000-4-4; IEC 61000-4-4
Surge	EN 61000-4-5; IEC 61000-4-5
Conducted	EN 61000-4-6; IEC 61000-4-6
Power frequency magnetic field	IEC 61000-4-8; EN 61000-4-8
Voltage dips and interruptions	EN 61000-4-11; IEC 61000-4-11
Harmonics	EN 61000-3-2; IEC 61000-3-2
Flicker	EN 61000-3-3; IEC 61000-3-3

Management	HPE IMC; command-line interface; out-of-band management; SNMP manager; Telnet; FTP	HPE IMC; command-line interface; out-of-band management; SNMP manager; Telnet; FTP
Services	Visit 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, contact your local HPE sales office.	Visit the HPE website at hpe.com/networking/services for details on the service-level descriptions and product numbers. For details about services and response times in your area, contact your local HPE 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 SNMP v1/v2c
- RFC 1305 NTPv3
- RFC 1591 DNS (client)
- RFC 1902 (SNMP v2)
- RFC 1908 (SNMP v1/2 coexistence)
- RFC 2573 (SNMP v3 applications)
- RFC 2576 (coexistence between SNMP v1, v2, v3)
- Multiple configuration files
- Multiple software images
- SSHv1/SSHv2
- TACACS/TACACS+

General protocols

- IEEE 802.1D MAC Bridges
- IEEE 802.1p Priority
- IEEE 802.1Q VLANs
- IEEE 802.1s Multiple Spanning Trees
- IEEE 802.1w Rapid Reconfiguration of Spanning Tree
- IEEE 802.3ad Link Aggregation Control Protocol (LACP)
- IEEE 802.3ae 10-Gigabit Ethernet
- IEEE 802.3ag Ethernet OAM
- IEEE 802.3ah Ethernet in First Mile over Point-to-Point Fiber—EFMF
- IEEE 802.3x Flow Control

- RFC 768 UDP
- RFC 783 TFTP Protocol (revision 2)
- RFC 791 IP
- RFC 792 ICMP
- RFC 793 TCP
- RFC 826 ARP
- RFC 854 Telnet
- RFC 856 Telnet
- RFC 868 Time Protocol
- RFC 896 Congestion Control in IP/TCP Internetworks
- RFC 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 Internet
- RFC 1253 (OSPFv2)
- 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 and IPv6
- RFC 3046 DHCP Relay Agent Information Option

- RFC 3768 Virtual Router Redundancy Protocol (VRRP)
- RFC 4250 The SSH Protocol Assigned Numbers
- RFC 4251 SSH Protocol Architecture
- RFC 4252 SSH Authentication Protocol
- RFC 4253 SSH Transport Layer Protocol
- RFC 4254 SSH Connection Protocol
- RFC 4419 Diffie-Hellman Group Exchange for the SSH Transport Layer Protocol
- RFC 4594 Configuration Guidelines for DiffServ Service Classes
- RFC 4941 Privacy Extensions for Stateless Address Auto-configuration in IPv6

IPv6

- RFC 2080 RIPng for IPv6
- RFC 2460 IPv6 Specification
- RFC 2461 IPv6 Neighbor Discovery
- RFC 2462 IPv6 Stateless Address Auto-configuration
- RFC 2463 ICMPv6
- RFC 2464 Transmission of IPv6 over Ethernet Networks
- RFC 2473 Generic Packet Tunneling in IPv6
- RFC 2545 Use of MP-BGP-4 for IPv6
- RFC 2563 ICMPv6
- RFC 2711 IPv6 Router Alert Option
- RFC 2740 OSPFv3 for IPv6
- RFC 2767 Dual stacks IPv4 and IPv6
- RFC 3315 DHCPv6 (client and relay)
- RFC 4291 IPv6 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 SNMP v2 MIB
- RFC 2571 SNMP Framework MIB
- RFC 2572 SNMP-MPD MIB
- RFC 2573 SNMP-Notification MIB
- RFC 2573 SNMP-Target MIB
- RFC 2574 SNMP USM MIB
- RFC 2737 Entity MIB (version 2)

- RFC 3414 SNMP-User based-SM MIB
- RFC 3415 SNMP-View based-ACM MIB
- LLDP-EXT-DOT1-MIB
- LLDP-EXT-DOT3-MIB
- LLDP-MIB

Network management
- RFC 3164 BSD Syslog Protocol

OSPF
- RFC 1587 OSPF NSSA
- RFC 2328 OSPFv2
- RFC 3101 OSPF NSSA
- RFC 3137 OSPF Stub Router Advertisement
- RFC 3623 Graceful OSPF Restart
- RFC 4577 OSPF as the Provider/Customer Edge
- 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

HPE FLEXFABRIC 5900 SWITCH SERIES ACCESSORIES

Transceivers	HPE X120 1G SFP LC LX Transceiver JD119B HPE X120 1G SFP RJ45 T Transceiver JD089B HPE X120 1G SFP LC SX Transceiver JD118B HPE X120 1G SFP LC BX 10-U Transceiver JD098B HPE X120 1G SFP LC BX 10-D Transceiver JD099B HPE X120 1G SFP LC LH100 Transceiver JD103A HPE X130 10G SFP+ LC SR Transceiver JD092B HPE X130 10G SFP+ LC LR Transceiver JD094B HPE X130 10G SFP+ LC BiDi 40km-Downlink Transceiver JL740A HPE X130 10G SFP+ LC ER 40km Transceiver JG234A HPE X130 10G SFP+ LC BiDi 40km-Uplink Transceiver JL739A HPE X130 10G SFP+ LC LH 80km XCVR JG915A HPE X130 10G SFP+ LC BiDi 10km-Uplink Transceiver JL737A HPE X130 10G SFP+ LC BiDi 10km-Downlink Transceiver JL738A HPE X140 40G QSFP+ LC BiDi 100m MM XCVR JL251A HPE X140 40G QSFP+ MPO SR4 XCVR JG325B HPE X140 40G QSFP+ CSR4 300m XCVR JG709A 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+ LC LR4L 2km SM Transceiver JL286A HPE X130 10G SFP+ LC LH80 tunable Transceiver JL250A
Power supply	HPE X361 150W 100–240VAC to 12VDC Power Supply JD362B HPE X361 150W 48–60VDC to 12VDC Power Supply JD366B HPE A58x0AF Back (Power Side) to Front (Port Side) Airflow 300W AC Power Supply JG900A (for JG510A only) HPE A58x0AF Back (Power Side) to Front (Port Side) Airflow 300W DC Power Supply JG901A (for JG510A only) HPE 58x0AF 650W AC Power Supply JC680A (for JG510A only)
Fan	HPE FlexFabric 5944 Power to Port Airflow (Back to Front) Fan Module JL838A HPE FlexFabric 5944 Port to Power Airflow (Front to Back) Fan Module JL837A HPE 58x0AF Back (Power Side) to Front (Port Side) Airflow Fan Tray JC682A (for JG510A only) HPE 58x0AF Front (Port Side) to Back (Power Side) Airflow Fan Tray JC683A (for JG510A only) HPE X711 Front (Port Side) to Back (Power Side) Airflow High Volume Fan Tray JG552A (for JG510A only) HPE X712 Back (Power Side) to Front (Port Side) Airflow High Volume Fan Tray JG553A (for JG510A only)
Cables	HPE X240 10G SFP+ 7m DAC Cable JC784C HPE FlexNetwork X240 10G SFP+ to SFP+ 0.65m Direct Attach Copper Cable JD095C HPE FlexNetwork X240 10G SFP+ to SFP+ 1.2m Direct Attach Copper Cable JD096C HPE FlexNetwork X240 10G SFP+ to SFP+ 3m Direct Attach Copper Cable JD097C HPE FlexNetwork X240 10G SFP+ to SFP+ 5m Direct Attach Copper Cable JG081C HPE FlexNetwork X240 40G QSFP+ QSFP+ 1m Direct Attach Copper Cable JG326A HPE FlexNetwork X240 40G QSFP+ QSFP+ 3m Direct Attach Copper Cable JG327A HPE FlexNetwork X240 40G QSFP+ QSFP+ 5m Direct Attach Copper Cable JG328A HPE FlexNetwork X240 40G QSFP+ to 4x10G SFP+ 1m Direct Attach Copper Splitter Cable JG329A HPE FlexNetwork X240 40G QSFP+ to 4x10G SFP+ 3m Direct Attach Copper Splitter Cable JG330A HPE FlexNetwork X240 40G QSFP+ to 4x10G SFP+ 5m Direct Attach Copper Splitter Cable JG331A HPE X2A0 40G QSFP+ 7m AOC Cable JL287A HPE X2A0 40G QSFP+ 10m AOC Cable JL288A HPE X2A0 40G QSFP+ 20m AOC Cable JL289A HPE X2A0 10G SFP+ 7m AOC Cable JL290A HPE X2A0 10G SFP+ 10m AOC Cable JL291A HPE X2A0 10G SFP+ 20m AOC Cable JL292A

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