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HPE FLEXFABRIC 5944 SWITCH SERIES

KEY FEATURES

- High-density, high-performance top-of-rack (ToR) switch with 48 x 1/10GbE BASE-T ports and 6 x 40 or 100GbE QSFP28 uplink ports.
- HPE FlexFabric Network Analytics solution supporting application telemetry and real-time microburst congestion detection.
- HPE IMC Orchestrator and Analyzer offering enhanced network operations with orchestration, automation, and analytical capabilities.
- Industry-standard Distributed Resilient Network Interconnection (DRNI) enabling device-level link aggregation for simpler network topology and ease of operation.
- Virtual Extensible LAN (VXLAN) supporting greater scalability of Layer 2 and Layer 3 overlay service and multicast.
- HPE Intelligent Resilient Fabric (IRF) technology enabling greater resilience and scalability with its stacking.

PRODUCT OVERVIEW

The HPE FlexFabric 5944 Switch Series are high-density, low-latency, top-of-rack (ToR) switches suited for deployment at the aggregation and server access or leaf layer of enterprise data centers and cloud service provider environments.

Delivering high-performance switching capacity with the latest generation of ASICs, 10GBASE-T connectivity, Virtual Extensible LAN (VXLAN), Multiprotocol Label Switching (MPLS), and multicast, the HPE FlexFabric 5944 Switch Series offers a choice that fits your budget and delivers low TCO.

The HPE FlexFabric 5944 Switch Series supports HPE IMC Orchestrator and Analyzer that offers automated network overlay/underlay deployment, enhanced visibility with application telemetry and AI-enabled network monitoring for faster troubleshooting.

FEATURES AND BENEFITS

High density, advanced, data center switches with HPE FlexFabric Network Analytics

- The HPE FlexFabric 5944 Switch Series offers a cost-effective and high-density ToR switch with 48 x 1/10GbE BASE-T ports and 6 x 40/100GbE high-speed uplink QSFP28 ports.
- Supports HPE IMC Orchestrator and Analyzer that offers orchestration, automated service provisioning, and AI-enabled network health monitoring with telemetry and visual dashboards for fault detection and resolution.
- Supports HPE FlexFabric Network Analytics that offers real-time telemetry analysis and network operation insight with microburst congestion detection, rich congestion analytics, and buffer congestion statistics.
- VXLAN support for network virtualization and overlay solutions for improved flexibility.

High performance data center switching

- The HPE FlexFabric 5944 Switch Series delivers up to 2.16 Tbps switching capacity for demanding data center applications.
- Supports up to 1001.7 Mpps throughput for data-intensive environments.
- Low latency, under 1 µs for 40GbE, delivering increased network throughput.
- Supports IEEE 802.1Qbb Priority Flow Control (PFC), Data Center Bridging Exchange (DCBX) and IEEE 802.1Qaz Enhanced Transmission Selection (ETS), ensuring low latency for converged FCoE environments.

Business agility and resilience

- The HPE FlexFabric 5944 Switch Series delivers scalability and enhances reliability of the network with HPE Intelligent Resilient Fabric (IRF) technology. HPE IRF stacking enables uninterrupted L2 switching and L3 forwarding to eliminate operational complexity with simpler, flatter, and more agile networks.
- Distributed Resilient Network Interconnection (DRNI) enables link aggregation from multiple switches to implement device-level link backup for node redundancy. DRNI also simplifies network topology by virtualizing two physical devices into a logical device.
- IRF and In-Service Software Update (ISSU) enable high availability with modular updates accomplished without downtime, in the background.

Simplicity and lower TCO

- HPE FlexFabric 5944 Switch Series simplifies switch management by up to 88% with 9-unit HPE Intelligent Resilient Fabric (IRF).
- Supports centralized configuration, compliance and policy management, monitoring, and troubleshooting with HPE Intelligent Management Center (IMC) to provide a consistent network manageability experience.
- No hidden costs with a simple one license per switch for all software features. All switch ports are active and ready to use without the need for activation licenses.
- FCoE support enables network and storage convergence, eliminating the need for separate storage networks and SAN switches.

Customer first, customer last support

HPE Pointnext Services and Aruba Global Services work closely together to ensure your products are optimized throughout their lifecycle. From design, through deployment and operation, and into refresh, our technology experts can help you achieve higher value from your HPE solution in the shortest amount of time. Discover the support service that best meets your needs:

HPE Installation and Startup Service provides for the installation of your HPE hardware according to product specifications including options. The HPE service delivery technician will connect the product to a LAN as appropriate and enable remote support to allow for automatic case creation for hardware failures. Installation and start up services also include the installation of one supported operating system type (Windows or Linux®).

Foundation Care for Aruba provides support services for your switches, delivering 24x7 priority technical support, including access to, and guidance for, all software updates and upgrades, as well as parts replacement and on-site support with SLA commitment to help you keep your network performing at the highest level possible.

HPE Proactive Care layers on top of Foundation Care for Aruba and helps prevent problems and maintain IT stability by utilizing personalized proactive reports with recommendations and advice. This service combines both reactive support when there is a problem with an enhanced call experience and start-to-finish case management with proactive reporting and advice. This service also includes collaborative software support for Independent Software Vendors (ISVs) (e.g., Red Hat®, VMware®, Microsoft).

HPE Datacenter Care helps run and monitor your IT by offloading the day to day routine tasks, helping you be more predictive and proactive, and saving time with one place to call for your IT environment. Partner with an assigned account team backed by local and global experts, access HPE enhanced call experience with priority access, use specialized support for complex technologies, choose hardware and software support for your devices, implement proactive monitoring to stay ahead of issues, and access HPE IT best practices and Intellectual Property.

HPE FLEXFABRIC 5944 SWITCH SERIES

Specifications	HPE FlexFabric 5944 48XGT 6QSFP28 Switch (JL836A)
I/O ports and slots	48 x 1/10GBASE-T ports 6 x QSFP28 100GbE ports
Additional ports and slots	1 x 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 1 minimum power supply required (ordered separately)
Fan tray	5 fan tray slots 5 hot-swappable fans, fan speed adjustable with reversible airflow. Note: The customer must order fan trays, as they are not included with the switch. The system should not be operated with less than five fan trays 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	18.11 in. (w) x 17.32 in. (d) x 1.73 in. (h) (46 cm x 44 cm x 4.4 cm) (1U height)
Weight	22.05 lb (< 10 kg)
Memory and processor	4 GB flash; packet buffer size: 32 MB, 8 GB SDRAM
Performance	
Latency	< 1 µs (64-byte packets)
Throughput	1001.7 Mpps
Routing/switching capacity	2.16 Tbps
Routing table size	324K entries (IPv4), 162K entries (IPv6)
MAC address table size	288K entries (max.)
Environment	
Operating temperature	32°F to 113°F (0°C to 45°C)
Operating relative humidity	10% to 95%, noncondensing
Acoustic	Low-speed fan: 67 dB, high-speed fan: 71 dB
Electrical characteristics	
Frequency	50/60 Hz
Maximum heat dissipation	887 BTU/hr (935.79 kJ/hr)
AC voltage	100 to 240 VAC V rated
DC voltage	–40 VDC to –60 VDC rated
Maximum power rating	233W
Idle power	102W
Notes	Idle power is the actual power consumption of the device with no ports connected. Maximum power rating and maximum heat dissipation are the worst-case theoretical maximum numbers provided for planning the infrastructure with fully loaded PoE. (if equipped), 100% traffic, all ports plugged in, and all modules populated.

HPE FLEXFABRIC 5944 SWITCH SERIES (CONTINUED)

Specifications	HPE FlexFabric 5944 48XGT 6QSFP28 Switch (JL836A)
Safety	UL 60950-1, CAN/CSA-C22.2 No. 60950-1, IEC 60950-1, EN 60950-1, AS/NZS 60950.1, FDA 21 CFR Subchapter J
Emissions	FCC Part 15 (CFR 47) Class A, ICES-003 Class A, VCCI Class A, CISPR 32 Class A, EN 55032 Class A, AS/NZS CISPR 32 Class A, EN 61000-3-2, EN 61000-3-3, ETSI EN 300 386
Immunity	CISPR 24, EN 55024, ETSI EN 300 386
Management	HPE IMC; CLI; out-of-band management; SNMP manager; Telnet; FTP Note: The customer must install a minimum of one power supply, as the device does not come with one. The customer must install five fan kits, as the device does not come with one.

STANDARDS AND PROTOCOLS

Applies to all products in series

- 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 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 DHCP
- 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 RIPv2
- RFC 2581 TCP Congestion Control
- RFC 2644 Directed Broadcast Control
- RFC 2767 Dual Stacks IPv4 & IPv6
- RFC 2865 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 SNMP Applications
- RFC 3416 Protocol Operations for SNMP
- RFC 3417 Transport Mappings for SNMP
- RFC 3418 Management Information Base (MIB) for the SNMP
- RFC 3768 VRRP
- RFC 4250 The SSH Protocol Assigned Numbers
- RFC 4251 The SSH Protocol Architecture

- RFC 4252 The SSH Authentication Protocol
- RFC 4253 The SSH Transport Layer Protocol
- RFC 4254 The SSH Connection Protocol
- RFC 4292 IP Forwarding Table MIB
- RFC 4293 Management Information Base for the Internet Protocol (IP)
- RFC 4364 BGP/MPLS IP Virtual Private Networks (VPNs)
- RFC 4419 Diffie-Hellman Group Exchange for the SSH Transport Layer Protocol
- RFC 4594 Configuration Guidelines for DiffServ Service Classes
- RFC 4601 Protocol Independent Multicast—Sparse Mode (PIM-SM): Protocol Specification (Revised)
- 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 5905 NTP Version 4: Protocol and Algorithms Specification
- RFC 2929 RADIUS Support DS for RADIUS

Device management

- RFC 1157 SNMPv1/v2c
- RFC 1305 NTPv3
- RFC 1591 DNS (client)
- RFC 1902 (SNMPv2)
- RFC 1908 (SNMPv1/v2 Coexistence)
- RFC 2573 (SNMPv3 Applications)
- RFC 2576 (Coexistence between SNMPv1, v2, v3)
- RFC 2819 RMON
- Multiple configuration files
- Multiple software images
- SSHv1/SSHv2
- TACACS/TACACS+

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 3484 Default Address Selection for IPv6
- RFC 3810 Multicast Listener Discovery Version 2 (MLDv2) for IPv6
- RFC 4213 Basic Transition Mechanisms for IPv6 Hosts and Routers
- RFC 4291 IP Version 6 Addressing Architecture
- 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

BGP

- RFC 1163 BGP
- RFC 1771 BGPv4
- RFC 1997 BGP Communities Attribute
- RFC 2918 Route Refresh Capability
- RFC 3392 Capabilities Advertisement with BGP-4
- RFC 4271 A 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
- RFC 7432 BGP MPLS-Based Ethernet VPN

MIBs

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

Network management
- RFC 2580 Conformance Statements for SMIv2
- RFC 3164 BSD Syslog protocol

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 Expedited Forwarding Per-Hop Behavior (EF PHB)
- RFC 3260 New Terminology and Clarifications for DiffServ

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

Security
- RFC 1321 The MD5 Message-Digest Algorithm
- RFC 2818 HTTP Over TLS
- RFC 6192 Partial Support-Protecting the router control plane
- ACLs SSHv2

HPE FLEXFABRIC 5944 SWITCH SERIES OPTIONS

SFP transceivers	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 X115 100M SFP LC FX Transceiver (JD102B) HPE X110 100M SFP LC LX Transceiver (JD120B)
QSFP+ transceivers	HPE X140 40G QSFP+ MPO SR4 Transceiver (JG325A) HPE X140 40G QSFP+ MPO MM 850nm CSR4 300m Transceiver (JG709A) HPE X140 40G QSFP+ LC LR4 SM 10km 1310nm Transceiver (JG661A) HPE X140 40G QSFP+ LC LR4L 2km SM Transceiver (JL286A) HPE X2A0 40G QSFP+ to QSFP+ 7m Active Optical Cable (JL287A) HPE X2A0 40G QSFP+ to QSFP+ 10m Active Optical Cable (JL288A) HPE X2A0 40G QSFP+ to QSFP+ 20m Active Optical Cable (JL289A) HPE X240 40G QSFP+ QSFP+ 1m Direct Attach Copper Cable (JG326A) HPE X240 40G QSFP+ QSFP+ 3m Direct Attach Copper Cable (JG327A) HPE X240 40G QSFP+ QSFP+ 5m Direct Attach Copper Cable (JG328A)
QSFP28 transceivers	HPE X150 100G QSFP28 MPO SR4 100m MM Transceiver (JL274A) HPE X150 100G QSFP28 LC LR4 10km SM Transceiver (JL275A) HPE X150 100G QSFP28 BiDi 100m MM XCVR (JQ344A) HPE X2A0 100G QSFP28 to QSFP28 5m Active Optical Cable (JL796A) HPE X2A0 100G QSFP28 to QSFP28 7m Active Optical Cable (JL276A) HPE X2A0 100G QSFP28 to QSFP28 10m Active Optical Cable (JL277A) HPE X2A0 100G QSFP28 to QSFP28 20m Active Optical Cable (JL278A) HPE X2A0 100G QSFP28 to QSFP28 30m Active Optical Cable (JL795A) HPE X240 100G QSFP28 to QSFP28 1m Direct Attach Copper Cable (JL271A) HPE X240 100G QSFP28 to QSFP28 3m Direct Attach Copper Cable (JL272A) HPE X240 100G QSFP28 to QSFP28 5m Direct Attach Copper Cable (JL273A)
Internal power supplies	HPE FlexFabric 5710 450W FB AC PSU (JL592A) HPE FlexFabric 5710 450W BF AC PSU (JL593A) HPE FlexFabric 5710 450W 48V FB DC PSU (JL688A)
Fan trays	HPE FlexFabric 5944 Port to Power Airflow (Front to Back) Fan Module HPE FlexFabric 5944 Power to Port Airflow (Back to Front) Fan Module

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