The bridge to possible

Cisco Nexus 9348GC-FXP-B1 PoE Switch for ACI and NX-OS Supported Deployments

Contents

Product overview

Based on Cisco® Cloud Scale technology, the Cisco Nexus® 9348GC-FXP-B1 Switch is the first Power-over-Ethernet (PoE) fixed switch in the next-generation Cisco Nexus 9300 platform. Continuing the success of the Cisco Nexus 9300 EX platform, the Cisco Nexus 9300 FX platform PoE switch is built on modern system architecture designed to provide high performance, support cost-effective deployments, and meet the evolving needs of entry-level enterprise, midmarket, and small branch-office networks.

The Cisco Nexus 9348GC-FXP-B1 allows connectivity to Ethernet powered devices, including Cisco IP phones, wireless access points, and video cameras. The product supports prestandard PoE devices and is IEEE 802.3af and IEEE 802.3at-compliant. With PoE, you no longer need to have wall power to each PoE-enabled device, and thus the expense for additional electrical cables and circuits is no longer necessary in IP phone and WLAN deployments. Power injectors and PoE midspans are also no longer required. With optimized efficiency, simplified operation and installation, and a wide array of device versatility, the 9348GC-FXP-B1 provides investment protection for customers in an ever-changing data-centric and increasingly connected market. The expansive feature set includes 40 MB of intelligent buffering, support for voice VLANs, a full-featured Layer 2 and Layer 3 Application-Specific Integrated Circuit (ASIC), and dual 1100-watt (W) power supplies that provide up to 2000W of PoE power.

Cisco provides two modes of operation for Cisco Nexus 9000 Series Switches. Organizations can use Cisco NX-OS Software to deploy the switches in standard Cisco Nexus switch environments (NX-OS mode). Organizations also can use a hardware infrastructure that is ready to support the Cisco Application Centric Infrastructure (Cisco ACI™) platform to take full advantage of an automated, policy-based, systems-management approach (ACI mode).

Switch model

Table 1 summarizes the Cisco Nexus 9348GC-FXP-B1 PoE switch.

Table 1. Cisco Nexus 9348GC-FXP-B1 PoE switch

Model	Description
Cisco Nexus 9348GC-FXP-B1 Switch	48 x 100M/1GBASE-T PoE and PoE+ supported ports 4 x 10/25-Gbps Small Form Factor 28 (SFP28) ports and 2 x 40/100-Gbps Quad SFP 28 (QSFP28) ports, (non-PoE supported)

The Cisco Nexus 9348GC-FXP-B1 Switch (Figure 1) is a 1-Rack-Unit (1RU) switch that supports 696 Gbps of bandwidth and over 1035 Million Packets Per Second (mpps). Offering flexible port speed configurations, the switch supports 48 ports of 100M/1GBASE-T, 4 ports of 1/10/25-GB SFP+, and 2 ports of 40- and 100-GB QSFP+. The 48 1GBASE-T downlink PoE and PoE+ supported ports on the 9348GC-FXP-B1 can be configured to work as 100-Mbps and 1-Gbps ports. The 4 ports of SFP28 can be configured as 1-, 10-, and 25-Gbps ports, and the 2 ports of QSFP28 can be configured as 40- and 100-Gbps ports. The 9348GC-FXP-B1 is well suited for network customers requiring a Gigabit Ethernet connection while supporting wiring and space-constrained applications.

Figure 1.
Cisco Nexus 9348GC-FXP-B1 Switch

Features and benefits

The Cisco Nexus 9348GC-FXP-B1 provides the following features and benefits:

- High performance, scalability, flexibility, and security
    - The platform provides wire-rate Layer 2 and 3 switching on all ports.
    - Robust hardware system specifications include a 4-core CPU, 24 GB of system memory, and a 128-GB Solid-State Disk (SSD).
    - The 40-MB buffer can support growing enterprises.
    - Flexible forwarding tables support up to 2 million shared entries.
    - Flexible use of Ternary Content-Addressable Memory (TCAM) space allows custom definition of Access Control List (ACL) templates.
    - IEEE 802.1ae MAC Security (MACsec) support on two 40- and 100-Gbps QSFP28 ports allows traffic encryption at the physical layer and provides secure server, border leaf, and leaf-to-spine connectivity.
- Virtual Extensible LAN (VXLAN)
    - The platform offers native line-rate VXLAN routing.
    - The Border Gateway Protocol (BGP) Ethernet Virtual Private Network (EVPN) control plane provides scalable multitenancy and host mobility (refer to [VXLAN Network with MP-BGP EVPN Control Plane] for more information).
- Hardware and software high availability
    - Virtual Port Channel (vPC) technology provides Layer 2 multipathing through the elimination of Spanning Tree Protocol. It also enables fully utilized bisectional bandwidth and simplified Layer 2 logical topologies without the need to change the existing management and deployment models.
    - The 64-way Equal-Cost Multipath (ECMP) routing enables the use of Layer 3 fat-tree designs. This feature helps organizations prevent network bottlenecks, increase resiliency, and add capacity with little network disruption.
    - Advanced reboot capabilities include hot and cold patching.
    - The switches use hot-swappable Power-Supply Units (PSUs) and fans with N+1 redundancy.
- Purpose-built Cisco NX-OS Software operating system with comprehensive, proven innovations
    - Open programmability supports built-in DevOps automation tools such as Puppet, Chef, and Ansible.
    - Cisco NX-API supports a common programmatic approach across Cisco Nexus switches.

- Power-on autoprovisioning (POAP) enables touchless bootup and configuration of the switch, drastically reducing provisioning time.
- Cisco Embedded Event Manager (EEM) and Python scripting enable automation and remote operations in the data center.
- Advanced buffer monitoring reports real-time buffer use per port and per queue, which allows organizations to monitor traffic bursts and application traffic patterns.
- Complete Layer 3 unicast and multicast routing protocol suites are supported, including BGP, Open Shortest Path First (OSPF), Enhanced Interior Gateway Routing Protocol (EIGRP), Routing Information Protocol Version 2 (RIPv2), Protocol Independent Multicast Sparse Mode (PIM-SM), Source-Specific Multicast (SSM), and Multicast Source Discovery Protocol (MSDP).
- Segment routing allows the network to forward Multiprotocol Label Switching (MPLS) packets and engineer traffic without Resource Reservation Protocol (RSVP) Traffic Engineering (TE). It provides a control-plane alternative for increased network scalability and virtualization.
- Fibre Channel and Fibre Channel over Ethernet (FCoE) N-Port Virtualization (NPV) support enables the network administrator to control domain IDs and points of management on a Fibre Channel network as it scales. This feature enables LAN and SAN converged networks on a lossless, reliable Ethernet network.
- Network traffic monitoring with Cisco Nexus Data Broker builds simple, scalable, and cost-effective network Test Access Points (TAPs) and Cisco Switched Port Analyzer (SPAN) aggregation for network traffic monitoring and analysis.
- Automate the time-consuming tasks of creating, installing, and maintaining appropriate fabricwide switch configurations with the new Cisco Nexus Fabric Manager.

- Cisco Application Centric Infrastructure (Cisco ACI) solution
    - Cisco ACI offers a holistic architecture in the data center with centralized automation and policy-based application profiles
    - Cisco ACI provides a robust, transport network for today's dynamic workloads. Cisco ACI is built on a network fabric that combines time-tested protocols with new innovations to create a highly flexible, scalable, and resilient architecture of low-latency, high-bandwidth links. This fabric delivers a network that can support the most demanding and flexible data center environments.
    - The Cisco ACI fabric consists of three major components:
        - Cisco Application Policy Infrastructure Controller (APIC)
        - Spine switches
        - Leaf switches

Please visit the latest release notes for additional information.

Table 2 summarizes the switch specifications.

Table 2. Cisco Nexus 9348GC-FXP-B1 switch specifications

Feature	Cisco Nexus 9348GC-FXP-B1
Ports	48 x 100M/1GBASE-T PoE and PoE+ ports, 4 x 10/25-Gbps SFP28 ports, and 2 x 40/100 QSFP28 ports
Downlink supported speeds	100-Mbps and 1-Gbps speeds
CPU	4 cores
System memory	24 GB
SSD drive	128 GB
System buffer	40 MB
Management ports	2 ports: 1 RJ-45 and 1 SFP+
USB ports	1
RS-232 serial ports	1
Power supplies (up to 2)	1100W AC
Average power (AC)	1035W
Maximum power (AC)	2000W
NEBS maximum power	2010W
Maximum output power per device **PoE: IEEE 802.3af** **PoE+: IEEE 802.3at**	PoE supported only on ports 1 through 48 15W per port 30W per port
Frequency (AC)	50 to 60 Hz
Fans	3
Airflow	Port-side intake and exhaust
Physical dimensions (H x W x D)	1.72 x 17.3 x 21 in. (4.4 x 43.9 x 50.8.9 cm)
Acoustics	67.5 dBA at 50% fan speed, 73.2 dBA at 70% fan speed, and 81.6 dB at 100% fan speed
RoHS compliance	Yes
Mean Time Between Failures (MTBF)	257,860 hours

Cisco NX-OS Software overview

The Cisco Nexus 9300 FX platform supports the NX-OS operating system. NX-OS interoperates with any networking operating system, including Cisco IOS® Software that conforms to the networking standards described in this data sheet.

NX-OS is a purpose-built data center operating system designed for performance, resiliency, scalability, manageability, and programmability at its foundation. It provides a robust and comprehensive feature set that meets the demanding requirements of virtualization and automation in present and future data centers.

The Cisco Nexus 9000 Series Switches use an enhanced version of NX-OS with a single binary image that supports every switch in the series, simplifying image management. The operating system is modular, with a dedicated process for each routing protocol: a design that isolates faults while increasing availability. In the event of a process failure, the process can be restarted without loss of state. The operating system supports hot and cold patching and online diagnostics.

The software packaging for the Cisco Nexus 9000 Series offers flexibility and a comprehensive feature set while being consistent with Cisco Nexus access switches. The default system software has a comprehensive Layer 2 security and management feature set. To enable additional functions, including Layer 3 IP unicast and IP multicast routing and Cisco Nexus Data Broker, you must install additional licenses. Table 3 lists the software packaging and licensing available to enable advanced features.

Cisco ACI Software overview

Cisco® Application Centric Infrastructure (ACI) is a holistic architecture with centralized automation and policy-based application profiles. The Cisco ACI fabric is designed from the foundation to support emerging industry demands while maintaining a migration path for architecture already in place. The fabric is designed to support the industry move to management automation, programmatic policy, and dynamic "workload-anywhere" models. The Cisco ACI fabric accomplishes this with a combination of hardware, policy-based control systems, and software closely coupled to provide advantages not possible in other models.

The fabric consists of three major components: the Cisco Application Policy Infrastructure Controller (APIC), spine switches, and leaf switches. These three components handle both the application of network policy and the delivery of packets. Organizations can use the ACI-ready Cisco Nexus® 9000 Series Switches as spine or leaf switches to take full advantage of an automated, policy-based, systems management approach. The Cisco Nexus 9300 Series Switches include both spine and leaf switches. For detailed information, please refer here.

Table 3. Software packaging and licensing

Packaging	License form	Part number	Supported features
Cisco Nexus 9000 Series Fixed Enhanced Layer 3 license	Switch based	N93-1G-LAN1K9	Layer 3 features, including full OSPF, EIGRP, BGP, and VXLAN
Cisco Data Center Network Manager (DCNM) license	Switch based	DCNM-LAN-N93-K9	DCNM license for Cisco Nexus 9000 Series fixed switching platform

Packaging	License form	Part number	Supported features
Cisco Nexus Data Broker license	Switch based	NDB-FX-SWT-K9	Data Broker license for Cisco Nexus 9000 Series fixed switching platform
FCoE license	Switch based	N93-FNPV1K9	FCoE NPV license for Cisco Nexus 9300 platform switches
Cisco Nexus 9300 Platform Network Services (Cisco Intelligent Traffic Director [ITD] and Cisco IP Fabric for Media)	Switch based	N93-SERVICES1K9	Network Services includes Intelligent Traffic Director and IP Fabric for Media
Cisco Telemetry license	Switch based	N93-TTR1K9	Flow telemetry data collection at line rate
NXOS Essential SW license for a 1G Nexus 9K Leaf	Switch based	NXOS-ES-GF	The NXOS Essentials license is inclusive of the LAN license. DNCM-LAN, Network Services and Streaming Telemetry.
NXOS Advantage SW license for a 1G Nexus 9K Leaf	Switch based	NXOS-AD-GF	The Advantage NXOS license includes the VPN Fabric license. In addition, the Advantage license also includes the Essentials license
ACI Essential SW license for a 1G Nexus 9K Leaf	Switch based	ACI-ES-GF	The ACI Essentials license contains the ACI base license, Streaming Telemetry, Multi-POD and Cisco PTP/Netflow
ACI Advantage SW license for a 1G Nexus 9K Leaf	Switch based	ACI-AD-GF	The Advantage ACI license includes the Multi-Site. In addition, the Advantage license also includes the Essentials license.

New software license tiers

As we introduce new features and capabilities in our ACI and NX-OS Software Solutions, we want to make it easier for customers to design, buy, maintain and manage the solutions. As a result, Cisco has adopted the ACI and NX-OS licensing tiers. These will be offered in conjunction with our existing offerings. For more information, please reference the Cisco Nexus NX-OS licensing guide

Specifications

Table 4 lists the performance and scalability specifications for the Cisco Nexus 9300 EX and FX platform switches. (Check the software release notes for feature support information.)

Table 4. Hardware performance and scalability specifications*

Item	Cisco Nexus 9300 FX platform switches
Maximum number of Longest Prefix Match (LPM) routes**	1,792,000
Maximum number of IP host entries**	1,792,000

Item	Cisco Nexus 9300 FX platform switches
Maximum number of MAC address entries**	512,000
Maximum number of multicast routes	32,000
Number of Interior Gateway Management Protocol (IGMP) snooping groups	Shipping: 8000 Maximum: 32,000
Maximum number of Cisco Nexus 2000 Series Fabric Extenders per switch	16
Maximum number of ACL entries	Single-slice forwarding engine: 5000 ingress + up to 64,000** 2000 egress
Maximum number of VLANs	3967
Number of Virtual Routing and Forwarding (VRF) instances	Shipping: 1000 Maximum: 16,000
Maximum number of ECMP paths	64
Maximum number of port channels	512
Maximum number of links in a port channel	32
Number of active SPAN sessions	4
Maximum number of VLAN's in Rapid per-VLAN Spanning Tree (RPVST) instances	3967
Maximum number of Hot-Standby Router Protocol (HSRP) groups	490
Number of Network Address Translation (NAT) entries	1023
Maximum number of Multiple Spanning Tree (MST) instances	64
Flow-table size used for Cisco Tetration Analytics™ platform	32,000

* More templates and greater scalability are on the roadmap. Refer to the [Cisco Nexus 9000 Series Verified Scalability Guide] documentation for the latest exact scalability values validated for specific software.

** Shared entries.

Environmental properties

Table 5 lists the environmental properties, and Table 6 lists the weight for Cisco Nexus 9348GC-FX-B1 switches.

Table 5. Environmental properties

Property	Description
Operating temperature	32 to 104°F (0 to 40°C)
Nonoperating (storage) temperature	-40 to 158°F (-40 to 70°C)
Humidity	5 to 95% (noncondensing)
Altitude	0 to 13,123 ft (0 to 4000m)

Table 6. Weight

Component	Weight
Cisco Nexus 9348GC-FXP-B1 without power supplies or fans	14.2 lb (6.44 kg)
1100W AC power supply (port-side intake and port-side exhaust)	3.0 lb (1.36 kg)
Fan tray: NXA-FAN-30CFM-F or NXA-FAN-30CFM-B	0.92 lb (0.4 kg)

Regulatory standards compliance

Table 7 summarizes regulatory standards compliance for the Cisco Nexus 9300 FX platform switches.

Table 7. Regulatory standards compliance: Safety and EMC

Specification	Description
Regulatory compliance	Products should comply with CE Markings according to directives 2004/108/EC and 2006/95/EC.
Safety	NEBS • UL 60950-1 Second Edition • CAN/CSA-C22.2 No. 60950-1 Second Edition • EN 60950-1 Second Edition • IEC 60950-1 Second Edition • AS/NZS 60950-1 • GB4943

Specification	Description
EMC: Emissions	• 47CFR Part 15 (CFR 47) Class A • AS/NZS CISPR22 Class A • CISPR22 Class A • EN55022 Class A • ICES003 Class A • VCCI Class A • EN61000-3-2 • EN61000-3-3 • KN22 Class A • CNS13438 Class A
EMC: Immunity	• EN55024 • CISPR24 • EN300386 • KN 61000-4 series
RoHS	The product is RoHS-6 compliant with exceptions for leaded-ball grid-array (BGA) balls and lead press-fit connectors.

Supported optics modules

For details about the optics modules available and the minimum software release required for each supported module, visit https://www.cisco.com/en/US/products/hw/modules/ps5455/products_device_support_tables_list.html.

Ordering information

Table 8 presents ordering information for the Cisco Nexus 9348GC-FXP-B1 Switch.

Table 8. Ordering information

Part number	Product description
Base part number	
N9K-C9348GC-FXP-B1	Nexus 9300 with 48p 100M/1G BASE-T, 4p 10/25G SFP28 and 2p 40G/100G QSFP28
Power supplies	
NXA-PAC-1100W-PI	Nexus 9000 1100W AC PS, Port-side Intake
NXA-PAC-1100W-PE	Nexus 9000 1100W AC PS, Port-side Exhaust
Fans	
NXA-FAN-30CFM-F	Nexus 2K/3K/9K Single Fan, port side exhaust airflow
NXA-FAN-30CFM-B	Nexus 2K/3K/9K Single Fan, port side intake airflow

Part number	Product description
Software	
N93-LAN1K9	Enhanced L3 including full OSPF, EIGRP, BGP
NDB-FX-SWT-K9	Tap/SPAN Agg lic for 1 Cisco Nexus Fixed Switch
N93-FNPV1K9	FCOE NPV License for 9300 Series Switches
DCNM-LAN-N93-K9	DCNM license for Nexus 9000 Fixed Platform
N93-TTR1K9	Cisco Telemetry License for 9300 Series Switches
N93-SERVICES1K9	Nexus 9300 Network Services (ITD, IP Media Fabric)
NXOS-ES-GF	The NXOS Essentials license is inclusive of the LAN license. DNCM-LAN, Network Services and Streaming Telemetry.
NXOS-AD-GF	The Advantage NXOS license includes the VPN Fabric license. In addition, the Advantage license also includes the Essentials license
ACI-ES-GF	The ACI Essentials license contains the ACI base license, Streaming Telemetry, Multi-POD and Cisco PTP/Netflow
ACI-AD-GF	The Advantage ACI license includes the Multi-Site. In addition, the Advantage license also includes the Essentials license.
Power cords	
CAB-AC-C15-KOR	AC Power Cord, Korea, C15
CAB-ACBZ-12A	AC Power Cord (Brazil) 12A/125V BR-3-20 plug up to 12A
CAB-C15-CBN	Cabinet Jumper Power Cord, 250 VAC 13A, C14-C15 Connectors
CAB-TA-250V-JP	Japan 250V AC Type A Power Cable
CAB-TA-AP	Australia AC Type A Power Cable
CAB-TA-AR	Argentina AC Type A Power Cable
CAB-TA-CN	China AC Type A Power Cable
CAB-TA-DN	Denmark AC Type A Power Cable
CAB-TA-EU	Europe AC Type A Power Cable
CAB-TA-IN	India AC Type A Power Cable
CAB-TA-IS	Israel AC Type A Power Cable

Part number	Product description
CAB-TA-IT	Italy AC Type A Power Cable
CAB-TA-NA	North America AC Type A Power Cable
CAB-TA-SW	Switzerland AC Type A Power Cable
CAB-TA-UK	United Kingdom AC Type A Power Cable
Accessories	
N3K-C3064-ACC-KIT	Nexus 3K/9K Fixed Accessory Kit
NXK-ACC-KIT-2P	Nexus Fixed Accessory Kit with 2-post rack mount

Warranty

The Cisco Nexus 9300 EX and FX platforms have a 1-year limited hardware warranty. The warranty includes hardware replacement with a 10-day turnaround from receipt of a Return Materials Authorization (RMA).

Cisco environmental sustainability

Information about Cisco's environmental sustainability policies and initiatives for our products, solutions, operations, and extended operations or supply chain is provided in the "Environment Sustainability" section of Cisco's Corporate Social Responsibility (CSR) Report.

Reference links to information about key environmental sustainability topics (mentioned in the "Environment Sustainability" section of the CSR Report) are provided in the following table:

Sustainability topic	Reference
Information on product material content laws and regulations	Materials
Information on electronic waste laws and regulations, including products, batteries, and packaging	WEEE compliance

Cisco makes the packaging data available for informational purposes only. It may not reflect the most current legal developments, and Cisco does not represent, warrant, or guarantee that it is complete, accurate, or up to date. This information is subject to change without notice.

Services and support

Cisco offers a range of professional, solution, and product support services for each stage of your Cisco Nexus 9300 EX or FX platform deployment:

- Cisco Data Center Quick Start Service for Cisco Nexus 9000 Series Switches: This offering provides consulting services that include technical advice and assistance to help deploy Cisco Nexus 9000 Series Switches.

- Cisco Data Center Accelerated Deployment Service for Cisco Nexus 9000 Series Switches: This service delivers planning, design, and implementation expertise to bring your project into production. The service also provides recommended next steps, an architectural high-level design, and operation-readiness guidelines to scale the implementation to your environment.
- Cisco Migration Service for Cisco Nexus 9000 Series Switches: This service helps you migrate from Cisco Catalyst® 6000 Series Switches to Cisco Nexus 9000 Series Switches.
- Cisco Product Support: Support service is available globally 24 hours a day, 7 days a week, for Cisco software and hardware products and technologies associated with Cisco Nexus 9000 Series Switches. Enhanced support options delivered by Cisco also include solution support for the Cisco Application Centric Infrastructure (Cisco ACI™) solution, Cisco SMARTnet™ Service, and Cisco Smart Net Total Care™* service.

* For Cisco products only.

For more information, visit https://www.cisco.com/go/services.

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For more information

For more information about the Cisco Nexus 9000 Series and latest software release information and recommendations, visit https://www.cisco.com/go/nexus9000.

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