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Cisco Nexus 9300 ACI Fixed Spine Switches

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Product overview

Industry shifts are redefining IT at all levels. On-premise IT consumption models are shifting to cloud-based services. IT as a Service (IaaS) is supplanted by applications as a service. Separate development and operations are moving toward integrated Development and Operations (DevOps). Device-centric management models are migrating to application-centric management.

Business agility requires application agility, so IT teams need to provision applications in hours instead of months. Resources need to scale up (or down) in minutes, not hours. Traditional approaches take a siloed operational view, with no common operational model for the application, network, security, and cloud teams. A common operational model delivers application agility, simplified operations, assured performance, and scale.

The Solution: An application-centric approach to managing your infrastructure

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](#).

Switch models

The Cisco Nexus 9336PQ ACI Spine Switch is a 2-Rack-Unit (2RU) spine switch for Cisco ACI that supports 2.88 Tbps of bandwidth and 2.3 billion packets per second (bps) across 36 fixed 40 QSFP+ ports (Figure 1). Cisco Nexus 9300 platform leaf switches are Layer 2 and 3 nonblocking 10 and 40 Gigabit Ethernet switches with up to 2.56 Terabits per second (Tbps) of internal bandwidth.



Figure 1.
Cisco Nexus 9336PQ Switch

The Cisco Nexus 9364C ACI Spine Switch is a 2-Rack-Unit (2RU) spine switch for Cisco ACI that supports 12.84 Tbps of bandwidth and 4.3 bpps across 64 fixed 40/100G QSFP28 ports and 2 fixed 1/10G SFP+ ports (Figure 2). Breakout is not supported on ports 1 to 64. The last 16 ports marked in green support wire-rate MACsec encryption¹.

¹ Software is expected in a future release. Please check the latest software update [here](#).



Figure 2.
Cisco Nexus 9364C Switch

The Cisco Nexus 9332C is the smallest form-factor 1-Rack-Unit (1RU) spine switch for Cisco ACI that supports 6.4 Tbps of bandwidth and 2.3 bpps across 32 fixed 40/100G QSFP28 ports and 2 fixed 1/10G SFP+ ports (Figure 3). Breakout is not supported on ports 1 to 32. The last 8 ports marked in green support wire-rate MACsec encryption².



Figure 3.
Cisco Nexus 9332C Switch

Specifications

Table 1 lists the specifications for the Cisco Nexus 9336PQ switch. (Please check Cisco ACI software release notes for feature support information.)

Table 1. Cisco Nexus 9300 ACI Spine switch specifications

Model	Cisco Nexus 9336PQ	Cisco Nexus 9364C	Cisco Nexus 9332C
Physical	<ul style="list-style-type: none"> • 36-port 40G QSFP ports • 1200 watt (W) AC power supplies or 930W DC power supplies (up to 2) • 80 Plus Platinum-rated power supplies that provide at least 90% efficiency with 20% utilization • Hot-swappable, dual fan trays with redundant fans • Port-side intake or Port side exhaust airflow direction • System memory: 16GB • SSD: 64GB • USB: 2 ports • RS-232 serial console ports: 1 • Management ports: 1 x 10/100/1000BASE-T 	<ul style="list-style-type: none"> • 64-port 40/100G QSFP28 ports & 2-port 1/10G SFP+ ports • 1200 watt (W) AC power supplies or 930W DC power supplies (up to 2) • Hot-swappable, dual fan trays with redundant fans • System memory: 32GB • SSD: 128GB • USB: 1 port • RS-232 serial console ports: 1 • Management ports: 2 (1 x 10/100/1000BASE-T and 1 x 1-Gbps SFP+) • Broadwell-DE CPU: 4 cores 	<ul style="list-style-type: none"> • 32-port 40/100G QSFP28 ports & 2-port 1/10G SFP+ ports • 1100 watt (W) AC, DC or HVAC/HVDC power supplies (up to 2) • Hot-swappable, 5 fans with redundancy • System memory: 16 GB • SSD: 128GB • USB: 1 port • RS-232 serial console ports: 1 • Management ports: 2 (1 x 10/100/1000BASE-T and 1 x 1-Gbps SFP+) • Broadwell-DE CPU: 4 cores

² Software is expected in a future release. Please check the latest software update [here](#).

Model	Cisco Nexus 9336PQ	Cisco Nexus 9364C	Cisco Nexus 9332C
Power and Cooling	<ul style="list-style-type: none"> Power: 1200W AC, 930W DC or 1200W HVAC/HVDC Input voltage: 100 to 240V* AC or -40V to -72V DC (min-max), -48V to -60V DC (nominal) *Supports input voltage of 100-120V for a max output of 800W; 200-240V for a max output of 1200W Frequency: 50 to 60 Hz (AC) Efficiency: 90% or greater (20 to 100% load) RoHS compliance: Yes Hot swappable: Yes Port-side intake or port-side exhale options Typical power: 400W (AC) Maximum power: 660W (AC) 	<ul style="list-style-type: none"> Power: 1200W AC, 930W DC³ or 1200W HVAC/HVDC Input voltage: 100 to 240V* AC or -40V to -72V DC (min-max), -48V to -60V DC (nominal) *Supports input voltage of 100-120V for a max output of 800W; 200-240V for a max output of 1200W; PSU redundancy is not supported when used in 100-120V Frequency: 50 to 60 Hz (AC) Efficiency: 90% or greater (20 to 100% load) RoHS compliance: Yes Hot swappable: Yes Port-side intake or port-side exhale options Typical power: 429W (AC) Maximum power: 1245W (AC) 	<ul style="list-style-type: none"> Power: 1100W AC, 1100 DC or 1100W HVAC/HVDC Input voltage: 100 to 240V* AC or -40V to -72V DC (min-max), -48V to -60V DC (nominal) *Supports input voltage of 100-120V for a max output of 800W; 200-240V for a max output of 1200W; PSU redundancy is not supported when used in 100-120V Frequency: 50 to 60 Hz (AC) Efficiency: 90% or greater (20 to 100% load) RoHS compliance: Yes Hot swappable: Yes Port-side intake or port-side exhale options Typical power: 296W (AC) Maximum power: 700W (AC)
Environmental	<ul style="list-style-type: none"> Physical (H x W x D): 3.5 x 17.5 x 22.5 in. (8.9 x 44.5 x 57.1 cm) Weight: 34.4 lb 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) 	<ul style="list-style-type: none"> Physical (H x W x D): 3.38 x 17.37 x 22.27 in. (8.59 x 44.13 x 56.58 cm) Weight: 36.9lb (16.74kg) with power supplies and fans, 27.4 lb (12.43kg) without power supplies and fans Operating temperature: 32 to 104° F (0 to 40° C) Nonoperating (storage) temperature: -40 to 158° F (-40 to 70° C) Humidity: 5 to 85% (noncondensing) Altitude: 0 to 13,123 ft (0 to 4000m) 	<ul style="list-style-type: none"> Physical (H x W x D): 1.7 x 17.3 x 22.9 in. (4.4 x 43.9 x 58.1 cm) Weight: 25.1lb (11.4kg) with power supplies and fans, 19 lb (8.6kg) without power supplies and fans Operating temperature: 32 to 104° F (0 to 40° C) Nonoperating (storage) temperature: -40 to 158° F (-40 to 70° C) Humidity: 5 to 85% (noncondensing) Altitude: 0 to 13,123 ft (0 to 4000m)
Acoustics	<ul style="list-style-type: none"> Fan speed at 40%: 64.4 dBA Fan speed at 70%: 79.6 dBA Fan speed at 100%: 89.8 dBA 	<ul style="list-style-type: none"> Fan speed at 40%: 76.7 dBA Fan speed at 70%: 88.7 dBA Fan speed at 100%: 97.4 dBA 	<ul style="list-style-type: none"> Fan speed at 50%: 76.4 dBA Fan speed at 70%: 83.3 dBA Fan speed at 100%: 92.1 dBA
MTBF	<ul style="list-style-type: none"> 242,000 hours 	<ul style="list-style-type: none"> 257,860 hours 	<ul style="list-style-type: none"> 363,500 hours

³ 930W-DC PSU is supported in redundancy mode if 3.5W QSFP+ modules or Passive QSFP cables are used & the system is used in 40C ambient temp or less; for other optics or higher ambient temps, 930W-DC is supported with 2 PSU's in non-redundancy mode only.

Cisco Nexus 9300 ACI Spine switch deployment scenarios

The Nexus 9300 ACI spine switch along with Nexus 9300 leaf nodes enable an automated and policy driven ACI architecture. The Cisco Nexus 9300 ACI spine switch offers advanced scalability in the smallest spine switch form factor, and enables connectivity to up-to 64 Cisco Nexus 9300 leaf switches with its high port density of 64 40/100 GbE ports and 12.84 Tbps throughput. The degree of redundancy in leaf-and-spine architectures delivers increased availability with a high level of flexibility in workload placement (Figure 3).

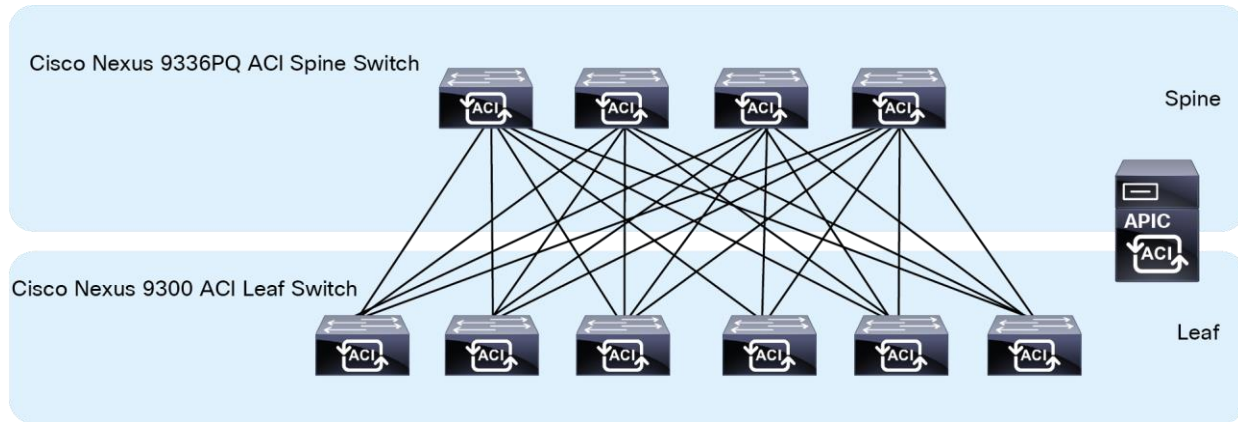


Figure 4.
Cisco Nexus 9300 Platform in a Leaf-and-Spine Architecture

Software requirements

For the latest software release information and recommendations, please refer to the product bulletin at <https://www.cisco.com/go/aci> and [Cisco Feature Navigator](#).

Regulatory standards compliance

Table 2 summarizes regulatory standards compliance for the Cisco Nexus 9300 Spine switch.

Table 2. 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	<ul style="list-style-type: none"> • 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	<ul style="list-style-type: none"> • 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	<ul style="list-style-type: none"> • 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 pluggable

For details on the optical modules available and the minimum software release required for each supported optical module, visit

https://www.cisco.com/en/US/products/hw/modules/ps5455/products_device_support_tables_list.html.

Ordering information

Table 3 presents ordering information for the Cisco Nexus 9300 ACI Spine Switch.

Table 3. Ordering information

Part Number	Product Description
Hardware	
N9K-C9336PQ	Nexus 9336 ACI Spine switch with 36p 40G QSFP
N9K-C9364C	Nexus 9364C ACI Spine switch with 64p 40/100G QSFP28, 2p 1/10G SFP
N9K-C9332C	Nexus 9332C ACI Spine switch with 32p 40/100G QSFP28, 2p 1/10G SFP
FAN Options	
N9K-C9300-FAN3	Nexus 9300 Fan 3, Port-side Intake
N9K-C9300-FAN3-B	Nexus 9300 Fan 3, Port-side Exhaust
NXA-FAN-160CFM-PI	Nexus Fan, 160CFM, port side intake airflow
NXA-FAN-160CFM-PE	Nexus Fan, 160CFM, port side exhaust airflow

Part Number	Product Description
NXA-FAN-35CFM-PI	Nexus Fan, 35CFM, port side intake airflow
NXA-FAN-35CFM-PE	Nexus Fan, 35CFM, port side exhaust airflow
Power Supply Options	
N9K-PAC-1200W	Nexus 9300 1200W AC PS, Port-side Intake
N9K-PAC-1200W-B	Nexus 9300 1200W AC PS, Port-side Exhaust
NXA-PAC-1100W-PE2	Nexus 1100W AC PS, Port-side Exhaust
NXA-PAC-1100W-PI2	Nexus 1100W AC PS, Port-side Intake
NXA-PAC-1200W-PE	Nexus 1200W AC PS, Port-side Exhaust
NXA-PAC-1200W-PI	Nexus 1200W AC PS, Port-side Intake
N9K-PUV-1200W	Nexus 1200W, 200-277AC,240-380DC, Dual airflow PSU
UCS-PSU-6332-DC	930W -48V DC PS, Port-side Exhaust
UCSC-PSU-930WDC	930W -48V DC PS, Port-side Intake
NXA-PDC-930W-PE	Nexus 930W -48V DC PS, Port-side Exhaust
NXA-PDC-930W-PI	Nexus 930W -48V DC PS, Port-side Intake
Power Cords	
CAB-250V-10A-AR	AC Power Cord - 250V, 10A - Argentina (2.5 meter)
CAB-250V-10A-BR	AC Power Cord - 250V, 10A - Brazil (2.1 meter)
CAB-250V-10A-CN	AC Power Cord - 250V, 10A - PRC (2.5 meter)
CAB-250V-10A-ID	AC Power Cord - 250V, 10A, South Africa (2.5 meter)
CAB-250V-10A-IS	AC Power Cord - 250V, 10A - Israel (2.5 meter)
CAB-9K10A-AU	Power Cord, 250VAC 10A 3112 Plug, Australia (2.5 meter)
CAB-9K10A-EU	Power Cord, 250VAC 10A CEE 7/7 Plug, EU (2.5 meter)
CAB-9K10A-IT	Power Cord, 250VAC 10A CEI 23-16/VII Plug, Italy (2.5 meter)
CAB-9K10A-SW	Power Cord, 250VAC 10A MP232 Plug, SWITZ (2.5 meter)
CAB-9K10A-UK	Power Cord, 250VAC 10A BS1363 Plug (13 A fuse), UK (2.5 meter)
CAB-9K12A-NA	Power Cord, 125VAC 13A NEMA 5-15 Plug, North America (2.5 meter)
CAB-AC-L620-C13	North America, NEMA L6-20-C13 (2.0 meter)

Part Number	Product Description
CAB-C13-C14-2M	Power Cord Jumper, C13-C14 Connectors, 2 Meter Length (2 meter)
CAB-C13-C14-AC	Power cord, C13 to C14 (recessed receptacle), 10A (3 meter)
CAB-C13-CBN	Cabinet Jumper Power Cord, 250 VAC 10A, C14-C13 Connectors (0.7 meter)
CAB-IND-10A	10A Power cable for India (2.5 meter)
CAB-N5K6A-NA	Power Cord, 200/240V 6A North America (2.5 meter)
Accessories	
N9K-C9300-ACK	Nexus 9300 Accessory Kit
N9K-C9300-RMK	Nexus 9300 Rack Mount Kit
N3K-C3064-ACC-KIT	Nexus 1RU switch Accessory Kit

Warranty

The Cisco Nexus 9300 switch has 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

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Service and Support

Cisco offers a wide range of services to help accelerate your success in deploying and optimizing the Cisco Nexus 9300 switch in your data center. The innovative Cisco Services offerings are delivered through a unique combination of people, processes, tools, and partners and are focused on helping you increase operation efficiency and improve your data center network. Cisco Advanced Services uses an architecture-led approach to help you align your data center infrastructure with your business goals and achieve long-term value. Cisco SMARTnet® Service helps you resolve mission-critical problems with direct access at any time to Cisco network experts and award-winning resources.

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For more information

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

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