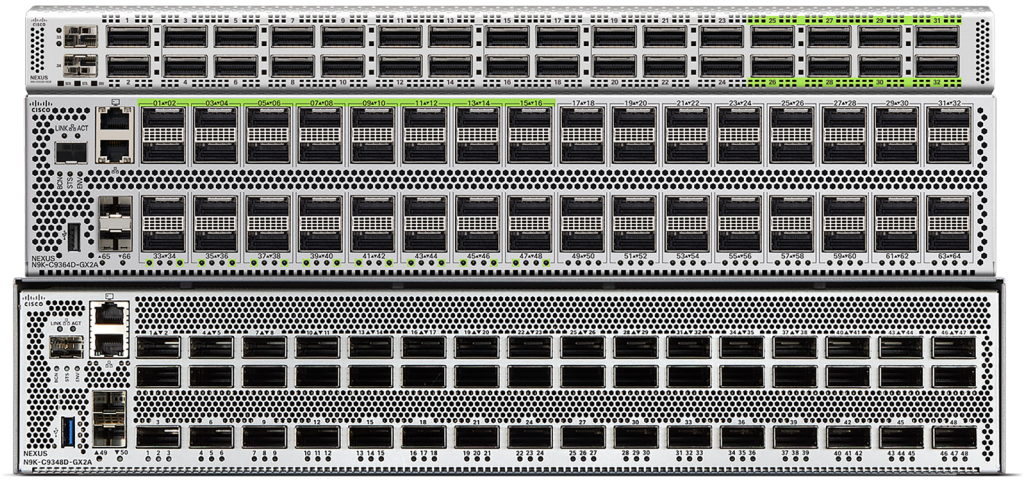
Nexus 9300 GX2 Series Fixed Switches

Contents

Product overview



The Cisco Nexus® 9300-GX2 Series switches address the need for high-performance, power-efficient, compact switches in the networking infrastructure. These switches are optimized for supporting large network fabrics due to their compact size and high density. These ports support various speeds and breakouts, and offer wire-rate MACsec encryption.

Switch model detail

Figure 1. Cisco Nexus 9364D-GX2A switch

The Cisco Nexus 9364D-GX2A is a 2-rack-unit (2RU) switch that supports 51.2 Tbps of bandwidth and 8.35 bpps across 64 fixed 400G QSFP-DD ports and 2 fixed 1/10G SFP+ ports (Figure 1). QSFP-DD ports also support native 200G (QSFP56), 100G (QSFP28), and 40G (QSFP+). Each port can also support 4 x 10G, 4 x 25G, 4 x 50G, 4 x 100G, and 2 x 200G breakouts. The first 16 ports, marked in green, are capable of wire-rate MACsec encryption. This switch is best suited to support massive scale-out fabrics as a compact, high-density spine.

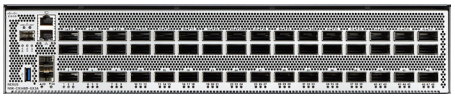


Figure 2. Cisco Nexus 9348D-GX2A switch

The Cisco Nexus 9348D-GX2A is a 2-rack-unit (2RU) switch that supports 38.4 Tbps of bandwidth and 8.35 bpps across 48 fixed 400G QSFP-DD ports and 2 fixed 1/10G SFP+ ports (Figure 2). QSFP-DD ports also support native 200G (QSFP56), 100G (QSFP28), and 40G (QSFP+). Each port can also support 4 x 10G, 4 x 25G, 4 x 50G, 4 x 100G, and 2 x 200G breakouts. All 48 ports are capable of wire-rate MACsec encryption. This switch is best suited to support massive scale-out fabrics as a compact, high-density spine.

Figure 3. Cisco Nexus 9332D-GX2B switch

The Cisco Nexus 9332D-GX2B is a compact form-factor 1-rack-unit (1RU) switch that supports 25.6 Tbps of bandwidth and 4.17 bpps across 32 fixed 400G QSFP-DD ports and 2 fixed 1/10G SFP+ ports (Figure 3). QSFP-DD ports also support native 200G (QSFP56), 100G (QSFP28), and 40G (QSFP+). Each port can also support 4 x 10G, 4 x 25G, 4 x 50G, 4 x 100G, and 2 x 200G breakouts. The last 8 ports, marked in green, are capable of wire-rate MACsec encryption.

Product highlights

The Nexus 9300-GX2 Series switches are compact switches for next-generation leaf and spine networks. Here are the key details:

- **Performance and efficiency:** These switches deliver fast data processing with low latency, making them ideal for environments where speed is critical. They are energy-efficient, reducing power consumption and operational costs, benefits for both the environment and an organization's bottom line.
- **Flexible and scalable:** Organizations can easily add more connections and support faster network speeds without replacing the entire system. The switches also make network management simpler, allowing quick adjustments to meet changing demands.
- **Observability and control:** The Nexus Dashboard Data Broker provides complete observability into the network, helping customers identify and mitigate security threats, remediate performance bottlenecks, adhere to data compliance, and gain insight into capacity planning operations. This feature enhances the control and management of the network infrastructure.
- **Advanced operating system:** The Cisco NX-OS Software operating system is purpose-built and modular, with a dedicated process for each routing protocol. This design isolates faults and increases availability, enhancing the reliability of the system.
- **Comprehensive support:** The switches support a wide range of protocols and infrastructures, including Cisco ACI, Cisco NX-OS VXLAN EVPN, Cisco IP Fabric for Media, Cisco Nexus Dashboard Data Broker, and IP routed or Ethernet switched Layer-2 fabrics. This support allows for a flexible and adaptable network architecture.

Note: This data sheet specifies hardware capabilities only. Please refer to Cisco ACI® or Cisco NX-OS software release notes and appropriate feature documentation for more details.

Features and benefits

Table 1. Features and benefits

Features	Description and benefits
Architectural flexibility	Cisco Nexus 9000 Series Switches support Cisco® Application Centric Infrastructure (Cisco ACI), Cisco NX-OS VXLAN EVPN, Cisco IP Fabric for Media, Cisco Nexus Data Broker, and IP routed on Ethernet switched Layer-2 fabrics using a comprehensive set of unicast and multicast IPv6/IPv4 and Ethernet protocols. • Purpose-built Cisco NX-OS Software operating system with comprehensive, proven innovations. The operating system is modular, with a dedicated process for each routing protocol: a design that isolates faults while increasing availability. • Industry-leading Cisco Software-Defined Networking (SDN) solution with Cisco ACI support. Cisco ACI is a holistic, intent-driven architecture with centralized automation and policy-based application profiles. • Support for standards-based VXLAN EVPN fabrics, inclusive of hierarchical multisite support. (Refer to VXLAN network with MP-BGP EVPN control plane design guide for more information). • Three-tier BGP architectures, enabling horizontal, nonblocking IPv6 network fabrics at web scale. • Comprehensive protocol support for Layer-3 (v4 and v6) unicast and multicast routing protocol suites, 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 (SR and SRv6) allows the network to forward Multiprotocol Label Switching (MPLS) packets and to engineer traffic without Resource Reservation Protocol (RSVP) Traffic Engineering (TE). It provides a control-plane alternative for increased network scalability and virtualization. • Cisco IP Fabric for Media helps you migrate from an SDI router to an IP-based infrastructure. In an IP-based infrastructure, a single cable has the capacity to carry multiple bidirectional traffic flows and can support different flow sizes without requiring changes to the physical infrastructure. • Cisco Nexus Dashboard Data Broker provides customers complete observability into their network and solution(s) that can help them identify and mitigate security threats, realize and remediate performance bottlenecks, adhere to data compliance, and have insight into capacity-planning operations.

Features	Description and benefits
Extensive programmability	• Day-0 automation through Power On Auto Provisioning (POAP), drastically reducing provision time. • Industry-leading integrations for leading DevOps configuration management applications, such as Ansible. Extensive native YANG, and industry-standard OpenConfig model support through RESTCONF/NETCONF/gNMI. • REST API interacting with Cisco NX-OS Software Data Management Engine (DME). • Model-driven telemetry, which enhances network observability. • Third-party application-hosting using Cisco Application Framework (CAF).
High scalability, flexibility, and security	• Flexible forwarding tables that support up to two million shared entries. • Flexible shared ingress and egress of a maximum of 28,000 ACL entries. • IEEE 802.1ae MAC Security (MACsec) capability on all ports, which allows traffic encryption at the physical layer and provides secure server, border leaf, and leaf-to-spine connectivity.
AI/ML networking	Cisco Nexus 9300 Series Switches support Cisco Intelligent Packet Flow – a collection of innovative congestion management and flow-control algorithms aided by hardware telemetry. Cisco Intelligent Packet Flow works to reduce job completion time (JCT) and improving overall GPU efficiency in AI/ML fabrics. • Priority Flow Control (PFC) is a key capability supported on Cisco Nexus 9000 Series Switches that prevents Ethernet frame drops by signaling, controlling, and managing Ethernet flows along a path by sending pause frames to appropriate senders. • The platform also supports Explicit Congestion Notification (ECN), which provides end-to-end notification per IP flow by marking packets that experienced congestion, without dropping traffic. The platform is capable of tracking ECN statistics, including the number of marked packets that have experienced congestion. • The platform offers lossless transport for Remote Direct Memory Access (RDMA) over converged Ethernet (RoCE) with support of data-center bridging (DCB) protocols: – Enhanced Transmission Selection (ETS) reserves bandwidth per priority class in network contention situations. – Data Center Bridging Exchange Protocol (DCBX) can discover and exchange priority and bandwidth information with endpoints.

Features	Description and benefits
	• Weighted Random Early Detection (WRED) is a congestion-avoidance technique that allows Cisco Nexus 9000 Series Switches to detect and react to congestion in the network by marking flows that could cause congestion. • The platform offers Cisco's innovative intelligent buffer management, which offers the capability to distinguish mice and elephant flows and apply different queue-management schemes to them based on their network forwarding requirements in the event of link congestion. • Approximate Fair Dropping (AFD) with Elephant Trap (ETRAP). By using ETRAP, AFD distinguishes long-lived elephant flows from short-lived mice flows. ETRAP measures the byte counts of incoming flows and compares this against the user-defined ETRAP threshold. After a flow crosses the threshold, it becomes an elephant flow. • Dynamic Packet Prioritization (DPP) provides the capability of separating mice flows and elephant flows into two different queues so that buffer space can be allocated to them independently.
Hardware and software high availability	• Virtual port-channel (vPC) technology provides Layer-2 multipathing through the elimination of Spanning Tree Protocol (STP). • Capability to link fabrics in a VXLAN environment, eliminating the need for peer-to-peer vPC. The 128-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. • Software-maintenance upgrades (SMUs) contain fixes for specific defects. They provide a quick resolution of critical issues. • In-service software upgrades (ISSUs) allow upgrades of device software while the switch continues to forward traffic. ISSUs reduce or eliminate the downtime typically caused by software upgrades. • The switches use hot-swappable power-supply units (PSUs) with 1+1 redundancy and fans with N+1 redundancy.
Cisco Nexus Dashboard	Cisco Nexus Dashboard is a platform that transforms data-center and cloud-network operations through simplicity, automation, and analytics. Cisco Nexus Dashboard Fabric Controller (NDFC), Cisco Nexus Dashboard Insights (NDI), Cisco Nexus Dashboard Orchestrator (NDO), and Cisco Nexus Dashboard Data Broker (NDDB) are integrated as services into Cisco Nexus Dashboard. Cisco Nexus Dashboard is included with all Cisco Nexus 9000 switch tiered licenses. Cisco Nexus Dashboard Fabric Controller requires a Cisco Data Center Networking (DCN) Essentials license, Cisco Nexus Dashboard Orchestrator requires a Cisco DCN Advantage license, and Cisco Nexus Dashboard Insights requires a Cisco DCN Premier or a Cisco DCN Day-2 Ops add-on license.

Specifications

Model	Cisco Nexus 9364D-GX2A	Cisco Nexus 9348D-GX2A	Cisco Nexus 9332D-GX2B
Technical	64-port 400G QSFP-DD ports and 2-port 1/10G SFP+ ports Buffer: 120MB 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) CPU: 6 cores	48-port 400G QSFP-DD ports and 2-port 1/10G SFP+ ports Buffer: 120MB 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) CPU: 6 cores	32-port 400G QSFP-DD ports and 2-port 1/10G SFP+ ports Buffer: 120MB System memory: 32 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) CPU: 4 cores
Power and cooling	Power: 3200W AC Input voltage: 100 to 240V AC Hot-swappable, 4 fans, 3+1 redundancy Frequency: 50 to 60 Hz (AC) Efficiency: 90% or greater (20 to 100% load) Port-side intake Typical power: 1324 W Maximum power: 3000 W	Power: 3200W AC Input voltage: 100 to 240V AC Hot-swappable, 4 fans, 3+1 redundancy Frequency: 50 to 60 Hz (AC) Efficiency: 90% or greater (20 to 100% load) Port-side intake Typical power: 1380 W Maximum power: 3124 W	Power: 1500W AC Input voltage: 100 to 240V AC Hot-swappable, 6 fans, 5+1 redundancy Frequency: 50 to 60 Hz (AC) Efficiency: 90% or greater (20 to 100% load) Port-side intake and exhaust Typical power: 638 W Maximum power: 1442 W

Model	Cisco Nexus 9364D-GX2A	Cisco Nexus 9348D-GX2A	Cisco Nexus 9332D-GX2B
Environmental	Physical (H x W x D): 3.45 x 17.3 x 29.78 in. (8.76 x 43.94 x 75.65 cm) Weight without power supplies or fans: 58lbs (26.3kg) Acoustics: 78 dBA at 50% fan speed, 86.4 dBA at 70% fan speed, and 95.2 dBA at 100% fan speed 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) Mean time between failure (MTBF): 216,590 hours	Physical (H x W x D): 3.45 x 17.41 x 29.83 in. (8.76 x 44.23 x 75.76 cm) Weight without power supplies and fans: 51.2lbs (23.2kg) Acoustics: 79.9 dBA at 50% fan speed, 87.6 dBA at 70% fan speed, and 96.4 dBA at 100% fan speed 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) Mean time between failure (MTBF): 125,780 hours	Physical (H x W x D): 1.72 x 17.3 x 23.9 in. (4.4 x 43.9 x 60.8 cm) Weight without power supplies and fans: 28lbs (12.7kg) Acoustics: 71.1 dBA at 50% fan speed, 81.2 dBA at 70% fan speed, and 88 dBA at 100% fan speed Operating temperature: 32 to 104°F (0 to 40°C) with port-side intake 32 to 82°F (0 to 28°C) with port-side exhaust 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) Mean time between failure (MTBF): 211,310 hours
Switch model	64 x 400-Gbps QSFP-DD and 2 x 1/10-Gbps SFP+ ports	48 x 400-Gbps QSFP-DD and 2 x 1/10-Gbps SFP+ ports	32 x 400-Gbps QSFP-DD and 2 x 1/10-Gbps SFP+ ports
Switch mode support	ACI spine: Yes ACI leaf: Yes NX-OS: Yes	ACI spine: Yes ACI leaf: Yes NX-OS: Yes	ACI spine: Yes ACI leaf: Yes NX-OS: Yes

Performance and scalability

Item	Nexus 9300-GX2A Series switches	Nexus 9300-GX2B Series switches
Number of slices	4 slice-pairs	2 slice-pairs
Maximum number of Pv4 Longest Prefix Match (LPM) routes*	1 million	2 million
Maximum number of IPv4 host entries*	1 million	2 million
Maximum number of IPv6 Longest prefix match (LPM) routes*	500K	1 million
Maximum number of IPv6 host entries	1 million	2 million
Maximum number of MAC address entries*	500K	1 million
Maximum number of multicast routes	256,000	256,000
Number of Internet Group Management Protocol (IGMP) snooping groups	Maximum: 32,000	Maximum: 32,000
Maximum number of Access-Control-List (ACL) entries	6000 ingress/slice 3000 egress/slice Max: 48,000 ingress, 24,000 egress	6000 ingress/slice 3000 egress/slice Max: 24,000 ingress, 12,000 egress

Licensing

Licenses are managed through Cisco smart accounts. For a more detailed overview on Licensing, go to Cisco Software Licensing and Smart Accounts.

Creating Smart Accounts by using the Cisco Smart Software Manager (Cisco SSM) enables you to order devices and licensing packages and manage your software licenses from a centralized website. You can set up Cisco SSM to receive daily email alerts and to be notified of expiring add-on licenses that you want to renew.

You must order an add-on license in order to purchase a switch. When the license term expires, you can either renew the add-on license to continue using it or deactivate the add-on license and then reload the switch to continue operating with the base license capabilities.

Both the base and add-on licenses are also available for a 90-day evaluation period. An evaluation license is activated temporarily, without purchase. An expired evaluation license cannot be reactivated after reloading.

Required licensing

There are three tier choices for software subscription: Essentials, Advantage, Premier, each with license term of 3-year, 5-year, and 7-year. For feature information, go to Cisco Data Center Networking Software Subscriptions.

Cisco Enterprise Agreement

The Cisco Enterprise Agreement (EA) is a flexible licensing solution that simplifies the purchase, management, and deployment of Cisco technologies. By combining multiple Cisco software and services into one agreement, the EA provides easy access to a wide range of products, including networking, security, collaboration, and data center solutions. This approach reduces administrative tasks, offers predictable costs, and allows for scalability and adaptability. With the Cisco EA, organizations can drive digital transformation and innovation while maintaining control over their IT investments. For information, go to Cisco Enterprise Agreement.

Ordering information

It's required to purchase supported optics pluggable for each hardware model of the Nexus 9300 GX2. For details on the optical modules available and the minimum software release required for each supported optical module model, go to Cisco Optics-to-Device Compatibility Matrix.

Hardware

Product number	Description
N9K-C9364D-GX2A	Cisco Nexus 9364D-GX2A Switch with 64 400/100-Gbps QSFP-DD ports and 2 1/10 SFP+ ports
N9K-C9348D-GX2A	Cisco Nexus 9348D-GX2A Switch with 48 400/100-Gbps QSFP-DD ports and 2 1/10 SFP+ ports
N9K-C9332D-GX2B	Cisco Nexus 9332D-GX2B Switch with 32 400/100-Gbps QSFP-DD ports and 2 1/10 SFP+ ports

Fan options

Product number	Description
NXA-SFAN-160CFM-2PI	Cisco Nexus Fan, 160CFM, port-side intake airflow
NXA-SFAN-35CFM-PI	Cisco Nexus Fan, 35CFM, port-side intake airflow
NXA-SFAN-35CFM-PE	Cisco Nexus Fan, 35CFM, port-side exhaust airflow

Power supply options

Product number	Description
NXA-PAC-3200W-PI	Cisco Nexus 3200W AC PS, port-side intake
NXA-PAC-1500W-PI	Cisco Nexus 1500W AC PS, port-side intake
NXA-PAC-1500W-PE	Cisco Nexus 1500W AC PS, port-side exhaust

Power cords

Product number	Description
CAB-9K16A-BRZ	Power Cord 250VAC 16A, Brazil, Src Plug EL224-C19
CAB-9K16A-KOR	Power Cord 250VAC 16A, Korea, Src Plug
CAB-AC-16A-AUS	Power Cord, 250VAC, 16A, Australia C19
CAB-AC-2500W-EU	Power Cord, 250Vac 16A, Europe
CAB-AC-2500W-INT	Power Cord, 250Vac 16A, International
CAB-AC-2500W-ISRL	Power Cord,250VAC,16A, Israel
CAB-AC-16A-CH	16A AC Power Cord, China
CAB-ACS-16	AC Power Cord (Swiss) 16A
CAB-C19-CBN	Cabinet Jumper Power Cord, 250 VAC 16A, C20-C19 Connectors
CAB-IR2073-C19-AR	IRSM 2073 to IEC-C19 14ft, Argentina
CAB-L520P-C19-US	^NEMA L5-20 to IEC-C19 6ft US
CAB-AC-C19-TW	Power Cord, 250 V, 16A, C19, Taiwan, more
PWR-CORD10-IND	Power Cord, India, IEC60320/ C19, IS16A3, 7.0M Power Cord, India, IEC60320/ C19, IS16A3, 7.0MHide
CAB-C2316-C19-IT	CEI 23-16 to IEC-C19 14ft, Italy
CAB-AC-2500W-US1	Power Cord 250VAC 16A, Japan and North America (nonlocking) 200-240VAC operation
CAB-TA-250V-JP	Japan 250V AC Type A Power Cable
CAB-TA-EU	Europe AC Type A Power Cable

Product number	Description
CAB-C15-CBN	Cabinet Jumper Power Cord, 250 VAC 13A, C14-C15 Connectors
CAB-TA-IN	India AC Type A Power Cable
CAB-TA-IS	Israel AC Type A Power Cable
CAB-C15-CBN-JP	Japan Cabinet Jumper Power Cord, 250 VAC 12A, C14-C15
CAB-C15-CBN-EURA	Cabinet Jumper Power Cord, 250 VAC 13A, C14-C15 Connectors
CAB-C15-CBN-CK	Cabinet Jumper Power Cord, 250 VAC 10A, C14-C15 Connectors
CAB-9K10A-EU	Power Cord, 250VAC 10A CEE 7/7 Plug, EU
CAB-9K10A-SW	Power Cord, 250VAC 10A MP232 Plug, SWITZ
CAB-9K10A-AU	Power Cord, 250VAC 10A 3112 Plug, Australia
CAB-9K10A-IT	Power Cord, 250VAC 10A CEI 23-16/VII Plug, Italy
CAB-PWR-C15-CHN-A	Power Cord, C15, Black, 2.5m, 10A, China, more

Appendix

Regulatory standards compliance

Products should comply with CE Markings according to directives 2004/108/EC and 2006/95/EC.

Safety	EMC emissions	EMC immunity
• UL 60950-1 Second Edition	• 47CFR Part 15 (CFR 47) Class A	• EN55024
• CAN/CSA-C22.2 No. 60950-1 Second Edition	• AS/NZS CISPR22 Class A	• CISPR24
• EN 60950-1 Second Edition	• CISPR22 Class A	• EN300386
• IEC 60950-1 Second Edition	• EN55022 Class A	• KN 61000-4 series
• AS/NZS 60950-1	• ICES003 Class A	
• GB4943	• VCCI Class A	
	• EN61000-3-2	
	• EN61000-3-3	
	• KN22 Class A	
	• CNS13438 Class A	

RoHS

The product is RoHS-6 compliant with exceptions for leaded-Ball Grid-Array (BGA) balls and lead press-fit connectors.

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). For further information about warranty terms, visit www.cisco.com/go/warranty.

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