Cisco

C1-N9K-C9272Q

Datasheet

Product Overview

- Cisco's Nexus 9200 Series sets the standard for next-generation data center switches, driven by innovative Cloud Scale technology.

- The C1-N9K-C9272Q is ideal for enterprise data centers, cloud providers, and service providers seeking ultra-high-density switching.

- This switch provides up to 72 fixed 40G QSFP+ ports, flexible support for 1/10/25/40/50/100-Gbps, and robust line-rate Layer 2/3 performance.

- It features programmatic NX-OS, advanced automation tools, and programmable fabrics for future-ready operations.

- Clients benefit from easy configuration, real-time fabric mobility, and reduced manual intervention via DevOps integration tools.

- Designed to optimize space and power, the C1-N9K-C9272Q secures scalable, agile, and reliable operations for mission-critical network workflows.

Product Highlights

- **Ultra-High Port Density:** Supports up to 72 40G QSFP+ ports, maximizing bandwidth for dense data centers and high-performance enterprise environments.

- **Flexible Speed Options:** Offers a broad mix of 1/10/25/40/50/100-Gbps port speeds for seamless adaptation to varied connectivity requirements.

- **Programmable Infrastructure:** Uses Cisco NX-OS and programmable fabric to enable automation, scalability, and rapid network changes.

- **Compact, Efficient Design:** Optimizes power and rack space while ensuring top-tier performance for evolving data center and cloud deployments.

Detailed Features

C1-N9K-C9272Q

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Component	Specification
Product Series	Nexus 9200
Model	C1-N9K-C9272Q
Fixed Ports	72 × 40G QSFP+
Port Speed	1/10/25/40/50/100-Gbps supported
Form Factor	Ultra-high-density, fixed-configuration

High-Density Switching

Designed with up to 72 40G QSFP+ ports on a single fixed chassis, the C1-N9K-C9272Q delivers unmatched density. This is ideal for data centers with massive east-west traffic flows and requires significant scaling within constrained rack space. Network professionals can consolidate core, aggregation, and access switches, simplifying architectures while providing uncompromised throughput for modern applications. The dense port configuration addresses the critical needs of rapidly growing data platforms and virtualization environments.

Multi-Speed Connectivity

Flexible support for 1/10/25/40/50/100-Gbps connectivity allows seamless integration into diverse network topologies. Organizations can migrate legacy links or deploy next-generation high-speed links without complexity, ensuring infrastructure remains adaptable as demands evolve. Port speed flexibility safeguards investments as bandwidth requirements grow and modern workloads demand low latency, high throughput connections between compute, storage, and cloud segments.

Line-Rate Layer 2/3 Performance

The platform enables full line-rate switching and routing on every port, regardless of packet size or protocol mix. Its large MAC and IP host tables ensure stable and scalable Layer 2/ Layer 3 fabric operation, handling thousands of VLANs, VRF instances, and ECMP groups. Cloud environments benefit from deterministic forwarding, quick convergence, and high availability for business-critical applications and services, maximizing both network speed and reliability.

Advanced Programmability with NX-OS

With Cisco NX-OS, the switch enables advanced programmability across the full fabric. Automation tools streamline device deployment, monitoring, and maintenance, reducing operational costs and configuration errors. The open API support helps integrate DevOps workflows, allowing rapid service provisioning, network assurance, and real-time adjustment to workload shifts via scripts or third-party orchestration tools. This flexibility accelerates network innovation, agility, and resilience for any service provider or enterprise network.

Enterprise-Grade Security

The C1-N9K-C9272Q offers granular, hardware-based ACLs with extensive ingress and egress capacities to secure traffic at scale. Multiple HSRP, MST, and RPVST instances enable strong redundancy and fault-tolerance, safeguarding applications against disruptions. The programmable security fabric is essential for multi-tenant cloud, commercial, and service provider deployments that demand policy-driven segmentation and dynamic access control, without sacrificing performance.

Comprehensive Layer 3 Routing

With massive hardware tables supporting default, static, and dynamic routes, the switch adapts to large, complex networks. Its advanced Layer 3 routing suite, including support for VRF, ECMP, multicast, and IPv6 features, delivers efficient traffic engineering for intra/inter-data center links. Advanced segmentation and traffic control facilitate multi-cloud integration and smooth migration between on-premises and hosted services, enhancing business continuity and scalability.

Redundant Power and Cooling

Multiple power supply options spanning AC/DC/HVAC/HVDC enhance infrastructure reliability. Redundant, hot-swappable fan trays provide operational assurance under variable loads, while the efficient thermal design supports non-stop performance in dense racks. These features align with mission-critical deployment standards, minimizing downtime and operational risk for enterprises.

Robust Environmental Adaptability

The wide operating and storage temperature ranges, coupled with high humidity and altitude tolerance, make the C1-N9K-C9272Q suitable for global deployment scenarios. From advanced data centers in Asia to distributed operations in Africa/Europe/North America, the switch delivers continuous performance under diverse environmental conditions, supporting digital transformation initiatives worldwide.

Technical Specifications

Product Specifications

Feature	Value
LPM Routes	Default 6,000 (up to 1,792,000)
IP Host Entries	Default 96,000 (up to 1,792,000)
MAC Addresses	92,000 entries

Feature	Value
Multicast Routes	8,000 (max 32,000)
IGMP Groups	8,000 (max 32,000)
ACL Capacity (Ingress)	4,000 per forwarding slice
ACL Capacity (Egress)	2,000 per forwarding slice
VLANs	4,096 (127 reserved)
VRF Instances	1,000 (up to 16,000)
Port Channels	512 maximum (32 links each)
ECMP Paths	64-way
ECMP Groups	256 maximum
HSRP Groups	490
MST Instances	64
RPVST VLANs	3,967
SPAN Sessions	4 active
NAT Entries	1,023 (initial software release)
Power Options	Supports various 350W–1200W AC/DC/HVAC/HVDC PSUs
Fan Trays	Multiple options (0.24–1.42 lb each)
Operating Temperature	32°F to 104°F (0°C to 40°C)
Storage Temperature	-40°F to 158°F (-40°C to 70°C)
Humidity	5% to 85% non-condensing
Altitude	0–13,123 ft (0–4,000 m)

Product Comparison

Feature	C1-N9K-C9272Q	C1-N3K-C3172PQ	C1-N9KC93108FX-B24
Fixed Ports	72 × 40G QSFP+	48 × 10G SFP+ + 6 × 40G QSFP+	48 × 25G SFP28 + 6 × 100G QSFP28
Port Speed Support	1/10/25/40/50/100-Gbps	1/10/40-Gbps	1/10/25/40/50/100-Gbps
Switching Capacity	Ultra-high, line-rate Layer 2/3	High, line-rate Layer 2/3	Ultra-high, line-rate Layer 2/3
Layer 3 Routing	Supported, large hardware tables	Supported	Supported, advanced scalability

Feature	C1-N9K-C9272Q	C1-N3K-C3172PQ	C1-N9KC93108FX-B24
Programmability	Cisco NX-OS, open API	Cisco NX-OS, basic automation	Cisco NX-OS, advanced automation
Redundant Power	Supported (various types)	Supported	Supported
Physical Form Factor	Compact, high-density	Standard 1RU	Compact, high-density
Deployment Scenario	DC core/aggregation, cloud, IaaS	Enterprise/aggr, midsize DC	High-density enterprise/ cloud core

Accessories

Category	Accessories
Included Accessories	- AC/DC Power Supply - Rack Mount Kit - Console Cable
Optional Accessories	- QSFP+ Transceiver Modules - Fan Tray Units - Advanced Power Modules

Support & Warranty

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References

[1] Cisco Systems. (2023). Cisco Nexus 9000 Series Switches Datasheet. Retrieved from https://www.cisco.com/c/en/us/products/collateral/switches/nexus-9000-series-switches/datasheet-c78-735989.html