



Cisco

C1-N5K-C5596UP-FA

Datasheet



Product Overview

- The Cisco Nexus 5500 series delivers high-performance, next-generation data center switching, designed for modern enterprise needs.
- Ideal for top-of-rack, middle-of-row, and end-of-row access, this solution targets medium to large data centers and IT integrators.
- It provides 48 fixed 10 Gigabit Ethernet ports with SFP+ or 10GBASE-T, non-blocking 1.92 Tbps switching, and sub-5 microsecond latency.
- Advanced FCoE support, lossless Ethernet, and virtual machine awareness uniquely position the platform above traditional switches.
- With hot-swappable power, fan modules, and flexible SFP+ connectivity, the switch ensures high uptime, simple service, and easy integration.
- Perfect for businesses consolidating network fabrics, it scales as data center demands grow, blending investment protection with operational efficiency.

Product Highlights

- **Flexible High-Density Design:** 48 × 10 Gigabit Ethernet ports support both SFP+ and 10GBASE-T, ensuring easy fit for diverse rack layouts.
- **Enterprise-Grade Performance:** Non-blocking 1.92 Tbps switching capacity delivers wire-speed performance and ultra-low 5µs latency.
- **Advanced FCoE & VM Awareness:** Native Fibre Channel over Ethernet support and virtual machine features streamline data center consolidation.
- **Serviceability & Efficient Cooling:** Hot-swappable power and fan modules plus front-to-back/back-to-front airflow optimize maintenance and thermal control.

Detailed Features



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Component	Specification
Ports	48 × Fixed 10 Gigabit Ethernet (SFP+ or 10GBASE-T)
Switching Capacity	1.92 Tbps (non-blocking)
Power Supply	2 (redundant, hot-swappable)
Latency	5 microseconds (cut-through switching)
Form Factor	2RU



Optimized Data Center Switching

The Cisco Nexus 5500 platform is tailored for modern data centers, offering top-of-rack, end-of-row, and middle-of-row access. Its high port density and advanced architecture allow data centers to consolidate resources, streamline cable management, and adapt to changes in server deployments with minimal effort, supporting scalable and flexible growth over time.

Investment Protection & FCoE Support

This switch delivers standards-based 10 Gigabit Ethernet and native FCoE (Fibre Channel over Ethernet), enabling seamless network convergence. It helps IT departments consolidate storage and data networks without needing forklift upgrades, ensuring infrastructure investments are protected while migrating to unified Ethernet-based fabrics.

High Performance & Low Latency

With a switching capacity of 1.92 Tbps and latency as low as 5 microseconds, the Cisco C1-N5K-C5596UP-FA guarantees wire-speed data forwarding. It ensures dependable operation for demanding applications like virtualization, high-performance computing, and large-scale VM environments, maintaining high throughput and minimal packet delay.

Modular and Accessible Design

Power supplies and fans are hot-swappable and can be accessed from the front. This modular approach increases serviceability and reliability. Visual status indicators simplify troubleshooting, while redundant components minimize risks of downtime during maintenance, fulfilling critical uptime requirements in enterprise and cloud data centers.

Flexible Deployment & Connectivity

The flexible use of SFP+ or 10GBASE-T ports allows organizations to mix short-reach copper or long-reach fiber uplinks, optimizing both cost and performance. This versatile interconnectivity makes the switch suitable for diverse rack layouts and evolving network topologies, supporting a wide range of blade and rack-mounted server installations.

Lossless Ethernet & DCB Enhancements

Data Center Bridging (DCB) features boost network scalability by enabling lossless Ethernet transmission. These protocols optimize I/O consolidation, simplify multiple traffic flows, and support high-bandwidth applications such as storage or SAN consolidation, making large-scale, unified fabrics easier to manage and more resilient.

Advanced Virtualization Support

Integrated virtual machine awareness enables dynamic network adjustments as VMs move across the fabric. This ensures seamless and consistent policy enforcement, security, and optimal resource use, crucial for enterprise and service provider environments undergoing rapid virtualization or multi-tenant operations.

Scalable Management & NX-OS Reliability

Powered by Cisco NX-OS and managed via Cisco DCNM, CLI, or APIs, the switch offers unified, flexible, and automated control. Redundant supervisors, advanced diagnostics, and standards-compliance guarantee high reliability with a 10-year MTBF, supporting mission-critical workloads around the clock.

Technical Specifications

Product Specifications

Feature	Value
Form Factor	2RU
Ports	48 × Fixed 10 Gigabit Ethernet (SFP+ or 10GBASE-T, depending on variant)
Switching Capacity	1.92 Tbps (non-blocking)
Latency	5 microseconds (cut-through switching)
Over-Subscription Ratio	1:1 (fully non-blocking)
Power Supplies	2 (redundant, hot-swappable)
Typical Power Consumption	650W (varies with configuration)
Cooling	Front-to-back airflow (optimized for data center hot/cold aisle)
Fans	4 (redundant, hot-swappable)



Feature	Value
Operating System	Cisco NX-OS
Management	Cisco Data Center Network Manager (DCNM), CLI, SNMP, XML API
Redundancy	Yes (dual supervisors, power, fans)
Dimensions (H × W × D)	3.4 × 17.3 × 30.0 in (8.64 × 43.92 × 76.2 cm)
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 95% (non-condensing)
Mean Time Between Failures (MTBF)	10 years
Compliance & Certifications	UL, CSA, CE, FCC
Data Center Standards	NEBS Level 3 (optional)

Product Comparison

Feature	C1-N5K-C5596UP-FA	C9300-48U-E	C1-C4506-E
Port Quantity and Type	48 × 10G SFP+ or 10GBASE-T	48 × Multigigabit (1G/2.5G/5G/10G) + 4 × 10G SFP+	Up to 192 × 10/100/1000 (modular)
Switching Capacity	1.92 Tbps	176 Gbps	96 Gbps (Chassis/Slot dependent)
Latency	5 microseconds	<1.5 microseconds	<3 microseconds
Power Supply	2 (redundant, hot-swappable)	Redundant	Redundant, modular
Fan Design	4 (redundant, hot-swappable)	Field-replaceable	Field-replaceable
Virtualization Features	FCoE, VM awareness	Cisco StackWise, VM awareness	VSS, modular supervisor
Management	DCNM, CLI, SNMP, XML API	CLI, SNMP, Web UI	CLI, SNMP, Web UI
Form Factor	2RU fixed	1RU fixed	Chassis (Modular 6-Slot)
PoE Capability	No	Yes (UPoE up to 60W per port)	Depends on modules
Redundancy	Dual supervisors, power, fans	Redundant PSU, Stackwise	Redundant supervisor and PSU



Accessories

Category	Accessories
Included Accessories	- Power Cords - Rack Mount Kit - Console Cable
Optional Accessories	- SFP+ Transceiver Modules - Expansion Modules - Cable Management Accessories



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References

[1] Cisco. (2023). Cisco Nexus 5000 Series Switches Datasheet. Retrieved from https://www.cisco.com/c/en/us/products/collateral/switches/nexus-5000-series-switches/data_sheet_c78-618603.html