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Cisco Nexus 93108TC-FX3P Switch Datasheet

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Product overview

Based on [Cisco® Cloud Scale technology](#), the Cisco Nexus® 93108TC-FX3P Switch is a multigigabit-capable, fixed switch in the next-generation Cisco Nexus 9300 platform. Cisco Multigigabit Ethernet technology supports bandwidth speeds from 100Mbps to 10 Gbps over traditional Category 5e/6 cabling. This addresses the need for the exponential increases in bandwidth being driven by the enormous growth of 802.11ac Wave 2 and Wi-Fi 6 without having to replace current cabling infrastructure. The switch is built on modern-system architecture designed to provide high performance, support cost-effective deployments, and meet the evolving needs of growing mid-size to large enterprise customers.

Cisco provides two modes of operation for Cisco Nexus 9000 Series Switches. Organizations can deploy Cisco Application Centric Infrastructure (Cisco ACI®) or Cisco NX-OS mode. Cisco ACI is a holistic, intent-driven architecture with centralized automation and policy-based application profiles. It provides a robust transport network for dynamic workloads and 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. Designed for the programmable network, the Cisco NX-OS operating system automates configuration and management for customers who want to take advantage of the DevOps operation model and tool sets.

With optimized efficiency, simplified operation and installation, and a wide array of device versatility, the Cisco Nexus 93108TC-FX3P Switch provides investment protection for customers in an ever-changing data-centric and increasingly connected market. The expansive feature set includes 40MB of intelligent buffering, support for voice VLANs, and a full-featured Layer 2 and Layer 3 Application-Specific Integrated Circuit (ASIC).

Switch model

Table 1 summarizes the Cisco Nexus 93108TC-FX3P multigigabit switch.

Table 1.   Cisco Nexus 93108TC-FX3P multigigabit switch

Model	Description
Cisco Nexus 93108TC-FX3P Switch	48 x 100M/1/2.5/5/10G BASE-T ports
	6 x 40/100 Gbps Quad Small Form-Factor Pluggable 28 (QSFP28) ports

The Cisco Nexus 93108TC-FX3P Switch (Figure 1) is a compact 1 RU switch that supports 2.16 Tbps of bandwidth and 1.2 billion packets per second (bpps). Offering flexible port speed configurations, the switch supports 48 ports of 100M/1/2.5/5/10G BASE-T on the downlinks. The 6 uplink ports support 40/100G QSFP 28. The 93108TC-FX3P is well suited for network customers requiring more versatility and flexibility in networking speeds.

Figure 1.
Cisco Nexus 93108TC-FX3P Switch

Features and benefits

The Cisco Nexus 9300-FX3 series switches provide the following features and benefits:

- **Architectural flexibility**

  ◦ Industry-leading software-defined networking (SDN) solution Cisco ACI support

  ◦ Support for standards-based VXLAN EVPN fabrics, inclusive of hierarchical multisite support (Refer to VXLAN Network with MP-BGP EVPN Control Plane for more information.)

  ◦ Three-tier BGP architectures enabling horizontal, nonblocking IPv6 network fabrics at web-scale

  ◦ Segment routing that 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.

  ◦ Comprehensive protocol support for Layer 3 (v4/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).

- **Extensive programmability**

  ◦ Day-0 automation through Power On Auto Provisioning, drastically reducing provisioning time

  ◦ Industry-leading integrations for leading DevOps configuration management applications, including Ansible, Chef, Puppet, SALT, Extensive Native YANG, and industry-standard OpenConfig model support through RESTCONF/NETCONF

  ◦ Pervasive APIs for all switch CLI functions (JSON-based RPC over HTTP/HTTPs)

- **High scalability, flexibility, and security**

  ◦ Flexible forwarding tables support up to two million shared entries on FX3 models. Flexible use of TCAM space allows for custom definition of Access Control List (ACL) templates.

  ◦ MAC Security (MACsec) and CloudSec (VTEP-to-VTEP encryption) support on all ports of Cisco Nexus 9300-FX3 models with speeds greater than or equal to 1 Gbps, which allows traffic encryption at the physical layer and provides secure server, border-leaf, and leaf-to-spine connectivity

- **Intelligent buffer management**

  ◦ 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.

- Intelligent buffer management functions are:

    Approximate Fair Dropping (AFD) with Elephant Trap (ETRAP). AFD uses ETRAP to distinguish long-lived elephant flows from short-lived mice flows. AFD exempts mice flows from the dropping algorithm so that mice flows will get their fair share of bandwidth without being starved by bandwidth-hungry elephant flows. Also, AFD tracks elephant flows and subjects them to the AFD algorithm in the egress queue to grant them their fair share of bandwidth.

    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), which provides the capability of separating mice flows and elephant flows into two different queues so that buffer space can be allocated to them independently. Mice flows that are sensitive to congestion and latency can take priority in the queue and avoid reordering, allowing elephant flows to take full link bandwidth.

- **RDMA over Converged Ethernet – RoCE support**

    - Platform offers lossless transport for RDMA over Converged Ethernet with support of DCB protocols:

        Priority-based Flow Control (PFC) – to prevent drops in the network and pause frame propagation per priority class

        Enhanced Transmission Selection (ETS) – to reserve bandwidth per priority class in a network contention situation

        Data Center Bridging Exchange Protocol (DCBX) – to discover and exchange priority and bandwidth information with endpoints

        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 of the number of marked packets that have experienced congestion.

- **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 model.

    - 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 switch uses hot-swappable Power-Supply Units (PSUs) and fans with N+1 redundancy.

- **Purpose-built Cisco NX-OS software operating system with comprehensive, proven innovations**

    Single binary image that supports every switch in the Cisco Nexus 9000 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.

Cisco Data Center Network Manager (DCNM) is the network management platform for all NX-OS-enabled deployments, spanning new fabric architectures, IP Fabric for Media, and storage networking deployments for the Cisco Nexus–powered data center. Accelerate provisioning from days to minutes, and simplify deployments from day 0 through day N. Reduce troubleshooting cycles with graphical operational visibility for topology, network fabric, and infrastructure. Eliminate configuration errors and automate ongoing change in a closed loop, with a templated deployment model and configuration compliance alerting with automatic remediation. Real-time health summary for fabric, devices, and topology. Correlated visibility for fabric (underlay, overlay, virtual, and physical endpoints), including compute visualization with VMware.

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.

- **Cisco Data Center Network Assurance and Insights**

  Support for intelligent automation to day-2 operations with Cisco Data Center Network Assurance and Insights. Click here to learn more.

Table 2 summarizes the switch's specifications.

Table 2.   Cisco Nexus 93108TC-FX3P Switch specifications

Feature	Cisco Nexus 93108TC-FX3P Switch
Ports	Downlinks: 48 x 100M/1/2.5/5/10G BASE-T multigigabit supported ports Uplinks: 6 x 40/100G QSFP28 ports
CPU	4 cores
System memory	32 GB capable with 16G defaulted and 16G available as upgradeable option
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	1100W AC port-side intake and port-side exhaust 1900W AC port-side intake only
Switch Average Power (AC)	360W
Switch Maximum Power (AC)	530W
BTU/hr	1706
Frequency (AC)	50 to 60 Hz
Airflow	Port-side intake and port-side exhaust

Feature	Cisco Nexus 93108TC-FX3P Switch
Physical dimensions (H x W x D)	1.72 x 17.2 x 18 in
Acoustics	70.1 dBA at 50% fan speed, 78.1 dBA at 70% fan speed, and 86 dBA at 100% fan speed
Mean Time Between Failures (MTBF)	283,100 hours
Cisco Nexus 93108TC-FX3P Switch without power supplies and fans	16lbs (7.25 kg)
Power supplies, 1100W AC	3.0 lb (1.36 kg)
Power supplies, 1900W AC	3.6 lb (1.63 kg)
Fans: NXA-FAN-35CFM-F or NXA-FAN-35CFM-B	0.26 lb (0.12 kg)
Minimum NX-OS image	NXOS-9.3.5
Minimum ACI Image	ACI-N9KDK9-15.1.3

Software licensing and optics supported

The software packaging for the Cisco Nexus 9000 Series Switches offers flexibility and a comprehensive feature set. 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. To meet customer requirements, licensing is available as both subscription and perpetual. The licensing guide illustrates the software packaging and licensing available to enable advanced features.

Environmental properties

Table 3 lists the environmental properties for Cisco Nexus 93108TC-FX3P Switches.

Table 3.   Environmental properties for Cisco Nexus 93108TC-FX3P Switches

Property	Description
Operating temperature	32 to 131°F (0 to 55°C)
Nonoperating (storage) temperature	–40 to 158°F (–40 to 70°C)
Humidity	5 to 95% (noncondensing)
Altitude	0 to 6561 ft (0 to 2000m)

Table 4 lists the performance and scalability specifications for the Cisco Nexus 9300-FX3 series switch. (Check the software release notes for feature support information.)

Table 4.   Hardware performance and scalability specifications for the Cisco Nexus 9300-FX3 series switches

Item	Cisco Nexus 9300-FX3 series switches
Maximum number of IPv4 Longest Prefix Match (LPM) routes[*]	1,792,000
Maximum number of IPv4 host entries[*]	1,792,000
Maximum number of IPv6 Longest Prefix Match (LPM) routes[**]	896,000
Maximum number of IPv6 host entries[**]	1,792,000
Maximum number of MAC address entries[*]	512,000
Maximum number of multicast routes	128,000
Number of Internet Group 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 Access Control List (ACL) entries	Single-slice forwarding engine: 5000 ingress 2000 egress
Maximum number of VLANs	4096[***]
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 VLANs 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

Item	Cisco Nexus 9300-FX3 series switches
Maximum number of Multiple Spanning Tree (MST) instances	64
Number of queues	8

*Raw capacity of flow table. 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.

***27 VLANs out of 4096 are reserved

Regulatory standards compliance

Table 5 summarizes regulatory standards compliance for the Cisco Nexus 9300FX platform switches.

Table 5.   Regulatory standards compliance for Cisco Nexus 9300FX platform switches: 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 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
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.

Ordering information

Table 6 presents ordering information for the Cisco Nexus 93108TC-FX3P Switch.

Table 6.   Ordering information

Part number	Product description
Base part numbers	
N9K-C93108TC-FX3P	Cisco Nexus 9300 with 48p mgig 100M/1G/2.5G/5G/10GT and 6p 40/100G
Power supplies	
NXA-PAC-1100W-PI	Cisco Nexus 9000 100W AC PS, port-side intake
NXA-PAC-1100W-PE	Cisco Nexus 9000 1100W AC PS, port-side exhaust
NXA-PAC-1900W-PI	Cisco Nexus 9000 1900W AC PS, port-side intake
Fans	
NXA-FAN-35CFM-F	Cisco Nexus Single Fan, 30CFM, port-side exhaust airflow
NXA-FAN-35CFM-B	Cisco Nexus Single Fan, 30CFM, port-side intake airflow
Licenses on Cisco Nexus 9300-FX3 series switches	
C1E1TN9300XF-3Y	Cisco ACI and NX-OS Subscription Essentials package for 10/25/40G+ Cisco Nexus 9K Leaf, 3 Year Term
C1E1TN9300XF-5Y	Cisco ACI and NX-OS Subscription Essentials package for 10/25/40G+ Cisco Nexus 9K Leaf, 5 Year Term
C1A1TN9300XF-3Y	Cisco ACI and NX-OS Subscription Advantage package for 10/25/40G+ Cisco Nexus 9K Leaf, 3 Year Term
C1A1TN9300XF-5Y	Cisco ACI and NX-OS Subscription Advantage package for 10/25/40G+ Cisco Nexus 9K Leaf, 5 Year Term
C1P1TN9300XF-3Y	Cisco ACI and NX-OS Subscription Premier package for 10/25/40G+ Cisco Nexus 9K Leaf, 3 Year Term
C1P1TN9300XF-5Y	Cisco ACI and NX-OS Subscription Premier package for 10/25/40G+ Cisco Nexus 9K Leaf, 5 Year Term
ACI-ES-XF	Cisco ACI Essentials SW license for a 10/25/40G+ Cisco Nexus 9K Leaf
ACI-AD-XF	Cisco ACI Advantage SW license for a 10/25/40G+ Cisco Nexus 9K Leaf
NX-OS-ES-XF	Cisco NX-OS Essentials SW license for a 10/25/40G+ Cisco Nexus 9K Leaf
NX-OS-AD-XF	Cisco NX-OS Advantage SW license for a 10/25/40G+ Cisco Nexus 9K Leaf

Part number	Product description
Power cords	
CAB-TA-NA	North America AC Type A Power Cable
CAB-TA-UK	United Kingdom AC Type A Power Cable
CAB-TA-250V-JP	Japan 250V AC Type A Power Cable
CAB-TA-EU	Europe AC Type A Power Cable
CAB-C15-CBN	Cabinet Jumper Power Cord, 250 VAC 13A, C14-C15 Connectors
CAB-ACBZ-12A	AC Power Cord (Brazil) 12A/125V BR-3-20 plug up to 12A
CAB-TA-IN	India AC Type A Power Cable
CAB-TA-IS	Israel AC Type A Power Cable
Accessories on Cisco Nexus 9300-FX3 series switches	
NXK-ACC-KIT-1RU	Cisco Nexus Fixed Accessory Kit with 4-post rack mount kit
NXK-MEM-16GB	Additional memory of 16GB for Cisco Nexus switches

Warranty, service, and support

The Cisco Nexus 9300-FX3 series switches 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 offers a range of professional, solution, and product support services for each stage of your Cisco Nexus 9300-FX3 series switch 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 Cisco ACI, Cisco SMARTnet™ Service, and Cisco Smart Net Total Care®*** service.

*** For Cisco products only

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

Reference links to **product-specific environmental sustainability information** that is mentioned in relevant sections of this data sheet are provided in the following table:

Sustainability topic	Reference
General	
Product compliance	Table 5. Regulatory standards compliance for Cisco Nexus 9300FX platform switches: Safety and EMC
Power	
Power supply	Table 2. Cisco Nexus 93108TC-FX3P Switch specifications
Material	
Unit weight	Table 2. Cisco Nexus 93108TC-FX3P Switch specifications
Dimensions and mean time between failures metrics	Table 2. Cisco Nexus 93108TC-FX3P Switch specifications

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Document history

New or revised topic	Described in	Date

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