Cisco Nexus 3064 Switch

Product Overview

The Cisco Nexus® 3064 Switch (Figure 1) is a high-performance, high-density, ultra-low-latency Ethernet switch that is part of the new Cisco® Nexus 3000 Series. This compact one-rack-unit (1RU) form factor 10 Gigabit Ethernet switch provides line-rate Layer 2 and Layer 3 switching. The switch runs the industry-leading Cisco NX-OS Software operating system, providing customers with comprehensive features and functionality that are widely deployed globally. Cisco Nexus 3064 is a true PHY-less switch that is optimized for low latency and low power consumption. Cisco Nexus 3064 is well suited for financial co-location deployments that require support for comprehensive unicast and multicast routing protocol features at ultra-low latencies. This switch supports both forward and reversed airflow schemes with AC and DC power inputs.

Figure 1. Cisco Nexus 3064 Switch

Main Benefits

The Cisco Nexus 3064 provides the following main benefits:

- Ultra-low latency
  - The Cisco Nexus 3064 delivers ultra-low nominal latency that allows customers to implement high-performance infrastructures for high-frequency trading workloads.
- Wire-rate Layer 2 and 3 switching on all 64 10 Gigabit Ethernet ports
  - Cisco Nexus 3064 provides Layer 2 and 3 switching of up to 1.2 terabits per second (Tbps) and more than 950 million packets per second (mpps) in a compact 1RU form-factor switch.
- Purpose-built on Cisco NX-OS operating system with comprehensive, proven innovations
  - Virtual PortChannel (vPC) provides Layer 2 multipathing through the elimination of Spanning Tree Protocol and enables fully utilized bisectional bandwidth and simplified Layer 2 logical topologies without the need to change the existing management and deployment models.
  - Power On Auto Provisioning (POAP) enables touchless bootup and configuration of the switch, drastically reducing the provisioning time.
  - EEM and Python scripting enable automation and remote operations in datacenter.
  - Advanced buffer monitoring capability provides real-time buffer utilization per port and per queue, which allows organizations to monitor traffic bursts and application traffic patterns.
  - The 64-way equal-cost multipath (ECMP) routing enables Layer 3 fat tree designs and allows organizations to prevent network bottlenecks, increase resiliency, and add capacity with little network disruption.

- EtherAnalyzer is a built-in packet analyzer for monitoring and troubleshooting control-plane traffic and is based on the popular Wireshark open-source network protocol analyzer.
- Precision Time Protocol (IEEE 1588) provides accurate clock synchronization and improved data correlation with network captures and system events.
- Full Layer 3 unicast and multicast routing protocol suites are supported, including Border Gateway Protocol (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).

Configuration

- 48 fixed 10 Gigabit Ethernet Enhanced Small Form-Factor Pluggable (SFP+) ports (can operate at 100 Mbps and 1 Gbps speeds)
- Four fixed Quad SFP+ (QSFP+) ports (each QSFP+ port is 4 x 10 Gigabit Ethernet or 40 Gigabit Ethernet capable)
- Locator LED
- Dual redundant power supplies
- Fan tray with redundant fans
- Two 10/100/1000 management ports
- One RS-232 serial console port
- One USB port
- Locator LED button

Support for both forward (port-side exhaust) and reversed (port-side intake) airflow schemes is available.

Transceiver and Cabling Options

The Cisco Nexus 3064 supports a wide variety of 1, 10, and 40 Gigabit Ethernet connectivity options. 1 and 10 Gigabit Ethernet connectivity is achieved using SFP+ transceivers in the first 48 ports, and 40 Gigabit Ethernet connectivity is achieved by using QSFP+ transceivers in the last 4 ports.

QSFP+ technology allows smooth transition from 10 to 40 Gigabit Ethernet infrastructures in data centers. The Cisco Nexus 3064 supports connectivity over copper and fiber cables, providing excellent physical-layer flexibility. For low-cost cabling, copper-based 40-Gbps Twinax cables can be used, and for longer cable reaches, short-reach optical transceivers are excellent.

Connectivity can be established from the QSFP ports to an upstream 10 Gigabit Ethernet switch using a splitter cable that has a QSFP transceiver on one end and four SFP+ transceivers on the other end. Similar capability can be achieved using optical transceivers by procuring third-party fiber splitters. Table 1 lists the QSFP transceiver types supported.

Table 1. Cisco Nexus 3064 QSFP Transceiver Support Matrix

Part Number	Description
QSFP-4SFP10G-CU5M	QSFP to 4xSFP10G Passive Copper Splitter Cable, 5m
QSFP-4SFP10G-CU3M	QSFP to 4xSFP10G Passive Copper Splitter Cable, 3m
QSFP-4SFP10G-CU1M	QSFP to 4xSFP10G Passive Copper Splitter Cable, 1m

Part Number	Description
QSFP-H40G-CU5M	40GBASE-CR4 Passive Copper Cable, 5m
QSFP-H40G-CU3M	40GBASE-CR4 Passive Copper Cable, 3m
QSFP-H40G-CU1M	40GBASE-CR4 Passive Copper Cable, 1m
QSFP-40G-SR4	40GBASE-SR4 QSFP Transceiver Module with MPO Connector

For in-rack or adjacent-rack cabling, the Cisco Nexus 3064 supports SFP+ direct-attach 10 Gigabit Ethernet copper, an innovative solution that integrates transceivers with Twinax cables into an energy-efficient and low-cost solution. For longer cable runs, multimode and single-mode optical SFP+ transceivers are supported. Table 2 lists the supported 10 Gigabit Ethernet transceiver options.

Table 2. Cisco Nexus 3064 10 Gigabit Transceiver Support Matrix

Part Number	Description
SFP-10G-SR	10GBASE-SR SFP+ module (multimode fiber [MMF])
SFP-10G-LR	10GBASE-LR SFP+ module (single-mode fiber [SMF])
SFP-10G-ER	Cisco 10GBASE-ER SFP+ Module for SMF
SFP-H10GB-CU1M	10GBASE-CU SFP+ cable 1m (Twinax cable)
SFP-H10GB-CU3M	10GBASE-CU SFP+ cable 3m (Twinax cable)
SFP-H10GB-CU5M	10GBASE-CU SFP+ cable 5m (Twinax cable)
SFP-H10GB-ACU7M	Active Twinax cable assembly, 7m
SFP-H10GB-ACU10M	Active Twinax cable assembly, 10m

The Cisco Nexus 3064 is compatible with existing Gigabit Ethernet infrastructures. Both the uplink and downlink 10 Gigabit Ethernet interfaces can also operate in Gigabit Ethernet mode. Table 3 lists the Gigabit Ethernet SFP transceivers that are supported.

Table 3. Cisco Nexus 3064 Gigabit Ethernet Transceiver Support Matrix

Part Number	Description
GLC-T	1000BASE-T SFP
GLC-SX-MM	GE SFP, LC connector SX transceiver (MMF)
GLC-LH-SM	GE SFP, LC connector LX/LH transceiver (SMF)

For more information about the transceiver types, see http://www.cisco.com/en/US/products/hw/modules/ps5455/prod_module_series_home.html.

Cisco NX-OS Software Overview

Cisco NX-OS is a data-center-class operating system built with modularity, resiliency, and serviceability at its foundation. Cisco NX-OS helps ensure continuous availability and sets the standard for mission-critical data center environments. The self-healing and highly modular design of Cisco NX-OS makes zero-impact operations a reality and provides exceptional operational flexibility.

Focused on the requirements of the data center, Cisco NX-OS provides a robust and comprehensive feature set that meets the networking requirements of present and future data centers. With an XML interface and a command-line interface (CLI) like that of Cisco IOS® Software, Cisco NX-OS provides state-of-the-art implementations of relevant networking standards as well as a variety of true data-center-class Cisco innovations.

Cisco NX-OS Software Benefits

Table 4 summarizes the benefits that Cisco NX-OS Software offers.

Table 4. Benefits of Cisco NX-OS Software

Feature	Benefit
Common software throughout the data center: Cisco NX-OS runs on all Cisco data center switch platforms (Cisco Nexus 7000, 5000, 4000, 2000, and 1000V Series).	• Simplification of data center operating environment • End-to-end Cisco Nexus and Cisco NX-OS fabric • No retraining necessary for data center engineering and operations teams
Software compatibility: Cisco NX-OS interoperates with Cisco products running any variant of Cisco IOS Software and also with any networking OS that conforms to the networking standards listed as supported in this data sheet.	• Transparent operation with existing network infrastructure • Open standards • No compatibility concerns
Modular software design: Cisco NX-OS is designed to support distributed multithreaded processing. Cisco NX-OS modular processes are instantiated on demand, each in a separate protected memory space. Thus, processes are started and system resources allocated only when a feature is enabled. The modular processes are governed by a real-time preemptive scheduler that helps ensure timely processing of critical functions.	• Robust software • Fault tolerance • Increased scalability • Increased network availability
Troubleshooting and diagnostics: Cisco NX-OS is built with unique serviceability functions to allow network operators to take early action based on network trends and events, enhancing network planning and improving network operations center (NOC) and vendor response times. Smart Call Home and Cisco Online Health Management System (OHMS) are some of the features that enhance the serviceability of Cisco NX-OS.	• Quick problem isolation and resolution • Continuous system monitoring and proactive notifications • Improved productivity of operations teams
Ease of management: Cisco NX-OS provides a programmatic XML interface based on the NETCONF industry standard. The Cisco NX-OS XML interface provides a consistent API for devices. Cisco NX-OS also provides support for Simple Network Management Protocol (SNMP) Versions 1, 2, and 3 MIBs.	• Rapid development and creation of tools for enhanced management • Comprehensive SNMP MIB support for efficient remote monitoring
Role-based access control (RBAC): With RBAC, Cisco NX-OS enables administrators to limit access to switch operations by assigning roles to users. Administrators can customize access and restrict it to the users who require it.	• Effective access control mechanism based on user roles • Improved network device security • Reduction in network problems arising from human error

Cisco NX-OX Software Packaging for Nexus 3064

The software packaging in Nexus 3064 offers flexibility and comprehensive features while being consistent with Cisco's Nexus access switches. The default system software has a comprehensive Layer 2 feature set with extensive security and management features. To enable Layer 3 IP unicast and multicast routing functionality, additional licenses must be installed, as described in Table 5. See Table 7 for a complete software feature list.

Table 5. Software Licensing for Cisco Nexus 3064

Software Package	Features Supported
System Default (No License Required)	• Comprehensive Layer 2 feature set: VLAN, 802.1Q Trunking, Virtual Port Channel (vPC), LACP, UDLD (Standard and Aggressive), MSTP, RSTP, STP Guards, and VTP Transparent • Security: AAA, Access Control Lists (ACL), DHCP Snooping, Storm Control, PVLAN, and Configurable Control Plane Policing (CoPP) • Management features: Cisco Data Center Network Manager (DCNM) support, Console, SSHv2 access, CDP, SNMP, and Syslog
Base License (N3K-BAS1K9)	• Layer 3 IP Routing: inter-VLAN routing, static routes, RIPv2, ACLs, OSPFv2 (limited to 256 routes), EIGRP stub, HSRP, VRRP, and uRPF • Multicast: PIM SM, SSM, and MSDP
LAN Enterprise License (N3K-LAN1K9); Requires Base License	• Advanced Layer 3 IP Routing: OSPFv2, EIGRP, BGP, and VRF-Lite

Cisco Data Center Network Manager

Cisco Nexus 3064 is supported in Cisco DCNM. Cisco DCNM is designed for the Cisco Nexus hardware platforms, which are enabled for Cisco NX-OS. Cisco DCNM is a Cisco management solution that increases overall data center infrastructure uptime and reliability, improving business continuity. Focused on the management requirements of the data center network, Cisco DCNM provides a robust framework and comprehensive feature set that can meet the routing, switching, and storage administration needs of present and future data centers. Cisco DCNM automates the provisioning process, proactively monitors the LAN by detecting performance degradation, secures the network, and simplifies the diagnosis of dysfunctional network elements.

Product Specifications

Table 6 lists the specifications for the Cisco Nexus 3064, Table 7 lists software features, and Table 8 lists management standards and support.

Table 6. Specifications

Description	Specification	

Physical	• 1RU fixed form-factor switch
	• 64 10 Gigabit Ethernet ports (48 SFP+ and 4 QSFP+)
	  ◦ 48 SFP ports support 1 and 10 Gigabit Ethernet
	  ◦ 4 QSFP ports support 4 x 10 Gigabit Ethernet or 40 Gigabit Ethernet each
	• 2 redundant power supplies
	• 1 fan tray with redundant fans
	• 1 I/O module with management, console, and USB flash memory ports	

Performance	• 1.28-Tbps switching capacity • Forwarding rate of 960 mpps • Line-rate traffic throughput (both Layer 2 and 3) on all ports • Configurable maximum transmission units (MTUs) of up to 9216 bytes (jumbo frames)	
Hardware Tables and Scalability	MAC addresses	128,000
	Number of VLANS	4096
	Spanning-tree instances	• Rapid Spanning Tree Protocol (RSTP): 512 • Multiple Spanning Tree (MST) Protocol: 64
	Access control list (ACL) entries	2000 ingress 1000 egress
	Routing table	16000 prefixes and 16000 host entries* 8000 multicast routes*
	Number of EtherChannels	64 (with vPC)
	Number of ports per EtherChannel	16
	Buffers	9 MB shared
	Boot flash memory	2 GB
Power	Number of power supplies	2 (redundant)
	Power supply types	AC (forward and reversed airflow) DC (forward and reversed airflow)
	Typical operating power	143W (64p with Twinax at 100% load, 2 PSU) 177W (64p with SR optics at 100% load, 2 PSU)
	Maximum power	199W
	Input voltage	100 to 240 VAC
	Frequency	50 to 60 Hz
	Power supply efficiency	89% - 91% at 220V

Description	Specification	
	Typical heat dissipation	488 BTU per hr (64p with Twinax at 100% load, 2 PSU) 605 BTU per hr (64p with SR optics at 100% load, 2 PSU)
	Maximum heat dissipation	683 BTU per hr
Cooling	Forward and reversed airflow schemes: • Forward airflow: Port-side exhaust (air enters through fan-tray and power supplies and exits through ports) • Reversed airflow: Port-side intake (air enters through ports and exits through fan-tray and power supplies) Single fan tray with redundant fans Hot swappable (must swap within 1 min)	
Environment	Dimensions (height x width x depth)	1.72 x 17.3 x 19.7 in. (4.4 x 43.9 x 50.5 cm)
	Weight	20.5 lbs (9.3 kgs)
	Operating temperature	32 to 104°F (0 to 40℃)
	Storage temperature	-40 to 158°F (-40 to 70℃)
	Operating relative humidity	10 to 85% noncondensing Up to 5 days at max (85%) humidity Recommend ASHRAE data center Environment
	Storage relative humidity	5 to 95% noncondensing
	Altitude	0 to 10,000 ft (0 to 3000m)

* Please refer to Nexus 3K Verfied Scalability Guide for scalability numbers validated on specific software releases: http://www.cisco.com/en/US/products/ps11541/products_installation_and_configuration_guides_list.html.

Table 7. Software Features

Description	Specification
Layer 2	• Layer 2 switch ports and VLAN trunks • IEEE 802.1Q VLAN encapsulation • Support for up to 4096 VLANs • Rapid Per-VLAN Spanning Tree Plus (PVRST+) (IEEE 802.1w compatible) • Multiple Spanning Tree Protocol (MSTP) (IEEE 802.1s): 64 instances • Spanning Tree PortFast • Spanning Tree Root Guard • Spanning Tree Bridge Assurance • Cisco EtherChannel technology (up to 16 ports per EtherChannel) • Link Aggregation Control Protocol (LACP): IEEE 802.3ad • Advanced PortChannel hashing based on Layer 2, 3, and 4 information • Virtual Port Chanel (vPC) • Jumbo frames on all ports (up to 9216 bytes) • Storm control (unicast, multicast, and broadcast) • Private VLANs
Layer 3	• Layer 3 interfaces: Routed ports on interfaces, switch virtual interfaces (SVIs), PortChannels, and subinterfaces (Total 1024) • 64-way Equal-Cost Multipath (ECMP) • 2000 ingress and 1000 egress ACL entries • IPv6 Routing: Static, OSPFv3 and BGPv6 • Routing protocols: Static, RIP v2, EIGRP, OSPF, and BGP • Bi-directional Flow Detection (BFD) for BGP and OSPF • Hot Standby Router Protocol (HSRP) and Virtual Router Redundancy Protocol (VRRP) • ACL: Routed ACL with Layer 3 and 4 options to match ingress and egress ACLs • Virtual Route Forwarding (VRF): VRF-lite (IP VPN), VRF-aware unicast (BGP, OSPF, and RIP), and VRF-aware multicast • Unicast Reverse-Path Forwarding (uRPF) with ACL; strict and loose modes • Jumbo frame support (up to 9216 bytes)

Description	Specification
Multicast	Multicast: Protocol Independent Multicast Version 2 (PIMv2), sparse mode (PIM-SM), and Source-Specific Multicast (SSM) Bootstrap router (BSR), Auto-RP, and Static RP Multicast Source Discovery Protocol (MSDP) and Anycast RP Internet Group Management Protocol (IGMP) Versions 2 and 3
Quality of Service (QoS)	Layer 2 IEEE 802.1p (class of service [CoS]) 8 hardware queues per port Per-port QoS configuration CoS trust Port-based CoS assignment Modular QoS CLI (MQC) compliance ACL-based QoS classification (Layers 2, 3, and 4) MQC CoS marking Differentiated services code point (DSCP) marking Weighted Random Early Detection (WRED) CoS-based egress queuing Egress strict-priority queuing Egress port-based scheduling: Weighted Round-Robin (WRR) Explicit Congestion Notification (ECN)
Security	• Ingress ACLs (standard and extended) on Ethernet • Standard and extended Layer 3 to 4 ACLs include IPv4, Internet Control Message Protocol (ICMP), TCP, and User Datagram Protocol (UDP) • VLAN-based ACLs (VACLs) • Port-based ACLs (PACLs) • Named ACLs • ACL logging and statistics • ACLs on virtual terminals (VTYs) • Dynamic Host Configuration Protocol (DHCP) snooping with Option 82 • DHCP relay • Dynamic Address Resolution Protocol (ARP) inspection • Configurable Control Plane Policing (CoPP)
Management	• Power On Auto Provisioning (POAP) • Python scripting • EEM • Switch management using 10/100/1000-Mbps management or console ports • CLI-based console to provide detailed out-of-band management • In-band switch management • Locator and beacon LEDs • Configuration rollback • Secure Shell Protocol Version 2 (SSHv2) • Telnet • Authentication, authorization, and accounting (AAA) • AAA with RBAC • RADIUS • TACACS+ • Syslog • Embedded packet analyzer • SNMP v1, v2, and v3 • Enhanced SNMP MIB support • XML (NETCONF) support • Remote monitoring (RMON) • Advanced Encryption Standard (AES) for management traffic • Unified username and passwords across CLI and SNMP • Microsoft Challenge Handshake Authentication Protocol (MS-CHAP) • Digital certificates for management between switch and RADIUS server

Description	Specification
	• Cisco Discovery Protocol Versions 1 and 2 • RBAC • Switched Port Analyzer (SPAN) on physical, PortChannel, and VLAN • Encapsulated Remote Switched Port Analyzer (ERSPAN) • Ingress and egress packet counters per interface • Precision Time Protocol (IEEE 1588) Boundary Clock • Network Time Protocol (NTP) • Cisco OHMS • Comprehensive bootup diagnostic tests • Call Home • Cisco DCNM • Advanced Buffer Utilization Monitoring

Table 8. Management and Standards Support

Description	Specification	
MIB Support	Generic MIBs • SNMPv2-SMI • CISCO-SMI • SNMPv2-TM • SNMPv2-TC • IANA-ADDRESS-FAMILY-NUMBERS-MIB • IANAifType-MIB • IANAiprouteprotocol-MIB • HCNUM-TC • CISCO-TC • SNMPv2-MIB • SNMP-COMMUNITY-MIB • SNMP-FRAMEWORK-MIB • SNMP-NOTIFICATION-MIB • SNMP-TARGET-MIB • SNMP-USER-BASED-SM-MIB • SNMP-VIEW-BASED-ACM-MIB • CISCO-SNMP-VACM-EXT-MIB Ethernet MIBs • CISCO-VLAN-MEMBERSHIP-MIB Configuration MIBs • ENTITY-MIB • IF-MIB • CISCO-ENTITY-EXT-MIB • CISCO-ENTITY-FRU-CONTROL-MIB • CISCO-ENTITY-SENSOR-MIB • CISCO-SYSTEM-MIB • CISCO-SYSTEM-EXT-MIB • CISCO-IP-IF-MIB • CISCO-IF-EXTENSION-MIB • CISCO-NTP-MIB • CISCO-IMAGE-MIB • CISCO-IMAGE-UPGRADE-MIB	Monitoring MIBs • NOTIFICATION-LOG-MIB • CISCO-SYSLOG-EXT-MIB • CISCO-PROCESS-MIB • RMON-MIB • CISCO-RMON-CONFIG-MIB • CISCO-HC-ALARM-MIB Security MIBs • CISCO-AAA-SERVER-MIB • CISCO-AAA-SERVER-EXT-MIB • CISCO-COMMON-ROLES-MIB • CISCO-COMMON-MGMT-MIB • CISCO-SECURE-SHELL-MIB Miscellaneous MIBs • CISCO-LICENSE-MGR-MIB • CISCO-FEATURE-CONTROL-MIB • CISCO-CDP-MIB • CISCO-RF-MIB Layer 3 and Routing MIBs • UDP-MIB • TCP-MIB • OSPF-MIB • BGP4-MIB • CISCO-HSRP-MIB

Description	Specification
Standards	• IEEE 802.1D: Spanning Tree Protocol • IEEE 802.1p: CoS Prioritization • IEEE 802.1Q: VLAN Tagging • IEEE 802.1s: Multiple VLAN Instances of Spanning Tree Protocol • IEEE 802.1w: Rapid Reconfiguration of Spanning Tree Protocol • IEEE 802.3z: Gigabit Ethernet • IEEE 802.3ad: Link Aggregation Control Protocol (LACP) • IEEE 802.3ae: 10 Gigabit Ethernet • IEEE 802.1ab: LLDP • IEEE 1588-2008: Precision Time Protocol (Boundary Clock)
RFC	BGP • RFC 1997: BGP Communities Attribute • RFC 2385: Protection of BGP Sessions with the TCP MD5 Signature Option • RFC 2439: BGP Route Flap Damping • RFC 2519: A Framework for Inter-Domain Route Aggregation • RFC 2545: Use of BGPv4 Multiprotocol Extensions • RFC 2858: Multiprotocol Extensions for BGPv4 • RFC 3065: Autonomous System Confederations for BGP • RFC 3392: Capabilities Advertisement with BGPv4 • RFC 4271: BGPv4 • RFC 4273: BGPv4 MIB: Definitions of Managed Objects for BGPv4 • RFC 4456: BGP Route Reflection • RFC 4486: Subcodes for BGP Cease Notification Message • RFC 4724: Graceful Restart Mechanism for BGP • RFC 4893: BGP Support for Four-Octet AS Number Space OSPF • RFC 2328: OSPF Version 2 • 8431RFC 3101: OSPF Not-So-Stubby-Area (NSSA) Option • RFC 3137: OSPF Stub Router Advertisement • RFC 3509: Alternative Implementations of OSPF Area Border Routers • RFC 3623: Graceful OSPF Restart • RFC 4750: OSPF Version 2 MIB RIP • RFC 1724: RIPv2 MIB Extension • RFC 2082: RIPv2 MD5 Authentication • RFC 2453: RIP Version 2 • IP Services • RFC 768: User Datagram Protocol (UDP) • RFC 783: Trivial File Transfer Protocol (TFTP) • RFC 791: IP • RFC 792: Internet Control Message Protocol (ICMP) • RFC 793: TCP • RFC 826: ARP • RFC 854: Telnet • RFC 959: FTP • RFC 1027: Proxy ARP • RFC 1305: Network Time Protocol (NTP) Version 3 • RFC 1519: Classless Interdomain Routing (CIDR) • RFC 1542: BootP Relay • RFC 1591: Domain Name System (DNS) Client • RFC 1812: IPv4 Routers • RFC 2131: DHCP Helper • RFC 2338: VRRP IP Multicast • RFC 2236: Internet Group Management Protocol, version 2

Description	Specification
	• RFC 3376: Internet Group Management Protocol, Version 3 • RFC 3446: Anycast Rendezvous Point Mechanism Using PIM and MSDP • RFC 3569: An Overview of SSM • RFC 3618: Multicast Source Discovery Protocol (MSDP) • RFC 4601: Protocol Independent Multicast - Sparse Mode (PIM-SM): Protocol Specification (Revised) • RFC 4607: Source-Specific Multicast for IP • RFC 4610: Anycast-RP using PIM • RFC 5132: IP Multicast MIB

Software Requirements

Cisco Nexus 3000 Series Switches are supported by Cisco NX-OS Software Release 5.0 and later. Cisco NX-OS interoperates with any networking OS, including Cisco IOS Software, that conforms to the networking standards mentioned in this data sheet.

Regulatory Standards Compliance

Table 9 summarizes regulatory standards compliance for the Cisco Nexus 3000 Series.

Table 9. Regulatory Standards Compliance: Safety and EMC

Specification	Description
Regulatory Compliance	• Products should comply with CE Markings per 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 • KN24
RoHS	RoHS 5 compliant except for lead press-fit connectors

Ordering Information

Table 10 provides ordering information for the Cisco Nexus 3064.

Table 10. Ordering Information

Part Number	Description
Chassis	
N3K-C3064PQ-10GX	Nexus 3064-X, 48 SFP+ and 4 QSFP+ ports, with enhanced scale, low latency
N3K-C3064-FAN	Nexus 3064 Fan Module, Forward airflow (port side exhaust)
N3K-C3064-FAN-B	Nexus 3064 Fan Module, Reversed airflow (port side intake)
N2200-PAC-400W	N2K/3K 400W AC Power Supply, Forward airflow (port side exhaust)
N2200-PAC-400W-B	N2K/3K 400W AC Power Supply, Reversed airflow (port side intake)
N2200-PDC-400W	N2K/3K 400W DC Power Supply, Forward airflow (port side exhaust)
N3K-PDC-350W-B	N3K Series 350W DC Power Supply, Reversed airflow (port side intake)
Software Licenses	
N3K-BAS1K9	Nexus 3000 Layer 3 Base License
N3K-LAN1K9	Nexus 3000 Layer 3 LAN Enterprise License (Requires N3K-BAS1K9 License)
Spares	
N3K-C3064-FAN=	Nexus 3064 Fan Module, Forward airflow (port side exhaust), Spare
N3K-C3064-FAN-B=	Nexus 3064 Fan Module, Reversed airflow (port side intake), Spare
N2000-PAC-400W=	N2K/3K 400W AC Power Supply, Forward airflow (port side exhaust), Spare
N2000-PAC-400W-B=	N2K/3K 400W AC Power Supply, Reversed airflow (port side intake), Spare
N2200-PDC-400W=	N2K/3K 400W DC Power Supply, Forward airflow (port side exhaust), Spare
N3K-PDC-350W-B=	N3K Series 350W DC Power Supply, Reversed airflow (port side intake), Spare
N3K-C3064-ACC-KIT=	Nexus 3064PQ Accessory Kit
Bundles	
N3K-C3064-X-FA-L3	Nexus 3064-X, Forward Airflow (port side exhaust), AC P/S, Base and LAN Enterprise License Bundle
N3K-C3064-X-BA-L3	Nexus 3064-X, Reversed Airflow (port side intake), AC P/S, Base and LAN Enterprise License Bundle
N3K-C3064-X-FD-L3	Nexus 3064-X, Forward Airflow (port side exhaust), DC P/S, Base and LAN Enterprise License Bundle
N3K-C3064-X-BD-L3	Nexus 3064-X, Reversed Airflow (port side intake), DC P/S, Base and LAN Enterprise License Bundle
Cables and Optics	
QSFP-40G-SR4(=)	40GBASE-SR4 QSFP Transceiver Module with MPO Connector
QSFP-H40G-CU1M(=)	40GBASE-CR4 Passive Copper Cable, 1m
QSFP-H40G-CU3M(=)	40GBASE-CR4 Passive Copper Cable, 3m
QSFP-H40G-CU5M(=)	40GBASE-CR4 Passive Copper Cable, 5m
QSFP-4SFP10G-CU1M(=)	QSFP to 4xSFP10G Passive Copper Splitter Cable, 1m
QSFP-4SFP10G-CU3M(=)	QSFP to 4xSFP10G Passive Copper Splitter Cable, 3m
QSFP-4SFP10G-CU5M(=)	QSFP to 4xSFP10G Passive Copper Splitter Cable, 5m
SFP-10G-SR(=)	10GBASE-SR SFP+ Module
SFP-10G-LR(=)	10GBASE-LR SFP+ Module
SFP-10G-ER(=)	Cisco 10GBASE-ER SFP+ Module for SMF
SFP-H10GB-CU1M(=)	10GBASE-CU SFP+ Cable 1 Meter
SFP-H10GB-CU3M(=)	10GBASE-CU SFP+ Cable 3 Meter
SFP-H10GB-CU5M(=)	10GBASE-CU SFP+ Cable 5 Meter
SFP-H10GB-ACU7M(=)	Active Twinax Cable Assembly, 7m

Part Number	Description
SFP-H10GB-ACU10M(=)	Active Twinax Cable Assembly, 10m
GLC-T(=)	1000BASE-T SFP
GLC-SX-MM(=)	GE SFP, LC Connector SX Transceiver
GLC-LH-SM(=)	GE SFP, LC Connector LX/LH Transceiver

Service and Support

Cisco offers a wide range of services to help accelerate your success in deploying and optimizing the Cisco Nexus 3000 Series 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 operational 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. With this service, you can take advantage of the Smart Call Home service capability, which offers proactive diagnostics and real-time alerts on your Cisco Nexus 3000 Series Switches. Spanning the entire network lifecycle, Cisco Services helps increase investment protection, optimize network operations, support migration operations, and strengthen your IT expertise.

For More Information

For more information, please visit http://www.cisco.com/go/nexus3000.

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