

# Cisco Nexus 3164Q Switch

## Product Overview

The Cisco Nexus<sup>®</sup> 3164Q Switch is an ultra-high density, power efficient, 10/40-Gbps switch designed for the data center. This compact, two-rack-unit (2RU) model offers wire-rate Layer 2 and Layer 3 switching on all ports. It runs the enhanced version of the Cisco<sup>®</sup> NX-OS Software operating system, that also supports Nexus 9000 series switches. It provides customer comprehensive features while simplifying image management. The rich programmability features enable organizations to run today's applications while also being prepared for the demanding and changing application needs such as big data, cloud, and virtualization.

The Cisco Nexus 3164Q (Figure 1) is a 40-Gbps Quad Small Form-Factor Pluggable (QSFP)-based switch with 64 Enhanced QSFP (QSFP+) ports. Each QSFP+ port can operate in native 40-Gbps or 4 x 10-Gbps mode, up to a maximum of 256 10G ports<sup>1</sup>.

**Figure 1.** Cisco Nexus 3164Q Switch



## Main Benefits

The Cisco Nexus 3164Q provides the following:

- **Wire-rate Layer 2 and 3 switching on all ports<sup>2</sup>** up to 5.12 terabits per second (Tbps) and up to 3.8 billion packets per second (bps).
- **Rich Programmability**, with support for NX-API, Linux Containers, XML/JavaScript Object Notation (JSON) APIs, Openstack plugin, Python, and Puppet/Chef configuration and automation tools.
- **High Performance and Scalability** with 6 core CPU, 16GE DRAM and 64 GB SSD, with 48 Mbytes of dynamic buffer allocation. Ideal for massively scalable data centers and big data applications.
- **Flexibility**
  - The QSFP port can be configured to work as four 10-Gbps ports, offering deployment flexibility, up to a maximum of 256 10G ports.
  - The Cisco<sup>®</sup> Quad Small Form-Factor (QSFP) 40-Gbps Bidirectional (BiDi) Transceiver technology allows the reuse of existing 10G cabling, a smooth transition from 10 to 40 Gigabit Ethernet infrastructures in data centers.
  - Both fiber and copper cabling solutions for both 10-Gbps and 40-Gbps, with the SFP options of BiDi, AOC, SR4 fiber optics.

<sup>1</sup> 40G break-out coming shortly with software release

<sup>2</sup> Wire-rate on all ports for packets >200bytes

- **High availability**
  - Virtual PortChannel (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 models.
  - The 64-way equal-cost multipath (ECMP) routing enables the use of Layer 3 fat-tree designs. This allows organizations to prevent network bottlenecks, increase resiliency, and add capacity with little network disruption.
  - Advanced reboot capabilities include hot/cold pathching and Fast Reboot capabilities.
  - Hot swappable power-supply units (PSUs) and fans.
- Purpose-built Cisco NX-OS operating system with comprehensive, proven innovations
  - PowerOn Auto Provisioning (POAP) enables touchless bootup and configuration of the switch, drastically reducing provisioning time.
  - Cisco Embedded Event Manager (EEM) and Python scripting enable automation and remote operations in the data center.
  - Advanced buffer monitoring reports real-time buffer utilization per port and per queue, which allows organizations to monitor traffic bursts and application traffic patterns.
  - 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.
  - Complete 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

The Cisco Nexus 3164Q has the following configuration:

- 64 fixed 40 Gigabit Ethernet QSFP+ ports
- Locator LED
- Environment LED
- Status LED
- Dual redundant power supplies
- Redundant (3+1) fans
- Lane selected LED
- One 10/100/1000-Mbps management port
- One RS-232 serial console port
- Two USB ports

## Transceiver and Cabling Options

The Cisco Nexus 3164Q has 64 QSFP+ ports. QSFP+ technology allows a smooth transition from 10 to 40 Gigabit Ethernet infrastructures in data centers. Each of the Cisco Nexus 3164Q switch's QSFP+ ports can operate in either native 40 Gigabit Ethernet mode or 4 x 10 Gigabit Ethernet mode. This switch supports both fiber and copper cabling solutions for these two modes.

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 10 Gigabit Ethernet switches or hosts 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 on the fiber solution by using QSFP+ SR4 transceivers on both ends and procuring third-party fiber splitter MPO-to-LC cables. Table 1 lists the QSFP transceiver types supported.

**Table 1.** Cisco Nexus 3164Q QSFP Transceiver Support Matrix

Part Number	Description
<b>QSFP-40G-SR-BD</b>	Cisco QSFP40G BiDi Short-reach Transceiver
<b>QSFP-H40G-AOC1M</b>	QSFP 40G Active Optical Cable 1m
<b>QSFP-H40G-AOC2M</b>	QSFP 40G Active Optical Cable 2m
<b>QSFP-H40G-AOC3M</b>	QSFP 40G Active Optical Cable 3m
<b>QSFP-H40G-AOC5M</b>	QSFP 40G Active Optical Cable 5m
<b>QSFP-H40G-AOC7M</b>	QSFP 40G Active Optical Cable 7m
<b>QSFP-H40G-AOC10M</b>	QSFP 40G Active Optical Cable 10m
<b>QSFP-4x10G-AOC1M*</b>	QSFP to 4 x SFP 10Gbps Active Optical Cable 1m
<b>QSFP-4x10G-AOC2M*</b>	QSFP to 4 x SFP 10Gbps Active Optical Cable 2m
<b>QSFP-4x10G-AOC3M*</b>	QSFP to 4 x SFP 10Gbps Active Optical Cable 3m
<b>QSFP-4x10G-AOC5M*</b>	QSFP to 4 x SFP 10Gbps Active Optical Cable 5m
<b>QSFP-4x10G-AOC7M*</b>	QSFP to 4 x SFP 10Gbps Active Optical Cable 7m
<b>QSFP-4x10G-AOC10M*</b>	QSFP to 4 x SFP 10Gbps Active Optical Cable 10m
<b>QSFP-4SFP10G-CU5M</b>	QSFP to 4 x SFP 10-Gbps passive copper splitter cable, 5m
<b>QSFP-4SFP10G-CU3M</b>	QSFP to 4 x SFP 10-Gbps passive copper splitter cable, 3m
<b>QSFP-4SFP10G-CU1M</b>	QSFP to 4 x SFP 10-Gbps passive copper splitter cable, 1m
<b>QSFP-H40G-CU3M</b>	40GBASE-CR4 passive copper cable, 3m
<b>QSFP-H40G-CU1M</b>	40GBASE-CR4 passive copper cable, 1m
<b>QSFP-40G-SR4</b>	40GBASE-SR4 QSFP transceiver module with MPO connector
<b>QSFP-40G-CSR4</b>	40GBASE-CSR4 QSFP+ transceiver module for MMF, 4-lanes, 850-nm wavelength, 12-fiber MPO/MTP connector, 300 m reach with OM3 fiber
<b>QSFP-40GE-LR4</b>	40GBASE-LR4 QSFP+ transceiver module for SMF, 4 CWDM lanes in 1310 nm window Muxed inside module, duplex LC connector, 10 km reach

\* Coming shortly with software release

For more information about the transceiver types, see

[http://www.cisco.com/en/US/products/hw/modules/ps5455/prod\\_module\\_series\\_home.html](http://www.cisco.com/en/US/products/hw/modules/ps5455/prod_module_series_home.html).

### **Cisco QSFP 40-Gbps Bidirectional Short-Reach Transceiver**

The Cisco® Quad Small Form-Factor (QSFP) 40-Gbps Bidirectional (BiDi) Transceiver (Figure 1) is a short-reach pluggable optical transceiver with a duplex LC connector for 40 Gigabit Ethernet short-reach data communications and interconnect applications using multimode fiber (MMF). The Cisco QSFP 40-Gbps BiDi transceiver offers customers a solution that uses existing duplex MMF infrastructure for 40 Gigabit Ethernet connectivity. Unlike with other existing 40 Gigabit Ethernet solutions on the market, with the Cisco QSFP 40-Gbps BiDi transceiver customers can upgrade their network from 10 Gigabit Ethernet to 40 Gigabit Ethernet without incurring any fiber infrastructure upgrade cost. The Cisco QSFP 40-Gbps BiDi transceiver can enable 40 Gigabit Ethernet connectivity in a range of up to 100 meters over OM3 fiber, which meets most data center reach requirements. It complies with the Multiple Source Agreement (MSA) QSFP specification, enabling customers to use it on all Cisco QSFP 40-Gbps platforms and achieve high density in a 40 Gigabit Ethernet network. It can be used in data centers, high-performance computing (HPC) networks, enterprise and distribution layers, and service provider transport applications.

### **Cisco NX-OS Software Overview**

Cisco NX-OS is a data center purpose-built operating system designed for performance, resiliency, scalability, manageability, and programmability at its foundation. Cisco NX-OS provides a robust and comprehensive feature set that meets the demanding requirements of virtualization and automation in present and future data centers.

The Cisco Nexus 3164Q Switch uses an enhanced version of Cisco NX-OS Software with a single binary image that supports switch in the both modular (Cisco Nexus 9500 platform) and fixed-port (Cisco Nexus 9300 platform) switches, 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 losing state. The operating system supports hot and cold patching, and online diagnostics.

Main switch features include the following:

- Power-On Auto Provisioning (POAP) automates the process of upgrading software images and installing configuration files on Cisco Nexus switches that are being deployed in the network for the first time.
- Intelligent Application Programming Interface (iAPI) provides operators with a way to manage the switch through remote procedure calls (RPCs; JavaScript Object Notation [JSON] or XML) over HTTP/HTTPS infrastructure.
- Patching allows the Cisco NX-OS software to be upgraded and patched without any interruption in switch operations.
- Line-rate overlay support provides Virtual Extensible LAN (VXLAN) bridging at full line rate, facilitating and accelerating communication between virtual and physical servers as well as between multiple data centers in a campus environment.

### **Cisco NX-OS Features and Benefits**

The software packaging for the Cisco Nexus 3164Q Switch offers flexibility and a comprehensive feature set while being consistent with Cisco Nexus access switches. The default system software has a comprehensive Layer 2 security and management feature set and base level Layer 3 feature set. To enable advanced Layer 3 IP Unicast and IP Multicast routing functions, you must install additional licenses. Table 2 lists the software packaging and licensing available to enable advanced features.

**Table 2.** Software Packaging and Licensing

Packaging	Chassis Based	Part Number	Supported Features
Cisco Nexus 3164Q Enhanced Layer 3 license	Chassis	N3K-LAN1K9	Layer 3 including full OSPF, Enhanced Interior Gateway Routing Protocol (EIGRP), Border Gateway Protocol (BGP), and VXLAN

## Product Specifications

Table 3 lists the specifications for the Cisco Nexus 3164Q, Table 4 lists software features and management standards and support.

**Table 3.** Specifications

Description	Specification	
<b>Physical</b>	<ul style="list-style-type: none"> <li>• 2 RU fixed form-factor switch</li> <li>• 64 QSFP+ ports; each supports native 40 Gigabit Ethernet and 4 x 10 Gigabit Ethernet modes</li> <li>• 2 redundant power supplies</li> <li>• 3+1 redundant fans</li> <li>• Management, console, and USB flash-memory ports</li> </ul>	
<b>Performance</b>	<ul style="list-style-type: none"> <li>• 5.12 Tbps switching capacity</li> <li>• Forwarding rate up to 3.8 bpps</li> <li>• Line-rate traffic throughput (both Layer 2 and 3) on all ports</li> <li>• Configurable maximum transmission units (MTUs) of up to 9216 bytes (jumbo frames)</li> </ul>	
<b>Hardware tables and scalability</b>	Number of VLANs	MSTP: 4096
	Number of spanning-tree instances	MSTP: 64 RPVST+: 507
	Number of access control list (ACL) entries	4000 to 16000 ingress 1000 to 4000 egress
	Routing table	Maximum number of longest prefix match (LPM) routes 128,000 Maximum number of IP host entries 120,000 Maximum number of MAC address entries 96,000
	Number of EtherChannels	256
	Number of ports per EtherChannel	32
	Buffer size	48 MB shared
	System memory	16 GB
<b>Power</b>	Frequency	50 to 60 Hz
	Power supply types	AC
	Typical operating power	803 Watts (W) with SR4 optics at 100% load; 2 PSUs
	Maximum power	1100 Watts (W)
	AC PSUs <ul style="list-style-type: none"> <li>• Input voltage</li> <li>• Frequency</li> <li>• Efficiency</li> </ul>	<ul style="list-style-type: none"> <li>• 200 to 240 VAC</li> <li>• 50 to 60 Hz</li> <li>• 93% at 220V</li> </ul>
	Typical heat dissipation	2739 BTU/hr (with SR4 optics at 100% load)
	Maximum heat dissipation	3753 BTU/hr

Description	Specification	
<b>Cooling</b>	Port-side intake and port-side exhaust options Port-side intake: Yes Port-side exhaust: Post FCS	
<b>Dimensions</b>	• Dimensions (height x width x depth)	3.48 x 17.41 x 22.32in. (88.4 x 442 x 566 mm)
<b>Environment</b>	Weight	37 lb (16.8kg)
	Operating temperature	32 to 104°F (0 to 40°C)
	Storage temperature	-40 to 158°F (-40 to 70°C)
	Operating relative humidity	<ul style="list-style-type: none"> <li>• 10 to 85% noncondensing</li> <li>• Up to 5 days at maximum (85%) humidity</li> </ul> Recommend ASHRAE data center environment
	Storage relative humidity	5% to 95% noncondensing
	Altitude	0 to 10,000 ft (0 to 3000m)

\* Please refer to Cisco Nexus 3000 Series Verified Scalability Guide documentation for exact scalability numbers validated on for specific software releases:

[http://www.cisco.com/en/US/products/ps11541/products\\_installation\\_and\\_configuration\\_guides\\_list.html](http://www.cisco.com/en/US/products/ps11541/products_installation_and_configuration_guides_list.html).

**Table 4.** Software Features

Item	Cisco Nexus 3164Q Switch
Maximum number of longest prefix match (LPM) routes	128,000
Maximum number of IP host entries	120,000
Maximum number of MAC address entries	96,000
Number of multicast routes	<ul style="list-style-type: none"> <li>• 16,000, up to 60,000</li> </ul>
Number of Interior Gateway Management Protocol (IGMP) snooping groups	<ul style="list-style-type: none"> <li>• 8,000, up to 60,000</li> </ul>
Number of access control list (ACL) entries	<ul style="list-style-type: none"> <li>• 1000 to 4000 egress</li> <li>• 4000 to 16000 ingress</li> </ul>
Maximum number of VLANs	4000
Maximum number of Virtual Routing and Forwarding (VRF) instances	1000
Maximum number of links in a PortChannel	32
Maximum number of ECMP paths	64
Maximum number of PortChannels	256
Number of active Switched Port Analyzer (SPAN) sessions	4
Maximum number of Rapid per-VLAN Spanning Tree (RPVST) instances	507
Maximum number of Hot Standby Router Protocol (HSRP) groups	490
Maximum number of Multiple Spanning Tree (MST) instances	64
Maximum number of tunnel endpoints (VTEP) and VXLAN physical servers (per VLAN)	10,000

This section summarizes the Cisco Nexus 3164Q platform features.

#### Layer 2 Features

##### VLANs

- 4000

##### Private VLANs (PVLANS)<sup>\*</sup>

- Isolated ports and promiscuous ports
- PVLAN on PortChannels and vPCs

##### vPC

##### Spanning Tree Protocol

- IEEE 802.1w Rapid Spanning Tree (Rapid PVST+)
- IEEE 802.1s Multiple Spanning Tree (MST)
- Edge port and edge port trunk
- Extensions: Bridge Protocol Data Unit (BPDU) guard, BPDU filtering, bridge assurance, loop guard, and root guard

##### VLAN Trunk Protocol (VTP) Versions 1 and 2 (v1 and v2): Transparent mode

##### MAC addresses: Static

- Unicast and multicast

##### IEEE 802.1AB Link Layer Discovery Protocol (LLDP)

##### User-configurable interface maximum transmission unit (MTU) and jumbo frames

##### Unidirectional Link Detection (UDLD)

#### Layer 3 Features

##### IPv4

- Static routes
- BGP, EIGRP and OSPFv2
- VRF-Lite and VRF route leaking
- HSRPv1 and v2
- Virtual Router Redundancy Protocol (VRRP)
- Bidirectional Forwarding Detection (BFD)
- Dynamic Host Configuration Protocol (DHCP) relay

##### IPv6

- Static routes
- BGP and OSPFv3
- VRF-Lite and VRF route leaking
- HSRPv6
- DHCP relay

##### BGP enhancements

- **disable-peer-as-check**: Routes learned from one node in one autonomous system (**as**) will be advertised to another node in the same autonomous system.
- **allow-as in**: Allow routes having their own autonomous systems in the autonomous system path (**as-path**) to be installed in the BGP routing information base (BRIB).
- **best-as-path-relax**: Allow paths received from different autonomous systems to be handled as multipath if their **as-path** lengths are the same and other multipath conditions are met.
- **best-as-path-relax**: Allow paths received from different autonomous systems to be handled as multipath if their **as-path** lengths are the same and other multipath conditions are met.
- **transport connection-mode passive**: Allow a passive connection setup only.
- **remove private-as enhancements [no | default]: remove-private-as [all] [replace-as]**.
- MD5 authentication for prefix-based neighbors: Allow authentication for prefix-based neighbors.
- E-BGP next-hop is unchanged.
- IPv6 route updates over IPv4 peering.
- E-BGP scales to 192 peers with BFD.

##### 64-way ECMP

##### User-configurable MAC addresses (16) on routed interfaces

### Multicast Features

IGMPv1, v2, and v3

IGMP snooping

Protocol-Independent Multicast (PIM) sparse mode (PIM-SM) and Any Source Multicast (ASM)

Anycast Routing Protocol (Anycast RP)

Multicast Source Discovery Protocol (MSDP)

### Availability Features

Single binary image across Nexus 9300 and Nexus 9500 Switches

Fault isolation per process

Process patching

Stateless process restart

### Comprehensive Monitoring Features

Cisco Generic Online Diagnostics (GOLD)

- Complete, bypass, on-demand, and health checks

Onboard fault logging (OBFL)

Cisco Embedded Event Manager (EEM): Scheduler, monitor, and event manager

Integrated packet capture and analysis with Wireshark

Default SSD (chassis supervisor and ToR) for logging and data capture

SPAN

- Source and destination on switch

ERSPAN

- Ingress ACL filtering

### Virtualization Support Features

VXLAN gateway

VXLAN bridging

### Security Features

Ingress and egress ACLs using Layer 2, 3, and 4 fields

- Extended ACLs, MAC addresses, port ACL (PAACL), VLAN ACL (VAACL), and routed ACL (RAACL)
- Flexible ACL carving

ACL counters

Storm control

- Broadcast, multicast, and unknown unicast

User-configurable Control-Plane Policing (CoPP)

Authentication, authorization, and accounting (AAA)

- Challenge Handshake Authentication Protocol (CHAP), Password Authentication Protocol (PAP), Microsoft MS-CHAP, and MS-CHAPv2
- Capability to disable role-based access control (RBAC) and use AAA server authentication
- RBAC integration to replace privilege levels
- Logging
- Test parameters
- VRF context support
- LDAP support

RADIUS

RBAC

TACACS+



## Interface Types

Layer 2 switch port

- Access and trunk (VLAN list and native VLAN tagged and untagged)

Layer 3 routed

Loopback interface

Switched virtual interface (SVI)

PortChannel

- Static mode
- IEEE 802.3ad LACP
- Load balancing
- Minimum number of links

Lay 3 port subinterface

## QoS Features

Up to 8 queues per port

Modular QoS command-line interface (CLI; MQC)

ACL-based classification

Marking and classification

- Differentiated services code point (DSCP) on switch
- Class of service (CoS)
- CoS preservation for Remote Direct Memory Access (RDMA) over Converged Enhanced Ethernet (RoCEE)

Policing

- Ingress

Explicit congestion notification (ECN)

Weighted Random Early Detection (WRED)

Priority flow control (PFC) with support for up to 3 PFC classes

## Device Management Features

POAP

Configuration rollback

Configuration session manager

FTP, SFTP, and TFTP client

Network Time Protocol (NTP)

- Client, peer, server, ACL, and authentication

Remote copy (RCP) and secure copy (SCP) client

Remote monitor (RMON)

Cisco Smart Call Home

Simple Network Management Protocol (SNMP) v1, v2, and v3

Syslog

Virtual terminal (vty)

XML (Netconf)

Secure Shell (SSH) v2 (client and server)

Telnet (client and server)

USB port

100/1000 bps management port

Support for **copy <file> start**

Locator LED (beacon)

Supported in Cisco DCNM LAN and Cisco Prime™ Infrastructure

Supported in Cisco networking plug-in for OpenStack

Extensibility and Programmability Features
Linux tools <ul style="list-style-type: none"> <li>• Bash shell access</li> <li>• Broadcom shell access</li> </ul> Python shell NX-API Extensible Messaging and Presence Protocol (XMPP) client*
Standards Compliance
IEEE 802.1D Bridging and Spanning Tree IEEE 802.1p QoS/CoS IEEE 802.1Q VLAN Tagging IEEE 802.1w Rapid Spanning Tree IEEE 802.1s Multiple Spanning Tree Protocol IEEE 802.1AB Link Layer Discovery Protocol IEEE 802.3ad Link Aggregation with LACP IEEE 802.3ab 1000BASE-T IEEE 802.3z Gigabit Ethernet IEEE 802.3ae 10 Gigabit Ethernet IEEE 802.3ba 40 Gigabit Ethernet RFC 2460 IPv6 RFC 2461 Neighbor Discovery for IPv6 RFC 2462 IPv6 Stateless Address Autoconfiguration RFC 2463 ICMPv6
SNMP MIBs
Cisco NX-OS Software Release 6.2 equivalent * Support post FCS via software upgrade

## Regulatory Standards Compliance

Table 5 summarizes regulatory standards compliance for the Cisco Nexus 3100 Series.

**Table 5.** Regulatory Standards Compliance: Safety and EMC

Specification	Description
<b>Regulatory compliance</b>	<ul style="list-style-type: none"> <li>• Products should comply with CE Markings per directives 2004/108/EC and 2006/95/EC</li> </ul>
<b>Safety</b>	<ul style="list-style-type: none"> <li>• UL 60950-1 Second Edition</li> <li>• CAN/CSA-C22.2 No. 60950-1 Second Edition</li> <li>• EN 60950-1 Second Edition</li> <li>• IEC 60950-1 Second Edition</li> <li>• AS/NZS 60950-1</li> <li>• GB4943</li> </ul>
<b>EMC: Emissions</b>	<ul style="list-style-type: none"> <li>• 47CFR Part 15 (CFR 47) Class A</li> <li>• AS/NZS CISPR22 Class A</li> <li>• CISPR22 Class A</li> <li>• EN55022 Class A</li> <li>• ICES003 Class A</li> <li>• VCCI Class A</li> <li>• EN61000-3-2</li> <li>• EN61000-3-3</li> <li>• KN22 Class A</li> <li>• CNS13438 Class A</li> </ul>

Specification	Description
EMC: Immunity	<ul style="list-style-type: none"> <li>• EN55024</li> <li>• CISPR24</li> <li>• EN300386</li> <li>• KN24</li> </ul>

## Ordering Information

Table 6 provides ordering information for the Cisco Nexus 3164Q.

**Table 6.** Ordering Information

Part Number	Description
<b>Chassis</b>	
<b>N3K-C3164Q-40GE</b>	Nexus 3164Q, 64 QSFP+ ports, 2RU switch
<b>N9K-C9300-FAN3</b>	Nexus 3164 Fan Module, Port side intake
<b>N9K-PAC-1200W</b>	Nexus 3164 1200W AC Power Supply, Port side intake
<b>Software Licenses</b>	
<b>N3K-LAN1K9</b>	Nexus 3164 Layer 3 LAN Enterprise License
<b>Spares</b>	
<b>N3K-C3164Q-40GE=</b>	Nexus 3164Q, 64 QSFP+ ports, 2RU switch, Spare
<b>N9K-C9300-FAN3=</b>	Nexus 3164 Fan Module, Port side intake, Spare
<b>N9K-PAC-1200W=</b>	Nexus 3164 1200W AC Power Supply, Port side intake
<b>Cables and Optics</b>	
<b>QSFP-40G-SR-BD</b>	Cisco QSFP40G BiDi Short-reach Transceiver
<b>QSFP-40GE-LR4</b>	40GBASE-LR4 QSFP+ transceiver module for SMF, 4 CWDM lanes in 1310 nm window Muxed inside module, duplex LC connector, 10 km reach
<b>QSFP-40G-CSR4</b>	QSFP 4 x 10GBASE-SR transceiver module, MPO, 300m
<b>QSFP-40G-SR4</b>	40GBASE-SR4 QSFP Transceiver Module with MPO Connector
<b>QSFP-H40G-AOC1M</b>	QSFP 40G Active Optical Cable 1m
<b>QSFP-H40G-AOC2M</b>	QSFP 40G Active Optical Cable 2m
<b>QSFP-H40G-AOC3M</b>	QSFP 40G Active Optical Cable 3m
<b>QSFP-H40G-AOC5M</b>	QSFP 40G Active Optical Cable 5m
<b>QSFP-H40G-AOC7M</b>	QSFP 40G Active Optical Cable 7m
<b>QSFP-H40G-AOC10M</b>	QSFP 40G Active Optical Cable 10m
<b>QSFP-4x10G-AOC1M*</b>	QSFP to 4 x SFP 10Gbps Active Optical Cable 1m
<b>QSFP-4x10G-AOC2M*</b>	QSFP to 4 x SFP 10Gbps Active Optical Cable 2m
<b>QSFP-4x10G-AOC3M*</b>	QSFP to 4 x SFP 10Gbps Active Optical Cable 3m
<b>QSFP-4x10G-AOC5M*</b>	QSFP to 4 x SFP 10Gbps Active Optical Cable 5m
<b>QSFP-4x10G-AOC7M*</b>	QSFP to 4 x SFP 10Gbps Active Optical Cable 7m
<b>QSFP-4x10G-AOC10M*</b>	QSFP to 4 x SFP 10Gbps Active Optical Cable 10m
<b>QSFP-H40G-CU1M</b>	40GBASE-CR4 Passive Copper Cable, 1m
<b>QSFP-H40G-CU3M</b>	40GBASE-CR4 Passive Copper Cable, 3m
<b>QSFP-4SFP10G-CU1M</b>	QSFP to 4xSFP10G Passive Copper Splitter Cable, 1m
<b>QSFP-4SFP10G-CU3M</b>	QSFP to 4 x SFP 10-Gbps passive copper splitter cable, 3m
<b>QSFP-4SFP10G-CU5M</b>	QSFP to 4xSFP10G Passive Copper Splitter Cable, 5m

\* 40G breakout is supported in future software release

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## Service and Support

Cisco offers a wide range of services to help accelerate your success in deploying and optimizing the Cisco Nexus 3100 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 operation 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<sup>®</sup> 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 Cisco Smart Call Home service capability, which offers proactive diagnostics and real-time alerts on your Cisco Nexus 3100 Series Switches. Spanning the entire network lifecycle, Cisco Services helps increase investment protection, optimize network operations, support migration operations, and strengthen your IT expertise.

## Cisco Capital

### Financing to Help You Achieve Your Objectives

Cisco Capital can help you acquire the technology you need to achieve your objectives and stay competitive. We can help you reduce CapEx. Accelerate your growth. Optimize your investment dollars and ROI. Cisco Capital financing gives you flexibility in acquiring hardware, software, services, and complementary third-party equipment. And there's just one predictable payment. Cisco Capital is available in more than 100 countries. [Learn more.](#)

## For More Information

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



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