Cisco Nexus C36180YC-R Switch

Product Overview

The Cisco Nexus® C36180YC-R is a high-speed, high-density, 1, 10, 25, 40, or 100 Gigabit Ethernet switch designed for data center aggregation. The large buffers and routing table sizes of the Cisco Nexus C36180YC-R also make this switch an alternative for a wide range of applications, such as IP storage, Demilitarized Zone (DMZ), big data, and edge routing. The switch comes in a compact 1-Rack-Unit (1RU) form factor and provides extensive Layer 2 and Layer 3 functions. It is part of the R-Series family and runs the industry-leading NX-OS operating system software.

The comprehensive programmability features enable organizations to run today's applications while also preparing them for demanding and changing application needs. The Cisco Nexus C36180YC-R supports both forward and reverse (port-side exhaust and port-side intake) airflow schemes with AC and DC power inputs.

The Cisco Nexus C36180YC-R (Figure 1) is a Small Form-Factor Pluggable (SFP) and Quad SFP (QSFP) switch with 48 SFP and 6 QSFP28 ports. Each SFP port can operate at 1, 10, or 25 Gigabit Ethernet and each QSFP28 can operate at 100 or 40 Gigabit Ethernet or in a breakout cable configuration[1]. 6 QSFP28 ports can supports the IEEE 802.1ae MAC Security (MACSec) standard.

Figure 1.   Cisco Nexus C36180YC-R Switch

Main Benefits

The Cisco Nexus C36180YC-R provides the following:

- **Wire-rate Layer 2 and 3 switching on all ports,** with up to 1.8 Terabits per second (Tbps) and up to 1.67 billion packets per second (bpps)
- **Programmability,** with support for Cisco® NX-API, Linux containers, Extensible Markup Language (XML), and JavaScript Object Notation (JSON) Application Programming Interfaces (APIs), the OpenStack plug-in, Python, and Puppet and Chef configuration and automation tools
- **High performance and scalability** with a 6-core CPU, 32 GB of DRAM, and 8 GB of dynamic buffer allocation, making the switch excellent for massively scalable data centers and big data applications
- **Flexibility:**
  ◦ Both fiber and copper cabling solutions are available for 1-, 10-, 25-, 40-, 50-, and 100-Gbps connectivity, including Active Optical Cable (AOC) and Direct-Attached Cable (DAC)
  ◦ The QSFP28 ports can be configured to work as 4 x 25-Gbps or 4 x 10-Gbps ports

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[1] Please refer to the software release note and optics support page for more details.

- **High availability:**
  - Virtual PortChannel (vPC) technology provides Layer 2 multipathing by eliminating the Spanning Tree Protocol. It also enables fully used bisectional bandwidth and simplified Layer 2 logical topologies without the need to change the existing management and deployment models
  - Advanced maintenance capabilities include hot and cold patching and Graceful Insertion and Removal (GIR) mode
  - The switch uses hot-swappable Power-Supply Units (PSUs) and fans
- **NX-OS operating system with comprehensive, proven innovations:**
  - Power-On 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
  - 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 C36180YC-R has the following configuration:

- 48 ports 1, 10, or 25 Gigabit Ethernet SFP
- 6 ports 100 Gigabit Ethernet QSFP28. All the 6 ports support wire-rate MACSec encryption.
- Locator LED
- Environment LED
- Status LED
- Dual redundant power supplies
- One 10-, 100-, or 1000-Mbps management port (cooper or fiber)
- One RS-232 serial console port
- One USB port

Transceiver and Cabling Options

The Cisco Nexus C36180YC-R has 48 SFP ports. With support of a wide range of speed, from 1-, 10-, or 25-Gbps SFP, with support for both fiber and copper cabling solutions.

The Cisco Nexus C36180YC-R has 6 QSFP ports. QSFP28 technology allows a smooth transition from 40 to 100 Gigabit Ethernet infrastructure in data centers. Each of the switch QSFP28 ports can operate in either native 100 Gigabit Ethernet mode or 4 x 25 Gigabit Ethernet mode. This switch supports both fiber and copper cabling solutions for these two modes.

Please refer to the latest compatibility matrix for information about all supported optics:

https://www.cisco.com/c/en/us/support/interfaces-modules/transceiver-modules/products-device-support-tables-list.html

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

Cisco NX-OS Software Benefits

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

Focused on the requirements of the data center, 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, NX-OS provides state-of-the-art implementations of relevant networking standards as well as a variety of true data center-class Cisco innovations.

Table 1 summarizes the benefits that NX-OS offers, and Table 2 lists NX-OS packages available for the Cisco Nexus C36180YC-R.

Table 1.   Benefits of Cisco NX-OS Software

Feature	Benefit
Software compatibility: 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: NX-OS is designed to support distributed multithreaded processing. Its 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. A real-time preemptive scheduler that helps ensure timely processing of critical functions governs the modular processes.	• Robust software • Fault tolerance • Increased scalability • Increased network availability
Troubleshooting and diagnostics: NX-OS is built with innovative serviceability functions to enable 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.	• Quick problem isolation and resolution • Continuous system monitoring and proactive notifications • Improved productivity of operations teams
Ease of management: NX-OS provides a programmatic XML interface based on the NETCONF industry standard. The NX-OS XML interface provides a consistent API for devices. NX-OS also supports Simple Network Management Protocol (SNMP) Versions 1, 2, and 3 MIBs. In addition, NX-API and Linux Bash are now supported.	• Rapid development and creation of tools for enhanced management • Comprehensive SNMP MIB support for efficient remote monitoring
Role-Based Access Control (RBAC): With RBAC, 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.	• Tight access control mechanism based on user roles • Improved network device security • Reduction in network problems arising from human errors

Table 2.   Cisco NX-OS Software Packages Available for Cisco Nexus C36180YC-R[*]

Packaging	Chassis Based	Part Number	Supported Features
Cisco Nexus C36180YC-R Enhanced Layer 3 license	Chassis	N3K-LAN1K9	Layer 3 including full OSPF, EIGRP, BGP

[*] Cisco Nexus C36180YC-R uses the Cisco Nexus 9000 Licensing scheme. For more information please refer to https://www.cisco.com/c/en/us/td/docs/switches/datacenter/sw/nx-os/licensing/guide/b_Cisco_NX-OS_Licensing_Guide/b_Cisco_NX-OS_Licensing_Guide_chapter_01.html#con_24753.

Product Specifications

Table 3 lists the specifications for the Cisco Nexus C36180YC-R.

Table 3.   Specifications

Description	Specification	
Physical	• 1RU fixed-form-factor switch • 48 SFP ports; each supports native 25, 10, or 1 Gigabit Ethernet mode • 6 QSFP28 ports; each supports native 100 Gigabit Ethernet and 4 x 25 Gigabit Ethernet modes • 2 redundant power supplies • Management, console, and USB flash-memory ports	
Performance	• 1.8-Tbps switching capacity • Forwarding rate of up to 1.67 bpps • Line-rate traffic throughput (both Layer 2 and 3) on all ports, for packet size bigger than 115B • Configurable Maximum Transmission Unit (MTU) of up to 9216 bytes (jumbo frames)	
Hardware tables and scalability[*]	Number of MAC addresses	750,000
	Number of VLANS	4096
	Number of spanning-tree instances	• Rapid Spanning Tree Protocol (RSTP): 512 • Multiple Spanning Tree Protocol (MSTP): 64
	Number of ACL entries	• 7000 ingress
	Routing table[*]	• Maximum number of Longest-Prefix-Match (LPM) routes: 256,000 • Maximum number of IP host entries: 750,000 • Maximum number of MAC address entries: 750,000 • Maximum number of Layer 3 multicast entries: 128,000
	Number of EtherChannels	256 (with vPC)
	Number of ports per EtherChannel	32
	Buffer size	8 GB
	System memory	32 GB
	Boot-flash memory	128 GB
	Frequency	50 to 60 Hz
Power	Power-supply types	AC (forward and reverse airflow) DC (port-side exhaust)**
	Typical operating power	Watts (W)
	Maximum power	771W
	AC Power-Supply Units (PSUs) • Input voltage • Frequency Efficiency	• 100 to 240 VAC • 50 to 60 Hz 89 to 91% at 220V
	• Power-supply efficiency	• 89 to 91% at 220V
	Maximum heat dissipation	2,631MBTU

	• Forward and reverse airflow schemes
	  ◦ Forward airflow: Port-side exhaust (air enters through fan tray and power supplies and exits through ports)
	  ◦ Reverse airflow: Port-side intake (air enters through ports and exits through fan tray and power supplies)
	Hot-swappable (must swap within 1 minute)	

Description	Specification	
Cooling	Measured sound power (maximum) • Fan speed: 40% duty cycle • Fan speed: 70% duty cycle • Fan speed: 100% duty cycle	
Sound	Dimensions (Height x Width x Depth)	1.72 x 17.3 x 26.85 in. (4.4 x 43.9 x 68.2 cm)
Environment	Weight	27.1 lb (12.3 kg)
	Temperature: Operating	32 to 104°F (0 to 40°C)
	Temperature: Storage	–40 to 158°F (–40 to 70°C)
	Relative humidity: Operating	• 10 to 85% noncondensing • Up to 5 days at maximum (85%) humidity Recommend American Society of Heating, Refrigeration, and Air-Conditioning Engineers (ASHRAE) data center environment
	Relative humidity: Storage	• 5 to 95% noncondensing
	Altitude	0 to 10,000 ft (0 to 3000m)

* Denotes Application-Specific Integrated Circuit (ASIC) capabilities; please refer to Cisco Nexus 3600 Series Verified Scalability Guide documentation for exact scalability numbers validated for specific software releases: https://www.cisco.com/en/US/products/ps11541/products_installation_and_configuration_guides_list.html.

**Cannot mix High Voltage and normal power supplies

Software Features

Please refer to the latest release notes for a list of software features supported on Nexus 3600 platform:

https://www.cisco.com/c/en/us/support/switches/nexus-3000-series-switches/products-release-notes-list.html.

Standards

Table 4 lists management standards supported by the Cisco Nexus 3600 platform.

Table 4.   Management and Standards Support

Description	Specification	
MIB support	**Generic MIBs** • SNMPv2-SMI • CISCO-SMI • SNMPv2-TM • SNMPv2-TC • IANA-ADDRESS-FAMILY-NUMBERS-MIB • IANA-Type-MIB • IANA iprouteprotocol-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 • CISCO-CLASS-BASED-QOS-MIB **Ethernet MIBs** • CISCO-VLAN-MEMBERSHIP-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

Description	Specification	
	• LLDP-MIB • IP-MULTICAST-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	• TCP-MIB • OSPF-MIB • BGP4-MIB • CISCO-HSRP-MIB
Standards	• IEEE 802.1D: Spanning Tree Protocol • IEEE 802.1p: Class-of-Service (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: Link Layer Discovery Protocol (LLDP)	
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 • RFC 5549: BGP IPv4 NLRIs with an IPv6 next hop **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)	

Description	Specification
	• RFC 791: IP
	• RFC 792: 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
	• 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

Regulatory Standards Compliance

Table 5 summarizes regulatory standards compliance for the Cisco Nexus 3600 platform.

Table 5.   Regulatory Standards Compliance: 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 • CAN/CSA-C22.2 No. 60950-1EN 60950-1 • IEC 60950-1AS/NZS 60950-1GB4943
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	• EN50082-1 • EN61000-6-1 • EN55024 • CISPR24 • EN300386 • KN 61000-4 series

Ordering Information

Table 6 provides ordering information for the Cisco Nexus C36180YC-R.

Table 6. Ordering Information

Part Number	Description
Chassis	
N3K-C36180YC-R	Nexus 36180YC-R, 48p 10/25G and 6p QSFP28
NXA-FAN-65CFM-PI	Nexus Fan, 65CFM, port side intake airflow
NXA-FAN-65CFM-PE	Nexus Fan, 65CFM, port side exhaust airflow
NXA-PAC-1100W-PE2	Nexus AC 1100W PSU - Port Side Exhaust
NXA-PHV-1100W-PI	Nexus 1100W Platinum HV-AC-DC PS, Port side Intake airflow
NXA-PHV-1100W-PE	Nexus 1100W Platinum HV-AC-DC PS, Port side Exhaust airflow
NXA-PAC-1100W-PI2	Nexus AC 1100W PSU - Port Side Intake
Software Licenses	
N3K-LAN1K9	Nexus 3000 LAN Enterprise License
Spares	
N3K-C36180YC-R =	Nexus 36180YC-R, 48p 10/25G and 6p QSFP28, Spare
NXA-FAN-65CFM-PI=	Nexus Fan, 65CFM, port side intake airflow, Spare
NXA-FAN-65CFM-PE=	Nexus Fan, 65CFM, port side exhaust airflow, Spare
NXA-PAC-1100W-PE2=	Nexus AC 1100W PSU - Port Side Exhaust, Spare
NXA-PHV-1100W-PI=	Nexus 1100W Platinum HV-AC-DC PS, Port side Intake airflow, Spare
NXA-PHV-1100W-PE=	Nexus 1100W Platinum HV-AC-DC PS, Port side Exhaust airflow, Spare
NXA-PAC-1100W-PI2=	Nexus AC 1100W PSU - Port Side Intake, Spare

Services and Support

Cisco offers a wide range of services to help accelerate your success in deploying and optimizing the Cisco Nexus 3600 platform switches in your data center. The innovative Cisco Services offerings are delivered through a unique combination of people, processes, tools, and partners, and they focus on helping you increase operation efficiency and improve your data center network. Cisco Advanced Services use 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 Cisco Smart Call Home service capability, which offers proactive diagnostics and real-time alerts on your Cisco Nexus 3600 platform switches. Spanning the entire network lifecycle, Cisco Services help 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® financing 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 https://www.cisco.com/go/nexus3000.

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