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Cisco Nexus 34180YC and 3464C Programmable Switches

Contents

Product overview

The Cisco Nexus® 34180YC and 3464C programmable switches (Figures 1 and 2) are high-speed, low-power, high-density fixed data center switch. Joining the industry's widely deployed Cisco Nexus 3000 Series portfolio, they support enterprise applications, service provider hosting, financial networks applications, and secured cloud computing environments. These switches support a wide range of port speeds, with flexible combinations of 10-, 25-, 40-, and 100-Gigabit Ethernet connectivity and improved scalability and configurability because of the switch's capacity to modify and customize packet-forwarding behavior.

The Cisco Nexus 34180YC and 3464C platforms run the industry-leading Cisco® NX-OS network software operating system, which helps ensure continuous availability and sets the standard for mission-critical data center environments. The platforms are designed for programmable fabric, which offers flexibility, mobility, and scalability for service providers and Infrastructure-as-a-Service (IaaS) and cloud providers; and for programmable networks, which automate configuration and management for customers who want to take advantage of the DevOps operating model and tool sets. They are well suited for data centers that require cost-effective, power-efficient, line-rate Layer 2 and 3 Top-of-Rack (ToR) switches. These switches also support forward and reverse airflow (port-side exhaust and port-side intake) schemes with AC and DC power inputs.

Figure 1.
Cisco Nexus 34180YC switch

Figure 2.
Cisco Nexus 3464C switch

Features and benefits

The Cisco Nexus 34180YC and 3464C provide the following benefits:

- **Wire-rate Layer 2 and 3 switching on all ports**, with up to 3.6 Terabits per second (Tbps) and up to 1.4 billion packets per second (bpps) for the 34180YC model, and up to 12.8 Tbps and 5.2 bpps for the 3464C model.
- **NXOS 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.

- **Forwarding pipeline programmability** allows customers to implement a breadth of packet-forwarding and filtering use cases with the same hardware. These implementations are made possible by the switch's capacity to flexibly allocate hardware resources and define custom match-action logic. They take shape in the form of profiles selectable through Cisco NX-OS software. In addition, chipset programmability provides customers with investment protection as it extends the product's lifecycle with the possible support of all existing and future packet encapsulation and decapsulation formats. It allows customers to innovate at the speed of software development.
- **Inband Network Telemetry (INT)** is a framework that enables the collection and reporting of network states at wire-rate, by the data plane, without requiring the intervention of the control plane. Telemetry is the foundation of network automation; combined with pipeline reprogramming, it is used to close the loop on correcting anomalies and rebalancing workloads across network resources. Telemetry data for a given packet is cumulated at every node and inserted into the packet header. It is then collected by a destination switch and exported to an analytics engine. Telemetry information includes, but is not limited to, aggregate buffer usage and latency data across the network, microburst tracking and aggressor flow detection, and packet path tracing and drop history. Alternately, the framework supports a postcard mode that allows reporting of network states on a node by node basis.
- **Deep header and packet parsing** beyond the traditional 128B allows for monitoring application transactions and may be used to define new metadata, which in turn enables customers to fine-tune the match-action logic to a desired forwarding or filtering behavior.
- **Precision Time Protocol (PTP)** as per IEEE 1588 provides accurate clock synchronization and improved data correlation with network captures and system events.
- **High-availability, provisioning, and advanced maintenance capabilities:** This switch supports hot and cold patching and Graceful Insertion and Removal (GIR) mode. Power-on Auto Provisioning (POAP) enables touchless bootup and configuration of the switch, drastically reducing provisioning time. The switch uses hot-swappable Power Supply Units (PSUs) and fans.

Table 1 lists the hardware platform specifications.

Table 1. Cisco Nexus 34180YC and 3464C platforms specifications

Feature	Nexus 34180YC	Nexus 3464C
Ports	48 x SFP+/SFP28 and 6 x QSFP+/QSFP28 ports	64 x QSFP+/QSFP28 ports and 2 x SFP+
Port speeds	10 and 25 Gb on SFP ports 40, 4x10, 100, and 4x25 Gb on QSFP ports	40, 4x10, 100, and 4x25 Gb on QSFP ports 10 Gb on SFP ports
CPU	4 cores	4 cores
System memory	16 GB	16 GB
SSD drive	128 GB	128 GB
System buffer	20 MB	22 MB
Management ports	2 ports: 1 RJ-45 and 1 SFP	2 ports: 1 RJ-45 and 1 SFP
USB ports	1	1
RS-232 serial ports	1	1

Feature	Nexus 34180YC	Nexus 3464C
Power supplies (up to 2)	500W AC, 930W DC, or 1200W HVAC/HVDC	1200W AC, 930W DC, or 1200W HVAC/HVDC
Typical power (AC/DC)	190W	460W
Maximum power (AC/DC)	350W	1000W
Input voltage AC	100 to 240V	100 to 240V
Input voltage (High-Voltage AC [HVAC])	200 to 277V	200 to 277V
Input voltage DC	–48 to –60V	–48 to –60V
Input voltage (High-Voltage DC [HVDC])	–240 to –380V	–240 to –380V
Frequency (AC)	50 to 60Hz	50 to 60Hz
Fans	4	3
Airflow	Port-side intake and exhaust	Port-side intake and exhaust
Physical dimensions (H x W x D)	1.72 x 17.3 x 22.5 in. (4.4 x 43.9 x 57.1 cm)	3.38 x 17.4 x 22.5 in. (8.6 x 44.1 x 57.1 cm)
Weight	18.4 lb. (8.4 kg)	35.4 lb. (16.1 kg)
Acoustics	63.9 dBA at 50% fan speed, 68.9 dBA at 70% fan speed, and 77.4 dBA at 100% fan speed	80.2 dBA at 50% fan speed, 88.7 dBA at 70% fan speed, and 99.5 dBA at 100% fan speed
RoHS compliance	Yes	Yes
MTBF	347,890 hours	341,480 hours

Transceiver and cabling options

The Cisco Nexus 34180YC and 3464C switches support a variety of 100-, 40-, 25- and 10- Gigabit Ethernet optics. All forward error correction (FEC) modes required for the support of 25-Gb and 100-Gb interfaces are supported. Please refer to the latest compatibility matrix for information about all supported optics:

- 100-Gigabit Ethernet compatibility matrix:
  https://www.cisco.com/c/en/us/td/docs/interfaces_modules/transceiver_modules/compatibility/matrix/100GE_Tx_Matrix.html

- 40-Gigabit Ethernet compatibility matrix:
  https://www.cisco.com/c/en/us/td/docs/interfaces_modules/transceiver_modules/compatibility/matrix/40GE_Tx_Matrix.html

25-Gigabit Ethernet compatibility matrix:
https://www.cisco.com/c/en/us/td/docs/interfaces_modules/transceiver_modules/compatibility/matrix/25GE_Tx_Matrix.html

- 10-Gigabit Ethernet compatibility matrix:
https://www.cisco.com/c/en/us/td/docs/interfaces_modules/transceiver_modules/compatibility/matrix/10GE_Tx_Matrix.html

Cisco NX-OS Software

NX-OS is a data center–class operating system built with modularity, resiliency, and serviceability at its foundation. NX-OS 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 provides 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.

Cisco NX-OS minimum software requirement and features for Cisco Nexus 34180YC and 3464C

The Cisco Nexus 34180YC switch is supported by Cisco NX-OS Software Release 9.2(2) and later. The Cisco Nexus 3464C switch is supported by Cisco NX-OS release 9.2(3) and later. NX OS interoperates with any networking OS, including Cisco IOS Software, that conforms to the networking standards mentioned in this data sheet.

Please refer to the latest release notes for a list of software features supported by the Nexus 34180YC platform: https://www.cisco.com/c/en/us/support/switches/nexus-3000-series-switches/products-release-notes-list.html.

Cisco NX-OS Software packages and licensing for Cisco Nexus 34180YC and 3464C

The software packages available for the Cisco Nexus 34180YC and 3464C platforms offer flexibility and comprehensive feature sets while being consistent with the Cisco Nexus access switches. The default system software has comprehensive Layer 2 feature sets, with extensive security and management features. To enable Layer 3 IP routing functions, an additional license must be installed, as described in Table 2.

Table 2. Software licensing for Cisco Nexus 34180YC and 3464C platforms

Software package	Features supported
LAN Enterprise license (N3K-LAN1K9)	• Layer 3 features, including full OSPF, EIGRP, and BGP for Nexus 34180YC
LAN Enterprise license (N3K-LAN2K9)	• Layer 3 features, including full OSPF, EIGRP, and BGP for Nexus 3464C
Streaming Telemetry license (N3K-STR1K9)	• INT and postcard telemetry for Nexus 34180YC
Streaming Telemetry license (N3K-STR2K9)	• INT and postcard telemetry for Nexus 3464C

Software package	Features supported
Cisco Nexus Data Broker license (NDB-FX-SWT-K9)*	• License for using the TAP and SPAN aggregation functions with Cisco Nexus Data Broker

* Consult your Cisco representative or release notes for availability and software requirements.

Scalability

Table 3 lists scale numbers for each forwarding or filtering profile.

Table 3. Cisco Nexus 34180YC and 3464C scale

Maximum scale	Classic L2/L3 profile	L3-heavy profile
MAC addresses	32k	2k
VLAN	4k	4k
Multiple Spanning Tree (MST) instances	64	64
Hot-Standby Router Protocol (HSRP) groups	490	490
Active SPAN sessions	64	64
ECMP paths	32-way, 1k group	32-way, 1k group
Virtual Routing and Forwarding (VRF) instances	1k	1k
IPv4 hosts	32k	64k
IPv4 LPM	4k	64k
Multicast routes	8k	–
ACL entries	7k ingress	1k ingress
Inband Network Telemetry (INT)	1k watch list, 256 drop list	1k watch list, 256 drop list

Cisco Data Center network manager

The Cisco Nexus 3000 Series switches are supported in Cisco Data Center Network Manager (DCNM). DCNM is designed for the Cisco Nexus hardware platforms, which are enabled for NX-OS. 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, 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. DCNM automates the provisioning process, proactively monitors the LAN by detecting performance degradation, secures the network, and simplifies the diagnosis of dysfunctional network elements.

Cisco NEXUS data broker

The Cisco Nexus 3000 Series switches can be used with Cisco Nexus Data Broker to build a scalable and cost-effective traffic monitoring infrastructure using network TAPs and SPAN. This approach replaces the traditional purpose-built matrix switches with one or more OpenFlow-enabled Cisco Nexus switches. You can interconnect these switches to build a scalable TAP or SPAN aggregation infrastructure. You also can combine TAP and SPAN sources to bring the copy of the production traffic to this TAP or SPAN aggregation infrastructure. In addition, you can distribute these sources and traffic monitoring and analysis tools across multiple Cisco Nexus switches. For more details, visit https://www.cisco.com/go/nexusdatabroker.

Environmental properties

Table 4 lists the environmental properties for the Cisco Nexus 34180YC and 3464C switches.

Table 4.   Environmental properties for Cisco Nexus 34180YC and 3464C switches

Property	Description
Operating temperature	32 to 104° F (0 to 40° C)
Non-operating (storage) temperature	–40 to 158° F (–40 to 70° C)
Humidity	5 to 95% (noncondensing)
Altitude	0 to 13,123 ft (0 to 4000 m)

Regulatory standards compliance

Table 5 summarizes regulatory standards compliance for the Cisco Nexus 34180YC and 3464C platforms.

Table 5.   Regulatory standards compliance for Cisco Nexus 34180YC and 3464C 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

Specification	Description
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 provides ordering information for the Cisco Nexus 34180YC and 3464C switches.

Table 6. Ordering information

Part number	Description
Chassis	
N3K-C34180YC	Nexus 34180YC programmable switch, 48 10/25G SFP and 6 40/100G QSFP28 ports
N3K-C3464C	Nexus 3464C programmable switch, 64 40/100G QSFP28 ports
NXA-FAN-30CFM-F	Nexus 2K/3K single fan, forward airflow (port-side exhaust) for Nexus 34180YC
NXA-FAN-30CFM-B	Nexus 2K/3K single fan, reversed airflow (port-side intake) for Nexus 34180YC
NXA-FAN-160CFM-PE	Nexus fan, 160CFM (port-side exhaust) for Nexus 3464C
NXA-FAN-160CFM-PI	Nexus fan, 160CFM (port-side intake) for Nexus 3464C
NXA-PAC-500W-PE	Nexus 9000 500W AC PS, port-side exhaust for Nexus 34180YC
NXA-PAC-500W-PI	Nexus 9000 500W AC PS, port-side intake for Nexus 34180YC
NXA-PAC-1200W-PE	Nexus NEBs AC 1200W PSU - Port Side Exhaust for Nexus 3464C
NXA-PAC-1200W-PI	Nexus NEBs AC 1200W PSU - Port Side Intake for Nexus 3464C
NXA-PDC-930W-PE	Nexus 9000 930W DC PS, port-side exhaust
NXA-PDC-930W-PI	Nexus 9000 930W AC PS, port-side intake
N9K-PUV-1200W	Nexus 9300 1200W Universal Power Supply, bidirectional air flow and supports HVAC/HVDC
Software licenses	
N3K-LAN1K9	Nexus 3000 Layer 3 LAN Enterprise License for Nexus 34180YC
N3K-LAN2K9	Nexus 3000 Layer 3 LAN Enterprise License for Nexus 3464C
N3K-STR1K9	Telemetry license for Nexus 3000 platform
NDB-FX-SWT-K9	License for Tap/SPAN aggregation using Cisco Nexus Data Broker

Part number	Description
Spares	
NXA-FAN-30CFM-F=	Nexus 2K/3K single fan, forward airflow (port-side exhaust), spare
NXA-FAN-30CFM-B=	Nexus 2K/3K single fan, reversed airflow (port-side intake), spare
NXA-FAN-160CFM-PE=	Nexus fan, 160CFM (port-side exhaust), spare
NXA-FAN-160CFM-PI=	Nexus fan, 160CFM (port-side intake), spare
NXA-PAC-500W-PE=	Nexus 9000 500W AC PS, port-side exhaust, spare
NXA-PAC-500W-PI=	Nexus 9000 500W AC PS, port-side intake, spare
NXA-PAC-1200W-PE=	Nexus NEBs AC 1200W PSU - Port Side Exhaust, spare
NXA-PAC-1200W-PI=	Nexus NEBs AC 1200W PSU - Port Side Intake, spare
NXA-PDC-930W-PE=	Nexus 9000 930W DC PS, port-side exhaust, spare
NXA-PDC-930W-PI=	Nexus 9000 930W DC PS, port-side intake, spare
N9K-PUV-1200W=	Nexus 9300 1200W Universal Power Supply, bidirectional air flow and supports HVAC/HVDC, spare
N3K-C3064-ACC-KIT=	Nexus 3064PQ Accessory Kit for Nexus 34180YC
N9K-C9300-ACK=	Nexus 9300 accessory kit
NXK-ACC-RMK-2RU=	Nexus 3K/9K Fixed Rack Mount Kit front and rear removal

Warranty

The Cisco Nexus 3000 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).

Service and support

Cisco offers a wide range of services to help accelerate your success in deploying and optimizing the Cisco Nexus 3000 Series Switches 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 use an architecture-led approach to help you align your data center infrastructure with your business goals and achieve long-term value. Cisco SMARTnet™ 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 Services capability, which offers proactive diagnostics and real-time alerts on your Cisco Nexus 3000 Series Switches. Spanning the entire network lifecycle, Cisco Advanced Services help increase investment protection, optimize network operations, support migration operations, and strengthen your IT expertise.

Cisco Capital

Flexible payment solutions to help you achieve your objectives

Cisco Capital makes it easier to get the right technology to achieve your objectives, enable business transformation and help you stay competitive. We can help you reduce the total cost of ownership, conserve capital, and accelerate growth. In more than 100 countries, our flexible payment solutions can help you acquire hardware, software, services and complementary third-party equipment in easy, predictable payments. Learn more.

For more information

For more information about Cisco Nexus 3000 Series Switches, please visit https://www.cisco.com/go/nexus3000.

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