Cisco Network Convergence System 5500 Series: Modular Line Cards NC55-24X100G-SE

Product overview

Based on the Cisco Global Cloud Index, digitalization is projected to grow global data center and public/private cloud networks traffic more than 25 percent annually, resulting in a threefold increase by 2019. To help network providers meet these challenges, the Cisco® Network Convergence System 5500 Series is built with features such as extremely high port densities, deep packet buffering, and forwarding hardware optimized for these types of deployments.

The Cisco NCS 5500 Series modular chassis provides wide variety of combo line cards to address the customer's need to use flexible interfaces and port densities along with full bandwidth utilization of the forwarding ASIC. The Cisco NCS 5500 Series also offers a high-scaled line card, which improves the Forwarding Information Base (FIB) scale capabilities x8 times when compared with the base version of the line card. These line cards are capable of advanced packet forwarding, segment routing, programmable network management, and telemetry along with the robust and mature features already present in 64-bit Cisco IOS® XR Software.

The Cisco NC55-24X100G-SE line card (Figure 1) provides 24 ports of 100GE. This line card uses QSFP28/QSFP+ transceivers and is to be used in any of the NCS 5500 series of modular chassis. This card is designed for scale-enhanced configuration needs with expanded FIB, QoS, ACL, and so on.

Figure 1.   Cisco NCS 5500 Series 24-Port 100GE high-scale line card

Cisco IOS XR software overview

The Cisco NCS 5500 Series is powered by an industry-leading carrier-class 64-bit version of Cisco IOS XR Software designed on operational efficiency, optimized utilization, and service agility (evolved programmable network). Cisco IOS XR Software offers rich features such as iPXE boot, autoprovisioning, native support for third-party application hosting, machine-to-machine interface, telemetry, and flexible software package delivery.

For a complete list of supported features, refer to Cisco Feature Navigator.

Software requirements

These NCS 5500 Series line cards will be supported on the Cisco IOS XR Software Release 6.0.2 or later.

Specifications

Tables 1 through 5 list primary specifications for the Cisco NCS 5500 Series modular chassis.

Table 1. Features and benefits of Cisco NCS 5500 Series Line Cards (Cisco IOS XR Software 6.0.2 or Beyond)

Feature	Specification
Integrated interface	100GE, 40GE, and 10GE (using breakout cable) support 4x10G breakout using 40G transceiver
Industry-leading carrier-class Cisco IOS XR Software	Visibility and telemetry Machine-to-machine interface Application hosting Flexible platform and packaging Modularity Automation
Management ports	Provides easy access to system console
External USB port	Helps simplify image and file management
Embedded USB (eUSB) storage	Flash memory devices for storing software image, configuration, logging, and recovery
Power consumption	Ultralow power per Gigabit Ethernet
Redundancy	Redundant fan tray Redundant AC or DC power supply

Table 2. NCS 5500 Series 24 Ports of 100GE high-scale line card

Feature	Specification
PID	NC55-24X100G-SE
Specifications	• 24 ports 100 Gigabit Ethernet with high scale • 4 forwarding ASICs • FIB scale up 2M IPv4 or 512K IPv6 routes (FIB scale up to 2.75M IPv4 routes if combined with memory below) • On-chip tables for 750K IPv4 host routes, MAC, and labels • On-chip Ternary Content-Addressable Memory (TCAM) for network Access Control Lists (ACLs) and QoS
Power consumption	Typical: 678 watts Maximum: 940 watts
Physical specifications	Height: 1.68 in (4.27cm) Width: 16.89 in (42.9cm) Depth: 17.05 in (43.32cm) Weight: 15.3 lbs (6.94 kg) without optics
Mean Time Before Failure (MTBF)	157,570 hours

Table 3. NCS 5500 Series 24 Ports of 100GE high-scale line card optional license

Note: List of supported features is not exhaustive, and some features are supported in later software releases.

PID	Specification
NC55-L2VPN-LIC	NCS 5500 Series per 100G bandwidth L2VPN license on UNI ports • License for NNI ports is not necessary • EVPN • VPLS • VPWS • AC-AC Connect
NC55-L3VPN-LIC	NCS 5500 Series per 100G bandwidth L2VPN license on UNI ports • License for NNI ports is not necessary • MPLS VPN • Full Scale VRF

Table 4.   Software Feature Support on NCS 5500 Modular Chassis in Cisco IOS XR Software 6.0.2 Release or Beyond

Note: List of supported features is not exhaustive, and some features are supported in later software releases.

Description	Specification
Layer 2	• Layer 2 switch ports • IEEE 802.1Q VLAN encapsulation/Q-in-Q encapsulation • IEEE 802.1ad • Cisco bundle Ethernet technology (up to 32 ports per Ethernet bundle) • Link Aggregation Control Protocol (LACP): IEEE 802.3ad • Jumbo frames on all ports (up to 9216 bytes) • L2 ingress Access Control List (ACL) • L2 AC-AC cross-connect • Integrated Routing and Bridging (IRB) • Ethernet Flow Point (EFP) and VLAN trunks • Virtual Router Redundancy Protocol (VRRP)
Layer 3	• IPv4 and IPv6 unicast • Layer 3 interfaces: physical and subinterfaces • Routing protocols: static, Open Shortest Path First (OSPFv2), OSPFv3, Intermediate System to Intermediate System (ISIS), ISISv6, and Border Gateway Protocol (BGP) • 32-way Equal-Cost Multipath (ECMP) • L3 ingress and egress IPv4 ACL and IPv6 ACL • Bidirectional Forwarding Detection (BFD) • Cisco bundle Ethernet technology (up to 32 ports per Ethernet bundle) • Link Aggregation Control Protocol (LACP): IEEE 802.3ad • Jumbo frame support (up to 9216 bytes) • Virtual Router Redundancy Protocol (VRRP) • Layer 3 virtual private network (L3VPN)
MPLS	• Label switching • LDP • MPLS traffic engineering • Ethernet over MPLS (EoMPLS)
Segment routing	• Segment routing–based transport • ISIS extensions to segment routing • OSPF extensions to segment routing • BGP egress peering engineering • Segment Routing Traffic Engineering (SR-TE) • Segment routing Topology Independent Loop-Free Alternatives (TI-LFA)
Quality of Service (QoS)	• Quality of Service (QoS) • Ingress classification based on class of service (L2), IP differentiated service code point (L3), IP ACL (L3/L4), IP precedence (type of service) (L3) • DSCP marking • 8 number of queues for user traffic • Support for priority queuing

Description	Specification
Automation	• Zero-Touch Provisioning (ZTP), iPXE • Configuration management • Network Configuration Protocol (NETCONG/YANG model)
Security	• Provides comprehensive network security features, including ACLs; control-plane protection; management plane protection; routing authentications; Authentication, Authorization, and Accounting (AAA) and Terminal Access Controller Access-Control System Plus (TACACS+); Secure Shell (SSH) Protocol; SNMPv3; and RPL support • Layer 2 ingress ACLs • Layer 3 ingress ACLs
Management	• MIB, XML, JSON, GPB, and SNMP • MPLS OAM (label switched path [LSP] ping, LSP traceroute) • Ethernet OAM

Supported transceivers modules

Check the Cisco NCS 5500 Series supported transceivers module matrix.

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

Environment

Table 5. Environmental properties

Property	Cisco NCS 5500 Series
Operating temperature	32 to 104°F (0 to 40°C)
Nonoperating (storage) temperature	–40 to 158°F (–40 to 70°C)
Operating humidity	5% to 95% (noncondensing) **Note:** Not to exceed 0.024 kg water or dry air
Storage (relative) humidity	5% to 95% at 40°C per NEBS GR-63-Core **Note:** Not to exceed 0.024 kg water or dry air
Altitude	0 to 10,000 ft (0 to 3000m)
Power inputs	Worldwide ranging AC (90–265V; 50–60 Hz) Worldwide ranging DC (–40V to –72V)
Air flow	Front to back

Regulatory standards compliance

Table 6 describes regulatory standards compliance information.

Table 6. 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
Network Equipment Building Standards (NEBS)	Designed to meet GR-63-CORE and GR-1089-CORE
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 standards	• 47CFR Part 15 (CFR 47) Class A • AS/NZS CISPR22 Class A • CISPR22 Class A

Specification	Description
	• EN55022 Class A • ICES003 Class A • VCCI Class A • EN61000-3-2 • EN61000-3-3 • KN22 Class A • CNS13438 Class A
EMC immunity	• EN55024 • CISPR24 • EN300386 • KN 61000-4 series
RoHS	The product is RoHS-6 compliant with exceptions for leaded-ball grid-array (BGA) balls and lead press-fit connectors.

Get additional information related to NCS5500 regulatory compliance and safety standards.

Ordering information

Table 7 provides ordering information.

Table 7.   Ordering information for NCS 5500 Series Line Cards

Part Number	Subcomponent	Product Description
Hardware		
NC55-24X100G-SB		NCS 5500 Series 24 ports of 100GE scale base line card bundle
	NC55-24X100G-SE	NCS 5000 Series 24X100G scale enhanced line card
	NC55-24X100G-LIC	NCS 5500 Series 24X100G scale enhanced right to use license
NC55-24X100G-SB=		NCS 5500 Series 24 ports of 100GE scale base line card spare bundle
	NC55-24X100G-SE	NCS 5000 Series 24X100G scale base line card
	NC55-24X100G-LIC	NCS 5500 Series 24X100G right to use license
Software		
XR-NC55-P-06.00		Cisco IOS XR Software 6.0.2 release software image
XR-NC55-PK9-06.00		Cisco IOS XR Software 6.0.2 release software crypto image
Licenses		
NC55-L2VPN-LIC		NCS 5500 Series per 100G bandwidth L2VPN license on UNI ports
NC55-L3VPN-LIC		NCS 5500 Series per 100G bandwidth L3VPN license on UNI ports

Part number	Product description
Flexible Consumption Model Software Licenses	
ESS-100G-RTU-1	NCS 5500 Core & Aggregation Essentials SW RTU v1.0 100G
ADV-100G-RTU-1	NCS 5500 Core & Aggregation Advantage w/o Essentials SW RTU v1.0 100G
ADN-100G-RTU-1	NCS 5500 Core & Aggregation Advantage w/ Essentials SW RTU v1.0 100G
ESS-100G-SIA-3	NCS 5500 Core & Aggregation Essentials SIA per 100G 3-5 Year Subscription
ADV-100G-SIA-3	NCS 5500 Core & Aggregation Advantage w/o Essentials SIA per 100G 3-5 Year Subscription
ADN-100G-SIA-3	NCS 5500 Core & Aggregation Advantage w/ Essentials SIA per 100G 3-5 Year Subscription
ESS-100G-SIA-5	NCS 5500 Core & Aggregation Essentials SIA per 100G 5-10 Year Subscription
ADV-100G-SIA-5	NCS 5500 Core & Aggregation Advantage w/o Essentials SIA per 100G 5-10 Year Subscription
ADN-100G-SIA-5	NCS 5500 Core & Aggregation Advantage w/ Essentials SIA per 100G 5-10 Year Subscription

For details on the Cisco Network Convergence System 5500 Series Perpetual Software Licenses, refer to this data sheet and details on the flexible consumption model for the NCS 5500 Series are available in the data sheet for the IOS XR Software flexible consumption model.

Warranty

The Cisco NCS 5500 Series has 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 NCS 5500 Series. These innovative Cisco Services offerings are delivered through a unique combination of people, processes, tools, and partners, and they are focused on helping you increase operating 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 Cisco Smart Call Home service, which offers proactive diagnostics and real-time alerts on your Cisco NCS 5500 Series. Spanning the entire network lifecycle, Cisco Services offerings help increase investment protection, optimize network operations, support migration operations, and strengthen your IT expertise.

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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 the Cisco NCS 5500 Series, visit Cisco Network Convergence System 5500 Series.

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