

# Cisco Network Convergence System 5500 Series: Modular Line Cards NC55-24H12F-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 a 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 a 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 base versions 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 NC55-24H12F line card (Figure 1) provides 24 ports of 100G/40G and 12 ports of 40G ports for a total of 36 ports. 24 of the 36 ports can be upgraded to 100GE through a license on a per-port basis. This line card uses QSFP28/QSFP+ form factor transceivers and can 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 Ports 100GE and 12 Ports 40GE Base Line Card



## Cisco IOS XR Software Overview

The Cisco NCS 5500 Series is powered by the 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 iPX 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 6.1.2 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 6.1.2 or Beyond)

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

**Table 2.** NCS 5500 Series 24 Ports of 100GE and 12 Ports of 40GE High-Scale Line Card

Feature	Specification
<b>PID</b>	NC55-24H12F-SE
<b>Specifications</b>	<ul style="list-style-type: none"> <li>• 24 ports 100/40 Gigabit Ethernet and 12 ports 40GE QSFP28/QSFP+ line card with high scale</li> <li>• 4 forwarding ASICs</li> <li>• FIB scale up 2M IPv4 or 512K IPv6 routes (FIB scale up to 2.75M IPv4 routes if combined with memory below)</li> <li>• On-chip tables for 750K IPv4 host routes, MAC, and labels</li> <li>• On-chip ternary content-addressable memory (TCAM) for network access control lists (ACLs) and QoS</li> </ul>
<b>Power consumption</b>	Typical: 707 watts Maximum: 980 watts
<b>Physical specifications</b>	Height: 1.68 in (42.65mm) Width: 16.89 in (429.0mm) Depth: 17.05 in (433.17mm) Weight: 15.3 lbs (6.94 kg) without optics

**Table 3.** NCS 5500 Series 24 Ports of 100GE and 12 Ports of 40GE Base Scale Line Card Optional License

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

PID	Specification
<b>NC55-L2VPN-LIC</b>	NCS 5500 Series per 100G bandwidth L2VPN license on UNI ports <ul style="list-style-type: none"> <li>• License for NNI ports is not necessary</li> <li>• EVPN</li> <li>• VPLS</li> <li>• VPWS</li> <li>• AC-AC Connect</li> </ul>

PID	Specification
<b>NC55-L3VPN-LIC</b>	NCS 5500 Series per 100G bandwidth L2VPN license on UNI ports <ul style="list-style-type: none"> <li>• License for NNI ports is not necessary</li> <li>• MPLS VPN</li> <li>• Full Scale VRF</li> </ul>
<b>NC55-100G-SE-LIC</b>	NCS 5500 Series 40G to 100G scale enhanced upgrade license <ul style="list-style-type: none"> <li>• Applied on a per port basis</li> <li>• Applies to scale enhanced 40G ports</li> </ul>

**Table 4.** Software Feature Support on NCS 5500 Modular Chassis in Cisco IOS XR Software 6.1.2 Release or Beyond

Description	Specification
<b>Layer 2</b>	<ul style="list-style-type: none"> <li>• Layer 2 switch ports</li> <li>• IEEE 802.1Q VLAN encapsulation/Q-in-Q encapsulation</li> <li>• IEEE 802.1ad</li> <li>• Cisco bundle Ethernet technology (up to 32 ports per Ethernet bundle)</li> <li>• Link Aggregation Control Protocol (LACP): IEEE 802.3ad</li> <li>• Jumbo frames on all ports (up to 9216 bytes)</li> <li>• L2 ingress access control list (ACL)</li> <li>• L2 AC-AC cross-connect</li> <li>• Integrated routing and bridging (IRB)</li> <li>• Ethernet flow point (EFP) and VLAN trunks</li> <li>• Virtual Router Redundancy Protocol (VRRP)</li> </ul>
<b>Layer 3</b>	<ul style="list-style-type: none"> <li>• IPv4 and IPv6 unicast</li> <li>• Layer 3 interfaces: physical and subinterfaces</li> <li>• Routing protocols: static, Open Shortest Path First (OSPFv2), OSPFv3, Intermediate System to Intermediate System (ISIS), ISISv6, and Border Gateway Protocol (BGP)</li> <li>• 32-way equal-cost multipath (ECMP)</li> <li>• L3 ingress and egress IPv4 ACL and IPv6 ACL</li> <li>• Bidirectional forwarding detection (BFD)</li> <li>• Cisco bundle Ethernet technology (up to 32 ports per Ethernet bundle)</li> <li>• Link Aggregation Control Protocol (LACP): IEEE 802.3ad</li> <li>• Jumbo frame support (up to 9216 bytes)</li> <li>• Virtual Router Redundancy Protocol (VRRP)</li> <li>• Layer 3 virtual private network (L3VPN)</li> </ul>
<b>MPLS</b>	<ul style="list-style-type: none"> <li>• Label switching</li> <li>• LDP</li> <li>• MPLS traffic engineering</li> <li>• Ethernet over MPLS (EoMPLS)</li> </ul>
<b>Segment routing</b>	<ul style="list-style-type: none"> <li>• Segment routing–based transport</li> <li>• ISIS extensions to segment routing</li> <li>• OSPF extensions to segment routing</li> <li>• BGP egress peering engineering</li> <li>• Segment routing traffic engineering (SR-TE)</li> <li>• Segment routing topology-independent loop-free alternatives (TI-LFA)</li> </ul>
<b>Quality of service (QoS)</b>	<ul style="list-style-type: none"> <li>• Quality of service (QoS)</li> <li>• Ingress classification based on class of service (L2), IP differentiated services code point (L3), IP ACL (L3/L4), IP precedence (type of service) (L3)</li> <li>• DSCP marking</li> <li>• 8 number of queues for user traffic</li> <li>• Support for priority queuing</li> </ul>
<b>Automation</b>	<ul style="list-style-type: none"> <li>• Zero-touch provisioning (ZTP), iPXE</li> <li>• Configuration management</li> <li>• Network Configuration Protocol (NETCONG/YANG model)</li> </ul>

Description	Specification
<b>Security</b>	<ul style="list-style-type: none"> <li>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</li> <li>Layer 2 ingress ACLs</li> <li>Layer 3 ingress ACLs</li> </ul>
<b>Management</b>	<ul style="list-style-type: none"> <li>MIB, XML, JSON, GPB, and SNMP</li> <li>MPLS OAM (label switched path [LSP] ping, LSP traceroute)</li> <li>Ethernet OAM</li> </ul>

## Supported Transceivers Modules

Check the Cisco NCS 5500 Series supported transceivers module matrix.

<http://www.cisco.com/c/dam/en/us/products/collateral/routers/network-convergence-system-5500-series/fretta-optics-compatibility-matrix.pdf>

## Environment

**Table 5.** Environmental Properties

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

## Regulatory Standards Compliance

**Table 6.** Regulatory Standards Compliance: Safety and EMC

Specification	Description
<b>Regulatory compliance</b>	Products should comply with CE markings according to directives 2004/108/EC and 2006/95/EC
<b>Network Equipment Building Standards (NEBS)</b>	Designed to meet GR-63-CORE and GR-1089-CORE
<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 standards</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> </ul>

Specification	Description
	<ul style="list-style-type: none"> <li>• EN61000-3-2</li> <li>• EN61000-3-3</li> <li>• KN22 Class A</li> <li>• CNS13438 Class A</li> </ul>
<b>EMC immunity</b>	<ul style="list-style-type: none"> <li>• EN55024</li> <li>• CISPR24</li> <li>• EN300386</li> <li>• KN 61000-4 series</li> </ul>
<b>RoHS</b>	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 NCS5500 Series Line Cards

Part Number	Subcomponent	Product Description
<b>Hardware</b>		
<b>NC55-24H12F-SB</b>		NCS 5500 Series 24 ports of 100G and 18 ports of 40G scale base line card bundle
	NC55-24H12F	NCS 5000 Series 24X100G and 12X40G scale base line card
<b>NC55-24H12F-BA=</b>	NC55-24H1F-LIC	NCS 5500 Series 36X40G right to use license
		NCS 5500 Series 24 ports of 100G and 18 ports of 40G scale base line card spare bundle
	NC55-24H12F	NCS 5000 Series 24X100G and 12X40G Scale Base Line Card
	NC55-24H12F-LIC	NCS 5500 Series 36X40G right to use license
<b>Software</b>		
<b>XR-NC55-P-06.01</b>		Cisco IOS XR Software 6.1.2 release software image
<b>XR-NC55-PK9-06.01</b>		Cisco IOS XR Software 6.1.2 release software crypto image
<b>Licenses</b>		
<b>NC55-100G-SE-LIC</b>		NCS 5500 Series 40G to 100G scale enhanced upgrade license (per port)
<b>NC55-L2VPN-LIC</b>		NCS 5500 Series per 100G bandwidth L2VPN license on UNI ports
<b>NC55-L3VPN-LIC</b>		NCS 5500 Series per 100G bandwidth L3VPN license on UNI ports

## 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.

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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.

## Cisco Capital

### Financing to Help You Achieve Your Objectives

Cisco Capital<sup>®</sup> financing can help you acquire the technology you need to achieve your objectives and stay competitive. We can help you reduce capital expenditures (CapEx), accelerate your growth, and optimize your investment dollars and ROI. Cisco Capital financing gives you flexibility in acquiring hardware, software, services, and complementary third-party equipment. And you have just one predictable payment. Cisco Capital financing is available in more than 100 countries. [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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