

# Cisco Network Convergence System 5500 Series: Modular Line Cards NC55-MOD-A-S & NC55- MOD-A-SE-S

## 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 NC55-MOD-A-S & NC55-MOD-A-SE-S line card (Figure 1) provides 12 fixed ports of 1/10G & 2 ports of 40G. This line card also provides flexibility to use different ports combination through 2 Modular Port Adaptor (MPA) bays.

The Cisco NC55-MOD-A-S & NC55-MOD-A-SE-S line card uses SFP/SFP+/QSFP+ transceivers on fixed ports while each MPA have multiple options of QSFP28/QSFP+/SFP/SFP+/CFP2. This line card can be used in any of the NCS 5500 series of modular chassis.

**Figure 1.** Cisco NCS 5500 Series MOD line card with MPA



## 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

The Cisco NC55-MOD-A-S line card will be supported on the Cisco IOS XR Software Release 6.5.1 or later.

The Cisco NC55-MOD-A-SE-S line card will be supported on the Cisco IOS XR Software Release 6.6.1 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 6.5.1 or Beyond)

Feature	Specification
<b>Integrated interface and Modular Port Adaptor (MPA)</b>	40GE, 10GE, 4X10G and 1GE support (Fixed & MPA ports) 200GE, 100GE (MPA ports) 4x25G breakout support (MPA ports) 25G native support (Future MPA ports)
<b>MACsec encryption</b>	IEEE 802.1AE standards-based Layer 2 hop-by-hop encryption that provides data confidentiality and integrity for media access independent protocols
<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>Embedded Flash storage</b>	Flash memory devices for storing software image, configuration, logging, and recovery
<b>Power consumption</b>	Ultralow power per Gigabit Ethernet

**Table 2.** NCS 5500 Series MOD line card specifications

Feature	Specification
<b>PID</b>	NC55-MOD-A-S NC55-MOD-A-SE-S
<b>Specifications of NC55-MOD-A-S</b>	<ul style="list-style-type: none"><li>• 12 fixed ports of 1/10G &amp; 2 ports of 40G</li><li>• 2 Modular Port Adaptor (MPA) bays of 400G each</li><li>• 1 forwarding ASIC</li><li>• On-chip tables for minimum of 256k IPv4 or 64k IPv6 routes (350k IPv4 or 160k IPv6 Internet prefix distribution)</li><li>• On-chip tables for 786K IPv4 host routes, MAC, and MPLS labels</li><li>• On-chip Ternary Content-Addressable Memory (TCAM) for network Access Control Lists (ACLs) and QoS</li><li>• Supports SyncE and IEEE1588 PTP in combination with route processor NC55-RP-E</li></ul>

Feature	Specification
<b>Specifications of NC55-MOD-A-SE-S</b>	<ul style="list-style-type: none"> <li>• Scale line cards</li> <li>• 12 fixed ports of 1/10G &amp; 2 ports of 40G</li> <li>• 2 Modular Port Adaptor (MPA) bays of 400G each</li> <li>• 1 forwarding ASIC</li> <li>• FIB scale up 4M IPv4 or 2M IPv6 routes</li> <li>• On-chip tables for 786K IPv4 host routes, MAC, and MPLS labels</li> <li>• On-chip Ternary Content-Addressable Memory (TCAM) for network Access Control Lists (ACLs) and QoS</li> <li>• Supports SyncE and IEEE1588 PTP in combination with route processor NC55-RP-E</li> </ul>
<b>Modular Port Adaptor (MPA) Options</b>	2 ports of 200/100G CFP2 MPA (NC55-MPA-2TH-S) 1 ports of 200/100G CFP2 & 2 ports of QSFP28/QSFP+ MPA (NC55-MPA-1TH2H-S) 12 port of 10G MPA (NC55-MPA-12T-S) 4 port of QSFP28/QSFP+ MPA (NC55-MPA-4H-S)
<b>Power consumption of Line card</b>	NC55-MOD-A-S Typical: 250 watts Maximum: 300 watts NC55-MOD-A-SE-S Typical: 300 watts Maximum: 350 watts
<b>Power consumption of MPA</b>	2 ports of 200/100G CFP2 MPA (NC55-MPA-2TH-S) Typical: 75 watts Maximum: 100 watts 1 ports of 200/100G CFP2 & 2 ports of QSFP28/QSFP+ MPA (NC55-MPA-1TH2H-S) Typical: 60 watts Maximum: 80 watts 12 port of 10G MPA (NC55-MPA-12T-S) Typical: 50 watts Maximum: 75 watts 4 port of QSFP28/QSFP+ MPA (NC55-MPA-4H-S) Typical: 50 watts Maximum: 75 watts
<b>Physical specifications</b>	Height: 1.68 in (4.27cm) Width: 16.89 in (42.9cm) Depth: 16.74 in (42.51 cm) Weight: 13 lbs

**Table 3.** Software Feature Support on NCS 5500 Modular Chassis in Cisco IOS XR Software 6.5.1 Release or Beyond

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

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>

Description	Specification
<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>• 64-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 service 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 (NETCONF/YANG model)</li> </ul>
<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.

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

## Environment

**Table 4.** 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 5 describes regulatory standards compliance information.

**Table 5.** 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></ul>
<b>EMC standards</b>	<ul style="list-style-type: none"><li>• 47CFR Part 15 Class A</li><li>• CISPR32 Class A</li><li>• EN55032 Class A</li><li>• EN300386 Class A</li><li>• ICES-003 Class A</li><li>• VCCI Class A</li><li>• TCVN 7189 Class A</li><li>• EN61000-3-2</li><li>• EN61000-3-3</li><li>• KN32 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 35</li><li>• TCVN 7317</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 6 provides ordering information.

**Table 6.** Ordering information for NCS 5500 series line card

Part Number	Subcomponent	Product Description
<b>Hardware</b>		
<b>NC55-MOD-A-BM</b>		NCS 5500 12X10, 2X40 & 2XMPA line card base bundle, MACSec
	NC55-MOD-A-S	NCS 5500 12X10, 2X40 & 2XMPA line card base
	NC55-MOD-LIC	NCS 5500 12X10, 2X40 & 2XMPA line card base Right To Use License
<b>NC55-MOD-A-BM=</b>		NCS 5500 12X10, 2X40 & 2XMPA line card base spare bundle, MACSec
	NC55-MOD-A-S	NCS 5500 12X10, 2X40 & 2XMPA line card base
	NC55-MOD-LIC	NCS 5500 12X10, 2X40 & 2XMPA line card base Right To Use License
<b>NC55-MOD-A-SM</b>		NCS 5500 12X10, 2X40 & 2XMPA line card scale bundle, MACSec
	NC55-MOD-A-SE-S	NCS 5500 12X10, 2X40 & 2XMPA line card scale
	NC55-MOD-SE-LIC	NCS 5500 12X10, 2X40 & 2XMPA line card scale Right To Use License
<b>NC55-MOD-A-SM=</b>		NCS 5500 12X10, 2X40 & 2XMPA line card scale spare bundle, MACSec
	NC55-MOD-A-SE-S	NCS 5500 12X10, 2X40 & 2XMPA line card scale
	NC55-MOD-SE-LIC	NCS 5500 12X10, 2X40 & 2XMPA line card scale Right To Use License
<b>NC55-MPA-2TH-S</b>		NCS 5500 2X200G CFP2 MPA
<b>NC55-MPA-1TH2H-S</b>		NCS 5500 1X200G CFP2 + 2X100G QSFP28 MPA
<b>NC55-MPA-12T-S</b>		NCS 5500 12X10G MPA
<b>NC55-MPA-4H-S</b>		NCS 5500 4X100G QSFP28 MPA
<b>Software</b>		
<b>XR-NC55-P-06.05</b>		Cisco IOS XR Software 6.5 software image
<b>XR-NC55-PK9-06.05</b>		Cisco IOS XR Software 6.5 software PK9 image
<b>XR-NC55-P-06.06</b>		Cisco IOS XR Software 6.6 software image
<b>XR-NC55-PK9-06.06</b>		Cisco IOS XR Software 6.6 software PK9 image

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

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## 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.

## 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 the Cisco NCS 5500 Series, visit [Cisco Network Convergence System 5500 Series.](#)



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