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# Cisco Network Convergence System 5500 Series: 48 x 1/10/25G Line Card

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The new Cisco NCS 5500 48 x 1/10/25G line card improves port density for low-speed interfaces within the family of modular NCS 5500 chassis.

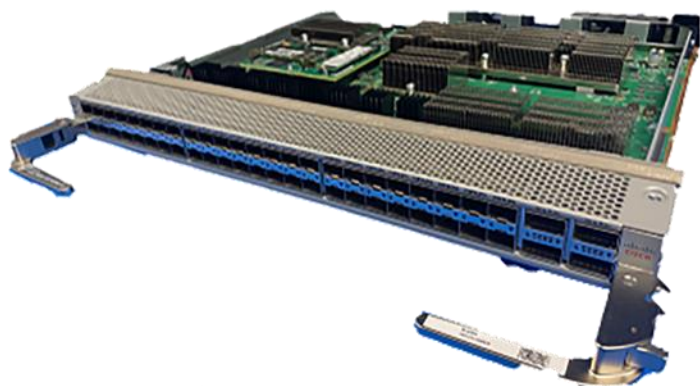
## Product overview

Based on the Cisco Global Cloud Index, digitalization is projected to grow global data center and public/private cloud network 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 line cards to address customer needs using flexible interfaces and port densities, along with full bandwidth utilization of the forwarding ASIC.

The Cisco NC55-32T16Q4H line card (Figure 1) provides a mix of 1/10G, 10/25G, and 40/100G to optimally support aggregation applications as needed for example in the mobile backhaul market.

This line card can be used in any of the NCS 5500 Series of modular chassis.



**Figure 1.**  
Cisco NCS 5500 Series 48-port 1/10/25G base line card

The line card supports SFP/SFP+ on the 1/10G ports, SFP+/SFP28 on the 10/25G ports, and QSFP+/QSFP28 on the 40/100G ports.

## 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 the [Cisco Feature Navigator](#).

## Software requirements

The new NCS 5500 line card will be supported on Cisco IOS XR Software release 7.2.2 or later.

## Features and benefits

Table 1 lists the features and benefits of the NCS 5500 Series line card. Table 2 shows the features and benefits of the new-generation line card. Table 3 outlines the software feature support for the line card, Table 4 lists the environmental features, and Table 5 details the regulatory standards compliance.

**Table 1.** Features and benefits of the Cisco NCS 5500 Series 48 x 1/10/25G line card (Cisco IOS XR Software 7.2.2 or later)

Feature	Benefit
<b>Integrated interface</b>	1 GE, 10 GE, 25 GE, 40 GE, 100GE
<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>	Ultra-low power per Gigabit Ethernet
<b>Redundancy</b>	Redundant route processor Redundant system controller Redundant fabric cards Redundant fan tray Redundant AC or DC power supply

**Table 2.** Features and benefits of the NCS 5500 Series 48 x 1/10/25G line card

Feature	Benefit
<b>Product ID (PID)</b>	NC55-32T16Q4H-A
<b>Specifications</b>	<ul style="list-style-type: none"> <li>• 32 ports 1/10 Gigabit Ethernet</li> <li>• 16 ports 10/25 Gigabit Ethernet</li> <li>• 4 ports 40/100 Gigabit Ethernet</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> <li>• Supports Class-C Timing in combination with route processor NC55-RP2-E</li> </ul>
<b>Power consumption</b>	Line card with transceivers: Typical: 306 watts Maximum: 370 watts
<b>Physical specifications</b>	Height: 1.69 in. (4.27 cm) Width: 16.89 in. (42.9 cm) Depth: 17.89 in. (43.32 cm) Weight: 13.22 lbs (5.99 kg) without optics

**Table 3.** Software feature support on NCS 5500 modular chassis in Cisco IOS XR Software

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

Feature	Benefit
<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>

Feature	Benefit
<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 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>
<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> <li>• BGP flow spec</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 transceiver modules

Please visit the [Cisco Optics Compatibility Matrix tool](#) to review the supported transceiver/optic module support.

**Table 4.** Environmental properties

Feature	Benefit
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 3000 m)
Power inputs	Worldwide ranging AC (90-265V; 50-60 Hz) Worldwide ranging DC (-40V to -72V)
Air flow	Front to back

**Table 5.** Regulatory standards compliance: Safety and EMC

Feature	Benefit
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 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>
EMC standards	<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> <li>• EN61000-3-2</li> <li>• EN61000-3-3</li> <li>• KN22 Class A</li> </ul>

Feature	Benefit
	<ul style="list-style-type: none"> <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>Restriction of Hazardous Substances (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 [NCS 5500 regulatory compliance and safety standards](#).

## Ordering information

**Table 6.** Ordering information for NCS 5500 Series line cards

Part number	Subcomponent	Product description
<b>NC55-32T16Q4H-BA</b>		NCS 5500 Series 48 ports of 1/10/25 GE base line card bundle for perpetual pay-as-you-grow consumption model
	NC55-32T16Q4H-A	NCS 5500 32x10, 16x25, and 4x100 Line Card Base
	NC55-32T16Q4H-LIC	NCS 5500 32X10,16X25, and 4X100 Line Card Base Right-to-Use Lic
<b>NC55-32T16Q4H-BA=</b>		NCS 5500 Series 48 ports of 1/10/25 GE base line card spare bundle for perpetual pay-as-you-grow consumption model
	NC55-32T16Q4H-A	NCS 5500 32x10, 16x25, and 4x100 Line Card Base
	NC55-32T16Q4H-LIC	NCS 5500 32X10, 16X25, and 4X100 Line Card Base Right-to-Use Lic
<b>NC-55-32T16Q4H-A</b>	NC-55-32T16Q4H-A	NCS 5500 Series 48 ports of 1/10/25 GE base line card with Flexible Consumption Model (Requires Smart Licensing)
<b>NC-55-32T16Q4H-A=</b>	NC-55-32T16Q4H-A	NCS 5500 Series 48 ports of 1/10/25 GE base line card with Flexible Consumption Model (Requires Smart Licensing) spare
<b>Software</b>		
<b>XR-NC55-P-07.02</b>		Cisco IOS XR Software 7.2.2 Release software image
<b>XR-NC55-PK9-07.02</b>		Cisco IOS XR Software 7.2.2 Release software crypto image



**Table 7.** Ordering information – Flexible Consumption Model Software Licenses

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

The Cisco NCS 5500 Series routers 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).

## Cisco environmental sustainability

Information about Cisco’s environmental sustainability policies and initiatives for our products, solutions, operations, and extended operations or supply chain is provided in the “Environment Sustainability” section of Cisco’s [Corporate Social Responsibility](#) (CSR) Report.

Reference links to **information about key environmental sustainability topics** (mentioned in the “Environment Sustainability” section of the CSR Report) are provided in the following table:

Sustainability topic	Reference
Information on product-material-content laws and regulations	<a href="#">Materials</a>
Information on electronic waste laws and regulations, including products, batteries, and packaging	<a href="#">WEEE compliance</a>

Reference links to **product-specific environmental sustainability information** that is mentioned in relevant sections of this data sheet are provided in the following table:

Sustainability topic	Reference
<b>General</b>	
<b>Power</b>	
<b>Idle, typical, or max product power</b>	Table 2. Product specifications
<b>Power calculator</b>	<a href="#">Please check here</a>
<b>Material</b>	
<b>Unit weight</b>	Table 2. Product specifications

Cisco makes the packaging data available for informational purposes only. It may not reflect the most current legal developments, and Cisco does not represent, warrant, or guarantee that it is complete, accurate, or up to date. This information is subject to change without notice.

## Cisco and Partner Services

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 use an architecture-led approach to help you align your data center infrastructure with your business goals and achieve long-term value.

The 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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