

Cisco Network Convergence System 5500 Series

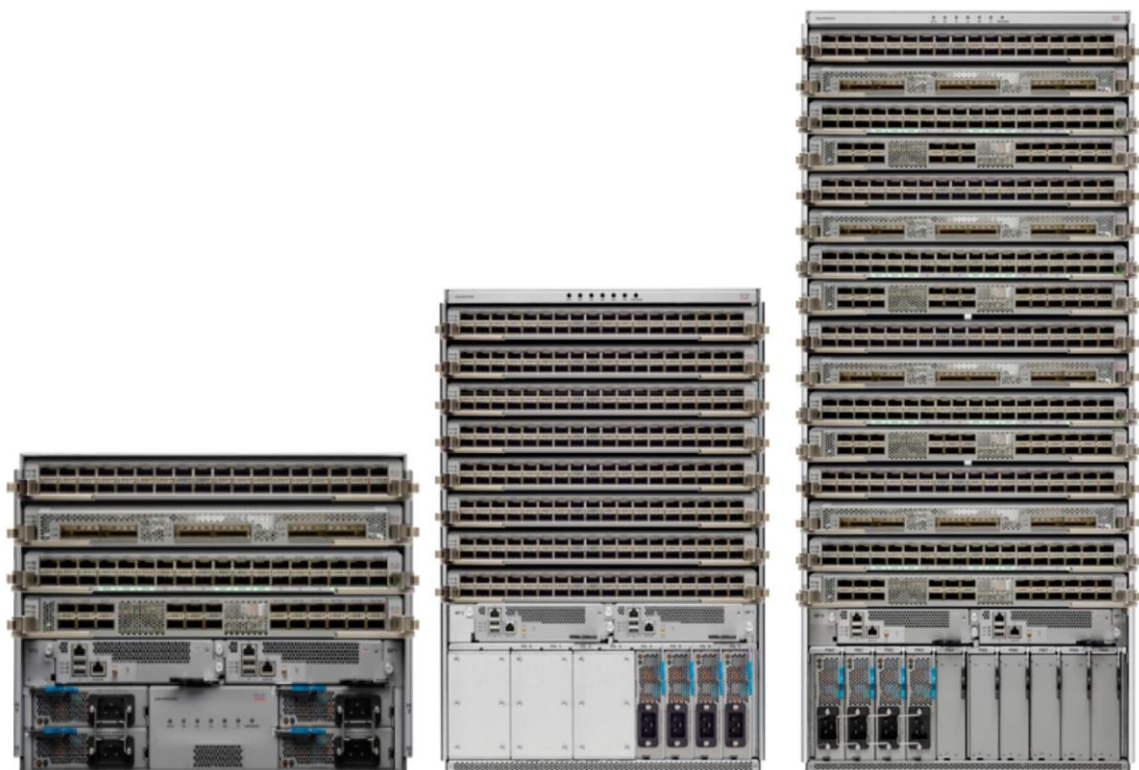
Cloud Scale for WAN Aggregation

The Cisco® Network Convergence System 5500 Series offers industry-leading density of routed 100 Gigabit Ethernet (100GE) ports for high-scale WAN aggregation. The NCS 5500 Series is designed to efficiently scale between data centers and large enterprise, web, and service provider WAN and aggregation networks.

Product Overview

The Cisco Network Convergence System (NCS) 5500 modular chassis series includes the Cisco NCS 5504 modular chassis, Cisco NCS 5508 modular chassis and the Cisco NCS 5516 modular chassis (Figure 1). The Cisco NCS 5504 supports up to four line cards, six switch fabric cards, two route processors, two system controllers, three fan trays, and four power supplies. The Cisco NCS 5508 supports up to eight line cards, six switch fabric cards, two route processors, two system controllers, three fan trays, and eight power supplies.

Figure 1. Cisco NCS 5504, Cisco NCS 5508 and NCS 5516 Chassis

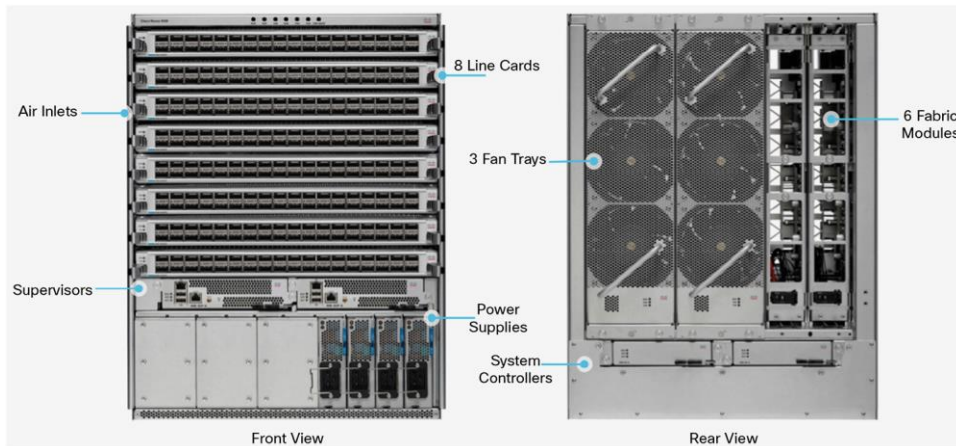


The Cisco NCS 5516 supports up to 16 line cards, 6 switch fabric cards, 2 route processors, 2 system controllers, 3 fan trays, and 10 power supplies. These routers support 10, 25, 40, 50 and 100 Gigabit Ethernet ports.

Cisco NCS 5500 Chassis Components

The Cisco NCS 5500 chassis are built using the components illustrated in Figure 2, which are described in the following sections. Figure 2 shows components of a Cisco NCS 5508 chassis. The NCS 5504 & NCS 5516 uses the same components with the exception of chassis-specific fabric modules and chassis-specific fan trays. The Cisco NCS 5516 has 16 line cards & Cisco NCS 5504 has 4 line cards.




Figure 2. Cisco NCS 5508 Chassis Components



Cisco NCS 5500 Series Line Cards

The NCS 5500 chassis supports the Quad Small Form-Factor Pluggable (QSFP) Cisco NCS 5500 Series line cards described in Table 1.

Table 1. Cisco NCS 5500 Series Line Cards




<p>36-Port 100GE Line Card (part number: NC55-36X100G)</p>  <p>For more details: https://www.cisco.com/c/en/us/products/collateral/routers/network-convergence-system-5500-series/datasheet-c78-736270.html.</p>	<ul style="list-style-type: none"> • 36-port 100 Gigabit Ethernet QSFP line card • 6 forwarding Application-Specific Integrated Circuits (ASICs) • On-chip tables for 256K IPv4 or 64K IPv6 routes • 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 • Supports QSFP28 100GE and QSFP+ 40GE optics • Supports 4 x 10GE with breakout mode
<p>24-Port 100GE and 12-Port 40GE Scale Line Card (part number: NC55-24H12F-SB)</p>  <p>For more details: https://www.cisco.com/c/en/us/products/collateral/routers/network-convergence-system-5500-series/datasheet-c78-737780.html.</p>	<ul style="list-style-type: none"> • 24 ports 100/40 Gigabit Ethernet and 12 ports 40GE QSFP28/QSFP+ line card 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 TCAM for network ACLs and QoS • Supports QSFP28 100GE and QSFP+ 40GE optics • Supports 4 x 10GE with breakout mode
<p>24-Port 100GE Scale Line Card (part number: NC55-24X100G-SB)</p>  <p>For more details: https://www.cisco.com/c/en/us/products/collateral/routers/network-convergence-system-5500-series/datasheet-c78-737779.html.</p>	<ul style="list-style-type: none"> • 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 TCAM for network ACLs and QoS • Supports QSFP28 100GE and QSFP+ 40GE optics • Supports 4 x 10GE with breakout mode

<p>18-Port 100GE and 18-Port 40GE Line Card (part number: NC55-18H18F-BA)</p>  <p>For more details: https://www.cisco.com/c/en/us/products/collateral/routers/network-convergence-system-5500-series/datasheet-c78-737776.html.</p>	<ul style="list-style-type: none"> • 18 ports 100/40 Gigabit Ethernet and 18 ports 40GE QSFP28/QSFP+ line card at base scale • 3 forwarding ASICs • FIB scale up to 256K IPv4 or 64K IPv6 routes (FIB scale up to 1M IPv4 routes if combined with memory below) • On-chip tables for 750K IPv4 host routes, MAC, and MPLS labels • On-chip TCAM for network ACLs and QoS • Supports QSFP28 100GE and QSFP+ 40GE optics • Supports 4 x 10GE with breakout mode
<p>36-Port 100GE Scale Line Card (part number: NC55-36X100G-SB)</p> 	<ul style="list-style-type: none"> • 36-port 100 Gigabit Ethernet QSFP line card with high scale • 4 forwarding Application-Specific Integrated Circuits (ASICs) • FIB scale up to 5.75M IPv4 or 3.25M IPv6 routes • On-chip tables for 750K IPv4 host routes, MAC, and labels • On-chip TCAM for network ACLs and QoS • Supports QSFP28 100GE and QSFP+ 40GE optics • Supports 4 x 10GE with breakout mode
<p>6-Port 200GE IPoDWDM Line Card (part number: NC55-6X2H-DWDM-BM)</p>  <p>For more details: https://www.cisco.com/c/en/us/products/collateral/routers/network-convergence-system-5500-series/datasheet-c78-739372.html.</p>	<ul style="list-style-type: none"> • 6 ports 100/150/200 CFP2-ACO linecard for IPoDWDM • 2 Forwarding ASICs • Supports MACsec on all ports at full line rate • Support for 96 channels with ITU-T 50-GHz channel spacing • Configurable SD-FEC • Flexspectrum support

Cisco NCS 5500 Series Switch Fabric Cards

As part of the NCS 5500 Series, the Cisco NCS 5504, the Cisco NCS 5508 and Cisco NCS 5516 chassis have a Clos fabric design that interconnects the line cards with rear-mounted fabric modules. It supports up to six switch fabric cards; all fabric cards are directly connected to all line cards. With load balancing across fabric cards, the architecture achieves optimal bandwidth distribution within the chassis. (See Table 2.)


Table 2. Cisco NCS 5500 Series Switch Fabric Card

<p>NCS 5504 Switch Fabric Card</p> 	<ul style="list-style-type: none"> • 6 fabric cards per chassis • Each fabric card provides 900 Gbps bandwidth to every line card slot in the chassis with a total of 5.4 Tbps combined with 6 fabrics • N+1 redundancy • Graceful bandwidth reduction if two or more are down • Single stage • Direct mate to line cards; no midplane
<p>NCS 5508 Switch Fabric Card</p> 	<ul style="list-style-type: none"> • 6 fabric cards per chassis • Each fabric card provides 900 Gbps bandwidth to every line card slot in the chassis with a total of 5.4 Tbps combined with 6 fabrics • N+1 redundancy • Graceful bandwidth reduction if two or more are down • Single stage • Direct mate to line cards; no midplane
<p>NCS 5516 Switch Fabric Card</p> 	<ul style="list-style-type: none"> • 6 fabric cards per chassis • Each fabric card provides 900 Gbps bandwidth to every line card slot in the chassis with a total of 5.4 Tbps combined with 6 fabrics • N+1 redundancy • Graceful bandwidth reduction if two or more are down • Single stage • Direct mate to line cards; no midplane

Cisco NCS 5500 Series Route Processor

A pair of redundant route processor cards manages all routing operations on the Cisco NCS 5504, Cisco NCS 5508 chassis & NCS 5516 chassis. (See Table 3.)


Table 3. Cisco NCS 5500 Series Route Processor Module

NCS 5500 Series Route Processor 	<ul style="list-style-type: none">• 6 cores at 2.2 GHz• 24 GB DRAM• 256 GB flash• 2 USB• Console• Management Ethernet• Clock inputs
NCS 5500 Series Route Processor with SyncE	<ul style="list-style-type: none">• 6 cores at 1.9 GHz• 32 GB DRAM• 240 GB flash• 2 USB• Console• Management Ethernet• Timing system<ul style="list-style-type: none">◦ BITS: Two independent BITS ports, in/out – RJ48 connector port◦ IEEE 1588 support: Copper 10/100/1000-Mbps RJ-45 Ethernet port• GPS<ul style="list-style-type: none">◦ ToD (RS422)◦ 1-pps RS422 or 1.0/2.3 50-ohm RF connector, in/out◦ 10MHz 1.0/2.3 50-ohm RF connector, in/out

Cisco NCS 5500 Series System Controller

A pair of redundant system controllers offloads chassis management functions from the route processor cards. The controllers are responsible for managing power supplies and fan trays and monitoring the environmental conditions in the chassis. (See Table 4.)

Table 4. Cisco NCS 5500 Series System Controller



NCS 5500 Series System Controller 	<ul style="list-style-type: none">• Dual core at 1.3GHz• Ethernet Out-of-Band Channel (EOBC) for internal connection between line cards, fabric cards, and supervisors• Ethernet Protocol Channel (EPC) for traffic punted to the RP
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Cisco NCS 5500 Series Power Supply

The Cisco NCS 5500 Series supports hot-swappable, front-panel-accessible power supplies. N+1 and N+N (grid) redundancy modes are supported for a fully loaded Cisco NCS 5504 & NCS 5508, and N+1 and N+M redundancy modes are supported for a fully loaded Cisco NCS 5516. The 3000W AC and DC power supplies are 80 Plus Platinum rated, providing more than 92 percent efficiency across typical workloads. (See Table 5.)

The additional unused power-supply slots are not needed with existing line cards, but they offer headroom to support higher-bandwidth line cards in the future.

Table 5. Cisco NCS 5500 Series Power Supplies

<p>NCS 5500 Series 3kW AC Power Supply</p> 	<ul style="list-style-type: none">• 3000W AC power supply, single 20A input, 220V• N+1 or N+N grid redundancy supported for Cisco NCS 5508• N+1 or N+M redundancy supported for Cisco NCS 5516• Hot swappable• Front-panel-accessible• 50 to 60 Hz frequency• 92% or greater efficiency (20 to 100% load)• RoHS compliant
<p>NCS 5500 Series 3kW DC Power Supply</p> 	<ul style="list-style-type: none">• 3000W DC power supply• Input voltage: -40V to -72V DC (min-max), -48V to -60V DC (nominal)• N+1 or N+N grid redundancy supported for Cisco NCS 5508• N+1 or N+M redundancy supported for Cisco NCS 5516• Hot swappable• Front-panel-accessible• 50 to 60 Hz frequency• 92% or greater efficiency (20 to 100% load)• RoHS compliant

Cisco NCS 5500 Series Fan Trays

Three hot-swappable fan trays are supported on the NCS 5504, NCS 5508 and NCS 5516 chassis with front-to-back cooling. Each fan tray covers two fabric modules and can be removed for access.

Software Requirements

The Cisco NCS 5508 supports Cisco IOS® XR Software Release 6.0 and later, and the Cisco NCS 5516 supports Cisco IOS XR Software Release 6.1 and later, Cisco NCS 5504 supports Cisco IOS XR Software Release 6.3 and later.

For a complete list of supported features, refer to the [Cisco Feature Navigator](#).

Specifications

Tables 6 through 8 list key specifications for the Cisco NCS 5500 Series. (Check software release notes for feature support information.)

Supported Optics Modules

A detailed list of all supported optics by the NCS 5500 Series is posted at <https://www.cisco.com/c/dam/en/us/products/collateral/routers/network-convergence-system-5500-series/fretta-optics-compatibility-matrix.pdf>.

Environment

Table 6. Environmental Properties

Property	Cisco NCS 5500 Series
Physical (H x W x D) <ul style="list-style-type: none"> Cisco NCS 5504 Cisco NCS 5508 Cisco NCS 5516 	<ul style="list-style-type: none"> 12.25 x 17.50 x 33.15 in. (31.1 x 44.50 x 84.20 cm) 22.70 x 17.50 x 30.00 in. (57.78 x 44.50 x 76.20 cm) 36.70 x 17.50 x 31.76 in. (93.41 x 44.50 x 80.67 cm)
Operating temperature	32 to 104°F (0 to 40°C)
Nonoperating (storage) temperature	-40 to 158°F (-40 to 70°C)
Humidity	5 to 95% (noncondensing)
Altitude	0 to 9842 ft (0 to 3000m)

Weight and Typical Power

Table 7. Weight and Power Consumption

Component	Weight	Typical Power	Maximum Power
Chassis <ul style="list-style-type: none"> Cisco NCS 5504 Chassis Cisco NCS 5508 Chassis Cisco NCS 5516 Chassis 	<ul style="list-style-type: none"> 84 lb (38.2 kg) 150 lb (68.2 kg) 192 lb (87.3 kg) 	-	-
Power supply <ul style="list-style-type: none"> NCS 5500 AC 3kW Power Supply NCS 5500 DC 3kW Power Supply 	<ul style="list-style-type: none"> 6.2 lb (2.8 kg) 6.4 lb (2.9 kg) 	-	-
Fan tray (3 maximum) <ul style="list-style-type: none"> NCS 5504 Fan Tray NCS 5508 Fan Tray NCS 5516 Fan Tray 	<ul style="list-style-type: none"> 6.38 lb (2.9 kg) 8.25 lb (3.7 kg) 10.0 lb (4.54 kg) 	<ul style="list-style-type: none"> 30W 75W 120W 	<ul style="list-style-type: none"> 158W per fan tray 290W per fan tray 580W per fan tray
Switch Fabric card (6 maximum) <ul style="list-style-type: none"> NCS 5504 Fabric Card NCS 5508 Fabric Card NCS 5516 Fabric Card 	<ul style="list-style-type: none"> 6.2 lb (2.8 kg) 9.59 lb (4.4 kg) 11.5 lb (5.2 kg) 	<ul style="list-style-type: none"> 115W 240W 650W 	<ul style="list-style-type: none"> 130W per fabric card 250W per fabric card 775W per fabric card
Route Processor (2 maximum) <ul style="list-style-type: none"> NCS 5500 Route Processor NCS 5500 Route Processor with SyncE 	<ul style="list-style-type: none"> 6.00 lb (2.72 kg) 6.00 lb (2.72 kg) 	<ul style="list-style-type: none"> 35W 40W 	<ul style="list-style-type: none"> 90W per route processor 80W per route processor
System controller (2 maximum) <ul style="list-style-type: none"> NCS 5500 System Controller 	<ul style="list-style-type: none"> 1.91 lb (0.9 kg) 	<ul style="list-style-type: none"> 15W 	<ul style="list-style-type: none"> 35W per system controller

Regulatory Standards Compliance

Table 8. 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
Safety	<ul style="list-style-type: none"> 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

Specification	Description
EMC: Emissions	<ul style="list-style-type: none"> • 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
EMC: Immunity	<ul style="list-style-type: none"> • 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 9 provides ordering information.

Table 9. Ordering Information

Part Number	Product Description
Cisco NCS 5500 Series Common Hardware	
NC55-RP	NCS 5500 Route Processor
NC55-RP=	NCS 5500 Route Processor Spare
NC55-RP-E	NCS 5500 Route Processor with SyncE
NC55-RP-E=	NCS 5500 Route Processor with SyncE Spare
NC55-SC	NCS 5500 System Controller
NC55-SC=	NCS 5500 System Controller Spare
NC55-PWR-3KW-AC	NCS 5500 AC 3KW Power Supply
NC55-PWR-3KW-AC=	NCS 5500 AC 3KW Power Supply Spare
NC55-PWR-3KW-DC	NCS 5500 DC 3KW Power Supply
NC55-PWR-3KW-DC=	NCS 5500 DC 3KW Power Supply Spare
NC55-RP-BLNK	NCS 5500 Route Processor Blank Filler
NC55-RP-BLNK=	NCS 5500 Route Processor Blank Filler Spare
NC55-5500-LC-BLNK	NCS 5500 Line Card Blank Filler
NC55-5500-LC-BLNK=	NCS 5500 Line Card Blank Filler Spare
NC55-PS-BLNK	NCS 5500 Power Supply Blank Filler
NC55-PS-BLNK=	NCS 5500 Power Supply Blank Filler Spare
NC55-5500-RMK-E	NCS 5500 Extended Rack Mounting Kit (Supports depth of 4-post rack from 36"~42)
NC55-5500-RMK-E=	NCS 5500 Extended Rack Mounting Kit Spare (Supports depth of 4-post rack from 36"~42)
NC55-5500-ACC-KIT	NCS 5500 Accessory Kit
NC55-5500-ACC-KIT=	NCS 5500 Accessory Kit Spare
Cisco NCS 5504 Chassis Hardware	
NCS-5504	NCS5500 4 Slot Single Chassis, Spare
NCS-5504=	NCS5500 4 Slot Single Chassis, Spare
NCS55-5504-FC	NCS 5504 Fabric Card

Part Number	Product Description
NC55-5504-FC=	NCS 5504 Fabric Card, Spare
NC55-5504-FAN	NCS 5504 Fan Tray
NC55-5504-FAN=	NCS 5504 Fan Tray, Spare
NC55-5504-RMK	NCS 5504 Rack Mounting Kit (Supports depth of 4-post rack from 24"~32")
NC55-5504-RMK=	NCS 5504 Rack Mounting Kit Spare (Supports depth of 4-post rack from 24"~32")
NC55-5504-RMK-E	NCS 5504 Extended Rack Mounting Kit (Supports depth of 4-post rack from 36"~42)
NC55-5504-RMK-E=	NCS 5504 Extended Rack Mounting Kit Spare (Supports depth of 4-post rack from 36"~42)
Cisco NCS 5508 Chassis Hardware	
NCS-5508	NCS5500 8 Slot Single Chassis, Spare
NCS-5508=	NCS5500 8 Slot Single Chassis, Spare
NC55-5508-FC	NCS 5508 Fabric Card
NC55-5508-FC=	NCS 5508 Fabric Card, Spare
NC55-5508-FAN	NCS 5508 Fan Tray
NC55-5508-FAN=	NCS 5508 Fan Tray, Spare
NC55-5508-RMK	NCS 5508 Rack Mounting Kit (Supports depth of 4-post rack from 24"~32")
NC55-5508-RMK=	NCS 5508 Rack Mounting Kit Spare (Supports depth of 4-post rack from 24"~32")
Cisco NCS 5516 Chassis Hardware	
NCS-5516	NCS5500 16 Slot Single Chassis, Spare
NCS-5516=	NCS5500 16 Slot Single Chassis, Spare
NC55-5516-FC	NCS 5516 Fabric Card
NC55-5516-FC=	NCS 5516 Fabric Card, Spare
NC55-5516-FAN	NCS 5516 Fan Tray
NC55-5516-FAN=	NCS 5516 Fan Tray, Spare
NC55-5516-RMK	NCS 5516 Rack Mounting Kit (Supports depth of 4-post rack from 24"~32")
NC55-5516-RMK=	NCS 5516 Rack Mounting Kit Spare (Supports depth of 4-post rack from 24"~32")
Cisco NCS 5500 Series Line Cards	
NC55-36X100G-BA	NCS 5500 36x100G Base
NC55-36X100G-BA=	NCS 5500 36x100G Base Line Card, Spare
NC55-24H12F-SB	NCS 5500 24X100GE and 12X40G Scale Base Line Card
NC55-100G-SE-LIC	NCS 5500 40GE to 100GE Scale Port Upgrade License Option (For 24H12F Line Card)
NC55-24H12F-SB=	NCS 5500 24X100GE and 12X40G Scale Base Line Card, Spare
NC55-100G-SE-LIC=	NCS 5500 40GE to 100GE Scale Port Upgrade License Option (For 24H12F Line Card), Spare
NC55-24X100G-SB	NCS 5500 24x100G Scale Base Line Card
NC55-24X100G-SB=	NCS 5500 24x100G Scale Base Line Card, Spare
NC55-18H18F-BA	NCS 5500 18X100G and 18X40G Base Line Card
NC55-100G-LIC	NCS 5500 40G to 100G Upgrade License (For 18H18F Line Card)
NC55-18H18F-BA=	NCS 5500 18X100G and 18X40G Base Line Card, Spare
NC55-100G-LIC=	NCS 5500 40G to 100G Upgrade License (For 18H18F Line Card), Spare
NC55-6X2H-DWDM-BM	NCS 5500 6x200G DWDM MACsec Linecard
NC55-6X2H-DWDM-BM=	NCS 5500 6x200G DWDM MACsec Linecard, Spare
NC55-2H-DWDM-BM	NCS 5500 6X200G DWDM MACsec PAYG Linecard
NC55-50G-DWDM-LIC	NCS 5500 Series 50G Bandwidth DWDM license
NC55-50G-MAC-LIC	NCS 5500 Series 50G Bandwidth MACsec license
NC55-2H-DWDM-BM=	NCS 5500 6X200G DWDM MACsec PAYG Linecard, Spare

Part Number	Product Description
NC55-50G-DWDM-LIC=	NCS 5500 Series 50G Bandwidth DWDM license, Spare
NC55-50G-MAC-LIC=	NCS 5500 Series 50G Bandwidth MACsec license, Spare
NC55-36X100G-SB	NCS 5500 36x100G Scale Base Linecard
NC55-36X100G-SB=	NCS 5500 36x100G Scale Base Linecard, Spare
NC55-36X100G-U-SB	NCS 5500 36x100G PAYG Scale Base Linecard
NC55-36X100G-U-SB=	NCS 5500 36x100G PAYG Scale Base Linecard, Spare
Software	
XR-NC55-P-06.00	IOS-XR 6.0 Release Software License
XR-NC55-PK9-06.00	IOS-XR 6.0 Release Software License
XR-NC55-P-06.01	IOS-XR 6.1 Release Software License
XR-NC55-PK9-06.01	IOS-XR 6.1 Release Software License
XR-NC55-P-06.02	IOS-XR 6.2 Release Software License
XR-NC55-PK9-06.02	IOS-XR 6.2 Release Software License
XR-NC55-P-06.03	IOS-XR 6.3 Release Software License
XR-NC55-PK9-06.03	IOS-XR 6.3 Release Software License

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 use 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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