

NCS 5500 Series Modular Router Overview

- Cisco NCS 5500 Series Modular Routers, on page 1
- Slot Numbering for Cisco NCS 5500 Series Modular Routers, on page 3
- Line Card Overview, on page 9
- Modular Port Adapters, on page 20
- Route Processor Card Overview, on page 28
- Environmental and Physical Specifications, on page 30
- Weight, Quantity and Power Consumption, on page 30
- Airflow Direction, on page 31
- Maximum Power Available to the Router, on page 31
- Transceivers, Connectors, and Cables, on page 34
- Pinouts, on page 35
- Power Supply Power Cord Specifications, on page 37

Cisco NCS 5500 Series Modular Routers

The following table lists the various components and its quantity as supported on Cisco NCS 5500 series modular routers.

Component	NCS 5504	NCS 5508	NCS 5516
Line cards – see Line Card Overview, on page 9	4	8	16
Route Processors	1 or 2 – NC55-RP or NC55-RP-E, or NC55-RP2-E		
System Controllers	1 or 2 – NC55-SC		

Component	NCS 5504	NCS 5508	NCS 5516
Fabric Cards	3 to 6 NC55-5504-FC **Caution** Use only with NC55-5504-FAN.	3 to 6 NC55-5508-FC **Caution** Use only with NC55-5508-FAN.	3 to 6 NC55-5516-FC **Caution** Use only with NC55-5516-FAN.
	3 to 6 NC55-5504-FC2 **Caution** Use only with NC55-5504-FAN2. Minimum requirements for the Cisco NCS 5504 chassis to operate with NC55-5504-FC2 cards are: • At least three NC55-5504-FC2 fabric cards and all three NC55-5504-FAN2 fan trays • NC55-5504-FC2 fabric cards must be inserted in slots FM1, FM3, and FM5	3 to 6 NC55-5508-FC2 **Caution** Use only with NC55-5508-FAN2. **Note** During a system upgrade from Release 7.0.1 or Release 7.0.2 to any future release, the NC55-5508-FC2 card reloads twice. The reboot history can be verified using the **show reboot-history card location** <*node-id*> command, in the System Admin Config mode.	3 to 6 NC55-5516-FC2 **Caution** Use only with NC55-5516-FAN2.
Fan trays	3 NC55-5504-FAN **Caution** Use only with NC55-5504-FC.	3 NC55-5508-FAN **Caution** Use only with NC55-5508-FC.	3 NC55-5516-FAN **Caution** Use only with NC55-5516-FC.
	3 NC55-5504-FAN2 **Caution** Use only with NC55-5504-FC2.	3 NC55-5508-FAN2 **Caution** Use only with NC55-5508-FC2.	3 NC55-5516-FAN2 **Caution** Use only with NC55-5516-FC2.
Power supplies: • NC55-PWR-3KW-AC • NC55-PWR-3KW-DC • NC55-PWR-3KW-2HV (3.15-kW HVAC/HVDC dual-input) • NC55-PWR-4.4KW-DC	4	8	10

Caution The system does not support a mix of 1st generation fans and fabric cards (NC55-55xx-FAN/NC55-55xx-FC) and 2nd generation fans and fabric cards (NC55-55xx-FAN2 and NC55-55xx-FC2). Attempting to mix 1st generation and 2nd generation components could result in equipment damage.

Slot Numbering for Cisco NCS 5500 Series Modular Routers

Cisco NCS 5504 Modular Router

In Cisco NCS 5504 modular router chassis, the line card slot number starts from 0 through 3. Slot 0 is located at the top of the chassis and slot 3 at the bottom. The fan tray and fabric cards are located at the rear of the chassis. The fabric cards are installed behind the fan trays. These illustrations show the NCS 5504 modular router slot numbering:

Figure 1: Cisco NCS 5504 Router Slot Numbering - Front View

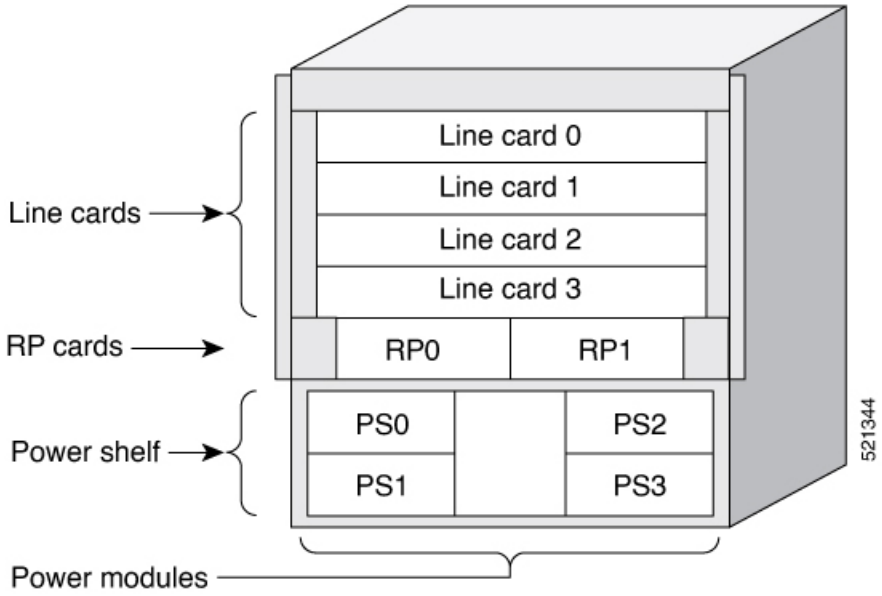
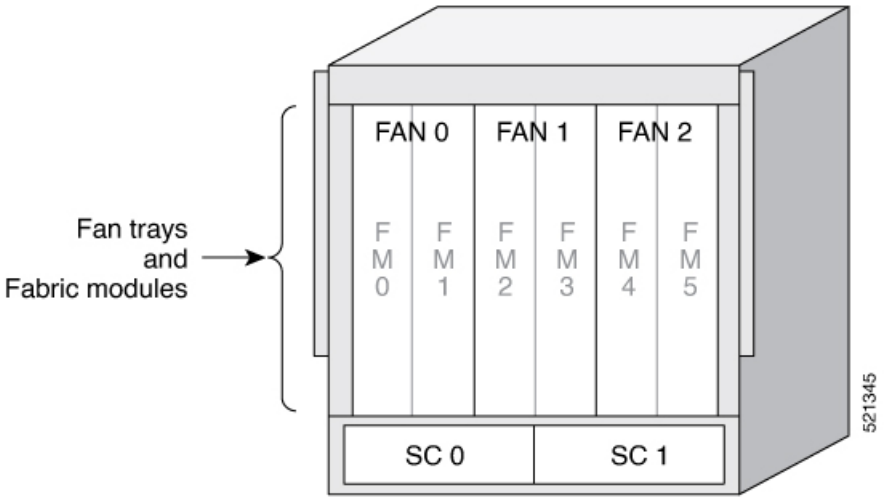


Figure 2: Cisco NCS 5504 Router Slot Numbering - Rear View



Cisco NCS 5508 Modular Router

In Cisco NCS 5508 modular router chassis, the line card slot number starts from 0 through 7. Slot 0 is located at the top of the chassis and slot 7 at the bottom. The fan tray and fabric cards are located at the rear of the chassis. The fabric cards are installed behind the fan trays. These illustrations show the NCS 5508 modular router slot numbering:

Figure 3: Cisco NCS 5508 Router Slot Numbering - Front View

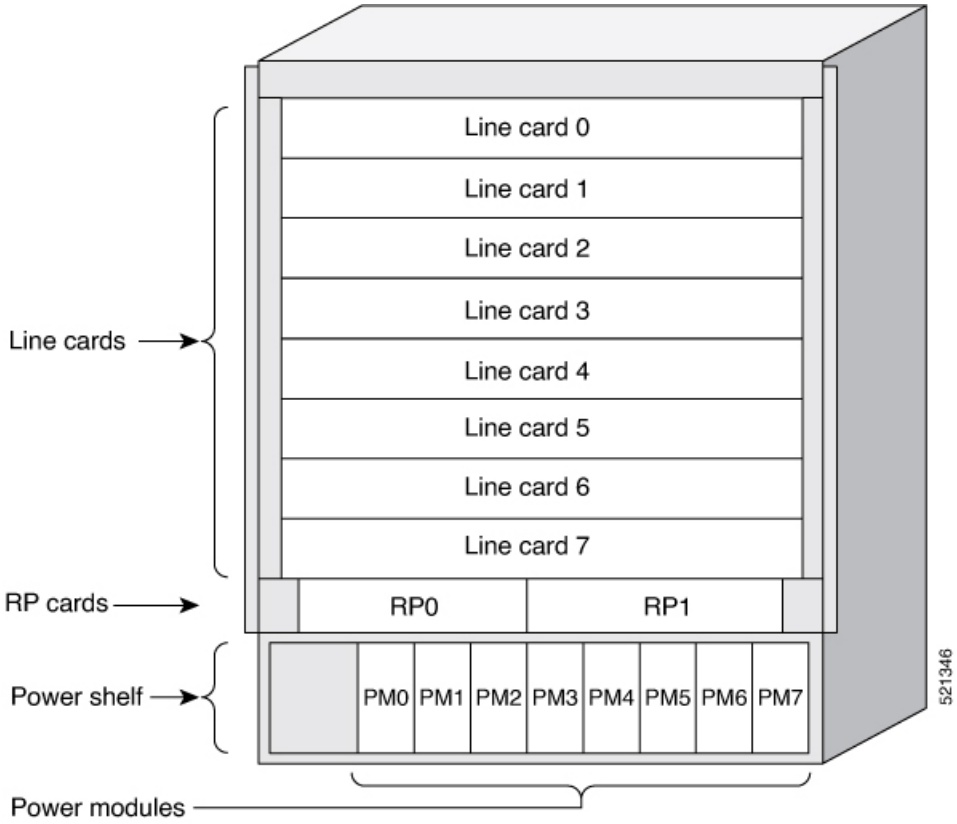
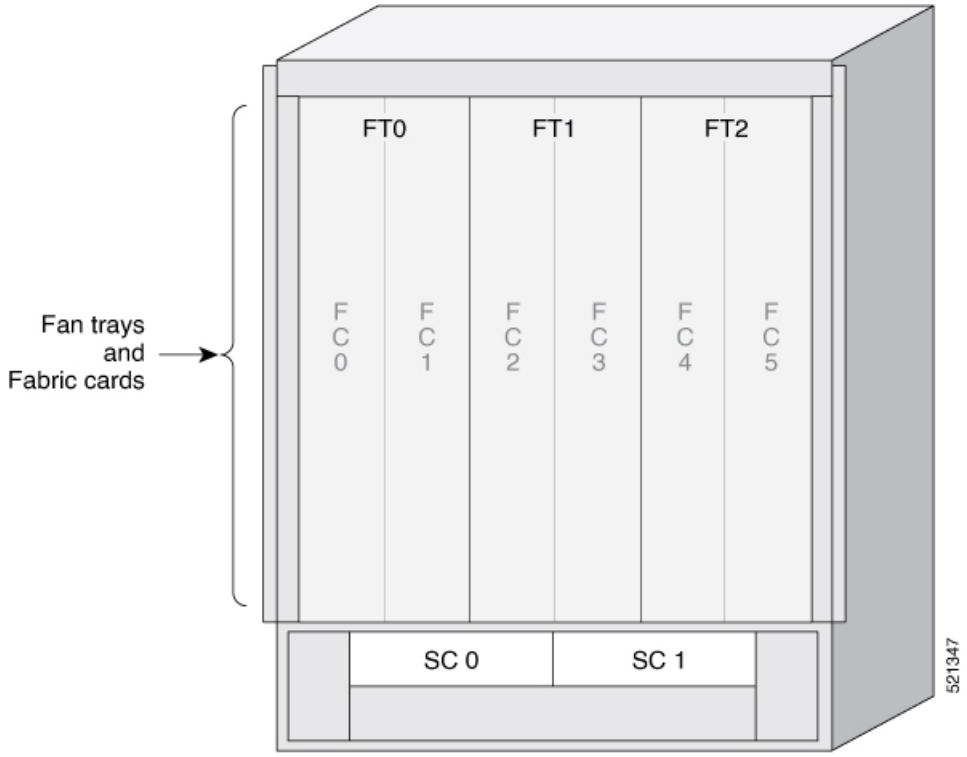


Figure 4: Cisco NCS 5508 Router Slot Numbering - Rear View



Cisco NCS 5516 Modular Router

In Cisco NCS 5516 modular router, the line card slot number starts from 0 through 15. Slot 0 is located at the top of the chassis and slot 15 at the bottom. The fan tray and fabric cards are located at the rear of the chassis. The fabric cards are installed behind the fan trays. These illustrations show the NCS 5516 modular router slot numbering:

Figure 5: Cisco NCS 5516 Router Slot Numbering - Front View

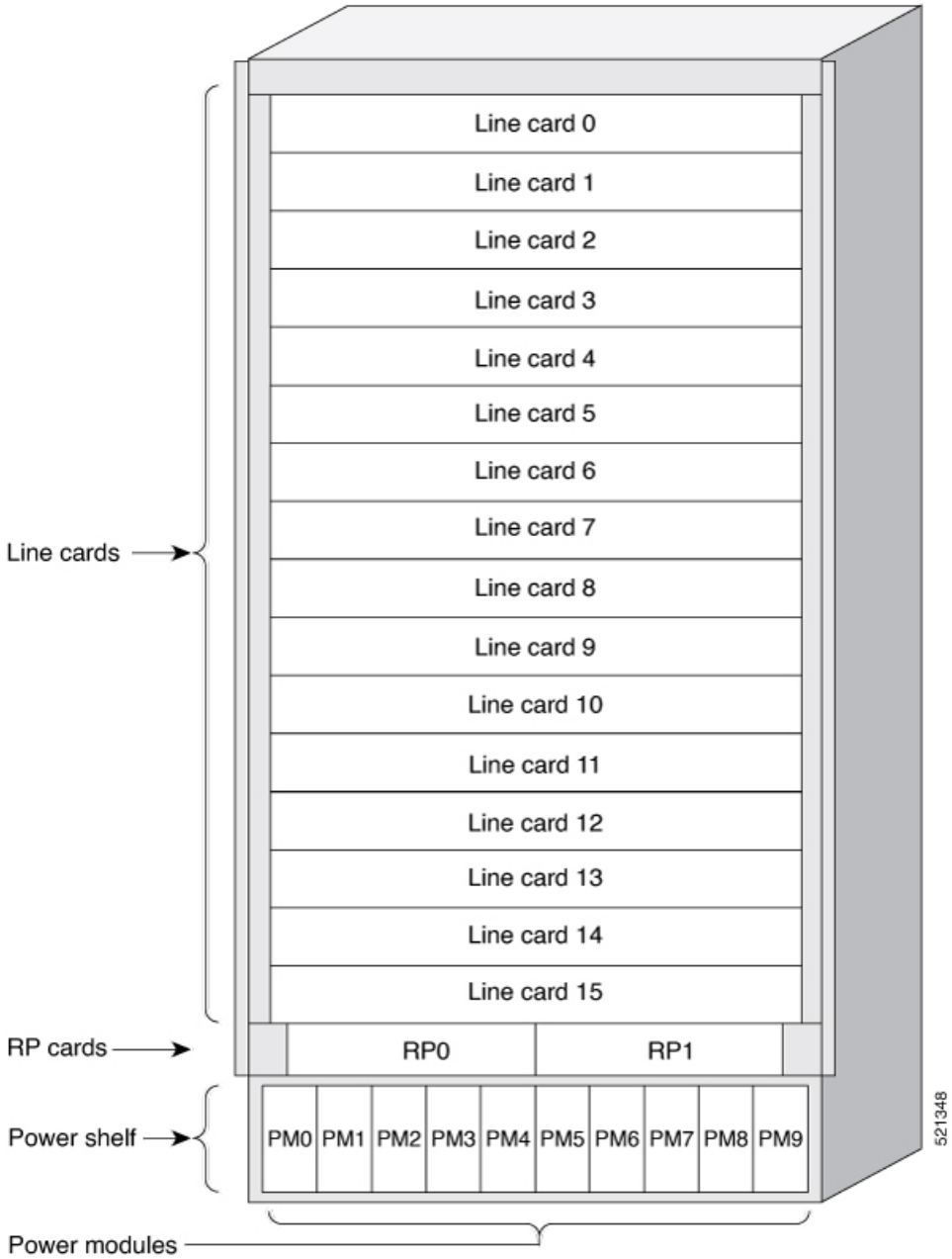
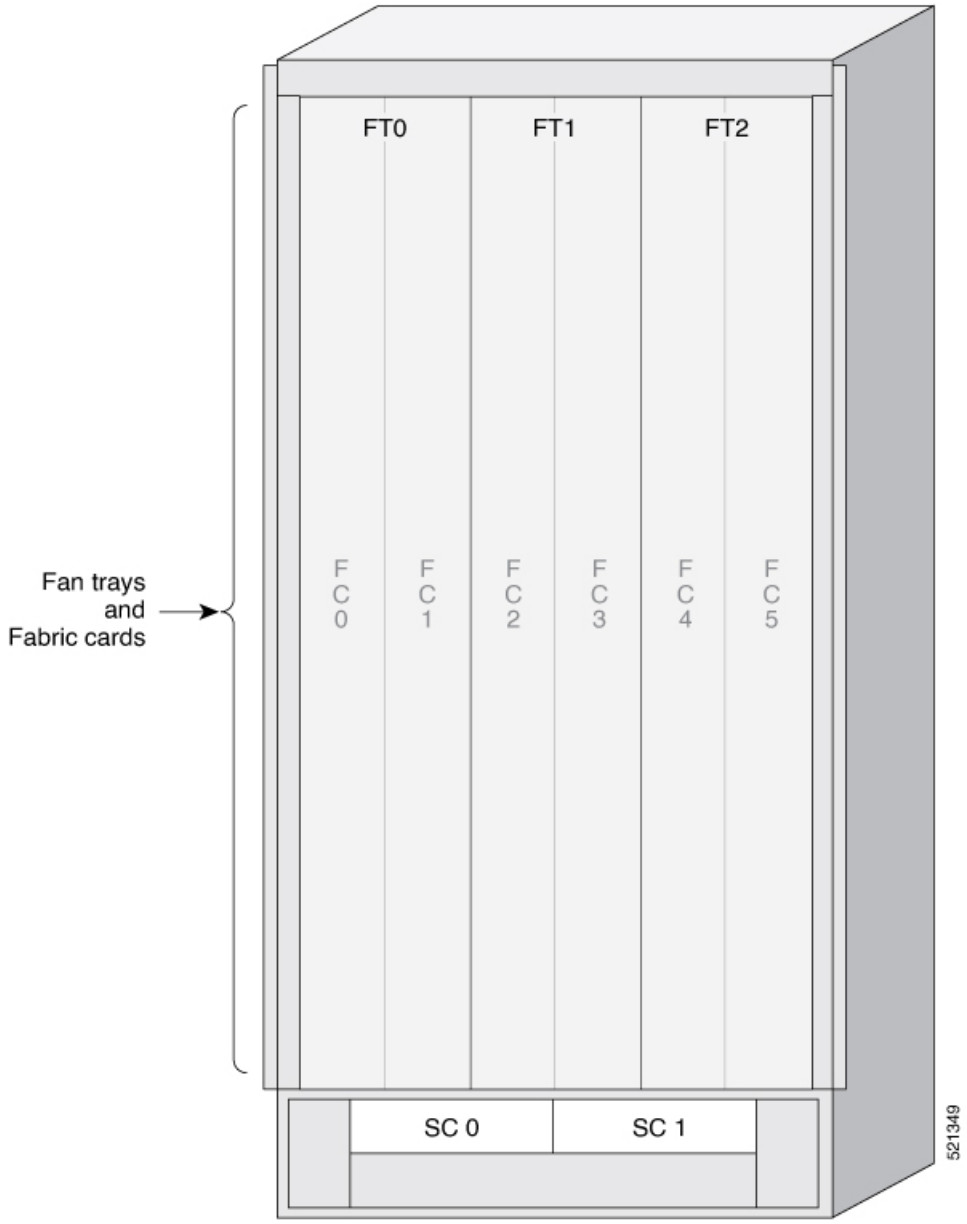


Figure 6: Cisco NCS 5516 Router Slot Numbering - Rear View



Line Card Overview

Table 1: Feature History Table

Hardware	Release Information	Feature Description
NC57-48Q2D-S and NC57-48Q2D-SE-S line cards	Release 7.10.1	The NC57-48Q2D-S is a modular line card that supports front panel bandwidth of 2.4 Tbps through fixed optics ports. The front panel consists of the following port: • Two QSFP-DD ports of 400GbE • 16 SFP56 ports of 50GbE • 32 SFP28 ports of 25GbE The NC57-48Q2D-SE-S line card has additional TCAM for supporting expanded Forwarding Information Base (FIB), network access control lists (ACLs), and QoS for scale-enhanced configuration needs. The line card can operate in native mode and compatible mode.

Hardware	Release Information	Feature Description
NC57-MOD-S line card	Release 7.6.1	The NC57-MOD-S is a modular line card that supports front panel ports through a combination of Modular Port Adapters (MPAs) and fixed optics ports. This line card provides 2.8 Tbps bandwidth through: • Two MPA slots, each supporting up to 800GbE MPA • Two QSFP-DD ports of 400GbE • Eight SFP56 ports of 50GbE The line card can operate in native mode (all line cards in the chassis are Cisco NCS 5700 line cards) and compatible mode (previous generation Cisco NCS 5500 series line cards are present in the chassis). For the compatibility details of Modular Port Adapters (MPAs) on the line cards, see the Cisco Network Convergence System 5700 Series: 400GbE and 100GbE Line Cards data sheet.
NC57-36H6D-S line card	Release 7.4.1 and Release 7.3.2	This release introduces a 100G optimized NCS 5700 combo line card with 4.8-Tbps throughput. It provides a mix of 100GE, 200GE, and 400GE ports with MACSec support. The line card provides flexible port configuration and can be used as 36x100GE or 24x100GE + 12x200GE, or 24x100GE + 6x400GE ports. For ports 0-23, only even numbered ports support 4x25GE and 4x10GE breakout. The line card can be operated in native mode (all NCS 5700 line cards in the chassis) and compatible mode (mix of NCS 5700 series line cards and previous generation NCS 5500 series line cards).

Hardware	Release Information	Feature Description
NC57-36H-SE line card	Release 7.2.2	This release introduces a 100G optimized NCS 5700 scale line card that provides 36 ports of 100 Gigabit Ethernet with full line rate capacity. All ports support 100GE and 40GE optics. Only even ports support 4x25GE and 4x10GE breakout. The line card works in native and compatibility mode.
NC55-32T16Q4H-A line card	Release 7.2.2	This release introduces a 10G optimized NCS5500 line card that provides 48 ports of 1/10/25 Gigabit Ethernet and 4 ports of 40/100 Gigabit Ethernet. The line card improves port density for low speed interfaces within the family of modular NCS 5500 chassis.

Note We recommend that you run the NC57 line cards in native mode, except when there is a NCS55 line card in the chassis.

The following table describes the line cards supported on the NCS 5500 series modular routers:

Line Card	Ports/Adapters	Transceivers
NC55-24X100-SE	• 24 x 100GE–100GE, 40GE, or 4x10GE via breakout cable • QSFP-to-SFP adapter (QSA) with 1GE SFP (GLC-SX-MMD, GLC-LH-SMD) and 10 GE SFP+ (ER, ER-S, ZR, ZR-S, DWDM fixed-wavelengths)	QSFP28/QSFP+
NC55-36X100G	• 36 x 100GE–100GE, 40GE, or 4x10GE via breakout cable • QSFP-to-SFP adapter (QSA) with 1GE SFP (GLC-SX-MMD, GLC-LH-SMD) and 10 GE SFP+ (ER, ER-S, ZR, ZR-S, DWDM fixed-wavelengths)	
NC55-36X100G-S Supports MACsec and offers 3.6 Tbps Ethernet traffic on the front panel to Fabric that support 5.4 Tbps.	• 36 x 100GE–100GE, 40GE, 4x25GE via breakout cable, or 4x10GE via breakout cable	
NC55-36X100G-A-SE Has external TCAM for supporting expanded Forwarding Information Base (FIB), network access control lists (ACLs), and QoS for scale-enhanced configuration needs.	• 36 x 100GE–100GE, 40GE, 4x25GE via breakout cable, or 4x10GE via breakout cable • QSFP-to-SFP adapter (QSA) with 10 GE SFP+ (ER, ER-S, ZR, ZR-S, DWDM fixed-wavelengths)	
NC55-18H18F	• 18 x 100GE–100GE, 40GE, or 4x10GE via breakout • 18 x 40GE–40GE or 4x10GE via breakout	
NCS55-24H12F-SE	• 24 x 100GE–100GE, 40GE, or 4x10GE via breakout • 12 x 40GE–40GE or 4x10GE via breakout • QSFP-to-SFP adapter (QSA) with 1GE SFP (GLC-TE, GLC-SX-MMD, GLC-LH-SMD) and 10 GE SFP+ (ER, ER-S, ZR, ZR-S, DWDM fixed-wavelengths)	

Line Card	Ports/Adapters	Transceivers
NC55-6X200-DWDM-S Adds DWDM capabilities to the NCS 5500 series modular chassis. Along with the ONS-CFP2-WDM long-haul optics, this line card eliminates the need to connect short-range grey optics to a dedicated optical platform between NCS 5500 series modular chassis. Thus reducing operating expenses and capital costs.	6 x 100GE–Supports 100 Gbps (DWDM QPSK), 150 Gbps (DWDM 8 QAM), or 200 Gbps (DWDM 16 QAM) WDM signals with full line-rate MACsec capability.	Second-generation Coherent Transceiver Pluggable (CTP2) optics modules (in CFP2 form-factor).
NC55-MOD-A-S NC55-MOD-A-SE-S— has external TCAM for supporting expanded Forwarding Information Base (FIB), network access control lists (ACLs), and QoS for scale-enhanced configuration needs.	• 12 x 1GE/10GE • 2 x 40GE • 2 modular port adapters (MPAs) See the Modular Port Adapters section for port details. **Note** QDD-400G-ZR-S and QDD-400G-ZRP-S optical modules are supported on all 400G ports of the MPA(NC57-MPA-2D4H-S).	SFP/SFP+ QSFP+ QSFP-DD
NC-55-32T16Q4H-A	• 4 x 100GE/40GE QSFP ports • 16 x 10GE/25GE SFP ports • 32 x 1GE/10GE SFP ports **Restrictions** • 1G optical modules aren't supported on ports starting from 32 through 47. • Dual rate optics are only supported in higher speed mode. For example, SFP-10/25G-LR-S is only supported in 25G mode. • Breakout operation isn't supported.	QSFP28 /QSFP+ SFP28/SFP+ SFP+/SFP

Line Card	Ports/Adapters	Transceivers
NC57-24DD Supported in the NCS 5508 and NCS 5516 chassis with second-generation fabric cards (NC55-5508-FC2/NC55-5516-FC2) and fan trays (NC55-5508-FAN2/NC55-5516-FAN2). Requires Cisco IOS XR 7.0.2 or later. Supported in the NCS 5504 chassis with second-generation fabric cards (NC55-5504-FC2) and fan trays (NC55-5504-FAN2). Requires Cisco IOS XR 7.2.2 or later.	• 24 ports x 400GE • 40GE (4x10GE) and 100GE (4x25GE) with QSFP28 optics • 400GE (4x100GE) and 200GE (2x100GE) with QSFPDD optics **Note** To ensure proper airflow and to minimize potential over temperature conditions, the NC57-24DD line card supports up to twelve QDD-400G-ZR-S/QDD-400G-ZRP-S optical modules only installed in the top ports (0 and even-numbered ports).	QSFP+ QSFP28 QSFP-DD
NC57-18DD-SE Supported in the NCS 5508 and NCS 5516 chassis with second-generation fabric cards (NC55-5508-FC2/NC55-5516-FC2) and fan trays (NC55-5508-FAN2/NC55-5516-FAN2). Requires Cisco IOS XR 7.0.2 or later. Supported in the NCS 5504 chassis with second-generation fabric cards (NC55-5504-FC2) and fan trays (NC55-5504-FAN2). Requires Cisco IOS XR 7.2.2 or later.	• 18 x 400GE (12 ports unused) Or 30 x 200GE – 200GE, 100GE • 40GE (4x10GE) and 100GE (4x25GE) with QSFP28 optics • 400GE (4x100GE) and 200GE (2x100GE) with QSFPDD optics **Note** Due to power limitations, the NC57-18DD-SE line card supports up to nine QDD-400G-ZR-S optical modules, or a combination of six QDD-400G-ZR-S and QDD-400G-ZRP-S optical modules. Install QDD-400G-ZR-S and QDD-400G-ZRP-S optics only in the top ports (0 and even-numbered ports).	QSFP+ QSFP28 QSFP-DD
NC57-36H-SE	• 36 x 100GE/40GE/10GE ports • All 36 ports support QSFP28/QSFP+ optics. • 6 ports (even-numbered ports 24-35) have additional capability to support QSFP-DD 100G ZR optics. • Breakout supported with 4x25G or 4x10G on the even-numbered ports (top row) with the odd-numbered ports (bottom row) disabled **Note** NC57-36H-SE doesn’t support 400G.	QSFP+ QSFP28 QSFP-DD

Line Card	Ports/Adapters	Transceivers
NC57-36H6D-S line card is supported in the following chassis with second generation fabric cards and fan trays: • Cisco NCS 5504 • Cisco NCS 5508 • Cisco NCS 5516 The second-generation fabric cards are: • NC55-5504-FC2 • NC55-5508-FC2 • NC55-5516-FC2 The second-generation fan trays are: • NC55-5504-FAN2 • NC55-5508-FAN2 • NC55-5516-FAN2	Flexible port configuration supports the following options: • 36 ports of 100GE/40GE • 24 ports (ports 0-23) of 100GE • 12 ports (ports 24-35) of 200GE, using 2x100GE • 24 ports (ports 0-23) of 100GE and 6 ports (even-numbered ports in 24-34) of 400GE • Ports 0-23 supports 4x10GE or 4x25GE breakout on even-numbered (ports in the top row of the card) only. • Ports 24-35 supports 4x10GE or 4x25GE breakout on all ports. • Ports 24-34 supports 4x100GE breakout on even-numbered ports only.	QSFP+ QSFP28 QSFP-DD SFP+
NC57-MOD-S	• Two MPA slots • Eight ports of 10GE/25GE/50GE SFP optics • Two ports of 40GE/100GE/400GE QSFP-DD optics	SFP+ SFP28 SFP56 QSFP+ QSPF28 QSFP-DD

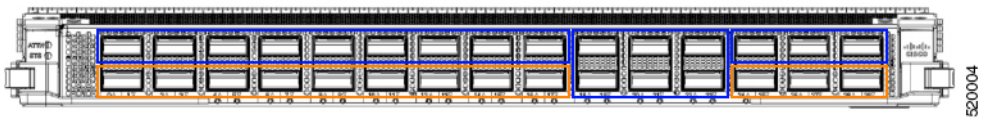
NC57-18DD-SE Line Card

In NC57-18DD-SE line card, there are eighteen 400GE ports which are the even-numbered ports between Port 0 and Port 29, Port 19, Port 21, and Port 23. The 400GE ports are marked on the front panel with blue indicator (see)Figure 7: NC57-18DD-SE Line Card, on page 15.

In 400GE configuration, the odd-numbered ports (except Port 19, Port 21, and Port 23) marked in orange at the bottom row (see)Figure 7: NC57-18DD-SE Line Card, on page 15 aren't used.

The NC57-18DD-SE supports 200GE optics or 100GE optics in all 30 ports.

Figure 7: NC57-18DD-SE Line Card



Port 0 to 17 and Port 24 to 29 can only be used in pairs (one top port and its respective bottom port make a pair), with the following restrictions:

- If the top port has 400GE optic, then the bottom ports can't be used.
- If the top port has 200GE, 100GE, or 40GE optic, the respective bottom port in the pair should also be 200GE, 100GE, or 40GE optic.

NC57-36H-SE Line Card

The line card can operate in routers with the previous generation Cisco NCS 5500 series line cards (in compatibility mode) in the same modular chassis and can also operate in a chassis with all Cisco NCS 5700 series line cards (in native mode).



Note NC57-36H-SE line card doesn't support 400G QSFP-DD transceivers.

Supported in the NCS 5504, NCS 5508, and NCS 5516 chassis with second-generation fabric cards (NC55-5504-FC2/NC55-5508-FC2/NC55-5516-FC2) and fan trays (NC55-5504-FAN2/NC55-5508-FAN2/NC55-5516-FAN2). Requires Cisco IOS XR 7.2.2 or later.

In the NC57-36H-SE line card, the ports from 0 to 35 are organized into groups of four, known as quad ports: Quad 0 (ports 0-3), Quad 1 (ports 4-7), Quad 2 (ports 8-11), Quad 3 (ports 12-15), Quad 4 (ports 16-19), Quad 5 (ports 20-23), Quad 6 (ports 24-27), Quad 7 (ports 28-31) and Quad 8 (ports 32-35) to support various SFP/QSFP and breakout configurations.

Each quad contains two pairs of ports. For example, ports 0-1 make up pair 1, and ports 2-3 make up pair 2 in Quad 0.

To adjust the speed of a port in a pair, you must first disable the other port in the pair, then change the speed as required, and finally re-enable both ports.

For instance, in Quad 4 (ports 16-19), SFPs need to be inserted in pairs such as 16-17 and 18-19. To change the speed of port 17 while port 16 is active, you must first disable port 16 before inserting the optics into port 17.



Note

- In all quads (Quad 0: 0-3, Quad 1: 4-7, ..., Quad 8: 32-35), a 4x25 breakout cannot coexist with either 40G native mode or 4x10 breakout mode.
- Additionally, the interface speed on Quad 0 must be consistent across all ports at any given time.

For more details, refer to the data sheet.

Even-numbered ports 24 to 35 have additional capability to support QSFP-DD 100G ZR optics and are marked in purple.

If you have already inserted a NC57-36H-SE line card on a router that is running a lower version than Cisco IOS XR Release 7.2.2 and the line card fails to boot, then use the following method to boot the line card:

1. Power off the router.
2. Remove the NC57-36H-SE line card after the router is powered off.

3. Power up the router.
4. Upgrade the router to release 7.2.2 or later.
5. After the software is upgraded, insert the line card.

   The line card boots up with release 7.2.2 or later.
6. iPXE boot the line card.

   For more information about iPXE boot, see the *System Setup and Software Installation Guide for Cisco NCS 5500 Series Routers*.

NC57-36H6D-S Line Card

The line card can operate in routers with the previous generation Cisco NCS 5500 series line cards (in compatibility mode) in the same modular chassis and can also operate in a chassis with all Cisco NCS 5700 series line cards (in native mode).

Figure 8: Port Numbering on NC57-36H6D-S Line Card

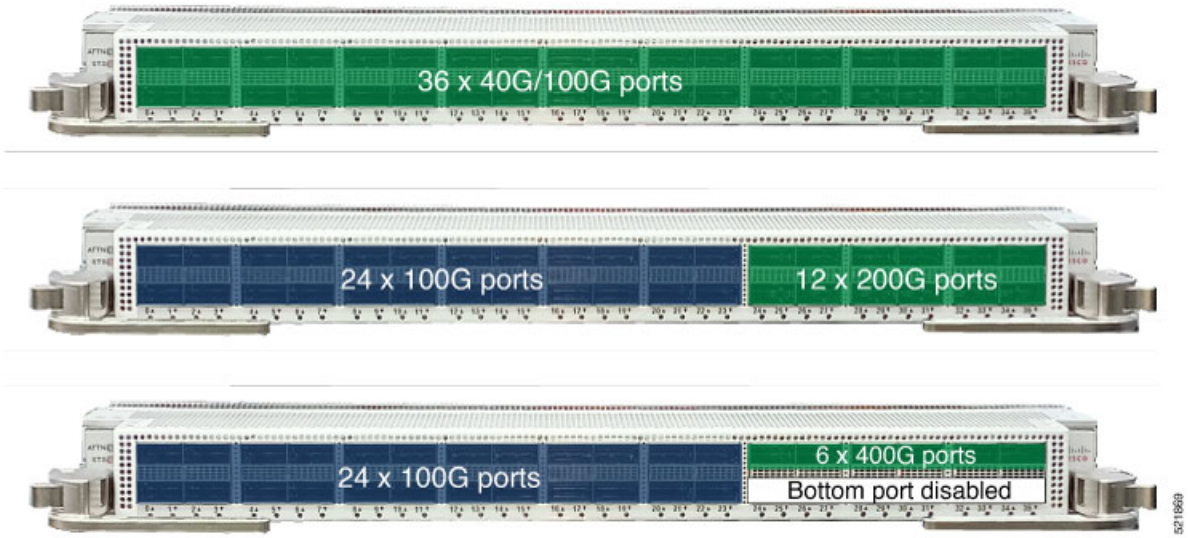


The line card is supported in the Cisco NCS 5504, Cisco NCS 5508 and Cisco NCS 5516 chassis with second-generation fabric cards and fan trays. To support the line card, the chassis must be running Cisco IOS XR 7.3.2, 7.4.1, or later versions.

For more details on features, benefits, and ordering information, see the data sheet.

This figure shows flexible port configuration options:

Figure 9: Flexible Port Configuration



In the NC57-36H6D-S line card, the ports from 0 to 23 are organized into groups of four, known as quad ports: Quad 0 (ports 0-3), Quad 1 (ports 4-7), Quad 2 (ports 8-11), Quad 3 (ports 12-15), Quad 4 (ports 16-19), and Quad 5 (ports 20-23) to support various SFP/QSFP and breakout configurations.

Each quad contains two pairs of ports. For example, ports 0-1 make up pair 1, and ports 2-3 make up pair 2 in Quad 0.

To adjust the speed of a port in a pair, you must first disable the other port in the pair, then change the speed as required, and finally re-enable both ports.

For instance, in Quad 4 (ports 16-19), SFPs need to be inserted in pairs such as 16-17 and 18-19. To change the speed of port 17 while port 16 is active, you must first disable port 16 before inserting the optics into port 17.

Note

- In all quads (Quad 0: 0-3, Quad 1: 4-7, ..., Quad 5: 20-23), a 4x25 breakout cannot coexist with either 40G native mode or 4x10 breakout mode. Also, a combination of 40GE and 4x10GE optics or a combination of 4x10GE and 4x25GE is not supported within a quad group
- Additionally, the interface speed on Quad 0 must be consistent across all ports at any given time.
- In ports 24-35, the combination of 2x100G and 40G in the same quad group isn't supported.

A group of two ports form a quad group on ports 24-25, 26-27, and so on. Each quad group consists of two ports each on ports 24-35. There is no restriction on combination of 4x10GE or 4x25GE breakout support on the ports 24-35.

To configure 4x25, or 4x10 breakout on ports 0-23, use the **hw-mod port-range** command. However, the 4x100 breakout isn't supported.

On ports 24-35:

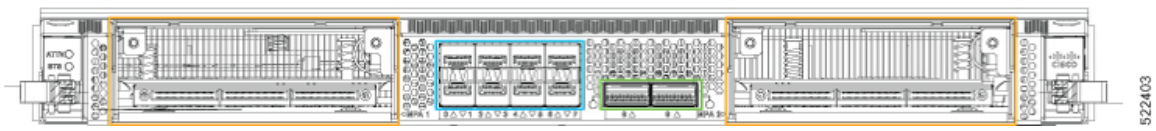
- To configure 4x25, or 4x10 breakout, use the **controller optics** command.
- To configure 4x100 breakout, use the **hw-mod port-range** command.

NC57-MOD-S Line Card

The NC57-MOD-S line card operates in routers with the previous generation Cisco NCS 5500 series line cards (in compatibility mode) in the same router. It also operates in a router with all line cards that are Cisco NCS 5700 series line cards in native mode.

The line card supports two MPA slots marked in orange, eight 50 GE SFP56 optics ports marked in blue and two 400 GE QSFP-DD optics ports marked in green (See NC57-MOD-S line card).

Figure 10: NC57-MOD-S Line Card



Two QSFP-DD ports support 4x100G, or 4x25G, or 4x10G and 2x100G breakout modes.

This line card is supported in the NCS 5504, NCS 5508, and NCS 5516 chassis with second-generation fabric cards (NC55-5504-FC2/NC55-5508-FC2/NC55-5516-FC2) and fan trays

(NC55-5504-FAN2/NC55-5508-FAN2/NC55-5516-FAN2). To support the line card, the chassis must run Cisco IOS XR Release 7.6.1.

Note All fixed ports (eight SFP56 ports and two QSFP-DD ports) of the NC57-MOD-S line card support MACsec.

For more details on features, benefits, and ordering information, see the Cisco Network Convergence System 5700 Series: 400GE and 100GE Line Cards data sheet.

NC57-48Q2D-S and NC57-48Q2D-SE-S Line Card

The NC57-48Q2D-S and NC57-48Q2D-SE-S line cards operate in a router with all line cards that are Cisco NCS 5700 series line cards in native mode. Additionally, they can also operate in routers with the previous generation Cisco NCS 5500 series line cards (in compatibility mode) in the same router.

The NC57-48Q2D-SE-S line card includes additional TCAM to support expanded Forwarding Information Base (FIB), network access control lists (ACLs), and QoS for scale-enhanced configuration requirements.

The line cards support two QSFP-DD ports of 400GbE speed marked in green, 16 SFP56 ports of 50GbE speed marked in blue, and 32 SFP28 ports of 25GbE speed marked in orange (See NC57-48Q2D-S line card).

Figure 11: NC57-48Q2D-S Line Card

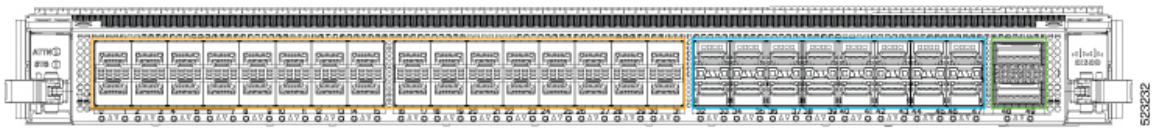


Table 2: Port description

Port Number	Port Type
0 to 31	SFP28
32 to 47	SFP56
48 and 49	QSFPDD

The following optics speeds and breakout configurations are supported by the fixed optic ports:

Optics	SFP28	SFP56	QSFPDD
1GbE	Yes	Yes	No
10GbE	Yes	Yes	No
25GbE	Yes	Yes	No
40GbE	No	No	Yes
50GbE	No	Yes	No
100GbE	No	No	Yes
200GbE	No	No	Yes
400GbE	No	No	Yes

Optics	SFP28	SFP56	QSFPDD
4x10GbE	No	No	Yes
4x25GbE	No	No	Yes
4x100GbE	No	No	Yes
400G ZR	No	No	Only top port-48
400G ZRP	No	No	Only top port-48

This line card is supported in the NCS 5504, NCS 5508, and NCS 5516 router with second-generation fabric cards (NC55-5504-FC2/NC55-5508-FC2/NC55-5516-FC2) and fan trays (NC55-5504-FAN2/NC55-5508-FAN2/NC55-5516-FAN2). To support the line card, the router must run Cisco IOS XR Release 7.10.1.

Note The NC57-48Q2D-S and NC57-48Q2D-SE-S line cards fully support MACsec and PTP-Class-C timing on all fixed ports. The PTP Class-C timing is exclusively supported in compatible mode. However, please note the following limitations when operating 1GbE optics:

- PTP Class-C timing cannot be achieved when MACsec or Auto-negotiation is enabled.
- For IOS XR software release 7.10.1, ports 32 to 47 do not support 1GbE optics.

Note The 400G ZR/ZRP is exclusively compatible with Port 48 and is not supported on Port 49.

For more details on features, benefits, and ordering information, see the Cisco Network Convergence System 5700 Series: 400GE and 100GE Line Cards data sheet.

Modular Port Adapters

The modular port adapters (MPAs) are supported in the NC57-MOD-S, NC55-MOD-A-S and NC55-MOD-A-SE-S line card. Each MPA has a STATUS and ATTN (attention) LED, and each port on the MPA has an adjacent A/L (Active/Link) LED.

To determine which transceivers and cables are supported by these MPAs, see Cisco Transceiver Modules Compatibility Information.

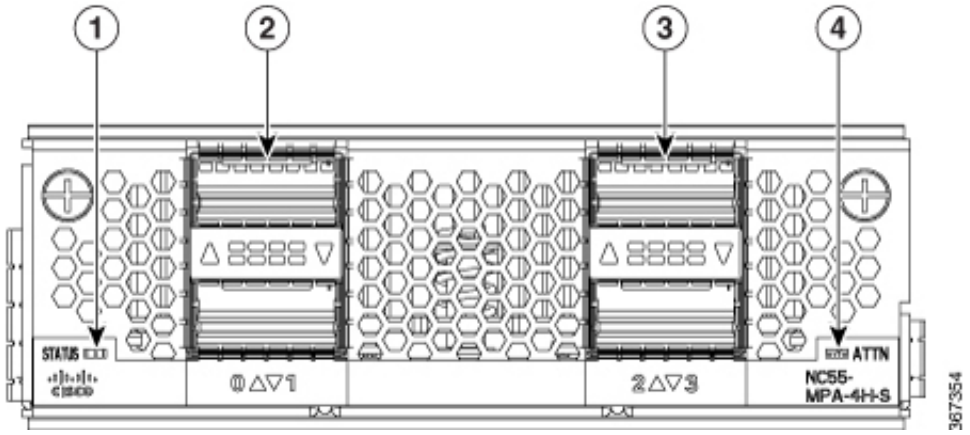
Note Before replacing an MPA card remove the port-range configurations that are applied on that MPA. If these configurations are not removed, interfaces in the new MPA card are not available.

4-Port 40GE/100GE MPA with QSFP+/QSFP28

The 4-port 40GE/100GE MPA (NC55-MPA-4H-S/NC55-MPA-4H-HD-S/NC55-MPA-4H-HX-S) provides 4 ports for 4x25GE (via cable breakout), QSFP+ (40Gbps) or QSFP28 (100Gbps) transceivers.

Note The temperature-hardened NC55-MPA-4H-HD-S MPA operates within industrial temperature range when installed in the temperature-hardened routers.

Note The temperature-hardened conformal-coated NC55-MPA-4H-HX-S MPA operates within industrial temperature range when installed in the temperature-hardened routers.

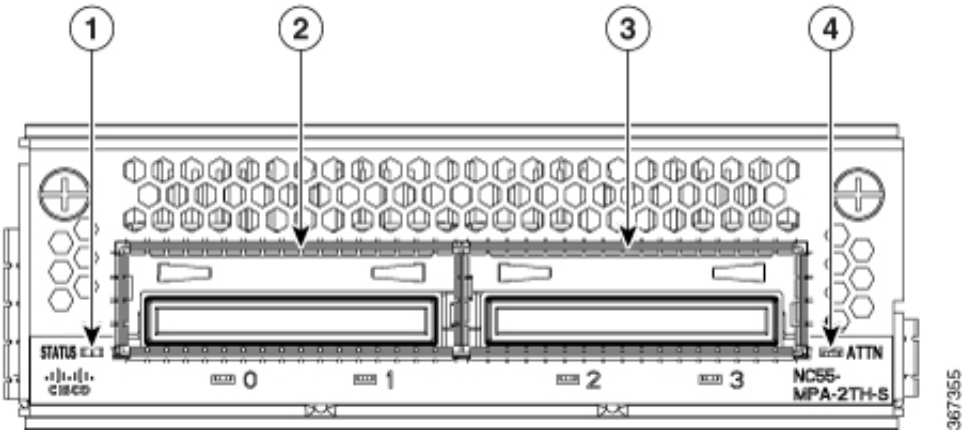


1	STATUS LED	3	QSFP port and Active/Link LED
2	QSFP port and Active/Link LED	4	ATTN LED

2-Port 100GE/200GE with CFP2-DCO

The 2-port 100GE/200GE MPA (NC55-MPA-2TH-S/NC55-MPA-2TH-HX-S) provides 2 ports for CFP2-DCO transceivers.

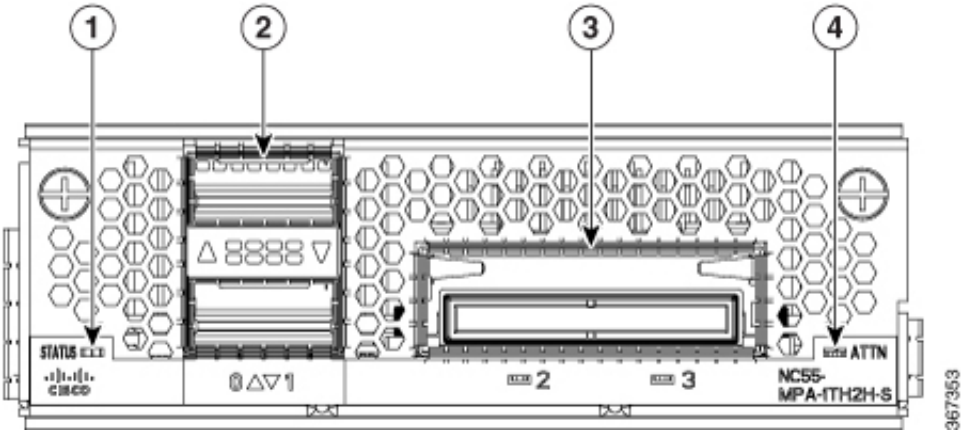
Note The temperature-hardened conformal-coated NC55-MPA-2TH-HX-S MPA operates within industrial temperature range when installed in the temperature-hardened routers.



1	STATUS LED	3	CFP2-DCO port and Active/Link LED
2	CFP2-DCO port and Active/Link LED	4	ATTN LED

1-port 100GE/200GE with CFP2-DCO + 2-Port 40GE or 100GE with QSFP+/QSFP28

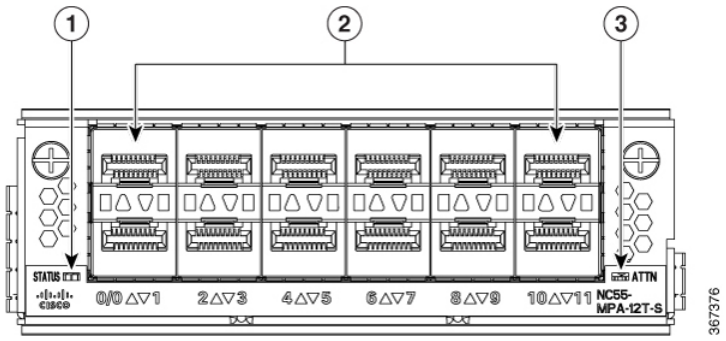
The 1-port 100GE/200GE + 2-Port 40GE/100GE combination MPA (NC55-MPA-1TH2H-S) provides 1 port for CFP2-DCO transceivers and 2 ports for 4x25GE (via cable breakout), QSFP+ (40Gbps) or QSFP28 (100Gbps) transceivers.



1	STATUS LED	3	CFP2-DCO port and Active/Link LED
2	QSFP port and Active/Link LED	4	ATTN LED

12-Port 10GE with SFP+

The 12-port 10GE MPA (NC55-MPA-12T-S) provides 12 ports for SFP+ transceivers.



1	STATUS LED	3	ATTN LED
2	SFP+ ports and LEDs		

Note The NCS-57C3 routers support 12-port 10GE MPA (NC55-MPA-12T-S); however, MPA slots 2 and 3 do not support 1G interfaces. On slot 1, ports 0-3 and 8-11 only support 1G. MACSec is not supported on these 1G interfaces.

4-Port 800GE MPA with QSFP28/QSFP-DD

Table 3: Feature History Table

Hardware	Release Information	Description
NC57-MPA-2D4H-S modular port adapter	Release 7.4.1	This release introduces a 4-port 800GE modular port adapter (NC57-MPA-2D4H-S) that supports QSFP28 and QSFP-DD optical transceivers. This MPA is supported in the NCS-55A2-MOD and NCS-57C3-MOD routers. This is the first modular port adapter to support the QSFP-DD optical transceiver.
NC57-MPA-2D4H-S Modular Port Adapter Support on NC55-MOD-A-SE-S Line Card	Release 7.9.1	The 4-port 800GE modular port adapter (NC57-MPA-2D4H-S) is now supported on NC55-MOD-A-SE-S line card.

The NC57-MPA-2D4H-S modular port adapter supports QSFP28 and QSFP-DD optical transceivers in the following configurations:

- All 4 ports support QSFP28-100GE transceivers.
- Ports 0 and 2 (even-numbered ports) support two QDD-2x100GE transceivers at the same time. This configuration is supported in both the MPA slots of the NCS-55A2-MOD-HD-S, NC55-55A2-MOD-SE-S, NCS-55A2-MOD-S, or NCS-55A2-MOD-HX-S chassis.

Note When QDD-2x100GE transceivers are installed in ports 0 and 2, ports 1 and 3 (odd-numbered ports) cannot be used.

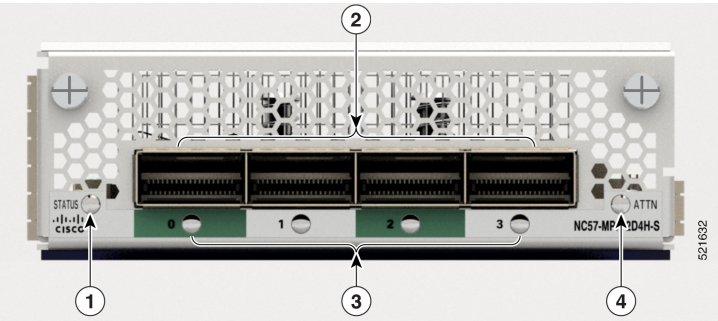
- Only one QDD-400GE transceiver is supported through port 0 in both the MPA slots of the NCS-55A2-MOD-HD-S, NC55-55A2-MOD-SE-S, NCS-55A2-MOD-S, or NCS-55A2-MOD-HX-S chassis.

The NC57-MPA-2D4H-S modular port adapter supports the following configurations of optical transceivers while operating on NC55-MOD-A-SE-S and NC57-MOD-S line cards.

Transceiver	MPA slot 1	MPA slot 2
	• Max bandwidth on NC55-MOD-A-SE-S line card = 400GE • Max bandwidth on NC57-MOD-S line card = 800GE	• Max bandwidth on NC55-MOD-A-SE-S line card = 400GE • Max bandwidth on NC57-MOD-S line card = 800GE
QSFP28-100GE	All ports	All ports
QDD-2x100GE	• On NC55-MOD-A-SE-S line card - Ports 0 and 2 **Note** When QDD-2x100GE transceivers are installed in ports 0 and 2, then ports 1 and 3 cannot be used. • On NC57-MOD-S line card - All ports	• On NC55-MOD-A-SE-S line card - Ports 0 and 2 **Note** When QDD-2x100GE transceivers are installed in ports 0 and 2, then ports 1 and 3 cannot be used. • On NC57-MOD-S line card - All ports
QDD-3x100GE	• On NC55-MOD-A-SE-S line card - Port 0 **Note** When QDD-3x100GE transceivers are installed in port 0, then ports 1, 2 and 3 cannot be used. • On NC57-MOD-S line card - Ports 0 and 2 **Note** When QDD-3x100GE transceivers are installed in ports 0 and 2, then ports 1 and 3 cannot be used.	• On NC55-MOD-A-SE-S line card - Port 0 **Note** When QDD-3x100GE transceivers are installed in port 0, then ports 1, 2 and 3 cannot be used. • On NC57-MOD-S line card - Ports 0 and 2 **Note** When QDD-3x100GE transceivers are installed in ports 0 and 2, then ports 1 and 3 cannot be used.
QDD-400GE	• On NC55-MOD-A-SE-S line card - Not supported • On NC57-MOD-S line card - Ports 0 and 2 **Note** When QDD-400GE transceivers are installed in ports 0 and 2, then ports 1 and 3 cannot be used.	• On NC55-MOD-A-SE-S line card - Not supported • On NC57-MOD-S line card - Ports 0 and 2 **Note** When QDD-400GE transceivers are installed in ports 0 and 2, then ports 1 and 3 cannot be used.

Transceiver	MPA slot 1	MPA slot 2
QDD-4x100GE	• On NC55-MOD-A-SE-S line card - Port 0 **Note** When QDD-4x100GE transceivers are installed in port 0, then ports 1, 2 and 3 cannot be used. • On NC57-MOD-S line card - Ports 0 and 2 **Note** When QDD-4x100GE transceivers are installed in ports 0 and 2, then ports 1 and 3 cannot be used.	• On NC55-MOD-A-SE-S line card - Port 0 **Note** When QDD-4x100GE transceivers are installed in port 0, then ports 1, 2 and 3 cannot be used. • On NC57-MOD-S line card - Ports 0 and 2 **Note** When QDD-4x100GE transceivers are installed in ports 0 and 2, then ports 1 and 3 cannot be used.

Figure 12: NC57-MPA-2D4H-S Modular Port Adapter (MPA)



1	STATUS LED	3	Active/Link LED
2	QSFP28/QSFP-DD port and LED	4	ATTN LED

12-Port 10GE/25GE/50GE MPA with SFP+/SFP28/SFP56

Table 4: Feature History Table

Hardware	Release Information	Feature Description
NCS57-MPA-12L-S modular port adapter	Release 7.6.1	A 12-port 600GE modular port adapter that supports SFP+, SPF28, and SFP56 optical transceivers, the NCS57-MPA-12L-S operates in 10GE, 25GE, and 50GE modes. The following command is modified to add support for the 50GE mode for even-numbered ports (port 4, port 6, port 8, and port 10): • **hw-module port-range** For more information, see the Cisco Network Convergence System 5700 Series: Modular Port Adapters Data Sheet.

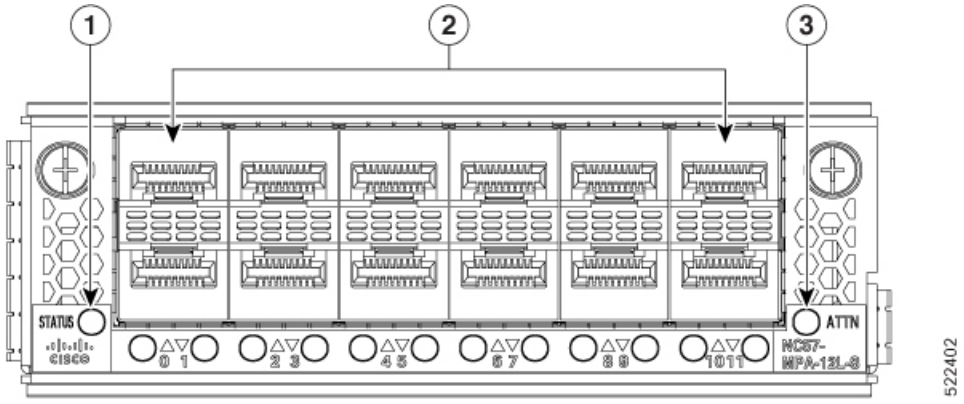
The NCS57-MPA-12L-S modular port adapter supports SFP+, SFP28 and SFP56 optical transceivers in these configurations:

Table 5: Supported SFP optical transceiver configurations

Port	MPA in NC55-MOD-A-S/NC55-MOD-A-SE-S	MPA in NC57-MOD-S
	Maximum bandwidth per MPA = 400GE	Maximum bandwidth per MPA = 600GE

0 and 1	• 10G using **hw-module quad** command • 25G • 50G • Combination of 25G and 50G **Note** Combination of 10G with 25G or 50G is not supported.	• 10G • 25G • 50G • Combination of 10G and 25G • Combination of 25G and 50G **Note** Combination of 10G and 50G or 10G, 25G and 50G is not supported.
2 and 3		
4, 5, 6 and 7	• 10G using **hw-module quad** command • 25G • Combination of 25G and 50G **Note** 50G can be enabled on even-numbered ports using **hw-module port-range** and the subsequent odd port will be disabled. **Note** Combination of 10G with 25G or 50G is not supported.	
8, 9, 10 and 11		

Figure 13: NCS57-MPA-12L-S Modular Port Adapter (MPA)



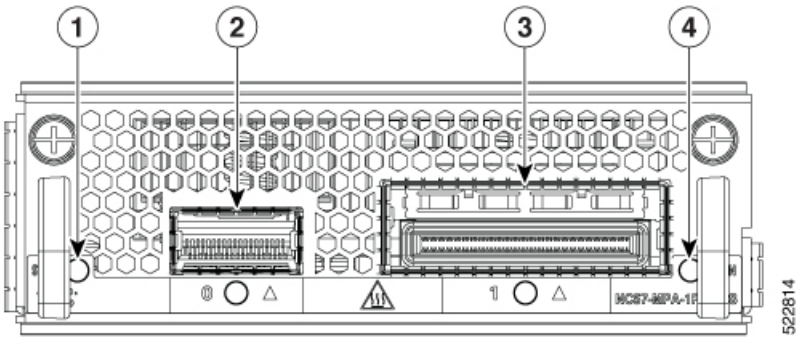
1	STATUS LED	3	ATTN LED
2	SFP56 ports and LEDs		

1-port 400GbE with CFP2-DCO + 1-Port 400GbE with QSFP-DD MPA

Table 6: Feature History Table

Hardware	Release Information	Feature Description
NCS57-MPA-1FH1D-S Modular Port Adapter	Release 7.8.1	This release introduces NCS57-MPA-1FH1D-S, a 2-port 800GbE modular port adapter with one port supporting QSFP-DD and the other supporting CFP2-DCO optical transceivers. This MPA is supported in the NCS-57C3-MODS-SYS router and NC57-MOD-S line card. For more information, see the Cisco Network Convergence System 5700 Series: Modular Port Adapters Data Sheet.

The 2-port 800GbE MPA (NCS57-MPA-1FH1D-S) provides one port for QSFP-DD and one port for CFP2-DCO transceivers. The QSFP-DD port operates in 400GbE mode and supports 4x100G breakout mode, and the CFP2-DCO port operates in 400GbE mode and supports 4x100G, or 3x100G, or 2x100G, or 1x100G breakout modes.

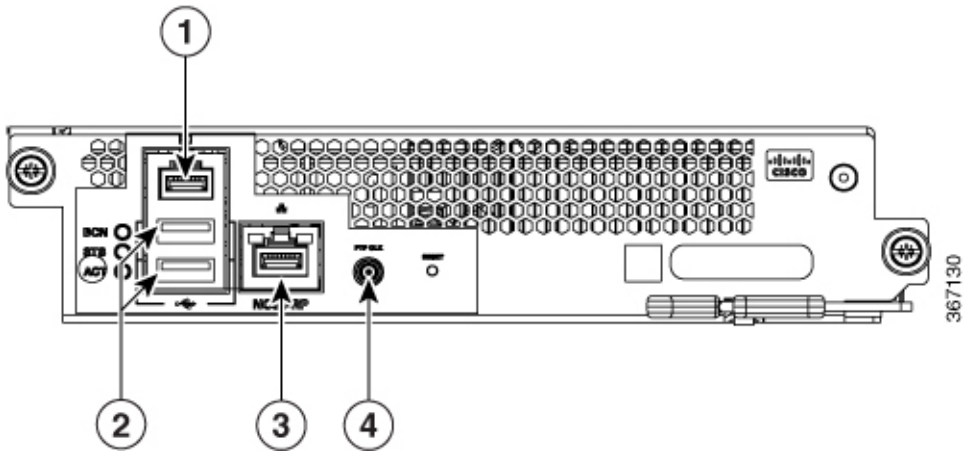


1	STATUS LED	3	CFP2-DCO port and LED
2	QSFP-DD port and LED	4	ATTN LED

Route Processor Card Overview

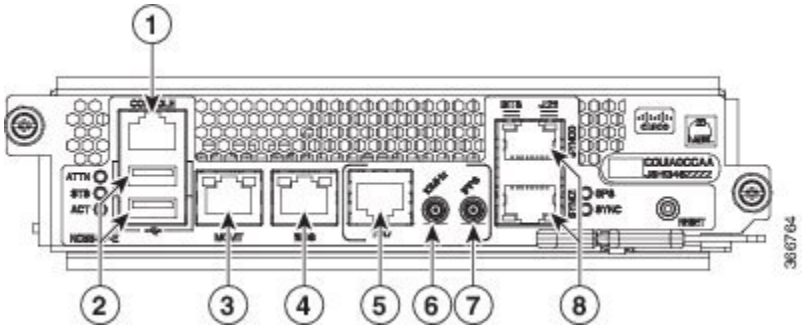
Route processor cards manage all routing operations on the Cisco NCS 5500 Series modular chassis.

NC55-RP



1	Console	3	Management Ethernet
2	USB (2)	4	Mini coax connector for 1 PPS input and output

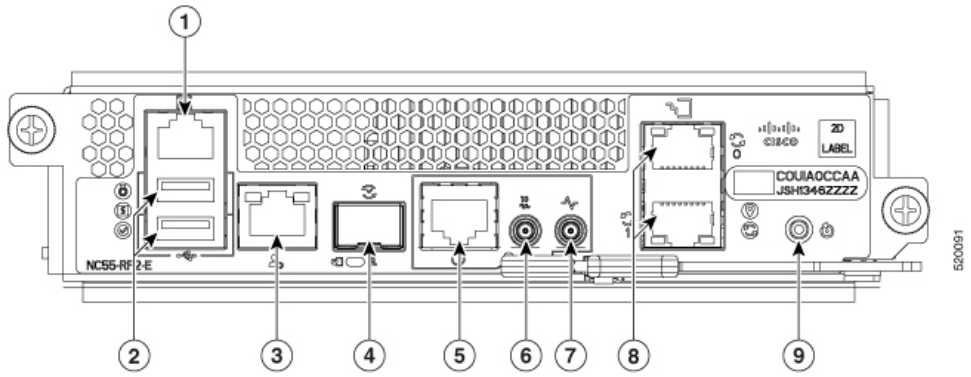
NC55-RP-E



Note The NC55-RP-E supports Class-B timing.

1	Console	5	Shielded RJ-45 connector for Time-of-Day (TOD) interface, input and output
2	USB (2)	6	Mini coax connector for 10 MHz, input and output
3	Management Ethernet	7	Mini coax connector for 1 PPS, input and output
4	10/100/1000-Mbps Ethernet RJ-45 (Copper) port, supports 1588 Precision Time Protocol (PTP)	8	RJ-48 connector for BITS interface, input and output

NC55-RP2-E



Note The NC55-RP2-E supports Class-B and Class-C timing.

Note Using a combination of RP2-E and RP-E is not supported on the same router.

1	Console	6	Mini coaxial connector for 10 MHz, input, and output
2	USB Port Type-A (2-ports). Only the USB drive that is inserted first gets detected.	7	Mini coaxial connector for 1 PPS, input, and output
3	Management Ethernet (10/100/1000-Mbps)	8	SyncE BITS/DTI/J.211
4	IEEE 1588 Precision Time Protocol (PTP)	9	Recessed reset button
5	G.703 Time-of-Day (TOD)		

Environmental and Physical Specifications

For environmental and physical specifications, refer to the *Environmental Properties* table in the Cisco Network Convergence System 5500 Series Data Sheet.

Weight, Quantity and Power Consumption

For weight and power consumption, refer to the *Weight and Power Consumption* table and the *Cisco NCS 5500 Series Line Cards* table in the Cisco Network Convergence System 5500 Series Data Sheet.

Airflow Direction

The airflow through the fan trays and power supplies on the Cisco NCS 5500 series modular router is from the port side intake (front-to-back cooling). To ensure proper airflow, you must make sure that when you install the router its air intake is positioned in a cold aisle and the air exhaust is positioned in a hot aisle.

Maximum Power Available to the Router

The maximum power available for operations depends on the input power from your power source, the number and output capabilities of your power supplies, and the power redundancy mode that you use. Your router's power consumption varies based on bandwidth utilization, enabled features, and environmental factors. To monitor real-time power usage, use the **show environment power** command. For detailed power specifications, refer to the Cisco Network Convergence System 5500 Series Data Sheet or consult Cisco TAC for guidance.

The following table lists the amount of power available for power supplies depending on power inputs, numbers of power supplies, and the mode used.

Table 7: Feature History Table

Feature Name	Release Information	Feature Description
New DC Power Supply NC55-PWR-4.4KW-DC	Release 7.3.1	This release introduces a new Power Supply Unit, NC55-PWR-4.4KW-DC. With the new 4.4 KW DC power supply (NC55-PWR-4.4KW-DC), feed redundancy is supported on the Cisco NCS 5504, Cisco NCS 5508, and Cisco NCS 5516 routers. The PSU supplies power to sensors, fan speeds, faults and alarms, and LED indicators. The firmware can detect AC or DC input types through input data sampling.

Table 8: Maximum Power Available for a Router with 3KW AC Power Supplies

Power Inputs (220 V)	Power Supplies	Combined Mode	*n*+1 Redundancy Mode	*n*+*n* Redundancy Mode
1 input per PSU	1	3000 W	—	—
	2	6000 W	3000 W	3000 W
	3	9000 W	6000 W	3000 W
	4	12000 W	9000 W	6000 W
	5	15000 W	12000 W	6000 W
	6	18000 W	15000 W	9000 W
	7	21000 W	18000 W	9000 W
	8	24000 W	21000 W	12000 W
	9	27000W	24000W	12000W
	10	30000W	27000W	15000W

Table 9: Maximum Power Available for a Router with 3KW DC Power Supplies

Power Inputs (-48 VDC)	Power Supplies	Combined Mode	*n*+1 Redundancy Mode	*n*+*n* Redundancy Mode
2 inputs per PSU	1	3000 W	—	—
	2	6000 W	3000 W	3000 W
	3	9000 W	6000 W	4500 W
	4	12000 W	9000 W	6000 W
	5	15000 W	12000 W	7500 W
	6	18000 W	15000 W	9000 W
	7	21000 W	18000 W	10500 W
	8	24000 W	21000 W	12000 W
	9	27000W	24000W	13500
	10	30000W	27000W	15000W

Table 10: Maximum Power Available for a Router with 3.15KW HVAC/HVDC Power Supplies

Power Inputs (220 V)	Power Supplies	Combined Mode	*n*+1 Redundancy Mode	*n*+*n* Redundancy Mode
1 or 2 inputs per PSU	1	3150 W	—	—
	2	6300 W	3150 W	3150 W
	3	9450 W	6300 W	3150 W
	4	12600 W	9450 W	6300 W
	5	15750 W	12600 W	6300 W
	6	18900 W	15750 W	9450 W
	7	22050 W	18900 W	9450 W
	8	25200 W	22050 W	12600 W
	9	28350 W	25200 W	12600 W
	10	31500 W	28350 W	15750 W

Table 11: Maximum Power Available for a Router with 4.4KW DC Power Supplies

Power Inputs (-48 V DC)	Power Supplies	Combined Mode	*n*+1 Redundancy Mode	*n*+*n* Line Redundancy Mode [1]
3 inputs per PSU	1	4400 W	—	—
	2	8800 W	4400 W	6600 W
	3	13200 W	8800 W	—
	4	17600 W	13200 W	13200 W
	5	22000 W	17600 W	—
	6	26400 W	22000 W	19800 W
	7	30800 W	26400 W	—
	8	35200 W	30800 W	26400 W
	9	39600 W	35200 W	—
	10	44000 W	39600 W	33000 W

[1] *n*+*n* Line Redundancy wired A/B,A/B to 2-inputs of every pair of PSUs (loss of either bus)

Table 12: Maximum Power Available for a Router with 4.4KW Power Supplies (n+n Redundancy Mode with A-Bus Loss)

Power Inputs (-48 V DC)	Power Supplies	*n+n* Line Redundancy Mode [2]
1 input per PSU	1	—
2 inputs per PSU	2	6600 W
1 input per PSU	3	—
2 inputs per PSU	4	13200 W
1 input per PSU	5	—
2 inputs per PSU	6	19800 W
1 input per PSU	7	—
2 inputs per PSU	8	26400 W
1 input per PSU	9	—
2 inputs per PSU	10	33000 W

[2] *n*+*n* Line Redundancy wired A/B/A, B/A/B to 3-inputs of every pair of PSUs (example: Loss of A-Bus)

Graceful Shutdown of DC PSU

If the DC input power to the DC PSU falls below 40V, graceful shutdown of the power supply is initiated, and the chassis is shutdown. To power up the chassis again, shut off the DC circuit at the circuit breaker, then turn on the DC circuit. The chassis will power up if the DC input power is above 43.5V.

Note You can disable the graceful shutdown of the DC PSU using the **environment graceful-shutdown disable** command in Admin Configuration mode. When graceful shutdown is disabled, the chassis will shut down if the DC input power falls below 38.5V +/- 1V. The chassis will recover (power on again) if the DC input power to the DC PSU is above 43.5V. In this mode, the long-term reliability of the router can be impacted if the DC input power continues to fluctuate between 38.5V and 43.5V (resulting in continuous power-on and power-off cycles).

Transceivers, Connectors, and Cables

Transceiver and Cable Specifications

To determine which transceivers and cables are supported by this router, refer to the Transceiver Module Group (TMG) Compatibility Matrix Tool:

https://tmgmatrix.cisco.com

To see the transceiver specifications and installation information, see Cisco Transceiver Modules Install and Upgrade Guides.

RJ-45 Connectors

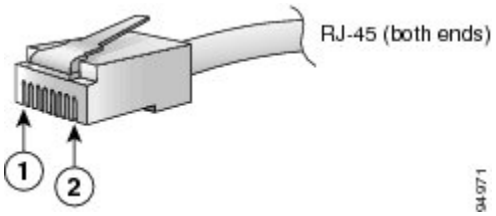
The RJ-45 connector connects Category 3, Category 5, Category 5e, Category 6, or Category 6A foil twisted-pair or unshielded twisted-pair cable from the external network to the following module interface connectors:

- Router chassis
  - CONSOLE port
  - MGMT ETH port

Caution To comply with GR-1089 intrabuilding, lightning immunity requirements, you must use a foil twisted-pair (FTP) cable that is properly grounded at both ends.

The following figure shows the RJ-45 connector.

Figure 14: RJ-45 Connector



1	Pin 1	2	Pin 2

Pinouts

The following sections describe the pinouts for the Cisco NCS 5500 RP-E (NC55-RP-E) interfaces:

BITS Port Pinouts

The table below summarizes the BITS port pinouts.

Table 13: BITS Port Pinouts

Pin	Signal Name	Direction	Description
1	RX Ring	Input	Receive Ring
2	RX Tip	Input	Receive Tip
3	–	–	Not used

Pin	Signal Name	Direction	Description
4	TX Ring	Output	TX Ring
5	TX Tip	Output	TX Tip
6	–	–	Not used
7	–	–	Not used
8	–	–	Not used

Time-of-Day Port Pinouts

The table below summarizes the ToD/1-PPS port pinouts.

Table 14: RJ-45 ToD/1-PPS Port Pinouts

Pin	Signal Name	Direction	Description
1	–	–	–
2	–	–	–
3	1PPS_N	Output or Input	1PPS RS422 signal
4	GND	–	–
5	GND	–	–
6	1PPS_P	Output or Input	1PPS RS422 signal
7	TOD_N	Output or Input	Time-of-Day character
8	TOD_P	Output or Input	Time-of-Day character

Management and PTP Ethernet Port Pinouts

The table below summarizes the Management and Precision Time Protocol (PTP) Ethernet port pinouts.

Table 15: Management and PTP Ethernet Port Pinouts

Pin	Signal Name
1	TRP0+
2	TRP0-
3	TRP1+
4	TRP1-
5	TRP2+

Pin	Signal Name
6	TRP2-
7	TRP3+
8	TRP3-

USB Flash or MEM Port Pinouts

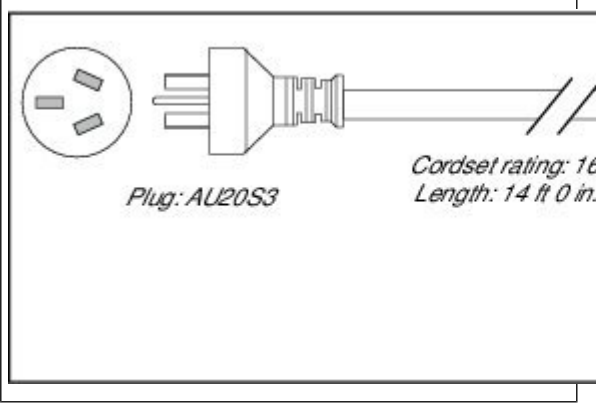
The table below summarizes the USB flash or MEM port pinouts.

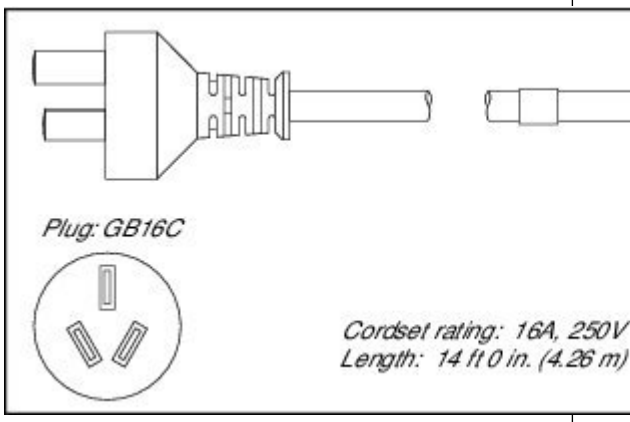
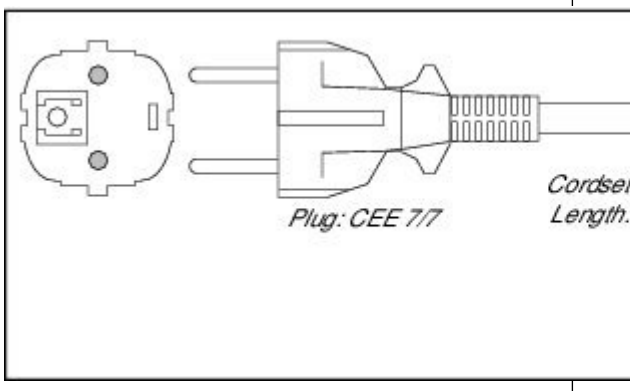
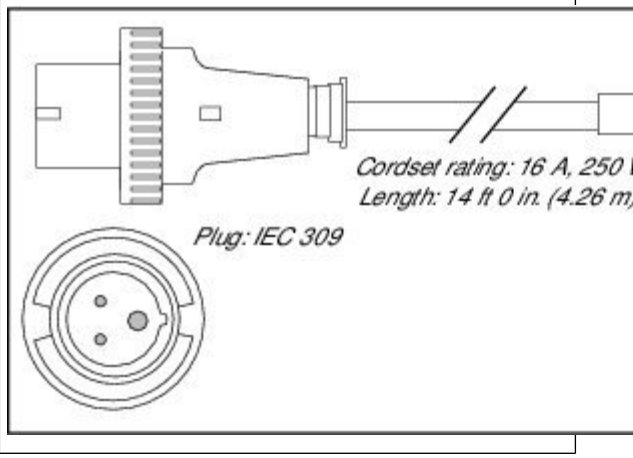
Table 16: USB Flash or MEM Port Pinouts

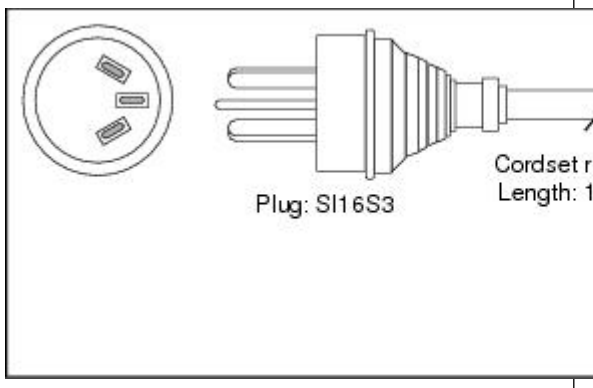
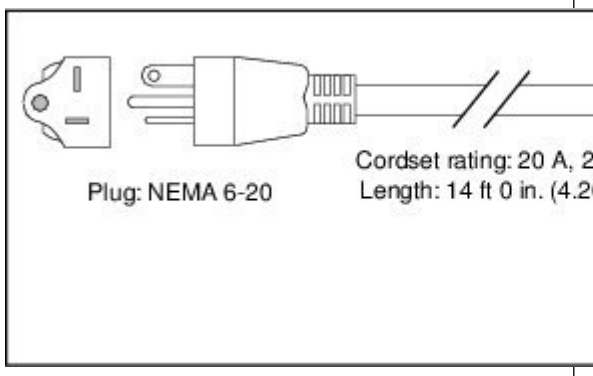
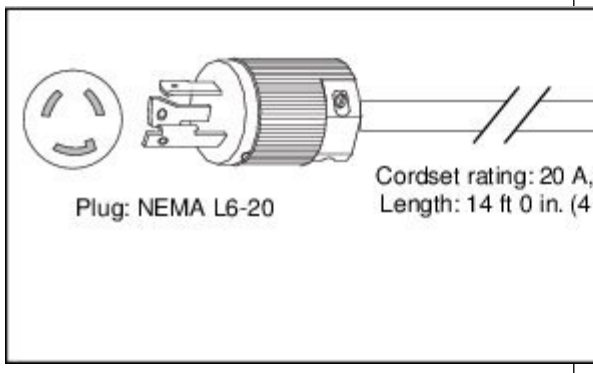
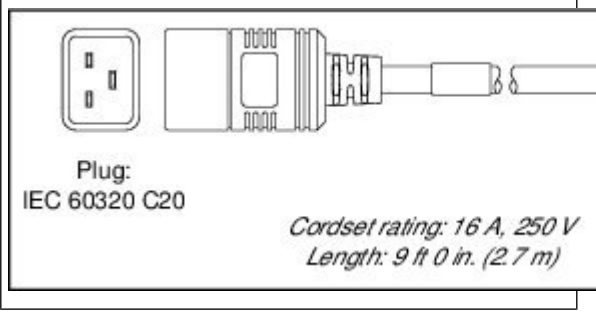
Pin	Signal Name	Description
A1	Vcc	+5 VDC
A2	D-	Data -
A3	D+	Data +
A4	Gnd	Ground

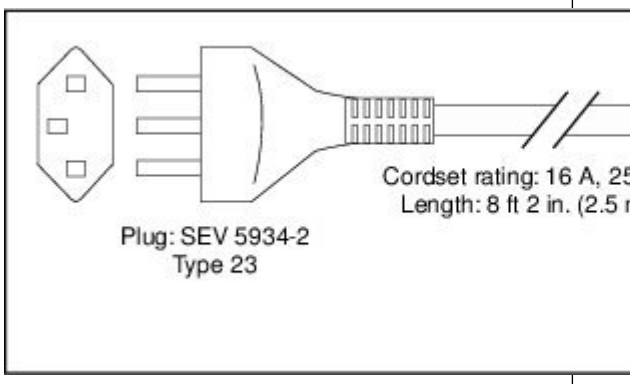
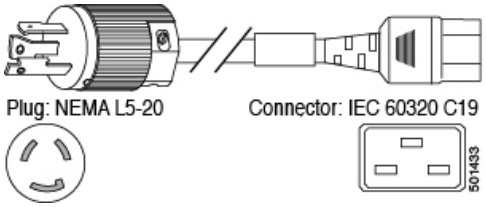
Power Supply Power Cord Specifications

Standard AC Power Cords

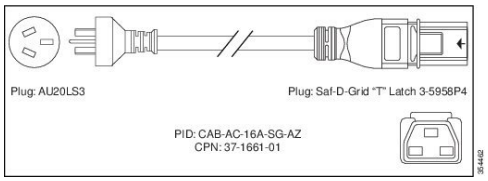
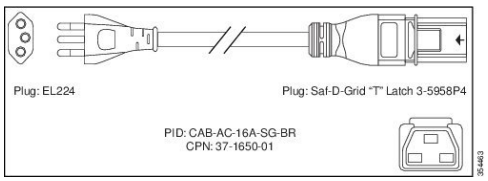
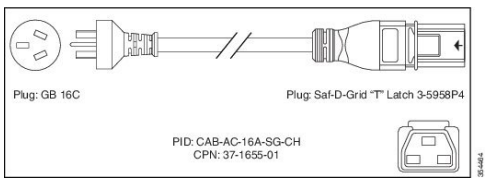
Locale	Part Number	Cord Set Rating	Power Cord Illustration
Australia and New Zealand	CAB-AC-16A-AUS	16A, 250 VAC	

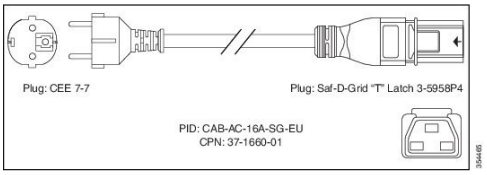
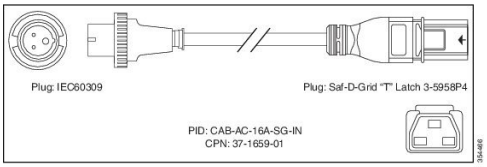
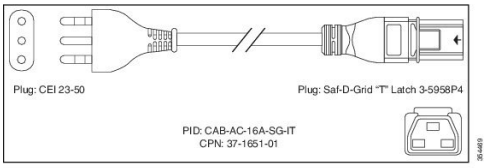
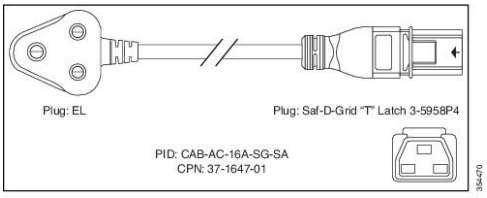
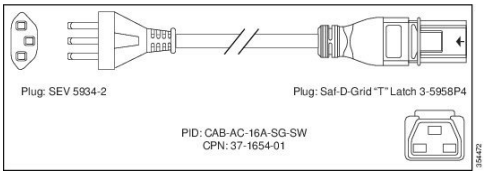
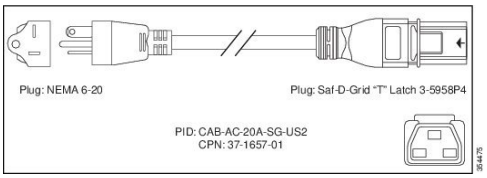
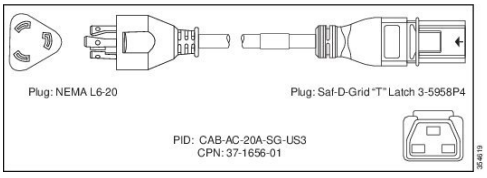
Locale	Part Number	Cord Set Rating	Power Cord Illustration
Peoples Republic of China	CAB-AC-16A-CH	16A, 250 VAC	
Continental Europe	CAB-AC-2500W-EU	16A, 250 VAC	
International	CAB-AC-2500W-INT	16A, 250 VAC	

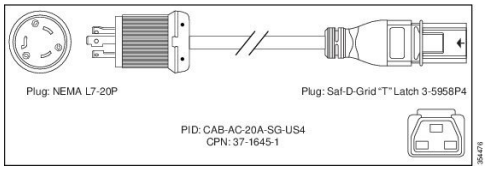
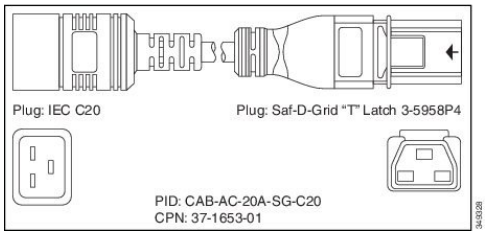
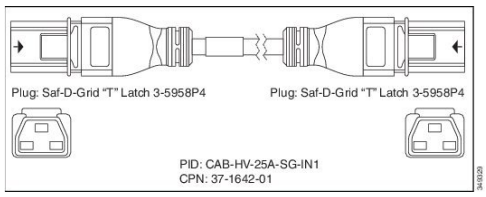
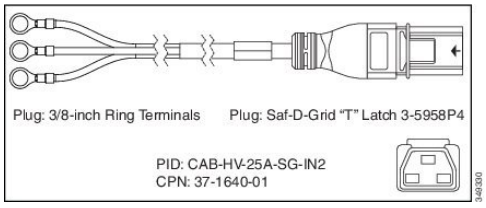
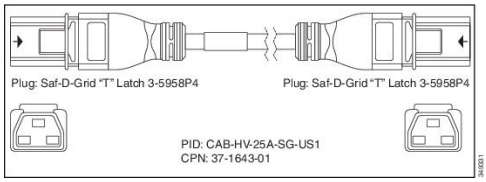
Locale	Part Number	Cord Set Rating	Power Cord Illustration
Israel	CAB-AC-2500W-ISRL	16A, 250 VAC	
Japan and North America (non locking) 200-240 VAC operation	CAB-AC-2500W-US1	16A, 250 VAC	
Japan and North America (locking) 200-240 VAC operation	CAB-AC-C6K-TWLK	16A, 250 VAC	
Power distribution unit (PDU)	CAB-C19-CBN	16A, 250 VAC	

Locale	Part Number	Cord Set Rating	Power Cord Illustration
Switzerland	CAB-ACS-16	16A, 250 VAC	
North America	CAB-L520P-C19-US	NEMA L5-20 to IEC-C19 6 feet (1.8 m)	

HVAC/HVDC Power Cords

Locale	Part Number	Power Cord Set Rating	Power Cord Illustration
Australia	CAB-AC-16A-SG-AZ	16A, 250 VAC	
Brazil	CAB-AC-16A-SG-BR	16A, 250 VAC	
China	CAB-AC-16A-SG-CH	16A, 250 VAC	

Locale	Part Number	Power Cord Set Rating	Power Cord Illustration
Europe	CAB-AC-16A-SG-EU	16A, 250 VAC	
International/UK	CAB-AC-16A-SG-IN	16A, 250 VAC	
Italy	CAB-AC-16A-SG-IT	16A, 250 VAC	
South Africa	CAB-AC-16A-SG-SA	16A, 250 VAC	
Switzerland	CAB-AC-16A-SG-SW	16A, 250 VAC	
North America (non locking) 200-240 VAC operation	CAB-AC-20A-SG-US2	20A, 250 VAC	
North America (locking) 200-240 VAC operation	CAB-AC-20A-SG-US3	20A, 250 VAC	

Locale	Part Number	Power Cord Set Rating	Power Cord Illustration
North America 277 VAC operation	CAB-AC-20A-SG-US4	20A, 277 VAC	
North America Cabinet Jumper Power Distribution unit (PDU)	CAB-AC-20A-SG-C20	20A, 250 VAC	
International, Saf-D-Grid/Saf-D-Grid	CAB-HV-25A-SG-IN1	20A, 400 VDC	
International, Ring Terminal source plug, Ring Terminal/Saf-D-Grid	CAB-HV-25A-SG-IN2	20A, 300 VAC/500 VDC	
North America, Saf-D-Grid/Saf-D-Grid	CAB-HV-25A-SG-US1	20A, 400 VDC	
North America, Ring Terminal source plug, Ring Terminal/Saf-D-Grid	CAB-HV-25A-SG-US2	20A, 300 VAC/500 VDC	