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Cisco NCS 5500 Modular Chassis: Second-Generation Fabric and Fan Modules

Contents

The second generation of Cisco NCS 5500 fabric cards and fan trays enhance the per-slot forwarding capacity of NCS 5500 by 2.7 times.

Product overview

The Cisco Network Convergence System 5500 Series offers industry-leading density of routed 100 Gigabit Ethernet (100 GE) ports for high-scale WAN aggregation. The NCS 5500 Series is designed to efficiently scale between data centers and large enterprises, web, and service provider WAN and aggregation networks. With the introduction of the second generation of fabric cards and fan trays, the forwarding capacity of NCS 5500 modular or line-card-based routers will be augmented by 2.7 times. The second-generation fabric cards and fan trays replace the first generation and a seamless upgrade will be supported. The upgrade will serve to support newer generation NCS 5700 line cards on the three existing variants of modular chassis, NCS5504, NCS 5508 and NCS 5516. Note that the new generation of fabric cards and fan trays are not compatible with their respective previous generation and hence should not be mixed with the first generation of fabric cards and fan trays.

Figure 1.
Cisco NCS 5500 Series second-generation fabric card for 16-slot chassis

Figure 2.
Cisco NCS 5500 Series second-generation fabric card for 8-slot chassis

Figure 3.
Cisco NCS 5500 Series second-generation fabric card for 4-slot chassis

The new fabric cards will offer double the switching capacity per fabric compared to the previous generation, to 1.8 Tbps. And the six fabric cards per chassis will offer up to a total of 10.8 Tbps per slot of bandwidth for every line card. The new fan trays are hot-swappable and will continue to provide front-to-back cooling for all the modules in the chassis. Each fan tray will cover two fabric modules and there will be a total of three fan trays to cover six fabric cards in the system. The second-generation fabric and fans are backward-compatible with all the line cards currently supported on the NCS 5500 Series and are absolutely required for the NCS 5700 line cards with 400GE and 100GE interface ports.

This second generation of fabric cards and fan trays for 16-slot chassis and 8-slot chassis and 4-slot chassis are currently shipping.

Figure 4.
Cisco NCS 5500 Series second-generation fan tray for 16-slot chassis

Figure 5.
Cisco NCS 5500 Series second-generation fan tray for 8-slot chassis

Figure 6.
Cisco NCS 5500 Series second-generation fan tray for 4-slot chassis

Software requirements

The second-generation fabric cards and fan trays for NCS 5500 Series 16-slot chassis (NCS-5516) and 8-slot chassis (NCS-5508) will be supported on Cisco IOS XR Software Release 6.6.25 or later and for NCS-5504 chassis, the second generation fabric cards and fan trays are supported on Cisco IOS XR Software Release 7.2.2 or later.

Features and benefits

Table 1 outlines the features and benefits of the second-generation fabric cards and fan trays for the NCS 5500. Table 2 outlines the new cards' and trays' specifications. Table 3 outlines the environmental properties.

Table 1. Features and benefits

Feature	Benefits descriptions
High-capacity fabric element ASICs	Enables high-density 100GE and 400GE interface on line cards and more than doubles the overall switching capacity of the system.
Power consumption	Ultra-low power consumption per Gigabit Ethernet
Fast boot time	Overall faster boot time and convergence during router upgrade or maintenance
Redundancy	Redundant fan trays
Industry-leading, carrier-class Cisco IOS XR Software	Visibility and telemetry Machine-to-machine interface Application hosting Flexible platform and packaging Modularity Automation
Backward-compatible	Backward-compatible with the current version of line cards

Table 2. NCS 5500 2nd generation Switch Fabric Specifications

Specification	Model number		
Product ID (PID)	**NC55-5516-FC2**	**NC55-5508-FC2**	**NC55-5504-FC2**
Specifications	• 6 fabric cards per chassis • Each fabric card provides 1.8 Tbps bandwidth to every line card slot in the chassis, with a total of 10.8 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 • Backward compatibility with already shipping line cards • Can co-exist only with the second generation of fan trays	• 6 fabric cards per chassis • Each fabric card provides 1.8 Tbps bandwidth to every line card slot in the chassis, with a total of 10.8 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 • Backward compatibility with already shipping line cards • Can co-exist only with the second generation of fan trays	• 6 fabric cards per chassis • Each fabric card provides 1.8 Tbps bandwidth to every line card slot in the chassis, with a total of 10.8 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 • Backward compatibility with already shipping line cards • Can co-exist only with the second generation of fan trays

Specification	Model number		
Power consumption	With previous-generation NCS 5500 line cards: • Typical: 480 watts • Maximum (55°C/130°F): 580 watts With new-generation NCS 5700 line cards: • Typical: 670 watts • Maximum (40°C/105°F): 790 watts	With previous-generation NCS 5500 line cards: • Typical: 190 watts • Maximum (55°C/130°F): 230 watts With new-generation NCS 5700 line cards • Typical: 280 watts • Maximum (40°C/105°F): 320 watts	With previous-generation NCS 5500 line cards: • Typical: 130 watts • Maximum (55°C/130°F): 134 watts With new-generation NCS 5700 line cards • Typical: 160 watts • Maximum (40°C/105°F): 167 watts
Physical specifications	Height: 31.42 in (798.14 mm) Width: 2.46 in (62.5 mm) Depth: 11.43 in (290.36 mm) Weight: 24.50 lbs (11.11 kg)	Height: 17.36 in (441.75 mm) Width: 2.46 in (62.5 mm) Depth: 11.43 in (290.36 mm) Weight: 12.51 lbs (5.68 kg)	Height – 10.3 in (261.7 mm) Width – 2.43 in (61.7 mm) Depth – 11.89 (302.1 mm) Weight: 7.37 lbs (3.35 kg)

[*] N+1 redundancy with the scale version of NCS 5700 line cards.

Table 3.   NCS 5500 2nd generation Fan Tray Specifications

Specification	Model number		
Product ID (PID)	**NC55-5516-FAN2**	**NC55-5508-FAN2**	**NC55-5504-FAN2**
Specifications	• 3 fan trays per chassis • N+1 redundancy • Fabric cards are placed behind the fan trays • Can co-exist only with the second generation of fabric cards	• 3 fan trays per chassis • N+1 redundancy • Fabric cards are placed behind the fan trays • Can co-exist only with the second generation of fabric cards	• 3 fan trays per chassis • N+1 redundancy • Fabric cards are placed behind the fan trays • Can co-exist only with the second generation of fabric cards
Power consumption	With previous-generation NCS 5500 line cards: • Typical: 320 watts • Maximum (55°C/130°F): 1330 watts With new-generation NCS 5700 line cards: • Typical: 320 watts • Maximum (40°C/105°F): 1330 watts	With previous-generation NCS 5500 line cards: • Typical: 120 watts • Maximum (55°C/130°F): 670 watts With new-generation NCS 5700 line cards: • Typical: 120 watts • Maximum (40°C/105°F): 670 watts	With previous-generation NCS 5500 line cards: • Typical: 95 watts • Maximum (55°C/130°F): 520 watts With new-generation NCS 5700 line cards: • Typical: 95 watts • Maximum (40°C/105°F): 520 watts
Physical specifications	Height: 32.07 in (814.77 mm) Width: 5.04 in (128.1 mm) Depth: 5.11 in (129.98 mm) Weight: 18.44 lbs (8.37 kg)	Height: 18.07 in (459.2 mm) Width: 5.04 in (128.1 mm) Depth: 5.11 in (129.98 mm) Weight: 10.11 lbs (4.59 kg)	Height – 10.6 in (269.2 mm) Width – 4.97 in (126.15 mm) Depth – 6.9 in (175.3 mm) Weight: 8.43 lbs (3.83 kg)

Table 4. Environmental properties

Property	Cisco NCS 5500 Series
Operating temperature	32° to 104°F (0° to 40°C)
Operating temperature NEBS (short-term)[1]	23° to 131°F (–5° to 55°C)
Nonoperating (storage) temperature	–40° to 158°F (–40° to 70°C)
Operating relative humidity (short-term)[1]	5% to 85% (GR-63 CORE) 5% to 93% Note: Not to exceed 0.024 kg water or dry air
Storage (relative) humidity	50% to 93% (40°C/105°F) NEBS GR-63-CORE
Altitude	0 to 13,000 ft (0 to 3960 m) 0 to 6000 ft (55°C/130°F), 6000 to 13,000 ft 45°C/113°F)
Power inputs	Worldwide ranging AC (90 to 265V; 50 to 60 Hz) Worldwide ranging DC (–40V to –72V)
Airflow	Front to back

[1] Short-term refers to a period of not more than 96 consecutive hours and a total of not more than 15 days in 1 year.
(This number refers to a total of 360 hours in any given year, but no more than 15 occurrences during that 1-year period.)

Table 5. Regulatory standards compliance: Safety and EMC

Specification	Description
Regulatory compliance	Products should comply with CE Marking per directives 2014/30/EU and 2014/35/EU with 2011/65/EU
Network Equipment Building Standards (NEBS)	Designed to meet GR-63-CORE and GR-1089-CORE
Safety	• UL 60950-1 Second Edition • CAN/CSA-C22.2 No. 60950-1 Second Edition • IEC 62368 • EN 60950-1 Second Edition • IEC 60950-1 Second Edition • AS/NZS 60950-1
EMC standards	• AS/NZS CISPR22 Class A • CISPR32 Class A • EN55032 Class A • ICES003 Class A • VCCI Class A • EN61000-3-2 • EN61000-3-3

Specification	Description
EMC immunity	• EN55024 • CISPR24 • EN300386
RoHS	The product is RoHS-6 compliant with exceptions for leaded-ball grid-array (BGA) balls and lead press-fit connectors.

Read additional information related to NCS 5500 regulatory compliance and safety standards.

Ordering information

Table 6. Ordering information Fabric, Fan modules and Software

Part number	Product description
Hardware	
NC55-5516-FC2	NCS 5516 second-generation Fabric Card
NC55-5516-FC2=	NCS 5516 second-generation Fabric Card Spare
NC55-5516-FAN2	NCS 5516 second-generation Fan Tray
NC55-5516-FAN2=	NCS 5516 second-generation Fan Tray Spare
NC55-5508-FC2	NCS 5508 second-generation Fabric Card
NC55-5508-FC2=	NCS 5508 second-generation Fabric Card Spare
NC55-5508-FAN2	NCS 5508 second-generation Fan Tray
NC55-5508-FAN2=	NCS 5508 second-generation Fan Tray Spare
NC55-5504-FC2	NCS 5504 second-generation Fabric Card
NC55-5504-FC2=	NCS 5504 second-generation Fabric Card Spare
NC55-5504-FAN2	NCS 5504 second-generation Fan Tray
NC55-5504-FAN2=	NCS 5504 second-generation Fan Tray Spare
Software	
XR-NC55-P-06.06	Cisco IOS XR Software 6.6.25 Release Image onward
XR-NC55-PK9-06.06	Cisco IOS XR Software 6.6.25 Release Crypto Image onward
XR-NC55-P-07.02	Cisco IOS XR Software 7.2.2 Release Image onward (NC55-5504-FC2)
XR-NC55-PK9-07.02	Cisco IOS XR Software 7.2.2 Release Crypto Image onward (NC55-5504-FC2)

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 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).

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	Materials
Information on electronic waste laws and regulations, including products, batteries, and packaging	WEEE compliance

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.

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.

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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Power consumption figures	Table 3	Oct 2022

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