

Cisco Network Convergence System 5500 Series: Dense 25G Fixed Chassis

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Product overview

According to Cisco's 2019 VNI Global Mobile Data Traffic Forecast, mobile data traffic is expected to grow at a 46 percent Compound Annual Growth Rate (CAGR) from 2017 to 2022, two times faster than the growth of global IP fixed traffic during the same period. To meet this growth economically, one of the architecture options available today is Centralized RAN (C-RAN). In this architecture, the base station is separated into two parts, the Baseband Unit (BBU) and the Remote Radio Head (RRH). The baseband processing functions are centralized at the aggregation site resulting in more efficient use of resources. However, to interconnect the BBU and RRH higher speed interfaces are needed.

The Cisco® Network Convergence System (NCS) 5500 Series offers a new fixed configuration chassis, NCS-55A1-48Q6H (Figure 1) designed to support high density of interfaces up to 25GE. These systems can provide a cost-effective solution by supporting WAN connectivity to RRH and LAN connectivity to BBU on a single platform.

The Cisco NCS-55A1-48Q6H systems provide dense 1GE/10GE/25GE functionality needed for modern spine-leaf architectures and Top-of-Rack (ToR) roles. Capabilities such as advanced packet classification, segment routing, ultra-wide ECMP, programmable network management, and telemetry are added to the robust and mature features already present in Cisco IOS® XR Software Release 6.6.25.

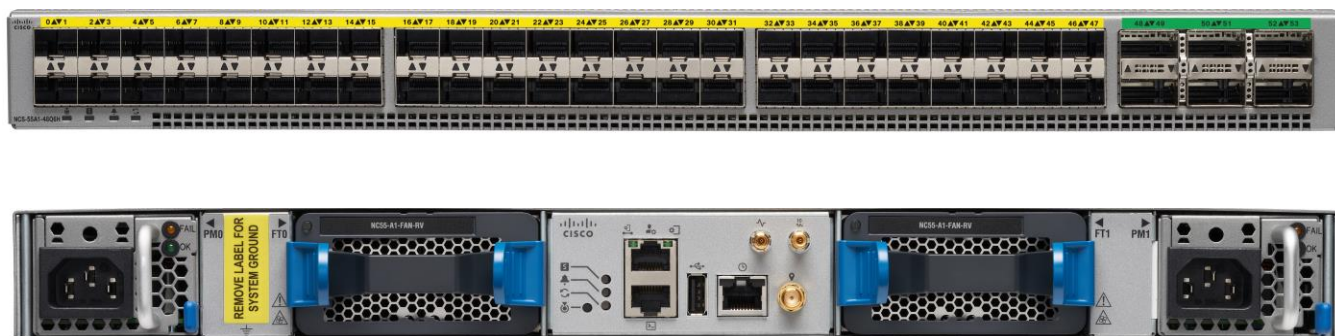


Figure 1.
The Cisco NCS-55A1-48Q6H Chassis

Cisco IOS XR Software overview

The Cisco NCS 5500 Series fixed chassis is powered by the industry-leading, carrier-class, 64-bit version of Cisco IOS XR Software designed for operational efficiency, optimized utilization, and service agility (evolved programmable network). Cisco IOS XR Software offers rich features such as iPXE boot, auto provisioning, native support for third-party application hosting, machine-to-machine interface, telemetry, and flexible software package delivery.

Software requirement

The Cisco NCS-55A1-48Q6H fixed chassis supports Cisco IOS XR Software Release 6.6.25 and later.

Specifications

Tables 1 through 4 list key specifications for the Cisco NCS-55A1-48Q6H Fixed Chassis.

Table 1. Features and benefits of Cisco NCS-55A1-48Q6H Fixed Chassis (Cisco IOS XR Software 6.6.25 release and later)

Feature	Specification
Integrated interface	1GE/10GE/25GE/40GE/100 Gigabit Ethernet support
Industry-leading, carrier-class Cisco IOS XR Software	Visibility and telemetry Machine-to-machine interface Application hosting Flexible platform and packaging Modularity Automation
Management ports	Provides easy access to system console
External USB port	Helps simplify image and file management
Solid-State Disk (SSD) drive	Memory for storing software image, configuration, logging, and recovery
Power consumption	Ultra-low power per Gigabit Ethernet
Redundancy	Redundant fan tray Redundant AC or DC power supply

Table 2. Cisco NCS-55A1-48Q6H Fixed Chassis specifications

Feature	Specification
Chassis PIDs	NCS-55A1-48Q6H
Interfaces	48 ports of 1GE/10GE/25GE 6 ports of 40GE/100GE
Integrated route processor	IOS-XR 64-bit software running on 6 cores x86 CPU @ 1.9 Ghz
Management ports	2x RJ45, one for console and two for management LAN ports

Feature	Specification
Flexible forwarding ports	6x 100GE Gigabit Ethernet with QSFP28 optics QSFP+ optics to support 40GE, 4x 10/25GE breakout options available 48x 25GE Gigabit Ethernet with SFP28 optics SFP+ or SFP optics can be supported on SFP28 ports (refer supported transceivers module matrix for details - https://www.cisco.com/c/en/us/support/interfaces-modules/transceiver-modules/products-device-support-tables-list.html)
System memory	32 GB
SSD drive	128 GB
Timing ports	1 PPS in/out, 10 Mhz in/out, ToD Internal GNSS
Performance	Up to 1800 Gbps of system throughput Full line rate MACsec encryption on all 6x 100G ports
Route scale	Up to 2M FIB entries
Power and cooling features	2 hot-swappable power supplies providing 1+1 redundancy 2 hot-swappable fan trays provide redundant system cooling
Power consumption	Typical: 460 W at 25 degrees Celsius Maximum: 700 W at 55 degrees Celsius
Physical specification	Height: 1RU 1.72 in (4.37 cm) Width: 17.3 in (43.94 cm) Depth: 26.84 in (68.19 cm) Weight: 27.5 lbs (12.5 kg)

Table 3. Software features Support on Cisco NCS-55A1-48Q6H Fixed Chassis in Cisco IOS XR Software 6.6.25 Release

Feature	Specification
Layer 2	<ul style="list-style-type: none"> • Layer 2 switch ports • IEEE 802.1Q VLAN encapsulation/Q-in-Q encapsulation • IEEE 802.1ad • Cisco Bundle Ethernet technology (up to 64 ports per Ethernet Bundle) • Link Aggregation Control Protocol (LACP): IEEE 802.3ad • Jumbo frames on all ports (up to 9216 bytes) • L2 ingress Access Control List (ACL) • L2 AC-AC cross-connect • Ethernet Flow Point (EFP) and VLAN trunks • Virtual Router Redundancy Protocol (VRRP)

Feature	Specification
Layer 3	<ul style="list-style-type: none"> • IPv4 and IPv6 unicast • Layer 3 interfaces: physical and sub-interfaces • Routing protocols: static, Open Shortest Path First (OSPFv2), OSPFv3, Intermediate System to Intermediate System (ISIS), ISISv6, and Border Gateway Protocol (BGP) • 64-way Equal-Cost Multipath (ECMP) • L3 ingress and egress IPv4 ACL and IPv6 ACL • Bidirectional Forwarding Detection (BFD) • Cisco Bundle Ethernet technology (up to 64 ports per Ethernet Bundle) • Link Aggregation Control Protocol (LACP): IEEE 802.3ad • Jumbo frame support (up to 9216 bytes) • Virtual Router Redundancy Protocol (VRRP) • Layer 3 Virtual Private Network (L3VPN)
MPLS	<ul style="list-style-type: none"> • Label switching • LDP • MPLS Traffic Engineering • Ethernet over MPLS (EoMPLS)
Segment Routing (SR)	<ul style="list-style-type: none"> • Segment routing-based transport • ISIS extensions to segment routing • OSPF extensions to segment routing • BGP egress peering engineering • Segment Routing Traffic Engineering (SR-TE) • Segment Routing Topology Independent Loop Free Alternatives (TI-LFA)
Quality of Service (QoS)	<ul style="list-style-type: none"> • Hierarchical QoS • Ingress classification based on Class of Service (L2), IP differentiated service code point (L3), IP ACL (L3/L4), IP precedence (type of service) (L3) • DSCP marking • 8 queues for user traffic • Support for priority queuing
Automation	<ul style="list-style-type: none"> • Zero-Touch Provisioning (ZTP), iPXE • Configuration management • Network Configuration Protocol (NETCONG/YANG model)
Security	<ul style="list-style-type: none"> • 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 • Layer 2 ingress ACLs • Layer 3 ingress ACLs
Management	<ul style="list-style-type: none"> • MIB, XML, JSON, GPB, and SNMP • MPLS OAM (Label-Switched Path [LSP] ping, LSP traceroute) • Ethernet OAM

Table 4. Environmental properties

Property	Cisco NCS 5500 Series
Normal operating temperature	Port-S Intake supply: 32 to 104° F (0 to 40° C) – Port-S Exhaust supply: 32 to 95° F (0 to 35° C)
Non-operating (storage) temperature	-40 to 158° F (-40 to 70° C)
Operating humidity	5 to 95% (noncondensing)
Storage (relative) humidity	5 to 95% at 40° C per NEBS GR-63-Core
Altitude	0 to 9842 ft (0 to 3000 m)
Power inputs	Worldwide ranging AC (90 to 265 V; 50 to 60 Hz) Worldwide ranging DC (-40 to -72 V)
Air flow	Front to back Back to front

Regulatory standards compliance

Table 5. 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 • GB4943
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

Specification	Description
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.

Supported transceivers modules

Check the Cisco NCS 5500 Series supported transceivers module matrix:

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

Please note, 1G Auto Negotiation is not supported on any of the 48 ports of 1GE/10GE/25GE.

Ordering information

Table 6. Ordering information – Flexible Consumption Model

Part number	Product description
Hardware	
NCS-55A1-48Q6-SYS	NCS55A1 Fixed 48X25G & 6X100G Chassis
NCS-55A1-48Q6-TRK	NCS55A1 Fixed 48X25G & 6X100G HW Tracking PID
NCS-1100W-ACFW	NCS 5500 AC 1100W Power Supply Port-S Intake/Front-to-Back
NCS-1100W-ACRV	NCS 5500 AC 1100W Power Supply Port-S Exhaust/Back-to-Front
NCS-1100W-DCRV	NCS 5500 DC 1100W Power Supply Port-S Exhaust/Back-to-Front
NCS-950W-DCFW	NCS 5500 DC 950W Power Supply Port-S Intake/Front-to-Back
NCS-1RU-ACC-KIT	NCS 5500 Accessory Kit for 1RU Chassis
NC55-A1-FAN-FW	NCS 5500 Fan Tray 1RU Chassis Port-S Intake/Front-to-Back
NC55-A1-FAN-RV	NCS 5500 Fan Tray 1RU Chassis Port-S Exhaust/Back-to-Front

Part number	Product description
Flexible Consumption Model Software Licenses	
ESS-100G-RTU-1	NCS 5500 Core & Aggregation Essentials SW RTU v1.0 100G
ADV-100G-RTU-1	NCS 5500 Core & Aggregation Advantage w/o Essentials SW RTU v1.0 100G

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

Table 7. Ordering information Perpetual

Part number	Product Description
Hardware	
NCS-55A1-48Q6H	NCS55A1 Fixed 48X25G & 6X100G Chassis
NCS-1100W-ACFW	NCS 5500 AC 1100W Power Supply Port-S Intake/Front-to-Back
NCS-1100W-ACRV	NCS 5500 AC 1100W Power Supply Port-S Exhaust/Back-to-Front
NCS-1100W-DCRV	NCS 5500 DC 1100W Power Supply Port-S Exhaust/Back-to-Front
NCS-950W-DCFW	NCS 5500 DC 950W Power Supply Port-S Intake/Front-to-Back
NCS-1RU-ACC-KIT	NCS 5500 Accessory Kit for 1RU Chassis
NC55-A1-FAN-FW	NCS 5500 Fan Tray 1RU Chassis Port-S Intake/Front-to-Back
NC55-A1-FAN-RV	NCS 5500 Fan Tray 1RU Chassis Port-S Exhaust/Back-to-Front
XR-NC55-P-06.06	Cisco IOS XR IP/MPLS Core Software
XR-NC55-PK9-06.06	Cisco IOS XR IP/MPLS Core Software 3DES
NC55P-BDL-48QT	NCS 5500 SW 4 x Bundle Lic for NCS-55A1-48Q6H
NC55P-ADVL3-48QT	NCS 5500 L3VPN Lic for NCS-55A1-48Q6H
NC55P-ADVL2-48QT	NCS 5500 L2VPN Lic for NCS-55A1-48Q6H
NC55P-CRAGR-48QT	NCS 5500 Core and Aggregation Lic for NCS-55A1-48Q6H
NC55P-PEER-48QT	NCS 5500 Peering Lic for NCS-55A1-48Q6H

Part number	Product Description
NC55P-ADVDC-48QT	NCS 5500 Advance Data Center Lic for NCS-55A1-48Q6H
NC55P-TIMING-F	NCS 5500 Timing and Mobility Lic for Fixed Chassis

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

The Cisco NCS 5500 Series has a 1-year limited hardware warranty. The warranty includes hardware replacement with a 10-day turnaround from receipt of a Return Materials Authorization (RMA).

Service and Support

Cisco offers a wide range of services to help accelerate your success in deploying and optimizing the Cisco NCS 5500 Series. These innovative Cisco Services offerings are delivered through a unique combination of people, processes, tools, and partners, and they are focused on helping you increase operating efficiency and improve your data center network. Cisco Advanced Services uses an architecture-led approach to help you align your data center infrastructure with your business goals and achieve long-term value. 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.

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

Learn more about the Cisco NCS 5500 Series [here](#).

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