Cisco Network Convergence System 5700 Series: NCS 57C3 Chassis

Contents

Product overview

As the world adapts to newer ways of operation, we see tremendous growth in internet usage driven by an increasing rate of digitization along with a rush to adopt a cloud-first approach. Meeting up with this demand would require significant investment from organizations. A robust and scalable solution offering best-in-class capabilities at a lower operating cost is what they need in order to expand their infrastructure and establish intelligent connections.

The Cisco® Network Convergence System 57C3 Series Routers (hereinafter referred to as the NCS 57C3) are designed for cost-effective delivery of next-generation networking services. These are high-capacity and low-power-consuming devices available in a 3-rack-unit compact form factor. The chassis along with the Modular Port Adapters (MPAs) provide options of using different types of interfaces ranging from 1GE to 400GE along with industry-leading MACSec encryption and Class C Timing support. These devices also provide Control Plane redundancy, thereby enabling high availability and reliability.

The Cisco NCS 57C3 Series Routers are well equipped for a range of applications such as Carrier Ethernet Aggregation, Subscriber Services, Business Ethernet, Mobile Edge, Campus, Peering and Core roles. Powered by the industry-leading Cisco IOS® XR Software, the NCS 57C3 supports a rich and comprehensive set of features like QoS, IP/MPLS, Segment Routing, SRv6, and Ethernet VPN (EVPN).

Figure 1.
The Cisco NCS-57C3-MOD-SYS (Base) chassis

Figure 2.
The Cisco NCS-57C3-MODS-SYS (Scale) chassis

Cisco NCS 57C3 chassis components	Specification
NC57-MOD-RP2-E Route Processor	8 cores at 2 GHz 32GB DRAM 256GB Flash 1 USB Console Management Ethernet

Cisco IOS XR Software overview

The Cisco NCS-57C3 Series is powered by an industry-leading, carrier-class, 64-bit version of IOS XR NOS designed on operational efficiency, optimized utilization, and service agility (evolved programmable network). Cisco IOS XR Software offers rich features such as iPXE boot, autoprovisioning, native support for third-party application hosting, machine-to-machine interface, telemetry, and flexible software package delivery.

Software requirement

The Cisco NCS-57C3-MOD-SYS fixed chassis supports Cisco IOS XR Software Release 7.4.1 and later.

The Cisco NCS-57C3-MODS-SYS fixed chassis supports Cisco IOS XR Software Release 7.4.1 and later.

Specifications

Tables 1 through 5 list key specifications for the Cisco NCS 57C3 Series fixed chassis.

Table 1. Features and benefits of Cisco NCS 57C3 Series fixed chassis (Cisco IOS XR Software 7.4.1 Release and later)

Feature	Specification
Interface	1/10/25/100/200/400G QSFP DD, CFP2 DCO Gigabit Ethernet support using fixed and MPA ports
Industry-leading, carrier-class Cisco IOS XR Software	Visibility and telemetry Machine-to-machine interface Application hosting Flexible platform and packaging Modularity Automation
Power consumption	Ultra-low power per Gigabit Ethernet
Redundancy	Redundant Control Plane Redundant fan tray Redundant AC or DC power supply

Table 2.   Cisco NCS 57C3 chassis specification

Description	Specification
Chassis PID	**Flexible Consumption Model (FCM):** NCS–57C3–MOD–SYS: NCS 57C3 Fixed 48x 1/10/25G + 8x 100G and 3x MPA Base Chassis NCS–57C3–MODS–SYS: NCS 57C3 Fixed 48x 1/10/25G + 4x 100G and 3x MPA Scale Chassis **Perpetual Licensing (BAU):** NCS–57C3–MOD–S: NCS 57C3 Fixed 48x 1/10/25G + 8x 100G and 3x MPA Base Chassis NCS–57C3–MOD–SE–S: NCS 57C3 Fixed 48x 1/10/25G + 4x 100G and 3x MPA Scale Chassis
Port configuration	**Base chassis:** Fixed – 48 port 1/10/25G and 8 port 100G Modular Port Adapters (MPAs) – Maximum 3 units of MPA (Slot 1 – 400G, Slot 2 and Slot 3 – 800G) **Scale chassis:** Fixed – 48 port 1/10/25G and 4 port 100G Modular Port Adapters (MPAs) – Maximum 3 units of MPA (Slot 1 – 400G, Slot 2 and Slot 3 – 800G)
Modular Port Adapter (MPA)	**Flexible Consumption Model (FCM):** NC57-MPA-2D4H-FC **(New):** NCS 5700 4X QSFP-DD MPA NC55-MPA-2TH-S-FC: NCS 5500 2X200G CFP2 MPA NC55-MPA-1TH2H-FC: NCS 5500 1X200G CFP2 + 2X100G QSFP28 MPA NC55-MPA-12T-S-FC: NCS 5500 12X10G MPA NC55-MPA-4H-S-FC: NCS 5500 4X100G QSFP28 MPA **Perpetual (BAU):** NC57-MPA-2D4H-S **(New):** NCS 5700 4X QSFP-DD MPA NC55-MPA-2TH-S: NCS 5500 2X200G CFP2 MPA NC55-MPA-1TH2H-S: NCS 5500 1X200G CFP2 + 2X100G QSFP28 MPA NC55-MPA-12T-S: NCS 5500 12X10G MPA NC55-MPA-4H-S: NCS 5500 4X100G QSFP28 MPA
Performance	Up to 2.4 Tbps/1 BPPS of system throughput
Route scale	**Base chassis:** Up to 2 M FIB entries **Scale chassis:** Up to 4 M FIB entries

Description	Specification		
Timing ports	Internal GNSS receiver module with GPS 1PPS in/out, 10 Mhz in/out, ToD		
Power and cooling	2 hot-swappable power supplies provide 1 + 1 redundancy Front-to-back airflow 6 hot-swappable fan trays provide 5 + 1 redundant system cooling		
Power consumption (with no MPA and IMIX traffic)	**Base chassis** Typical (25°C): 445W Maximum (50°C): 675W		**Scale chassis** Typical (25°C): 485W Maximum (50°C): 735W
Physical specification of chassis	**Dimensions**	**Weight**	
	Width – 438 mm Height – 130.5 mm Depth – 284 mm	Scale chassis (SE) – 24.5 lbs (11.12 kg) Base chassis (non-SE) – 24.8 lbs (11.25 kg)	Fan tray 1 – 0.53 lbs (0.24 kg) Fan tray 2 – 1.1 lbs (0.49 kg) Route Processor – 1.65 lbs (0.75 kg) Power supply unit – 2.27 lbs (1.03 kg)

For power consumption and physical specification of MPAs, please refer to NCS 5700 Series MPA data sheet and NCS 55A2 MOD data sheet.

Table 3. Software feature support on NCS 57C3 in Cisco IOS XR 7.4.1 Release and later

Description	Specification
Layer 2	• 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) • Carrier Ethernet Services

Description	Specification
Layer 3	• 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)
Multiprotocol Label Switching (MPLS)	• Label switching • Label Distribution Protocol (LDP) • MPLS Traffic Engineering • Ethernet over MPLS (EoMPLS)
Segment Routing (SR)	• 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)
Multicast	• IPv4, IPv6 • PIM-SM, PIM-SSM • IGMPv3, MLDv2 • PIM-ECMP • mLDP • P2MP-TE • Tree-SID
Quality of Service (QoS)	• Hierarchical QoS • Ingress classification based on Class of Service (L2), IP differentiated service code point (DSCP) (L3), IP ACL (L3/L4), IP precedence (type of service) (L3) • DSCP marking • 8 queues for user traffic • Support for priority queuing
Timing	• SyncE, G.8265.1, G.8275.1, G.8275.2 • G.8273.2 Class C support on ports 8-39 (base chassis) and ports 8-35 (scale chassis) • G.8273.2 Class B support on other fixed ports

Description	Specification
Automation	• Zero-Touch Provisioning (ZTP), iPXE • Configuration management • Network Configuration Protocol (NETCONG/YANG model)
Security	• 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; Simple Network Management Protocol (SNMP) v3; and Route Policy Language (RPL) support • Layer 2 ingress ACLs • Layer 3 ingress ACLs
MACsec encryption	• IEEE 802.1AE standards-based Layer 2 hop-by-hop encryption that provides data confidentiality and integrity for media access independent protocols • Supported on 24 out of 48 SFP28 ports (on fixed ports 0-7, 40-55 [base chassis] and 0-7, 36-51 [scale chassis])
Management	• MIB, XML, JSON, GPB, and SNMP • MPLS Operations, Administration, and Maintenance (OAM) (Label Switched Path [LSP] ping, LSP traceroute) • Ethernet OAM

For more details on features supported on NCS 57C3 Series routers, refer to Release Notes for IOS-XR 7.4.1 and later.

Supported transceivers modules

Check the Cisco NCS 5700 Series supported transceivers module matrix: https://tmgmatrix.cisco.com

Environment

Table 4.   Environmental properties

Property	Specifications
Normal operating temperature (at 1800 m)	0-50°C 0-45°C (with NC57-MPA-2D4H-FC & low-powered 400G optics)
Non-operating (storage) temperature	–40 to 158°F (–40 to 70°C)
Operating humidity	Normal: 5% RH to 85% RH Short term: 5% to 95% RH Should not exceed 0.026 kg water/kg of dry air
Storage (relative) humidity	5% to 95% at 40C per NEBS GR-63-Core
Altitude	0 to 9842 ft (0 to 3000 m)
Power inputs	Worldwide ranging AC: 90-240V; 50-60 Hz Worldwide ranging DC: -40V to -72V; Power ON at -45V

Property	Specifications
Air flow	Front to back

Regulatory standards compliance

Table 5.   Regulatory standards compliance: Safety and EMC

Specification	Description	
Regulatory compliance	Products should comply with CE Markings according to directives 2014/30/EU and 2014/35/EU.	
Network Equipment Building Standards (NEBS)	Designed to meet: • GR-63-CORE • GR-1089-CORE	
Safety	UL 62368-1 Third Edition CAN/CSA-C22.2 No. 62368-1, Third Edition EN 60950-1 Second Edition IEC 60950-1 Second Edition IEC 62368-1: 2018, Third Edition EN 62368-1: 2020, Third Edition AS/NZS 62368.1	
EMC standards	FCC 47CFR15 AS/NZS CISPR 32 EN55032/EN55022 CISPR 32/CISPR 22 ICES-003 VCCI KN32 CNS-13438	EN61000-3-2 Power Line Harmonics EN61000-3-3 Voltage Changes, Fluctuations, and Flicker
EMC immunity	IEC/EN61000-4-2 IEC/EN61000-4-3 IEC/EN61000-4-4 IEC/EN61000-4-5 IEC/EN61000-4-6 IEC/EN61000-4-8 IEC/EN61000-4-11	EN 300 386 C-4 EN55022 EN55024/CISPR 24 I EN55035/CISPR 35 EN61000-6-1 KN35

Additional information related to [NCS57C3 regulatory compliance and safety standards](#).

Ordering information

Table 6.   Ordering information – Flexible Consumption Model Hardware

Part number	Description
NCS-57C3-MOD-SYS	NCS 57C3 Base Chassis, Fixed ports – 48X25G, 8X100, & 3XMPA Chassis
NCS-57C3-MODS-SYS	NCS 57C3 Scale Chassis, Fixed ports – 48X25G, 4X100, & 3XMPA Chassis
NC57-MPA-2D4H-FC	NCS 5500/5700 2X400G or 4X200G QSFP-DD MPA
NC55-MPA-2TH-S-FC	NCS 5500 2X200G CFP2 MPA
NC55-MPA-1TH2H-FC	NCS 5500 1X200G CFP2 + 2X100G QSFP28 MPA
NC55-MPA-12T-S-FC	NCS 5500 12X10G MPA
NC55-MPA-4H-S-FC	NCS 5500 4X100G QSFP28 MPA
NC57-MOD-RP2-E	Route Processor for MOD Chassis
NC57-1600W-ACFW	NCS 57C3 AC 1600W Power Supply Port-S Intake/Front-to-Back
NC57-1600W-DCFW	NCS 57C3 DC 1560W Power Supply Port-S Intake/Front-to-Back
NC57-C3-FAN1-FW	NCS 57C3 Fan Tray 1 Chassis Port-S Intake/Front-to-Back Port-Side Intake
NC57-C3-FAN2-FW	NCS 57C3 Fan Tray 2 Chassis Port-S Intake/Front-to-Back Port-Side Intake
NC57-3RU-ACC-KIT	NCS 5700 Accessory Kit for 3RU Chassis

Table 7.   Ordering information – Flexible Consumption Model Software Licenses

Part number	Description
ESS-100G-RTU-2	NCS 5500 Core & Aggregation Essentials SW RTU v2.0 100G
ADN-100G-RTU-2	NCS 5500 Core & Aggregation Advantage w/Essentials SW RTU v2.0 100G
ESS-100G-SIA-3	NCS 5500 Core & Aggregation Essentials SIA per 100G 3- to 5-Year Subscription
ADN-100G-SIA-3	NCS 5500 Core & Aggregation Advantage w/Essentials SIA per 100G 3- to 5-Year Subscription
ESS-100G-SIA-5	NCS 5500 Core & Aggregation Essentials SIA per 100G 5- to 10-Year Subscription
ADN-100G-SIA-5	NCS 5500 Core & Aggregation Advantage w/Essentials SIA per 100G 5- to 10-Year Subscription

Table 8.   Ordering information – Perpetual Hardware

Part number	Description
NCS-57C3-MOD-S	NCS 57C3 Base Chassis, Fixed Ports - 48X25G, 8X100, & 3XMPA Chassis
NCS-57C3-MOD-SE-S	NCS 57C3 Scale Chassis, Fixed Ports - 48X25G, 4X100, & 3XMPA Chassis
NC57-MPA-2D4H-S	NCS 5500/5700 2X400G or 4X200G QSFP-DD MPA
NC55-MPA-2TH-S	NCS 5500 2X200G CFP2 MPA
NC55-MPA-1TH2H-S	NCS 5500 1X200G CFP2 + 2X100G QSFP28 MPA
NC55-MPA-12T-S	NCS 5500 12X10G MPA
NC55-MPA-4H-S	NCS 5500 4X100G QSFP28 MPA
NC57-MOD-RP2-E	Route Processor for MOD Chassis
NC57-1600W-ACFW	NCS 57C3 AC 1600W Power Supply Port-S Intake/Front-to-Back
NC57-1600W-DCFW	NCS 57C3 DC 1560W Power Supply Port-S Intake/Front-to-Back
NC57-C3-FAN1-FW	NCS 57C3 Fan Tray (40mm) Chassis Port-S Intake/Front-to-Back Port-Side Intake
NC57-C3-FAN2-FW	NCS 57C3 Fan Tray (60mm) Chassis Port-S Intake/Front-to-Back Port-Side Intake
NC57-3RU-ACC-KIT	NCS 5700 Accessory Kit for 3RU Chassis

Table 9.   Ordering information – Perpetual Software Licenses

Part number	Product description
XR-NC55-P-07.04	Cisco IOS XR IP/MPLS Core Software
XR-NC55-PK9-07.04	Cisco IOS XR IP/MPLS Core Software 3DES
NC55P-TIMING-F	NCS 5500 Timing and Mobility Lic for Fixed Chassis
NC55P-BASIC-LSR	NCS 5500 Basic MPLS LSR License
NC55P-ADVL3-100S	NCS 5500 L3VPN Lic for NCS 5500 Scale per 100G Bandwidth
NC55P-ADVL2-100S	NCS 5500 L2VPN Lic for NCS 5500 Scale per 100G Bandwidth
NC55P-CRAGR-100S	NCS 5500 Core and Aggr Lic for NCS 5500 Scale per 100G Bandwidth
NC55P-PEER-100S	NCS 5500 Peering Lic for NCS 5500 Scale per 100G Bandwidth
NC55P-ADVDC-100S	NCS 5500 Adv Data Center Lic for NCS 5500 Scale per 100G Bandwidth
NC55P-MSEC-100T	NCS 5500 MACsec Lic for NCS 5500 Base and Scale per 100G Bandwidth
NC55P-ADVL3-100T	NCS 5500 L3VPN Lic for NCS 5500 Base per 100G Bandwidth

Part number	Product description
NC55P-ADVL2-100T	NCS 5500 L2VPN Lic for NCS 5500 Base per 100G Bandwidth
NC55P-CRAGR-100T	NCS 5500 Core and Aggr Lic for NCS 5500 Base per 100G Bandwidth
NC55P-PEER-100T	NCS 5500 Peering Lic for NCS 5500 Base per 100G Bandwidth
NC55P-ADVDC-100T	NCS 5500 Adv Data Center Lic for NCS 5500 Base per 100G Bandwidth

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.

Product sustainability

Table 10. Cisco environmental sustainability information

Sustainability topic		Reference	
General	Information on product-material-content laws and regulations	Materials	
	Information on electronic waste laws and regulations, including our products, batteries, and packaging	WEEE Compliance	
	Information on product takeback and reuse program	Cisco Takeback and Reuse Program	
	Sustainability inquiries	Contact: csr_inquiries@cisco.com	
	Countries and regions supported	Table 5. Regulatory standards compliance: Safety and EMC	
	Predicted MTBF (at 40°C with credit from NCS-55A2 series in accordance with Telecordia issue 3)	NCS-57C3-MOD-SYS	505,736 hours
		NCS-57C3-MODS-SYS	486,445 hours
Power	Power consumption	Table 2. Cisco NCS 57C3 chassis specification	
Material	Product packaging weight and materials	Contact: environment@cisco.com	
	Weight	Table 2. Cisco NCS 57C3 chassis specification	

Warranty

The Cisco NCS 5500 Series has a one-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 Smart Net Total Care® 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 NCS 5700 Series.

Learn more about the NCS 5500 Series.

Our experts recommend

Cisco NCS 5500 Fixed Platform Architecture White Paper

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