Cisco Network Convergence System 5500 Series: 55A2 Chassis

Contents

The Cisco Visual Network Index forecasts that global IP traffic will increase threefold by 2021 driven by both mobile and wireline traffic. Mobile networks are seeing a dramatic evolution as they prepare for the transition from LTE to 5G. The demands on the service provider network will not be limited to exponentially higher bandwidth at lower operating costs but will also require the capabilities to support new applications such as pervasive mobile broadband, massive IoT, tactile internet, smart city and virtual reality.

The Cisco® Network Convergence System 55A2 Series Routers are designed for cost-effective delivery of these next generation services. These routers are high capacity, compact form factor, low power consumption devices providing flexibility with two modular bays. Modular Port Adaptors (MPA) and fixed ports on the chassis provides flexibility with options of different port types along with industry-leading MACSec encryption support. The Cisco NCS 55A2 Series Routers combine a comprehensive and scalable feature set of Layer 2 VPN (L2VPN) and Layer 3 VPN (L3VPN) services and a rich set of mobile features for a dense converged aggregation platform. 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.

The Cisco NCS 55A2 Series Router provides IP over Dense Wavelength-Division Multiplexing (DWDM) capability through MPA, collapsing network layers by tightly integrating DWDM interfaces with the routing platform, thereby helping customers to increase operational efficiency by simplifying management and accelerating service delivery. This IPoDWDM solution further reduces transport elements, while supporting advanced features dramatically reducing operating expenses and capital cost. MPA uses CFP2 Digital Coherent Optics (DCO) form factor transceivers.
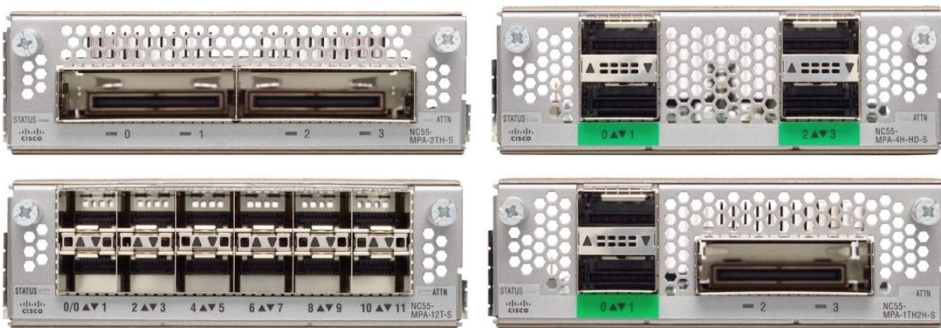

Figure 1.
The Cisco NCS-55A2-MOD Chassis

Figure 2.
The Cisco NCS-55A2-MOD Modular Port Adaptors (MPA)

Cisco IOS XR Software overview

The Cisco NCS 55A2 Series is powered by industry leading carrier-class 64-bit version of Cisco IOS XR Software designed on operational efficiency, optimized utilization and service agility. Cisco IOS XR Software offers rich features such as iPXE boot, auto provisioning, machine-to-machine interface, telemetry, and flexible software package delivery. The Cisco NCS-55A2-MOD-S and NCS-55A2-MOD-HD-S support Cisco IOS XR Software Release 6.5.1 and later. The Cisco NCS 55A2-MOD-SE-S and NC55A2-MOD-SE-H-S support Cisco IOS XR Software Release 6.6.1 and later. For a complete list of supported features, refer to Cisco Feature Navigator.

Specifications

Tables 1 through 8 list key specifications for the Cisco NCS 55A2 Series fixed chassis.

Table 1. Features and benefits of Cisco NCS 55A2 Series Fixed Chassis (Cisco IOS XR Software 6.5.1 Release or Beyond)

Feature	Specification
Interface	1/10/25/40/100/200 Gigabit Ethernet support using fixed and MPA ports
MACsec encryption	IEEE 802.1AE standards-based Layer 2 hop-by-hop encryption that provides data confidentiality and integrity for media access independent protocols
Industry leading carrier-class Cisco IOS XR Software	Visibility and telemetry Machine-to-machine interface Application hosting Flexible platform and packaging Modularity Automation
MEF Certified	Cisco NCS-55A2-MOD-HD-S is MEF 3.0 certified
Management ports	Provides easy access to system console
External USB port	Helps simplify image and file management
Embedded USB (eUSB) storage	Flash memory devices 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 55A2 Chassis specification

Feature	Specification
Chassis PID	NCS-55A2-MOD-SL: NCS 55A2 Fixed 24X10G + 16X25G and MPA Base Chassis
	NCS-55A2-MOD-HD-S: NCS 55A2 Fixed 24X10G + 16X25G and MPA Base Chassis, Temperature Hardened
	NCS-55A2-MOD-HX-S: NCS 55A2 Fixed 24X10G + 16X25G and MPA Base Chassis, Temperature Hardened with Conformal Coating
	NCS-55A2-MOD-SE-S: NCS 55A2 Fixed 24X10G + 16X25G and MPA Scale Chassis
	NC55A2-MOD-SE-H-S: NCS 55A2 Fixed 24X10G + 16X25G and MPA Scale Chassis, Temperature Hardened with Conformal Coating
Port configuration	Fixed – 24 port 1/10G and 16 port 1/10/25G
	Modular Port Adaptors (MPA) – Maximum 2 units of MPA
Modular Port Adaptor (MPA)	NC55-MPA-12T-S: NCS 5500 12X10G MPA
	NC55-MPA-1TH2H-S: NCS 5500 1X200/100G CFP2 and 2X100G QSFP28 MPA
	NC55-MPA-2TH-S: NCS 5500 2X200/100G CFP2 MPA
	NC55-MPA-4H-S: NCS 5500 4X100G QSFP28 MPA
	NC55-MPA-4H-HD-S: NCS 5500 4X100G QSFP28 MPA, Temp Hardened
	NC55-MPA-4H-HX-S: NCS 5500 4X100G QSFP28 MPA, Temp Hardened, Conformal Coating
	NC55-MPA-2TH-HX-S: NCS 5500 2X200/100G CFP2 MPA, Temp Hardened, Conformal Coating
Integrated Route Processor	NCS-55A2-MOD-S: IOS-XR 64-bit software running on 6 core CPU @ 2Ghz
	NCS-55A2-MOD-SE-S, NC55A2-MOD-SE-H-S: IOS-XR 64-bit software running on 8 core CPU @ 2Ghz
System Memory	32GB
Solid-State Disk (SSD) drive	128GB
Management Ports	1x RJ45, 1 for console and 1 for management LAN port
Performance	Up to 900 Gbps of system throughput
Route Scale	NCS-55A2-MOD-S, NCS-55A2-MOD-HD-S, NCS-55A2-MOD-HX-S: Upto 1M FIB entries
	NCS-55A2-MOD-SE-S, NC55A2-MOD-SE-H-S: Upto 4M FIB entries
Timing ports	Internal GNSS module with GPS
	1PPS in/out, 10Mhz in/out, ToD
Power and Cooling	2 hot-swappable power supplies provide 1+1 redundancy
	Front to back airflow
	8 hot-swappable fan provide redundant system cooling

Feature	Specification
Power Consumption of base chassis (NCS-55A2-MOD-S)	Typical: 270W Maximum: 370W
Power Consumption of base chassis (NCS-55A2-MOD-HD-S, NCS-55A2-MOD-HX-S)	Typical: 300W Maximum: 400W
Power Consumption of base chassis (NCS-55A2-MOD-SE-S)	Typical: 320W Maximum: 440W
Power Consumption of base chassis (NC55A2-MOD-SE-H-S)	Typical: 350W Maximum: 470W
Power consumption of MPA	2 ports of 200/100G CFP2 MPA (NC55-MPA-2TH-S) Typical: 75 watts Maximum: 100 watts 1 ports of 200/100G CFP2 and 2 ports of QSFP28/QSFP+ MPA (NC55-MPA-1TH2H-S) Typical: 60 watts Maximum: 80 watts 12 port of 10G MPA (NC55-MPA-12T-S) Typical: 50 watts Maximum: 75 watts 4 port of QSFP28/QSFP+ MPA (NC55-MPA-4H-S) Typical: 50 watts Maximum: 75 watts
Physical Specification of chassis	Width – 440mm Height – 88mm Depth – 280mm Weight – 20.5 lbs (including 2XPSU)
Physical Specification of MPA	Width – 110.69 mm Height – 34.36mm Depth – 174.32 mm Weight – 0.8 lbs

Table 3.   Software feature Support on NCS 55A2 in Cisco IOS XR 6.5.1 Release or Beyond

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 32 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)
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) 32-way Equal-Cost Multipath (ECMP) L3 ingress and egress IPv4 ACL and IPv6 ACL Bidirectional Forwarding Detection (BFD) Cisco Bundle Ethernet technology (up to 32 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	Label switching 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)

Description	Specification
Multicast	IPv4, IPv6 PIM-SM, PIM-SSM IGMPv3, MLDv2 PIM-ECMP mLDP P2MP-TE
Quality of Service (QoS)	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 number of queues for user traffic Support for priority queuing
Timing	SyncE, G.8265.1, G.8275.1, G.8275.2 G.8273.2
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; SNMPv3; and RPL support Layer 2 ingress ACLs Layer 3 ingress ACLs
Management	MIB, XML, JSON, GPB, and SNMP MPLS OAM (Label Switched Path [LSP] ping, LSP traceroute) Ethernet OAM

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 the 16 port of 1/10/25G.

Environment

Table 4.   Environmental properties for NCS-55A2-MOD-HD-S, NCS-55A2-MOD-HX-S and NC55A2-MOD-SE-H-S

Normal Operating Temperature	Industrial Temperature –40C to +70C (1000 feet), +65C (6000 feet), +55C (13,000 feet)
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 40C per NEBS GR-63-Core
Altitude	0 to 13,000 ft
Power Inputs	Worldwide ranging AC (90–265V; 50-60 Hz) Worldwide ranging DC (-40V to -72V)
Air Flow	Front to back

Table 5.   Environmental properties for NCS-55A2-MOD-S and NCS-55A2-MOD-SE-S

Normal Operating Temperature	0 to +55C (6,000 feet), +45C (13,000 feet)
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 40C per NEBS GR-63-Core
Altitude	0 to 13,000 ft
Power Inputs	Worldwide ranging AC (90–265V; 50-60 Hz) Worldwide ranging DC (-40V to -72V)
Air Flow	Front to back

Regulatory standards compliance

Table 6.   Regulatory standards compliance: Safety and EMC for NCS-55A2-MOD-S, NCS-55A2-MOD-SE-S

Specification	Description
Regulatory compliance	Products should comply with CE Markings according to directives 2004/108/EC and 2006/95/EC.
Network Equipment Building Standards (NEBS)	GR-63-CORE GR-1089-CORE
Safety	UL 60950-1 Second Edition CAN/CSA-C22.2 No. 60950-1 Second Edition EN 60950-1 Second Edition IEC 60950-1 Second Edition AS/NZS 60950-1 GB4943
EMC Standards	47CFR Part 15 (CFR 47) Class A CISPR32 Class A EN55032 Class A EN 300 386 Class A ICES-003 Class A TCVN 7189 Class A CNS13438 Class A VCCI Class A EN61000-3-2 EN61000-3-3 KN32 Class A
EMC Immunity	EN55024 CISPR24 EN300386 KN35 TCVN 7317
RoHS	The product is RoHS-6 compliant with exceptions for leaded-Ball Grid-Array (BGA) balls and lead press-fit connectors.

Table 7. Regulatory standards compliance: Safety and EMC for NCS-55A2-MOD-HD-S, NCS-55A2-MOD-HX-S, NC55A2-MOD-SE-H-S

Specification	Description
Regulatory compliance	Products should comply with CE Markings according to directives 2004/108/EC and 2006/95/EC.
Network Equipment Building Standards (NEBS)	GR-63-CORE GR-1089-CORE GR-3108-CORE Class 2
Safety	UL 60950-1 Second Edition CAN/CSA-C22.2 No. 60950-1 Second Edition EN 60950-1 Second Edition IEC 60950-1 Second Edition AS/NZS 60950-1 GB4943
EMC Standards	47CFR Part 15 (CFR 47) Class A CISPR32 Class A EN55032 Class A EN 300 386 Class A ICES-003 Class A TCVN 7189 Class A CNS13438 Class A VCCI Class A EN61000-3-2 EN61000-3-3 KN32 Class A EN 50121-3-2 EN50155 IEC 62236-3-2 IEC 60571 EN 50121-4 IEC 62236-4

Specification	Description
EMC Immunity	EN55024
	CISPR24
	EN300386
	KN35
	TCVN 7317
	EN 61000-6-1
	EN50121-3-2
	EN50155
	IEC 62236-3-2
	IEC 60571
	EN50121-4
	IEC 62236-4
	CISPR35
	EN61000-6-2
	EN61131-2
	EN61326-1
RoHS	The product is RoHS-6 compliant with exceptions for leaded-Ball Grid-Array (BGA) balls and lead press-fit connectors.

Additional information related to NCS55A2 regulatory compliance and safety standards.

Ordering information

Table 8 provides ordering information.

Table 8.   Ordering information

Part Number	Description
Chassis and MPA	
NCS-55A2-MOD-S	NCS 55A2 Fixed 24X10G + 16X25G and MPA Chassis
NCS-55A2-MOD-HD-S	NCS 55A2 Fixed 24X10G + 16X25G and MPA Chassis, Temperature Hardened
NCS-55A2-MOD-HX-S	NCS 55A2 Fixed 24X10G + 16X25G and MPA Chassis, Temperature Hardened with Conformal Coating
NCS-55A2-MOD-SE-S	NCS 55A2 Fixed 24X10G + 16X25G and MPA Scale Chassis
NC55A2-MOD-SE-H-S	NCS 55A2 Fixed 24X10G + 16X25G and MPA Scale Chassis, Temperature Hardened with Conformal Coating
NC55-MPA-2TH-S	NCS 5500 2X200G CFP2 MPA
NC55-MPA-1TH2H-S	NCS 5500 1X200G CFP2 + 2X100G QSFP28 MPA

Part Number	Description
NC55-MPA-12T-S	NCS 5500 12X10G MPA
NC55-MPA-4H-S	NCS 5500 4X100G QSFP28 MPA
NC55-MPA-4H-HD-S	NCS 5500 4X100G QSFP28 MPA, Temperature Hardened
NC55-MPA-4H-HX-S	NCS 5500 4X100G QSFP28 Temp hardened MPA with Conformal Coating
NC55-MPA-2TH-HX-S	NCS 5500 2X200G CFP2 MPA Temp hardened MPA with Conformal Coating
Software	
XR-NC55-P-06.05	Cisco IOS XR 6.5 Core Software
XR-NC55-PK9-06.05	Cisco IOS XR 6.5 Core Software PK9 Image
XR-NC55-P-06.06	Cisco IOS XR 6.6 Core Software
XR-NC55-PK9-06.06	Cisco IOS XR 6.6 Core Software PK9 Image
Fans and Accessories	
NC55-1200W-ACFW	NCS 5500 AC 1200W Power Supply Port-S Intake / Front-to-back
NC55-930W-DCFW	NCS 5500 DC 930W Power Supply Port-S Intake / Front-to-back
NC55-900W-ACFW-HD	NCS 5500 AC 900W Power Supply Port-S Intake / Front-to-back
NC55-900W-DCFW-HD	NCS 5500 DC 900W Power Supply Port-S Intake / Front-to-back
NC55-A2-FAN-FW	NCS 5500 Fan Tray 1RU Chassis Port-S Intake / Front-to-back Port-Side intake
NC55-A2-FAN-L-FW	NCS 5500 Latch type Fan Tray 1RU Chassis Port-S Intake / Front-to-back Port-Side intake
NC55-2RU-ACC-KIT	NCS 55A2 Accessory Kit for 2RU Chassis
NC55-2RU-ACCX-KIT	NCS 55A2 Accessory Kit for 2RU Chassis, Conformal Coated
NCS-55A2-FLTR-FW	NCS 55A2 Air Filter kit
Licenses	
NC55P-BNDL-A2MDT	NCS 5500 SW 4 x Bundle Lic for NCS-55A2-MOD-S (base chassis only/fixed ports)
NC55P-ADVL3-A2MDT	NCS 5500 L3VPN Lic for NCS-55A2-MOD-S (base chassis only/fixed ports)
NC55P-ADVL2-A2MDT	NCS 5500 L2VPN Lic for NCS-55A2-MOD-S (base chassis only/fixed ports)
NC55P-CRAGR-A2MDT	NCS 5500 Core and Aggregation Lic for NCS-55A2-MOD-S (base chassis only/fixed ports)
NC55P-PEER-A2MDT	NCS 5500 Peering Lic for NCS-55A2-MOD-S (base chassis only/fixed ports)
NC55P-ADVDC-A2MDT	NCS 5500 Advance Data Center Lic for NCS-55A2-MOD-S (base chassis only/fixed ports)

Part Number	Description
NC55P-MSEC-55A2	NCS 5500 MACsec Lic for NCS 55A2 fixed ports only (16)
NC55P-TIMING-F	NCS 5500 Timing and Mobility Lic for Fixed Chassis
NC55P-BDL-100T	NCS 5500 SW 4 x License Bundle for NCS 5500 Base Per 100G BW
NC55P-ADVL3-100T	NCS 5500 L3VPN Lic for NCS 5500 Base Per 100G Bandwidth
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 BW
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 BW
NC55P-BNDL-A2MDS	NCS 5500 SW 4 x Bundle Lic for NCS-55A2-MOD-SE-S (base chassis only/fixed ports)
NC55P-ADVL3-A2MDS	NCS 5500 L3VPN Lic for NCS-55A2-MOD-SE-S (base chassis only/fixed ports)
NC55P-ADVL2-A2MDS	NCS 5500 L2VPN Lic for NCS-55A2-MOD-SE-S (base chassis only/fixed ports)
NC55P-CRAGR-A2MDS	NCS 5500 Core and Aggregation Lic for NCS-55A2-MOD-SE-S (base chassis only/fixed ports)
NC55P-PEER-A2MDS	NCS 5500 Peering Lic for NCS-55A2-MOD-SE-S (base chassis only/fixed ports)
NC55P-ADVDC-A2MDS	NCS 5500 Advance Data Center Lic for NCS-55A2-MOD-SE-S (base chassis only/fixed ports)
NC55P-BDL-100S	NCS 5500 SW 4 x License Bundle for NCS 5500 Scale Base Per 100G BW
NC55P-ADVL3-100S	NCS 5500 L3VPN Lic for NCS 5500 Scale Base Per 100G Bandwidth
NC55P-ADVL2-100S	NCS 5500 L2VPN Lic for NCS 5500 Scale Base Per 100G Bandwidth
NC55P-CRAGR-100S	NCS 5500 Core and Aggr Lic for NCS 5500 Scale Base Per 100G BW
NC55P-PEER-100S	NCS 5500 Peering Lic for NCS 5500 Scale Base Per 100G Bandwidth
NC55P-ADVDC-100S	NCS 5500 Adv Data Center Lic for NCS 5500 Scale Base Per 100G BW
NC55P-MSEC-100T	NCS 5500 MACsec Lic for NCS 5500 Base Per 100G BW

Warranty

The Cisco NCS 55A2 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 55A2 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. 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 55A2 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 55A2 Series, https://www.cisco.com.

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