Cisco 8700 Series Routers

Contents

Cisco 8000 overview

The Cisco 8000 Series combines the revolutionary Cisco Silicon One™, IOS XR® software, and a set of clean sheet chassis to deliver a breakthrough in high-performance routers.

High-performance networking systems have historically been divided into routing or switching classes, with distinct hardware and software. But, as the necessity for reliable networks proliferates, it is imperative that traditional networks shift to a new architecture to address exponential bandwidth needs, ubiquitous connectivity, security, better quality of service, low latency coupled with high reliability, availability, and serviceability of the infrastructure. The Cisco® 8000 Series portfolio completes this journey with the Cisco 8700 products.

Cisco 8700 overview

The Cisco 8700 series is an addition to the Cisco 8000 Series Routers powered by Cisco Silicon One™ processors. 8700 products embody this cutting-edge innovation of the 8000 portfolio, offering advanced features engineered for seamless integration and scalability. This helps expand into aggregation and edge use cases by providing high-capacity solution tailored for the demands of the modern metro networks.

With the agility of Silicon One enabling applications at scale delivered on power and space optimized form factors, Cisco 8700 systems can address a wide variety of use cases such a business edge, residential aggregation, 5G mobile backhaul, provider core, and internet peering.

Table 1.   8700 series products

Product ID	Bandwidth	Height	Ports
8711-32FH-M	12.8 Tbps	1RU	16 ports QSFP-DD800 and 16 ports QSFP56-DD
8712-MOD-M	6.4 Tbps	2RU	4 modular port adapter slots at 1.6Tbps capacity each

8711-32FH-M router

8711-32FH-M front view

Figure 1.
8711-32FH-M router front view

8711-32FH-M rear view

Figure 2.
8711-32FH-M router rear view

8711-32FH-M features and benefits

Table 2.   Features and benefits of the **8711-32FH-M**

Feature	Benefit
Integrated interfaces	Flexible port rate configuration: 800G (8x100G, 2x400G), 400G, 100G, 40G, 25G, 10G Breakout support: 2x400G, 8x100G, 4x100G, 2x100G, 4x25G, 4x10G Routed Optical Network (RON) ready: Support 400G DCO optics
Cisco pluggable interface	Compatibility with a diverse range of optical modules, ensuring optimal performance and flexibility: QSFP+, QSFP28, QSFP56-DD, QSFP-DD800
Software	Supports Cisco IOS XR Software Release 24.3.1 and later. Enhanced Automation for onboarding, service provisioning and monitoring. Programmable infrastructure with segment routing (SR, SRv6) and EVPN.
Redundancy	6 x Redundant fan trays (N+1) 2 x Redundant AC or DC power supplies (1+1)

8711-32FH-M key specifications

Table 3.   List of key specifications for 8711-32FH-M

Features	Specification
Interfaces	16 ports QSFP-DD800 and 16 ports QSFP56-DD with breakout capabilities Interface combinations: • Up to 128 100G interfaces or • Up to 32 ports of 400G interfaces or • Up to 16 ports of 800G (2x400G, 8x100G) or • A combination of 400G, 800G (not exceeding 12.8T of bandwidth)
Integrated route processor	6-core x86 CPU (2.5GHz) System memory: Total 64GB DRAM Solid-state drive (SSD): 480GB SSD
Performance	Up to 12.8T of system throughput Full line-rate MACSec encryption capable on all ports[*] [*]Support post 24.3.1
Management interfaces	RS-232 serial ports: 1 x RJ45 Management ports: 1 x RJ45(1G) USB 3.0 ports: 1 x USB 3.0 Type A interface
Timing/Ports	Timing: PTP with Class C performance, SyncE, GNSS Interfaces: 1pps, 10MHz, 1588-TOD, GNSS PRTC-B

Features	Specification
Power features	Typical system power: 740W (without optics)
	Field replaceable Power System Unit (PSU) AC or DC
	DC PSU
	AC PSU power supply efficiency: 80+ Platinum
	2x PSU with 1+1 Redundancy
Fans and air flow	PSI / front to back airflow or
	PSE / back to front airflow
	6 Fans with 5+1 Redundancy
	Field replaceable fans
Physical specifications	Height: 1.73 in, 43.80 mm
	Width: 17.30 in, 439.42 mm
	Depth: 23.62 in, 600.00 mm
	Weight: 35.43 lb or 16.07 kg (with 2 PSUs and 6 fans); 28.51 lb or 12.93 kg (without PSUs and fans)
Environmental properties	Operating temperature: 0 to 40°C, mean sea level (MSL)
	Non-operating (storage) temperature: -40 to 70°C
	Operating humidity: 5% to 95% ± 2%
	Storage (relative) humidity: 5% to 95% ± 2%

8712-MOD-M router

8712-MOD-M front view

Figure 3.
8712-MOD-M chassis with 4 Modular Port Adapters (8K-MPA-16H on top left and right, 8K-MPA-16Z2D on bottom left, 8K-MPA-4D on bottom right)

8712-MOD-M rear view

Figure 4.
8712-MOD-M rear view

8712-MOD-M modular port adapters

8712-MOD-M supports three different Modular Port Adapters (MPAs). The details are captured in table below:

Table 4.   8712-MOD-M modular port adapters

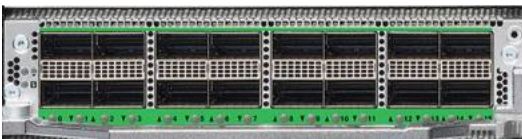| Modular Port Adapter	Bandwidth	SFP56 ports	QSFP28 ports	QSFP56 DD ports
8K-MPA-4D	1.6 Tbps	-	-	4
8K-MPA-16H	1.6 Tbps	-	16	-
8K-MPA-16Z2D	1.6 Tbps	16		2[*]

[*]4xQDD ports that can be used in 2x400G or 4x100G/200G

8K-MPA-4D

Figure 5.
4 port QSFP56 DD MPA

8K-MPA-16H

Figure 6.
16 port QSFP28 MPA

8K-MPA-16Z2D

Figure 7.
16 port SFP56 and 4 port QSFP56 DD that can be used as 2x400G or 4x100G/200G

8712-MOD-M features and benefits

Table 5.   Features and benefits of the 8712-MOD-M

Feature	Benefit
Interfaces via MPA	Flexible port rate configuration: 400G, 100G, 40G, 50G, 25G, 10G, 1G using Modular Port Adapters Breakout support: 4x100G, 2x100G, 4x25G, 4x10G Routed Optical Networking (RON) Architecture ready
Cisco Pluggable Interface	Compatibility with a diverse range of optical pluggable modules, ensuring optimal performance and flexibility: SFP, SFP+, SFP28, QSFP+, SFP56, QSFP28, QSFP56, QSFP28-DD, QSFP56-DD, Cu-DAC and AOC.
Software	Industry-leading, carrier-grade Cisco IOS® XR: Modular, patchable, scalable, highly available, carrier-grade, and edge-proven operating system
Redundancy	4 x Redundant fan trays (N+1) 2 x Redundant AC or DC power supplies (1+1)

8712-MOD-M key specifications

Table 6.   List of key specifications for 8712-MOD-M

Features	Specification
Interfaces	4 MPA slots at 1.6Tbps capacity each with breakout capabilities Interface combinations: • Up to 64 ports 1G interfaces or • Up to 128 ports 10G interfaces or • Up to 128 ports 25G interfaces or • Up to 32 ports of 40G interfaces or • Up to 64 ports of 100G interfaces • Up to 16 ports of 400G interfaces
Integrated route processor	6-core x86 CPU (2.5GHz) System memory: 64GB DDR4 SODIMM Solid-state drive (SSD): 480GB SSD
Performance	Up to 6.4T of system throughput Full line-rate MACsec encryption capable on all ports[*] [*]Software support on roadmap
Management interfaces	RS-232 serial ports: 1 x RJ45 Management ports: 1 x RJ45(1G) USB 2.0 ports: 1 x USB 2.0 Type A interface

Features	Specification
Timing/Ports	Timing: PTP with Class C performance, SyncE, GNSS Interfaces: 1pps, 10MHz, 1588-TOD, GNSS PRTC-B
Power features	Typical system power: 375W (without optics) Field replaceable Power System Unit (PSU) AC or DC DC PSU AC PSU power supply efficiency: 80+ Platinum 2x PSU with 1+1 Redundancy
Fans and air flow	PSI / front to back airflow or PSE / back to front airflow 4 Fans with 3+1 Redundancy Field replaceable fans
Physical Specifications	Height: 3.5 in or 87.6 mm Width: 17.3 in or 439.4 mm Chassis Depth: 23.6 in or 600 mm Weight: 55.1 lb or 25 kg
Environmental Properties	Operating temperature: 0 to 40C Non-operating(storage) temperature: -40 to 70C Operating humidity: 5% to 95% +- 2% Storage (relative) humidity: 5% to 95% +- 2%

Regulatory and safety compliance

Table 7.   List of regulatory and safety compliance for 8711-32FH-M and 8712-MOD-M

Specification	Description
Regulatory compliance	Regulatory Compliance statement: Products complies with CE Markings according to directives 2014/30/EU and 2014/35/EU
Network Equipment Buildings Standards (NEBS)	Designed to meet GR-63-CORE and GR-1089-CORE
Safety	ANSI / UL 60950-1 CAN/CSA C22.2 No. 60950-1 ANSI / UL 62368-1 CAN/CSA C22.2 No. 62368-1 EN / IEC 62368-1

Specification	Description
EMC Standards	Emissions: CISPR32 EN 55032 EN 61000-3-3 EN IEC 61000-3-2 EN 300 386 V2.1.23 47 CFR FCC Part 15 ICES-003 Issue 7 KS C 9832 KS C 9610-3-2 KS C 9610-3-3 VCCI-CISPR 32 CNS 15936 QCVN 118/BTTTT EN 301 489-1 EN 301 489-19 TEC 11016:2016_TEC/SD/DD/EMC-221/05/OCT-16
EMC Immunity	CISPR35 EN 55035 EN IEC 61000-6-1 EN IEC 61000-6-2 EN 300 386 V2.1.23 KS C 9835 EN 301 489-1 EN 301 489-19 TEC 11016:2016_TEC/SD/DD/EMC-221/05/OCT-16
Restriction of Hazardous Substances	The product is RoHS 6 compliant with exceptions for leaded Ball Grid Array (BGA) balls and lead press fit connectors.

Cisco IOS XR software

Cisco IOS XR is a unified network OS spanning access, aggregation, edge, and core. The networking protocol stack within XR can be cut down by two-thirds when the IP transport architecture is simplified. Improvements to XR internal architecture have reduced the memory footprint by 35 percent. By reducing code size and the resources required, XR can be installed onto even the most constrained hardware designs with full security features without impact to boot times.

Modernizing XR with install procedures using standard Linux software package managers has also improved operations. Instead of "one size fits all," XR provides modularity, so customers only load what they will use.

Service providers can easily access new software packages from trusted Cisco RPM Package Manager repositories. Alternatively, they can build their own repository of both Cisco and custom software packages, which can be fetched for final system configuration without spending time trying to sort out software dependencies. All the required Cisco software packages, homegrown/third-party software packages, and router configurations can be pulled into a single Cisco software image known as a "Golden ISO." Customized images can now be installed consistently and with confidence across devices in the network.

Cisco IOS XR brings an unmatched level of openness for programmability and customization

IOS XR supports open, model-driven APIs at all layers of the software stack. At the management layer, XR supports a comprehensive list of both native and industry-driven OpenConfig models with multiple encoding (XML and JSON) and transport (gRPC, NETCONF) options. The APIs at the management layer allow operators to apply configuration to the device or retrieve the state of the system. The APIs also address advanced traffic engineering use cases, allowing applications to control the route followed by traffic within the network. These APIs can be used independently or combined with other ecosystem abstraction layers such as P4Runtime.

IOS XR also supports the OFA (Open Forwarding Abstraction) API, which provides a logical representation of all the forwarding and telemetry capabilities of the underlying hardware. In addition, IOS XR provides a flexible consumption model, allowing third-party application software to run on the device alongside IOS XR to enable customization options for the customer network. With application hosting capabilities, operators can host their own controller agent or custom protocol; use various hosting apps for telemetry collection, traffic engineering, and configuration management; or manage the box like a Linux machine using third-party software such as Chef, Puppet, or Ansible.

Cisco IOS XR is the industry's most trusted network operating system

XR is the most advanced network operating system for improving the security posture of the router. The Cisco Secure Boot subsystem ensures that the device boot image is genuine and untampered. With advanced signing technology, XR can establish software integrity enforcement and measurement. To further enhance the trusted defense posture, multiple runtime defenses within XR guard against malicious actors and make exploitation of bugs more difficult. Even if booted securely, a router may run for months or years without rebooting, which could leave vulnerabilities at runtime undetected for a long time. XR leverages Integrated Measurement Architecture (IMA) to significantly enhance security by verifying the integrity of running software. In the IMA appraisal mode, signature validations prevent unauthorized images to launch. In the IMA measurement mode, the hashes of all images are logged in a secure location used for verification. Records of run time processes can be sent for analysis, so the operator knows that system software, updates, or patches are running as intended.

Detailed information on IOS XR can be found in the IOS XR data sheet.

For a complete list of supported features, refer to the Cisco Feature Navigator

8711-32FH-M Ordering information

Table 8.   8711-32FH-M Hardware and software ordering information

Product ID	Product Description
8711-32FH-M	Cisco 8711 1RU 12.8T P100 System
FAN-1RU-PI-V2	1RU Fan with Port-side Air Intake
FAN-1RU-PE-V2	1RU Fan with Port-side Air Exhaust
PSU2KW-ACPI	2000W AC Power Module with Port-side Air Intake
PSU2KW-ACPE	2000W AC Power Module with Port-side Air Exhaust
PSU2KW-DCPI	2000W DC Power Module with Port-side Air Intake
PSU2KW-DCPE	2000W DC Power Module with Port-side Air Exhaust
PWR-2KW-DC-CBL	2000W DC Power Cable
8000-QSFP-DCAP	QSFP Dust CAP
8700-1RU-4P-KIT	Rack Mount Kit for Cisco 8700 1RU Chassis 19" and 23", 4 POST
8700-1RU-2P-KIT	Rack Mount Kit for Cisco 8700 1RU Chassis 19" and 23", 2 POST
ESS-8KE-100G-RTU	Essential Right-to-Use 100G for Cisco 8000E Series
ADN-8KE-100G-RTU	Advantage Right-to-Use 100G for Cisco 8000E Series
PRM-8KE-100G-RTU	Premium Right-to-Use 100G for Cisco 8000E Series
8KSW-B-SIA-3	8000 Type B Device SIA for 3-year term FCM 2.0
8KSW-B-SIA-5	8000 Type B Device SIA for 5-year term FCM 2.0

8712-MOD-M Ordering information

Table 9.   8712-MOD-M Hardware and software ordering information

Product ID	Product Description
8712-MOD-M	Cisco 8712 2RU 6.4T System with 4 MPA bays
8K-MPA-4D	Cisco 8700 MPA with 4 x QSFP56 DD
8K-MPA-16H	Cisco 8700 MPA with 16 x QSFP28
8K-MPA-16Z2D	Cisco 8700 MPA with 16 ports SFP56 and 2 ports QSFP56-DD[*] [*]4xQDD ports that can be used in 2x400G or 4x100G/200G
FAN-PI-V3	Cisco 8000 FAN - port-side intake

Product ID	Product Description
FAN-PE-V3	Cisco 8000 FAN - port-side Exhaust
PSU2KW-DCPI	2000W 48V DC Power Module with Port-side Air Intake
PSU2KW-DCPE	2000W 48V DC Power Module with Port-side Exhaust
PSU2KW-ACPI	2000W AC Power Module with Port-side Air Intake
PSU2KW-ACPE	2000W AC Power Module with Port-side Exhaust
8000-QSFP-DCAP	QSFP Dust Cap
NC55-SFP-DCAP	SFP/ZSFP Dust Cap
NC57-2RU-ACC-KIT	19-inches 4-post rack mount kit and ground lug kit
NC57-2RU-ACC-KIT2	19-inches 2-post rack mount kit and ground lug kit
NC57-2RU-ACC-KIT3	23-inches 4-post rack mount kit and ground lug kit
NC57-2RU-ACC-KIT4	23-inches 2-post rack mount kit and ground lug kit
ESS-8KE-100G-RTU	Essential Right-to-Use 100G for Cisco 8000E Series
ADN-8KE-100G-RTU	Advantage Right-to-Use 100G for Cisco 8000E Series
PRM-8KE-100G-RTU	Premium-to-Use 100G for Cisco 8000E Series
8KSW-B-SIA-3	8000 & 8000E Type B Device SIA for 3-year term FCM 2.0
8KSW-B-SIA-5	8000 & 8000E Type B Device SIA for 5-year term FCM 2.0

The RTUs (Right-to-Use licenses) provide customers with the ability to access and utilize specific perpetual software functionalities without the requirement to purchase the complete software package.

The SIAs (Software Innovation Access licenses) are term-based agreements that provide customers with access to specific software benefits. The SIAs enable customers to optimize their software usage, easily manage licenses across their network infrastructure, and ensure seamless upgrades to the latest versions of IOS XR software.

Product sustainability

Information about Cisco's Environmental, Social and Governance (ESG) initiatives and performance is provided in Cisco's CSR and sustainability reporting.

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
Material	Product packaging weight and materials	Contact: environment@cisco.com

Warranty information

Cisco HW is backed by a limited warranty. For details on warranties, please visit Cisco Warranty Finder.

Service and Support Cisco offers a wide range of services to help accelerate your success in deploying and optimizing the Cisco 8700. 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 network.

Cisco Advanced Services uses an architecture-led approach to help you align your network infrastructure with your business goals and achieve long-term value.

Cisco Software Support offers the Cisco SMARTnet® service, which helps you resolve mission-critical problems with direct access at any time to Cisco network experts and award-winning technical support coverage and maintenance releases for the Essentials and Advantage Software Suites, helping to keep your systems and your business running smoothly. Software Support is a required purchase with the SIA feature upgrade licenses.

Cisco SP Base provides device-level support and helps reduce downtime with fast, expert technical support and flexible hardware coverage provided by the Cisco Technical Assistance Center (TAC). With this service, you can take advantage of the Cisco Smart Call Home service, which offers proactive diagnostics and real-time alerts on your hardware.

Cisco 8700. Spanning the entire network lifecycle, Cisco Services offerings help increase investment protection, optimize network operations, support migration operations, and strengthen your IT expertise.

For information on services for the Cisco 8700, contact your Cisco sales representative. For an overview of all offers, visit Cisco Services for Service Providers.

Cisco Licensing

Cisco Licensing is a flexible and secure licensing model that provides you with an easier, faster, and more consistent way to purchase, activate, manage, renew, and upgrade software products across the Cisco portfolio and across your organization. And it's secure – you control what users can access. With Cisco Licensing you get:

- **Easy Activation**. Cisco Licensing establishes a pool of software licenses that can be used across the entire organization –no more PAKs (Product Activation Keys).
- **Unified Management**. My Cisco Entitlements (MCE) provides a complete view into all your Cisco products and services in an easy-to-use portal, so you always know what you have and what you are using.
- **License Flexibility**. Your software is not node-locked to your hardware, so you can easily use and transfer licenses as needed.

In order to retrieve your Licenses, you will first need to set up a Account on [Cisco Software Central](#).

For a more detailed overview on Cisco Licensing, go to https://www.cisco.com/c/en/us/buy/licensing/licensing-guide.html.

The IOS XR Flexible Consumption Model requires Cisco Licensing registration and license usage reporting. A customer network under IOS XR FCM 2.0 is considered compliant if the FCM 2.0 enabled devices in the customer's network are registered to Cisco Licensing and are reporting the usage. For a more detailed overview on Cisco IOS XR Software Flexible Consumption Model 2.0, go to: https://www.cisco.com/c/en/us/products/collateral/routers/8000-series-routers/ios-xr-software-flexible-consumption-model-2-0-ds.html.

[Cisco Licensing](#) greatly simplifies the operational overhead associated with license and device experience management for customers.

A successful registration and reporting to Cisco Licensing is essential to avail all the benefits of Software Innovation Access in FCM 2.0. Customers could lose the right to software innovation and upgrades if the FCM 2.0 device installation base does not register to an Account on Cisco Software Central and report usage.

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Document history

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Added 8712-MOD-M details to the datasheet		December 2024

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