Cisco 8200 Series Routers

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Cisco 8000 overview

The Cisco® 8000 Series Routers combine the revolutionary Cisco Silicon One™ processor, Cisco 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 need for reliable networks proliferates, it is imperative that traditional networks shift to a new architecture to address the requirements for exponentially increasing bandwidth, ubiquitous connectivity, security, better quality of service, and low latency, coupled with high reliability, availability, and serviceability of the infrastructure. The Cisco 8000 Series portfolio completes this journey with the Cisco 8200 product family.

Overview

The Cisco 8200 Series is a family of fixed systems powered by Cisco Silicon One processors. It embodies the cutting-edge innovation of the Cisco 8000 Series portfolio, offering advanced features engineered for seamless integration and scalability in one- and two-rack-unit (1RU and 2RU) compact form factors. Whether enhancing existing infrastructure or enabling new capabilities, the 8200 Series empowers organizations to achieve their goals with unmatched efficiency and effectiveness.

With the agility of Silicon One enabling applications at scale delivered on power- and space-optimized form factors, Cisco 8200 Series systems can address a wide variety of use cases such as provider core and internet peering.

Chassis features and benefits

Table 1. 8200 Series PIDs

Fixed chassis	Bandwidth	Height	Ports
8201-24H8FH	5.6 Tbps	1 RU	8 QSFP56-DD 400GbE and 24 QSFP28 100GbE
8201-32FH/ 8201-32FH-O (SONiC only)	12.8 Tbps	1 RU	32 QSFP56-DD 400GbE
8202-32FH-M	12.8 Tbps	2 RU	32 QSFP56-DD 400GbE with MACsec
8212-48FH-M	19.2 Tbps	2 RU	24 QSFP-DD 800G or 48 QSFP56-DD 400GbE with MACsec

Table 2. Features and benefits of the Cisco 8200 Series fixed system

Feature	Benefit
Integrated interfaces	Flexible port rate configuration: 800G (8x 100G, 2x 400G on 8212-48H-M), 400G, 100G, 40G, 25G, 10G Breakout support: 2x 400G (8212-48FH-M), 8x 100G (8212-48FH-M), 4x 100G, 2x 100G, 4x 25G, 4x 10G Routed optical network (RON) ready: Supports 400G DCO optics
Cisco pluggable interface	Compatible with a diverse range of optical modules for optimal performance and flexibility: QSFP+, QSFP28, QSFP56-DD, QSFP-DD800
Software	Enhanced automation for onboarding, service provisioning, and monitoring Programmable infrastructure with segment routing (SR, SRv6) and Ethernet VPN (EVPN)
Redundancy	N+1 redundant fan 1+1 redundant AC or DC power supplies

Product specifications

Table 3. Product specification

Series or model	Physical characteristics
Cisco 8200 Series	Operating temperature: 32° to 104°F (0° to 40°C) Nonoperating temperature: -40° to 158°F (-40° to 70°C) Humidity: 5% to 95% (noncondensing) Altitude: 0 to 9842 ft (0 to 3000 m)
8201-24H8FH	Intel 4-core 2.4-GHz CPU with 32 GB of DRAM. RS-232 console, 10G control plane expansion, 1G management, 1x USB 2.0, GBP (ToD, 10 MHz, 1PPS), 1588, and BITs (sync). (H) 1.73 x (W) 17.3 x (D) 23.6 in. (4.40 x 43.9 x 59.9 cm) – 1 RU 31 lb (14.09 kg) Typical system power at 5.6 Tbps: 205W 2 power supplies, 6 fans
8201-32FH/ **8201-32FH-O (SONiC only)**	Intel 4-core 2.4-GHz CPU with 32 GB of DRAM. RS-232 console, 10G control plane expansion, 1G management, 1x USB 2.0, GBP (ToD, 10 MHz, 1PPS), 1588, and BITs (sync). (H) 1.73 x (W) 17.3 x (D) 23.6 in. (4.40 x 43.9 x 59.9 cm) – 1 RU 31 lb (14.09 kg) Typical system power at 12.8 Tbps: 288W 2 power supplies, 6 fans

Series or model	Physical characteristics
8202-32FH-M	Intel 4-core 2.4-GHz CPU with 64 GB of DRAM. RS-232 console, 10G control plane expansion, 1G management, 1x USB 2.0, GBP (ToD, 10 MHz, 1PPS), 1588, and BITs (sync). (H) 3.45 x (W) 17.3 x (D) 23.6 in. (8.77 x 43.9 x 59.9 cm) – 2 RU 50.25 lb (22.8 kg) Typical system power at 12.8 Tbps: 575W 2 power supplies, 4 fans, and optional air filter
8212-48FH-M	Intel 6-core x86 CPU with 64 GB of DRAM and 128-GB SSD. RS-232 console, 10G control plane expansion, 1G management, 1x USB 2.0, GBP (ToD, 10 MHz, 1PPS), 1588, and BITs (sync). (H) 3.45 x (W) 17.3 x (D) 23.6 in. (8.77 x 43.9 x 59.9 cm) – 2 RU 50.25 lb (22.8 kg) Typical system power at 19.2 Tbps: TBD 2 power supplies, 4 fans, and optional air filter PTP timing with Class C performance, MACsec all ports

Regulatory and safety compliance

Table 4. Regulatory and safety compliance

Specification	Description
Regulatory compliance	Regulatory compliance statement: Products comply with CE Markings according to directives 2014/30/EU and 2014/35/EU
Safety	AS/NZS 62368.1 ANSI/ UL 60950-1 CAN/ CSA-C22.2 No. 60950-1 CAN/ CSA-C22.2 No. 62368-1 ANSI/ UL 62368-1 EN/ IEC 62368-1 GB 4943-1
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

Specification	Description
	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 the 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 that customers load only 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 and third-party software packages, and router configurations can be pulled into a single Cisco software image known as a Golden ISO. Customized images can 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 helps ensure 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 from launching. In the IMA measurement mode, the hashes of all images are logged in a secure location used for verification. Records of runtime 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.

Ordering information

Table 5. 8200 Series ordering information

PID	Product description
8201-24H8FH	Cisco 8201 1RU System w/ 8x400GE QSFP56-DD&24x100GE QSFP28
8201-32FH/8201-32FH-O	Cisco 8200 32x400G QSFPDD 1RU Fixed System w/HBM
8202-32FH-M	Cisco 8200 2RU Chassis w/32x400G, HBM & MACsec
8212-48FH-M	Cisco 8212 2RU System w/ 48x400GE QSFP56-DD, HBM & MACsec

The Fan, power supply units, and accessory kit will be ordered as part of the system.

The software license, right-to-use (RTU) licenses, and Software Innovation Access (SIA) subscription will be ordered with the system for the system to work properly

The RTU licenses provide customers with the ability to access and use specific perpetual software functionalities without the requirement to purchase the complete software package.

The SIA subscriptions are term-based agreements that provide customers with access to specific software benefits. They enable customers to optimize their software usage, easily manage licenses across their network infrastructure, and perform seamless upgrades to the latest versions of IOS XR software.

Warranty information

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

Product sustainability

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

Table 6. 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

Service and support

Cisco offers a wide range of services to help accelerate your success in deploying and optimizing the 8200 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 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 Cisco Smart Call Home, which offers proactive diagnostics and real-time alerts on your hardware.

Cisco 8200 Series. 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 8200 Series, 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).
- **License flexibility**. Your software is not node-locked to your hardware, so you can easily use and transfer licenses as needed.

To retrieve your licenses, you will first need to set up an account on Cisco Software Central.

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

The IOS XR Flexible Consumption Model (FCM) requires Cisco Licensing registration and license usage reporting. A customer network under the IOS XR FCM is considered compliant if the FCM-enabled devices in the network are registered to Cisco Licensing and are reporting the usage. For a more detailed overview of the Cisco IOS XR Software FCM, 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 receive all the benefits of Software Innovation Access in FCM. Customers could lose the right to software innovation and upgrades if the FCM device installation base does not register to an account on Cisco Software Central and report usage.

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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 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.

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