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Cisco 8000 Series Routers Datasheet

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Cisco 8000 Series

Figure 1.
Cisco 8000 Series routers

High-performance networking systems have historically been divided into routing or switching classes, with distinct hardware and software. Over time, this distinction has become less pronounced. This convergence has occurred with the evolution of feature-rich switching chips and routing chips that balance traditional Service Provider (SP)-class capabilities with many benefits of switching Application-Specific Integrated Circuits (ASICs).

Cisco® 8000 Series routers complete this journey. They deliver provider-class routing functionality at unmatched density, performance, and power. This enables Cisco 8000 Series to be deployed into an unprecedented range of routing roles – all supported with a single ASIC architecture and operating system – thus streamlining qualification, deployment, and operations.

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. The 8000 Series comprises a full range of feature-rich, highly scalable, deep-buffered, on-chip High Bandwidth Memory (HBM) and 400 Gigabit Ethernet (GbE)-optimized routers ranging from 10.8 to 25.6 Tbps in a 1 RU footprint. It is also available in an industry leading, rack-mountable modular system capable of 518.4 Tbps of full-duplex, line rate forwarding.

The Cisco 8000 Series includes two distinct router architectures that both utilize the Cisco Silicon One ASICs. The 8800 Series provides the highest bandwidth via modular chassis with a redundant control plane and switch fabric. The 8800 Series includes the Cisco 8804, 8808, 8812, and 8818. These chassis deliver up to 28.8 Tbps per line card via 100, 400, and 2x400GbE (800G) ports.

The Cisco 8100 and 8200 Series utilize Cisco's Router-on-Chip (RoC) architecture to deliver full routing functionality with a single ASIC per router. Both support the full routing feature set, but the 8200 has deep buffers and expanded forwarding tables, while the 8100 Series is targeted for data center applications with lower buffering and forwarding table scale requirements.

The RoC architecture is distinguished from System-on-Chip (SoC) switches by supporting large forwarding tables, deep buffers, more flexible packet operations, and enhanced programmability. The Cisco 8100 and 8200 provide up to 25.6 Tbps of network bandwidth with lower power than similar systems.

Cisco 8000 Series hardware

The 8000 Series includes routers in both fixed and modular form factors to address a broad range of bandwidth needs and facility requirements.

Table 1. Cisco 8100 and 8200 Series fixed chassis options

Fixed Chassis	Bandwidth	Height	Ports	Memory Options
Cisco 8101-32H	3.2 Tbps	1 RU	32 QSFP28 100GbE	No HBM
Cisco 8102-64H	6.4 Tbps	2 RU	64QSFP28 100GbE	No HBM
Cisco 8101-32FH	12.8 Tbps	1 RU	32QSFP56-DD 400 GbE	No HBM
Cisco 8111-32EH	25.6 Tbps	1 RU	32 800G (2x 400GbE QSFP-DD800)	No HBM
Cisco 8201	10.8 Tbps	1 RU	24 QSFP56-DD 400GbE and 12 QSFP28 100GbE	With HBM
Cisco 8202	10.8 Tbps	2 RU	12 QSFP56-DD 400GbE and 60 QSFP28 100GbE	With HBM
Cisco 8201-24H8FH	5.6 Tbps	1 RU	8 QSFP56-DD 400GbE and 24 QSFP28 100GbE	With HBM
Cisco 8201-32FH	12.8 Tbps	1 RU	32 QSFP56-DD 400GbE	With HBM
Cisco 8202-32FH-M	12.8 Tbps	2 RU	32 QSFP56-DD 400GbE with MACsec	With HBM

Table 2. Cisco 8800 Series modular chassis options

Modular Chassis	Bandwidth	Height	Supported Line Cards on All Chassis
Cisco 8804	115.2 Tbps	4 slots/10 RU	48 QSFP28 100 GbE with MACsec 34 QSFP28 100 GbE and 14 QSFP56-DD 400 GbE 36 QSFP56-DD 400 GbE 36 QSFP56-DD 400 GbE with MACsec 36 QSFP-DD800 800 G
Cisco 8808	230.4 Tbps	8 slots/16 RU	
Cisco 8812	345.6 Tbps	12 slots/21 RU	
Cisco 8818	518.4 Tbps	18 slots/33 RU	

Silicon innovation with the Cisco Silicon One ASIC

Cisco Silicon One is the first routing silicon architecture to break through the 10-Tbps benchmark for network bandwidth. This is accomplished without sacrificing route capacity, packet-per-second forwarding performance, or feature flexibility. The first-generation Q100 ASIC delivers 10.8 Tbps of throughput in 16-nm process technology, while the second-generation Q200 ASIC increases the performance to 12.8 Tbps in 7-nm process technology and now the new P100 ASIC pushes the performance even further to 19.2Tbps in 7-nm technology. Q100, Q200 and P100 ASICs deliver high-scale routing and deep buffering that typically require off-chip memories. In case of external memories, data path bandwidth is reduced due to frequent memory access. The Cisco Silicon One architecture achieves high-performance and full routing capabilities without external memories. This is enabled by the clean-sheet internal architecture that includes an on-chip High Bandwidth Memory (HBM). HBM provides a significant increase in performance while lowering power consumption. It is located on the chip package and connects to the Cisco Silicon One ASIC via an ultra-fast silicon interface. HBM is used to increase the scale of the forwarding table. G100 ASIC with 25.6Tbps performance does not use HBM and it is optimized for certain applications such as Top of Rack (ToR), leaf, spine, etc. in Data Centers and large scale AI/ML (Artificial Intelligence/ Machine Learning) networks.

The Cisco Silicon One architecture supports multiple modes of operation. It can function as an RoC, a line card network processor, and a switch fabric element. This flexibility enables consistent software in multiple roles and rapid silicon evolution.

System design innovation

Supporting the 8000 Series capabilities demanded a wide range of new approaches to platform design. By leveraging over 25 years of high-performance system design, Cisco has delivered unprecedented capacity without compromising forwarding performance or requiring oversubscription. This required new power supplies, a redesigned cooling architecture, and future-proof connectors.

The Cisco 8100 and 8200 Series routers required extensive innovation like consolidation of multiple components into a single ASIC to support high densities. Cisco Silicon One brings the capabilities of multiple chips into one single device, greatly increasing the power efficiency of the solution. As with all modern networking devices the power density of the ASIC creates a challenging thermal problem. In addition, 400GbE optics require up to six times the power of 100GbE QSFP28 modules. These challenges are addressed via advanced system design, including state-of-the-art fans and heat sinks, and QSFP-DD modular optics.

The 8800 chassis utilize a state-of-the-art orthogonal direct design with advanced cooling, high power capacity and new power supplies. The chassis and all data path components for the 8800 Series benefit from a clean-sheet design that allows the systems to take full advantage of the latest technologies and Cisco's design expertise. This design connects all forwarding path components directly without a backplane or midplane. In the 8800 Series, the line cards are oriented horizontally, and the eight fabric cards are oriented vertically. Every major component of the 8800 Series was developed with a clean sheet approach – representing unprecedented investment and commitment to a long lifecycle for the 8000 Series.

The 8800 chassis deliver significant improvements over previous orthogonal chassis, including:

- State-of-the-art redundant fans
- Network Equipment Building System (NEBS)–compliant air filters with doors for simplified line card access
- Future-proof power capacity with power-saving internal distribution
- New power supplies for power feed redundancy with reduced provisioning
- Cable management for up to 864 fibers

Cisco 8100 Series

Figure 2.
Cisco 8101-32H

Figure 3.
Cisco 8102-64H

Figure 4.
Cisco 8101-32FH

Figure 5.
Cisco 8111-32EH

The Cisco 8100 Series extends the small footprint, low power, and high performance of the 8000 Series to data center fabric roles that do not require the expanded forwarding scale and deep buffering of the 8200 Series.

The 8100 Series designed with Cisco's Q200 and G100 generation ASICs and without HBM delivers the low power and high performance of 7nm technology at four bandwidth levels – 3.2 Tbps, 6.4 Tbps, 12.8 Tbps and 25.6 Tbps so the latest silicon developments can be fully leveraged across data center networks in roles such as Top of Rack (ToR), high-density IP Fabric leaf and spines.

The Cisco 8100 Series offers four different variants: Cisco 8101-32H with 32 ports of 100GbE in a compact 1RU form factor, Cisco 8102-64H with 64 ports of 100GbE in a 2RU from factor, Cisco 8101-32FH with 32 ports of 400GbE in a compact 1RU form factor and Cisco 8111-32EH with 32 ports of 800G or 64 ports of 400GbE with breakout cable in a compact 1RU form factor.

The 8100 Series supports both IOS XR software and the open-source network operating system SONiC (Software for Open Networking in the Cloud).

Cisco 8200 Series

Figure 6.
Cisco 8201

Figure 7.
Cisco 8202

Figure 8.
Cisco 8201-32FH

Figure 9.
Cisco 8201-24H8FH

Figure 10.
Cisco 8202-32FH-M

The Cisco 8200 Series is designed for roles requiring higher scale and external deep buffers. To achieve similar routed bandwidth and scale, other industry routers require multiple devices such as off-chip Ternary Content-Addressable Memory (TCAMs), fabric ASICs, and multiple network processors. However, the Cisco 8200 Series routers use a simple single ASIC (with HBM) design without the need for off-chip TCAM.

The 8200 Series 1 and 2 RU footprints allow them to be deployed in locations that traditionally required much larger chassis and special accommodations for power and cooling. Provisioning up to 12.8 Tbps in the most efficient 100G/400G-generation chassis requires over seven times the space. The 8200 Series provides tens of milliseconds of buffering and supports large forwarding tables. The ability to deploy a full-featured router into power- and space-constrained facilities such as colocation, Content Delivery Networks (CDNs), Internet

Exchange Points (IXPs), or older central office sites opens new possibilities for network designs. The 8200 Series with its large buffer and scale capacity is most suitable for roles such as aggregation, peering, core, and Data Center Interconnects (DCIs).

The Cisco 8200 Series offers five different variants: Cisco 8201 with 24 ports of 400GbE and 12 ports of 100GbE in a compact 1RU form factor, Cisco 8202 with 60 ports of 100GbE and 12 ports of 400GbE in a 2RU from factor, Cisco 8201-24H8FH with 24 ports of 100GbE and 8 ports of 400GbE in a compact 1RU form factor, Cisco 8201-32FH with 32 ports of 400GbE in a compact 1RU form factor and Cisco 8202-32FH-M with 32 ports of 400GbE with MACsec in a 2RU form factor.

The 8200 Series supports both IOS XR software and the open-source network operating system SONiC (Software for Open Networking in the Cloud).

Cisco 8800 Series

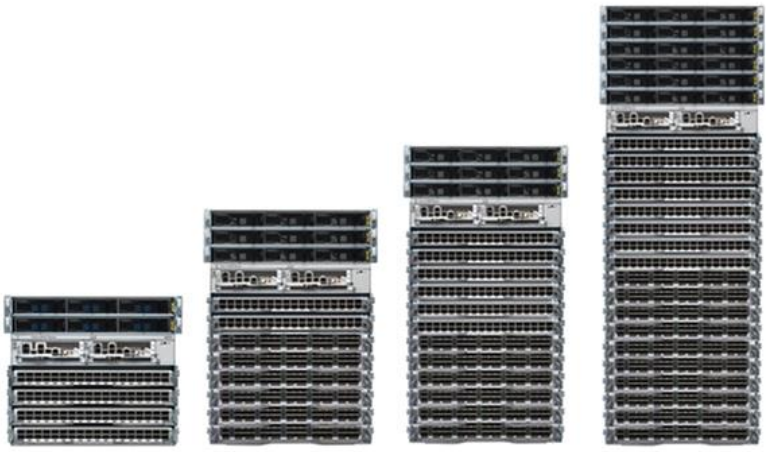

Figure 11.
Cisco 8800 4-, 8-, 12-, and 18-slot modular chassis

With up to 518.4 Tbps via 648 800G (2x 400GbE) ports, the Cisco 8800 Series delivers industry leading breakthrough density and efficiency with the extensive scale, buffering, and feature capabilities common to all the Cisco 8000 Series of routers. It includes four chassis – the 8804, 8808, 8812, and 8818 – to meet a broad set of network and facility requirements.

In addition to reducing per-port power relative to previous generations, the Cisco 8800 Series enables even greater savings by reducing the number of routers required in a given location – potentially removing entire layers from a network. This results in a significant reduction in the total number of router port and optics, one of the top contributors to network costs.

Cisco 8800 Series line cards

The Cisco 8800 Series modular platform supports six different 100GbE, 400GbE, and 800G line cards. The line cards utilize multiple Cisco Silicon One forwarding ASICs to achieve high performance and bandwidth with line rate forwarding. All ports on all six-line cards support different breakout options for 200 GbE, 100GbE, 50GbE, 40GbE, and 10GbE.

Table 3. Cisco 8800 Series line card options

Line Cards	Bandwidth	Silicon	100GbE Ports	400GbE Ports	800G Ports (2x 400GbE)	MACsec
8800-LC-48H	4.8 Tbps	Q100	48	-	-	Yes
88-LC0-34H14FH	9 Tbps	Q200	34	14	-	16x 100GbE ports
8800-LC-36FH	14.4 Tbps	Q100	-	36	-	No
88-LC0-36FH	14.4 Tbps	Q200	-	36	-	No
88-LC0-36FH-M	14.4 Tbps	Q200	-	36	-	Yes
88-LC1-36EH	28.8 Tbps	P100	-	-	36	No

There are six different line cards supported on all 8800 modular chassis.

The 48-port QSFP28 100GbE line card provides 4.8 Tbps of throughput with MACsec support on all ports. It also supports QSFP+ optics for 10G and 40G compatibility.

Figure 12.
48-port QSFP28 100GbE line card

The two variants of 36-port QSFP56-DD 400GbE line cards are based on Q100 and Q200 silicon chips. Each line card provides 14.4 Tbps via 36 QSFP56-DD front-panel ports.

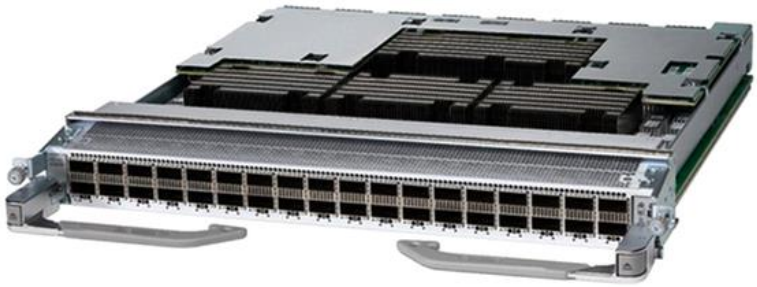

Figure 13.
36-port QSFP56-DD 400GbE line card

There is also a Q200-based, MACsec-capable, 36-port QSFP56-DD 400GbE line card that provides 14.4 Tbps of throughput with line rate MACsec on all ports.

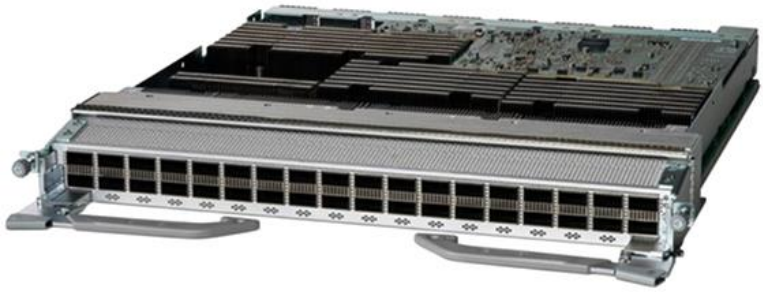

Figure 14.
36-port QSFP56-DD 400GbE line card with MACsec

The 36-port QSFP-DD800 800G line card provides 28.8 Tbps of throughput. Each 800G port can be used as 2x400GbE ethernet or 8x100GbE ethernet.

Figure 15.
36-port QSFP-DD800 800G line card

In addition, there is a combo card that provides 34 – QSFP28 ports and 14 – QSFP56-DD ports. It offers customers the ability to smoothly transition from 100G to 400G. For additional flexibility, this card supports MACsec on 16 of the 100GbE ports.

Figure 16.
34 – port QSFP28 100GbE and 14 – port QSFP56-DD 400GbE

Cisco 8800 Series switch fabric

The Cisco 8800 Series switch fabric is powered by 8 fabric cards that provide 7+1 line rate redundancy. In addition, the fabric supports a separate operational model with 4+1 fabric card redundancy to provide an entry level option for systems with only the 48-port 100GbE line card. This mode reduces cost and power for networks that want to take advantage of the latest platforms but are not yet ready to broadly deploy 400GbE.

Figure 17.
Cisco 8812 fabric card

Security

Security is a major concern for all Cisco customers. Attacks on networking equipment can have disastrous results. Network operators need assurance that their equipment is secure and running authorized Cisco software. Cisco 8000 Series routers support hardware root of trust based on the Trusted Computing Group (TCG) and IEEE 802.1 AR standards. This approach is far more reliable than a software-based security approach. All Cisco 8200 routers are FIPS 140-2 Level 2 compliant and support advance security features to ensure platform and OS integrity.

- Cisco secures the supply chain of every system at manufacturing time. A technology called “Chip Protection” allows customers to be assured that the hardware they receive from Cisco has no counterfeit components. This is accomplished with the use of unique identifiers that are stored inside the Trusted Anchor Module (TAM) device as a way to identify and track components through the entire lifecycle of the Cisco 8000. The checks cover all major components, including network processors, CPUs, and Field-Programmable Gate Arrays (FPGAs).
- Every image that a customer downloads from the Cisco site is cryptographically signed using Cisco private keys. Each platform has a TAM (based on the TCG standard) that uses built-in cryptographic functions to validate the image signature. Once the signature is validated, the software is considered authentic and is ready for install.

- During normal operation, the JTAG (Joint Test Action Group – a method of chip testing and verification) ports on chips are monitored. JTAG is one of the most common attack surfaces and therefore must be secured. Cisco uses a technology called “Secure JTAG” to monitor the port. If any illegal activity is detected, it is flagged and the system CPU is held in reset mode.
- Secure Boot root of trust is anchored in the TAM. It establishes an authentication chain in which each software module authenticates the next module in the boot process.

Cisco IOS XR software

Cisco IOS XR7 is a unified network OS spanning access, aggregation, edge, and core. The networking protocol stack within XR7 can be cut down by two-thirds when the IP transport architecture is simplified. Improvements to XR7 internal architecture have reduced the memory footprint by 35 percent. By reducing code size and the resources required, XR7 can be installed onto even the most constrained hardware designs with full security features without impact to boot times.

Modernizing XR7 with install procedures using standard Linux software package managers has also improved operations. Instead of “one-size-fits-all,” XR7 provides modularity, so customers only load what they will use.

Service providers can easily access new software packages from trusted Cisco Red Hat Package Manager (RPM) 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, home-grown/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 XR7 brings an unmatched level of openness for programmability and customization.

IOS XR 7 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 SONIC or P4Runtime.

IOS XR 7 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 7 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 7 is the industry's most trusted network operating system.

XR7 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, XR7 can establish software integrity enforcement and measurement. To further enhance the trusted defense posture, multiple runtime defenses within XR7 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. XR7 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 XR7 can be found here: IOS XR Data Sheet.

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

Ordering overview

The high-level hardware components are listed below. For full ordering information, refer to the ordering documentation.

Table 4. Cisco 8000 Series ordering overview

Part Number	Description
8101-32H	Cisco 8100 1 RU Chassis with 32x100GbE QSFP28 with IOS XR and without HBM
8102-64H	Cisco 8100 2 RU Chassis with 64x100GbE QSFP28 with IOS XR and without HBM
8101-32FH	Cisco 8100 1 RU Chassis with 32x400GbE QSFP56-DD with IOS XR and without HBM
8111-32EH	Cisco 8100 1 RU Chassis with 32x800G or 64x400GbE QSFP-DD800 with IOS XR and without HBM
8101-32H-O	Cisco 8100 1 RU Chassis with 32x100GbE QSFP28 with Open Software and without HBM
8102-64H-O	Cisco 8100 2 RU Chassis with 64x100GbE QSFP28 with Open Software and without HBM
8101-32FH-O	Cisco 8100 1 RU Chassis with 32x400GbE QSFP56-DD with Open Software and without HBM
8111-32EH-O	Cisco 8100 1 RU Chassis with 32x800G or 64x400GbE QSFP-DD800 with Open Software and without HBM
8201-SYS	Cisco 8200 1 RU Chassis with 24x400GbE QSFP56-DD and 12x100GbE QSFP28 with IOS XR
8202-SYS	Cisco 8200 2 RU Chassis with 12x400GbE QSFP56-DD and 60x100GbE QSFP28 with IOS XR
8201-24H8FH	Cisco 8200 1 RU Chassis with 8x400GbE QSFP56-DD and 24x100GbE QSFP28 with IOS XR
8201-32FH	Cisco 8200 1 RU Chassis with 32x400GbE QSFP56-DD with IOS XR and HBM
8202-32FH-M	Cisco 8200 2 RU Chassis with 32x400GbE QSFP56-DD MACsec with IOS XR and HBM
8201-32FH-O	Cisco 8200 1 RU Chassis with 32x400GbE QSFP56-DD with Open Software and HBM

Part Number	Description
8804-SYS	Cisco 8808 4-slot System
8808-SYS	Cisco 8808 8-slot System
8812-SYS	Cisco 8812 12-slot System
8818-SYS	Cisco 8818 18-slot System
8800-LC-48H	Cisco 8800 48x100GbE QSFP28 Line Card based on Q100 Silicon with 56Gb Serdes
88-LC0-34H14FH	Cisco 8800 34x100GbE QSFP28 and 14x400GbE QSFP56-DD Line Card based on Q200 Silicon with 56Gb Serdes
8800-LC-36FH	Cisco 8800 36x400GbE QSFP56-DD Line Card based on Q100 Silicon with 56Gb Serdes
88-LC0-36FH	Cisco 8800 36x400GbE QSFP56-DD Line Card based on Q200 Silicon with 56Gb Serdes
88-LC0-36FH-M	Cisco 8800 36x400GbE QSFP56-DD Line Card with MACsec based on Q200 Silicon with 56Gb Serdes
88-LC1-36EH	Cisco 8800 36x800G QSFP-DD800 Line Card based on P100 Silicon with 112Gb Serdes
8800-RP	Cisco 8800 Route Processor
8818-FC	Cisco 8818 Fabric Card based on Q100 Silicon with 56Gb Serdes
8812-FC	Cisco 8812 Fabric Card based on Q100 Silicon with 56Gb Serdes
8808-FC	Cisco 8808 Fabric Card based on Q100 Silicon with 56Gb Serdes
8818-FC0	Cisco 8818 Fabric Card based on Q200 Silicon with 56Gb Serdes
8808-FC0	Cisco 8808 Fabric Card based on Q200 Silicon with 56Gb Serdes
8804-FC0	Cisco 8804 Fabric Card based on Q200 Silicon with 56Gb Serdes

Physical characteristics

Table 5. Cisco 8000 Series physical characteristics

Series or Model	Physical Characteristics
Cisco 8000 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)
8101-32H	Intel Broadwell 4-core 2.4 GHz CPU with 16 GB of DRAM. RS-232 console, 10GbE Control Plane expansion, 1GbE Management, 1x USB2.0, GBP (ToD, 10MHz, 1PPS), 1588, and BITs (sync). (H) 1.73 x (W) 17.3 x (D) 19.34 in. (4.40 x 43.9 x 49.1 cm) – 1 RU 22.7 lbs (10.32 kg) Typical system power at 3.2 Tbps: 172W 2 power supplies, 5 Fans
8102-64H	Intel Broadwell 4-core 2.4 GHz CPU with 16 GB of DRAM. RS-232 console, 10GbE Control Plane expansion, 1GbE Management, 1x USB2.0, GBP (ToD, 10MHz, 1PPS), 1588, and BITs (sync). (H) 3.45 x (W) 17.3 x (D) 20.1 in. (8.77 x 43.9 x 51.1 cm) – 2 RU 35 lbs (16 kg) Typical system power at 6.4 Tbps: 256W 2 power supplies, 3 Fans
8101-32FH	Intel Broadwell 4-core 2.4 GHz CPU with 32 GB of DRAM. RS-232 console, 10GbE Control Plane expansion, 1GbE Management, 1x USB2.0, GBP (ToD, 10MHz, 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 lbs (14.09 kg) Typical system power at 12.8 Tbps: 288W 2 power supplies, 6 Fans
8111-32EH	Intel Broadwell 4-core 2.4 GHz CPU with 32 GB of DRAM. RS-232 console, 10GbE Control Plane expansion, 1GbE Management, 1x USB2.0, GBP (ToD, 10MHz, 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 25 lbs (11.34 kg) Typical system power at 25.6 Tbps: TBD 2 power supplies, 6 Fans

Series or Model	Physical Characteristics
Cisco 8201	Intel Broadwell 4-core 2.4 GHz CPU with 32 GB of DRAM. RS-232 console, 10GbE Control Plane expansion, 1GbE Management, 1x USB2.0, GBP (ToD, 10MHz, 1PPS), 1588, and BITs (sync). (H) 1.73 x (W) 17.3 x (D) 20.1 in. (4.40 x 43.9 x 51.1 cm) – 1 RU 24 lbs (10.9 kg) Typical system power at 10.8 Tbps: 415 W 2 power supplies, 5 Fans
Cisco 8202	Intel Broadwell 4-core 2.4 GHz CPU with 32 GB of DRAM. RS-232 console, 10GbE Control Plane expansion, 1GbE Management, 1x USB2.0, GBP (ToD, 10MHz, 1PPS), 1588, and BITs (sync). (H) 3.45 x (W) 17.3 x (D) 20.1 in. (8.77 x 43.9 x 51.1 cm) – 2 RU 42 lbs (19 kg) Typical system power at 10.8 Tbps: 750 W 2 power supplies, 3 Fans and Optional air filter
8201-24H8FH	Intel Broadwell 4-core 2.4 GHz CPU with 32 GB of DRAM. RS-232 console, 10GbE Control Plane expansion, 1GbE Management, 1x USB2.0, GBP (ToD, 10MHz, 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 lbs (14.09 kg) Typical system power at 5.6 Tbps: 205W 2 power supplies, 6 Fans
8201-32FH	Intel Broadwell 4-core 2.4 GHz CPU with 32 GB of DRAM. RS-232 console, 10GbE Control Plane expansion, 1GbE Management, 1x USB2.0, GBP (ToD, 10MHz, 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 lbs (14.09 kg) Typical system power at 12.8 Tbps: 288W 2 power supplies, 6 Fans
8202-32FH-M	Intel Broadwell 4-core 2.4 GHz CPU with 64 GB of DRAM. RS-232 console, 10GbE Control Plane expansion, 1GbE Management, 1x USB2.0, GBP (ToD, 10MHz, 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 lbs (22.8 kg) Typical system power at 12.8 Tbps: TBD 2 power supplies, 4 Fans and Optional air filter

Series or Model	Physical Characteristics
Cisco 8800 Series	2 route processors Intel Broadwell 4-core 2.4 GHz CPU with 32 GB of DRAM. RS-232 console, 10GbE Control Plane expansion SFP+, 1GbE Management and BMC port, 2x USB2.0, GBP (ToD, 10MHz, 1PPS), 1588, and BITs (sync). Cable management, doors, and air filters 6.3 KW power supply for AC and high-voltage DC (180 to 305V AC, 192 to 200V DC) 4.4 KW power supply for 48V 60A DC (-40 to -75V DC) 4.8 KW power supply for 48V 100A DC (-40 to -75V DC) Horizontal line cards with 8 vertical fabric cards and 4 fan trays Rack mountable in standard 19-in. (48.3-cm) rack
Cisco 8804	(H) 17.5 x (W) 17.45 x (D) 33 in. (44.45 x 44.32 x 83.82 cm) – 10 RU – 4 line cards Depth with cable management, filter, and doors: 39.88 in. (101.3 cm) Weight: Unloaded, 124 lbs (56.36 kg); fully loaded, 402 lbs (183 kg) Typical system power at 57.6 Tbps: 4.2 KW; at 115.2 Tbps: TBD 6 high-voltage power supplies or 8 48V DC power supplies
Cisco 8808	(H) 28 x (W) 17.45 x (D) 33.73 in. (71.12 x 44.32 x 85.7 cm) – 16 RU – 8 line cards Depth with cable management, filter, and doors: 41.18 in. (104.6 cm) Weight: Unloaded, 162 lbs (73 kg); fully loaded, 658 lbs (299 kg) Typical system power at 115.2 Tbps: 9.3 KW; at 230.3 TBps: TBD 9 high-voltage power supplies or 12 48V DC power supplies
Cisco 8812	(H) 36.75 x (W) 17.45 x (D) 35.43 in. (93.345 x 44.23 x 90 cm) – 21 RU – 12 line cards Depth with cable management, filter, and doors: 41.55 in. (105.5 cm) Weight: Unloaded, 212 lbs (96 kg); fully loaded, 891 lbs (404 kg) Typical system power at 172.8 Tbps: 16.3 KW; at 345.6Tbps: TBD 9 high-voltage power supplies or 12 48V DC power supplies
Cisco 8818	(H) 57.75 x (W) 17.45 x (D) 35.43 in. (146.7 x 44.23 x 90 cm) – 33 RU – 18 line cards Depth with cable management, filter, and doors: 41.55 in. (105.5 cm) Weight: Unloaded, 283 lbs (128 kg); fully loaded, 1357 lbs (615 kg) Typical system power at 259.2 Tbps: 22 KW; at 518.4 Tbps: TBD 18 high-voltage power supplies or 24 48V DC power supplies

Compliance

Table 6. Compliance

Specification	Description
Regulatory Compliance	Products should comply with CE Markings according to directives 2004/108/EC and 2006/95/EC
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: Emissions	47 CFR 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 KN32 Class A CNS13438 Class A
EMC: Immunity	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.

Warranty

Service and support

Cisco offers a wide range of services to help accelerate your success in deploying and optimizing the Cisco 8000 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 use an architecture-led approach to help you align your network 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 8000 Series. Spanning the entire network lifecycle, Cisco Services offerings help increase investment protection, optimize network operations, support migration operations, and strengthen your IT expertise.

Product sustainability

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

Table 7. Product sustainability

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

Cisco Smart Licensing

Cisco Smart 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 Smart Licensing you get:

- Easy Activation. Smart 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 of 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.

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 8000 Series routers

Document history

New or revised topic	Described In	Date
Updated 88-LC1-36EH line card and 800G ports column	Cisco 8800 Series line card section	March 2023
Updated Bandwidth and CPU for8000 Series	Cisco 8000 Series hardware and Physical characteristics sections	March 2023
Updated SerDes information	Cisco 8000 Series ordering overview	March 2023
Updated weights for 8804, 8808, 8812, 8818	Physical Characteristics	Jul 16, 2021
Added section on Cisco Smart Licensing	Cisco Smart Licensing	Jul 16, 2021
Added models 8111-32EH, 8201-24H8FH, and 8202-32FH-M	Hardware Description, Ordering Overview, Physical Characteristics	Jun 29, 2022