Data sheet
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Cisco 8100 Series Switches

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Overview of the Cisco 8000 Series

The Cisco 8000 Series combines the revolutionary Cisco Silicon One™ and Cisco IOS® XR or the SONiC open-source network operating system 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 the need for exponential growth in bandwidth, ubiquitous connectivity, security, better quality of service, low latency coupled with high reliability, availability, and serviceability of the infrastructure. The Cisco® 8000 Series Router portfolio completes this journey with the Cisco 8100 Series Switches.

The 8100 Series inherits the core attributes of the Cisco 8000 Series architecture, including Silicon One ASICs, energy efficiency, and software support, while tailoring its features for high-density, high-speed switching environments. It extends the software support of the 8000 Series to include SONiC (Software for Open Networking in the Cloud), an open-source network operating system widely adopted by hyperscalers. SONiC allows the 8100 Series to seamlessly integrate into hyperscaler data centers while maintaining compatibility with traditional data center deployments. This makes the 8100 Series an integral part of the 8000 portfolio, addressing both traditional and next-generation network challenges with the same high standards of performance and reliability.

Cisco 8100 Series overview

The Cisco 8100 Series is a line of fixed form-factor switches that extend the small footprint, low power, and high performance of the 8000 Series to address the evolving needs of modern data center fabrics, including the emerging demands of AI and Machine Learning (AI/ML) networks. As AI/ML workloads grow exponentially, hyperscalers face significant challenges in optimizing network performance to reduce convergence time, job completion time, and overall latency. These environments require massive compute power, and data or model parallelism is often employed to improve processing efficiency. Recognizing these demands, Cisco has taken a comprehensive, end-to-end approach to address the unique requirements of AI/ML networks while maintaining the core strengths of the 8000 Series.

At the heart of the 8100 Series are Cisco's Q200 and G200 ASICs, built on 7-nm and 5-nm technology, respectively, which offer exceptional power efficiency and high performance without the need for High-Bandwidth Memory (HBM). These switches deliver bandwidth levels ranging from 3.2 Tbps to 51.2 Tbps, making them suitable for a wide variety of roles, from traditional data center Top-of-Rack (ToR) deployments to high-density IP fabric leaf and spine configurations. The compact form factors, ranging from 1 Rack Unit (1RU) to 2RU, offer flexibility for various network designs, and the series includes 100 Gigabit Ethernet (100G), 400G, and 800G options, catering to different levels of network scaling and traffic demand.

In addition to its role in traditional data centers, the Cisco 8100 Series is poised to play a critical role in AI/ML infrastructure. With new 51.2-Tbps switches, Cisco offers versatile connectivity through Quad Small Form-Factor Pluggable (QSFP) and Octal SFP (OSFP) port options, enabling high-speed interconnects in both front-end and back-end AI networks. These networks benefit from the hierarchical separation of zones and job placement modules, allowing for more efficient management of data flows and workloads across distributed compute environments. The Cisco 8100 Series helps ensure that network infrastructure can scale and adapt as AI/ML workloads grow in complexity and size, maintaining optimal performance and minimizing network bottlenecks.

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The 8100 Series supports the SONiC open-source network operating system. This open networking capability helps ensure that customers can build and manage their networks with the agility required to support cutting-edge AI/ML workloads while maintaining compatibility with existing data center infrastructure.

The Cisco 8100 Series offers several distinct variants, including the 8102-64H-O with 64 ports of 100G in a 2RU form factor, the 8101-32FH-O with 32 ports of 400G in a 1RU form factor, the high-density 8122-64EH-O and 8122x-64EF-O, which support 64 ports of 800G or 128 ports of 400G with breakout cables (QSFP and OSFP, respectively), and the 8102-28FH-DPU-O with 28 ports of 400G QSFP-DD (11.2T) and 8 Data Processing Units (DPUs) (1.6 Tbps). This diverse portfolio helps ensure that the 8100 Series can meet the demands of both traditional data center roles and the high-performance requirements of next-generation AI/ML network infrastructures.

Cisco 8100 Series chassis features and benefits

Table 1. 8100 Series product IDs

Fixed chassis	Bandwidth	Height	Ports
Cisco 8102-64H-O	6.4 Tbps	2RU	64x 100G (64x QSFP28)
*Cisco 8101-32FH-O	12.8 Tbps	1RU	32x 400G (32x QSFP-DD)
Cisco 8101-32FH-O-C01	**12.8 Tbps**	**1RU**	32x 400G (32x QSFP-DD)
Cisco 8122-64EH-O	51.2 Tbps	2RU	64x 800G (2x 400G QSFP-DD800)
Cisco 8122x-64EF-O	51.2Tbps	2RU	64x 800G (2x 400G OSFP800)
**Cisco 8501-SYS-MT	51.2 Tbps	4RU	64x 800G OSFP800
Cisco 8102-28FH-DPU-O	12.8 Tbps	2RU	28x 400G QSFP-DD (11.2T) + 8x DPUs (1.6 Tbps)

* Also offered as a closed PID with IOS-XR: 8102-32FH.

** SONiC not supported. Ships with FBOSS OS.



Figure 1.
Cisco 8102-64H-O



Figure 2.
Cisco 8101-32FH-O

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Figure 3.
Cisco 8101-32FH-O-C01

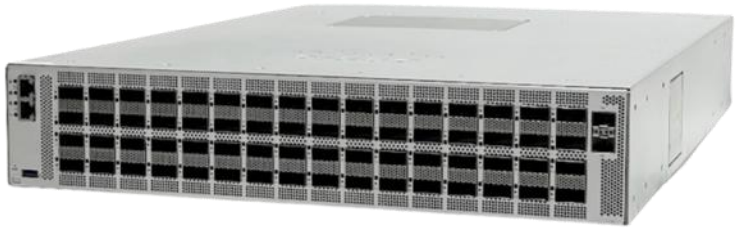


Figure 4.
Cisco 8122-64EH-O



Figure 5.
Cisco 8122x-64EF-O



Figure 6.
Cisco 8501-SYS-MT

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Figure 7.
Cisco 8102-28FH-DPU-O

Table 2. Cisco 8100 features and benefits

Feature	Benefit
Integrated interfaces	Flexible port rate configuration: 800G (8x 100G, 2x 400G), 400G, 100G, 40G, 25G, 10G Breakout support: 2x 400G, 8x 100G, 4x 100G, 2x 100G, 4x 25G, 4x 10G
Cisco pluggable interface	Compatible with a diverse range of optical modules, for optimal performance and flexibility: QSFP+, QSFP28, QSFP56-DD, QSFP-DD800, OSFP800
Software	Enhanced Automation for onboarding, service provisioning, and monitoring.
Redundancy	Redundant fan trays (N+1) Redundant AC or DC power supplies (N+1)

Product specifications

Table 3. 8100 Series specifications

Series or model	Physical characteristics
Environmental specifications	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)
8102-64H-O	Intel 4-core 2.4-GHz CPU with 16 GB of DRAM. RS-232 console, 10G control plane expansion, 1G management, 1x USB 2.0, GBP (ToD, 10 MHz, 1 PPS), 1588, and BITs (sync) Dimensions (HxWxD): 3.45 x 17.3 x 20.1 in. (8.77 x 43.9 x 51.1 cm) – 2 RU Weight: 35 lb (16 kg) Typical system power at 6.4 Tbps: 256W 2 power supplies, 3 fans

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Series or model	Physical characteristics
8101-32FH-O	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, 1 PPS), 1588, and BITs (sync) Dimensions (HxWxD): 1.73 x 17.3 x 23.6 in. (4.40 x 43.9 x 59.9 cm) – 1 RU Weight: 31 lb (14.09 kg) Typical system power at 12.8 Tbps: 288W 2 power supplies (1+1 redundancy), 6 fans (5+1 redundant cooling) 1.4KW AC port-side intake, 1.4KW AC port-side exhaust
8101-32FH-O-C01	Intel 4-core 2.4-GHz CPU with 16 GB of DRAM. RS-232 console, 1G management, 1x USB 2.0 Dimensions: 17.3" (W) x 1.73" (H) x 21.3" (D) 1RU Weight ~ max < 37.5 lbs (17 kg) with all accessories 2 power supplies (1+1 redundancy), 6 Fans (5+1 redundant cooling) 1.4KW AC port-side intake 19” Rack supported Extended tray compatible with Nvidia MGX Rack
8122-64EH-O	Intel 4-core 2.4-GHz CPU with 64 GB of DRAM. RS-232 console, 1G management, 1x USB 2.0, 2x SFP28 telemetry ports Dimensions: (HxWxD) 3.43 x 17.3 x 24.7 in. (8.76 x 44.0 x 62.7 cm) – 2 RU Weight: ~ 37.0 lb (16.7 kg) without 4 fans and 2 power supplies Typical system power at 51.2 Tbps: TBD 2 power supplies (1+1 redundancy), 4 fans (3+1 redundant cooling)
8122x-64EF-O	AMD 8-core CPU with 32 GB of DDR5 DRAM. RS-232 console, 1G management, 1x USB 2.0, 1x QSFP28 telemetry port Dimensions (HxWxD): 3.43 x 17.3 x 24.7 in. (8.76 x 44.0 x 62.7 cm) – 2 RU Weight: ~ 37.0 lbs (16.7 kg) without 4 fans and 2 power supplies Typical system power at 51.2 Tbps: 1011W 2 power supplies (1+1 redundancy), 4 fans (3+1 redundant cooling)
8501-SYS-MT	Dimensions: (H) 6.93 in (16.6 cm); (W) 17.32 in. (44 cm) excluding handles,17.49 in. (44.42 cm) including side handles; (L) 26 in. (66 cm) Weight: ~86.5 lb (39.24 kg) with power supply and fans
8102-28FH-DPU-O	Intel 16-core 2.5-GHz CPU, 4 slots supporting DPU complexes each with 400G data bandwidth to the switch ASIC, RS-232 console, 1G management, 1x USB 2.0 Dimensions: (H) 3.43 x (W) 17.3 x (D) 24.2 in. (8.76 x 43.95 x 67.4 cm) – 2 RU 2 power supplies (1+1 redundancy), 4 fans (3+1 redundant cooling), 4 DPU cards Weight: ~49 lb (22.2 kg) with power supply and fans, ~40 lb (18.1 kg) without power supply and fans Typical power: 1210 W

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Regulatory and safety compliance

Table 4. 8100 Series 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 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* *Support post 24.3.1

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Specification	Description
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* *Support post 24.3.1
Restriction of Hazardous Substances	The product is RoHS 6 compliant with exceptions for leaded Ball Grid Array (BGA) balls and lead press fit connectors.

SONiC software

SONiC is an open-source project that is part of the Linux Foundation. It is a Linux-based network operating system designed for scalable cloud networking. A key feature of the Cisco 8100 Series Routers is their integration with the SONiC network operating system.

Key capabilities

SONiC provides a programmable and flexible platform for building high-performance, cloud-scale networking solutions. The integration of SONiC with the Cisco 8100 Series Routers unlocks several key benefits:

- Open and programmable: SONiC is an open-source network operating system that provides a programmable and flexible platform for building network solutions.
- Cloud-native architecture: The 8100 Series Routers with SONiC leverage a cloud-native architecture, enabling rapid feature development and updates.
- Hardware flexibility: SONiC supports a wide range of Cisco 8100 Series fixed platforms with throughputs ranging from 6.4 to 51.2 Tbps, providing flexibility in choosing the right switch for the network.
- Seamless integration: SONiC integrates seamlessly with popular cloud management tools and platforms, simplifying operations.
- Scalability and performance: SONiC on the 8100 Series routers delivers high-capacity, low-latency networking to support demanding workloads like AI/ML, high-performance computing, cloud, and edge computing.
- Operational efficiency: SONiC's automated provisioning, monitoring, and troubleshooting capabilities help improve operational efficiency.

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Ordering information

Table 5. 8100 Series hardware and software ordering information

PID	Description
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
8101-32FH-O-C01	Cisco 8100 1 RU Chassis with 32x400GbE QSFP56-DD with Open Software and without HBM
8122-64EH-O	Cisco 8100 2 RU Chassis with 64x800G or 128x400GbE QSFP-DD800 with open Software without HBM based on G200 ASIC with 112Gb Serdes
8122x-64EF-O	Cisco 8100 2 RU Chassis with 64x800G or 128x400GbE OSFP800 with open Software without HBM based on G200 ASIC with 112Gb Serdes
8102-28FH-DPU-O	Cisco 8100 28x400G QSFPDD DPU enabled, 2RU Fixed Switch, with open Software without HBM

The fan, power supply units, and accessory kits are ordered as part of the system.

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 CSR 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

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Service and support

Cisco offers a wide range of services to help accelerate your success in deploying and optimizing the Cisco 8100 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 Smart Net Total Care® 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. This support helps to keep your systems and your business running smoothly. Software Support is a required purchase with the Software Innovation Access (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.

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 8100 Series, contact your Cisco sales representative.
For an overview of all offers, visit Cisco Services for Service Providers.

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