

Huawei FusionServer

E9000 Converged Architecture Blade Server



HUAWEI TECHNOLOGIES CO., LTD.



Huawei FusionServer E9000 Converged Architecture Blade Server



Huawei FusionServer E9000 Converged Architecture Blade Server is the latest-generation infrastructure platform presented by Huawei. It delivers superior computing, storage, switching, and management power out of one tightly integrated package, and is ideal for scenarios such as data center infrastructure, high-performance database, virtualization, high-performance computing (HPC), and carrier network function virtualization infrastructure (NFVI).

Chassis



E9000 Chassis

Modular design for compute, storage, network, heat dissipation, and power supply.

12U high, providing 8 full-width or 16 half-width slots.

Supports next 3 generations of Intel high-performance processors.

Supports next-decade network technology evolution.

Compute nodes

CH121 V5



Half-Width 2S Compute Node
High performance
Multi-plane switching

CH121L V5



Liquid-Cooled 2S Compute Node
Liquid cooled
Low energy consumption

CH221 V5



Full-Width I/O Expansion Node
High expandability
2 PCIe slots

CH225 V5



Full-Width Storage Node
All-flash 12 NVMe SSD disks

CH242 V5



Full-Width 4S Compute Node
Mission-critical applications
Large memory

Switch modules

GE



CX110



CX116
Passthrough



CX220
16G FC

8G/16G FC



CX310



CX311



CX318
Passthrough



CX320

10GE/40GE/FCoE

IB FDR/EDR



CX611



CX620/CX621



CX710

40GE



CX820

OPA



CX912
10GE+FC

Multi-Plane Switch Modules



CX916
10GE/25GE+FC

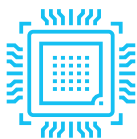


CX920
10GE+40GE

Huawei FusionServer E9000 Converged Architecture Blade Server



Huawei FusionServer E9000 Converged Architecture Blade Server runs on an industry-leading technology platform and architecture, and leverages Huawei's longstanding, extensive experience and expertise in the ICT space, to empower customers with a diversity of features that help them differentiate themselves amidst the intensifying competition.



Leading Performance

- Supports the Intel® Xeon® E5/E7 and the new-generation Scalable Processor Family
- Supports I/O expansion for accelerating M.2, NVMe SSD, GPU, and FPGA
- Supports leading-edge all-flash blade, and accommodates 12 built-in NVMe SSDs in a full-width node, unlocking exceptional data throughput



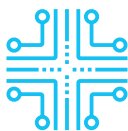
Intelligent Management

- Intelligent O&M with full-lifecycle management, significantly improving deployment and O&M efficiency
- Supports automated firmware upgrade, automated OS deployment, and stateless computing
- Full Restful APIs, compatible with the Intel RSD architecture



High-Speed Network

- Midplane switching capacity of up to 32 Tbit/s, supporting evolution to 100GE
- Multi-plan switching and SDN intelligent networking
- Supports GE, 10GE, 40GE, FCoE, FC, and IB EDR switching



Flexible Expansion

- Supports flexible combinations of 2-socket and 4-socket compute nodes
- Supports PCIe standard card expansion on half-width compute nodes
- Supports expansion with 2 PCIe standard cards on a full-width compute node
- 4-socket compute nodes support PCIe standard card expansion

Typical Applications

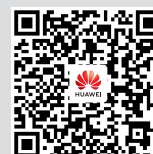
Huawei FusionServer E9000 converges computing, storage, and networking to power the high-end, core applications of carriers and enterprises. It is the choicest platform for enterprises to run private clouds, high-end corporation applications, and HPC workloads.

For more information

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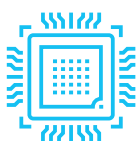


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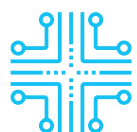
The E9000 chassis is engineered as a 12U 16-blade form factor. It provides a fully redundant modular design for power supply, heat dissipation, management, and switching.

The layout inside the chassis enables optimal space utilization. It can be installed in standard 19-inch cabinets with a 1,000 mm depth and above. According to the PSUs configured, the E9000 can run in an AC-powered or DC-powered chassis.



Superior Performance

- Supports evolution of the next three generations of Intel® high-performance processors
- Full-width slot supports up to 12 NVMe/SAS/SATA disks
- Supports I/O expansion for accelerating M.2, NVMe SSD, GPU, and FPGA
- Supports half-width 700 W or full-width 1400 W heat dissipation and power supply
- Supports 40GE, IB EDR, OPA, and evolution to 100GE



Converged Architecture

- Modular design for computing, storage, switching, heat dissipation, and power supply
- Provides an architecture for dynamic expansion by using 2S and 4S compute nodes
- Supports various switch modules (GE, 10GE, 40GE, FC, FCoE, IB and OPA), flexibly configurable to meet diverse service requirements



High Energy Efficiency and Rock-solid Reliability

- Supports the liquid cooling solution, enabling over 40% energy conservation and PUE equal to or smaller than 1.1
- Powered by 80 Plus Platinum/Titanium PSUs with conversion efficiency of up to 96%, and supports Dynamic Energy Management Technology (DEMT)
- Optimized system air ducts and industry's highest heat dissipation efficiency
- Fully redundant functional modules, enabling seamless failover in case of faults
- Passive midplane, avoiding single points of failure

Huawei FusionServer E9000 Chassis



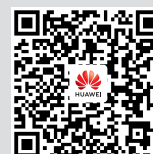
Form factor	12U blade server chassis
Compute node	16 half-width slots or 8 full-width slots, supporting flexible configurations of single-slot, dual-slot, full-width, and half-width nodes and accommodating up to 16 Huawei CH series half-width single-slot compute nodes; supports up to 64 Intel Xeon E5-2600 v3/v4 processors
Switching system	<p>Provides 4 slots for installing Huawei CX series switch modules, provides a midplane switching capability of up to 32 Tbit/s, supports the following types of switch modules:</p> <ul style="list-style-type: none">• CX110 GE switch module: 12 x GE + 4 x 10GE uplinks, 32 x GE downlinks• CX116 GE pass-through module: 32 x GE uplinks, 32 x GE downlinks• CX220 16G FC switch module: 8 x 8G FC uplinks, 16 x 16G FC downlinks• CX310 10GE switch module: supports FCoE ports, 16 x 10GE uplinks, 32 x 10GE downlinks• CX311 10GE switch module: supports FCoE and FC ports, 16 x 10GE + 8 x 8G FC uplinks, 32 x 10GE downlinks• CX318 10GE pass-through module: 32 x 10GE uplinks, 32 x 10GE downlinks• CX320 10GE switch module: supports 40GE, FCoE, and FC ports, 8 x 10GE + 2 x 40GE uplinks (supports 8 x 10GE/8G FC Flexible interface card), 32 x 10GE downlinks• CX611 IB QDR/FDR switch module: 18 x QDR/FDR uplinks, 16 x QDR/FDR downlinks• CX620 IB EDR switch module: 18 x EDR uplinks, 16 x EDR downlinks• CX710 40GE switch module: 8 x 40GE uplinks, 16 x 40GE downlinks• CX820 100G OPA switch module: 20 x 100G uplinks, 16 x 100G downlinks• CX912 multi-plane switch module: supports FC ports, 16 x 10GE + 8 x 8G FC uplinks, 32 x 10GE + 16 x 8G FC downlinks• CX916 multi-plane switch module: supports FC ports, 8 x 10GE/25GE + 2 x 40GE + 8 x 16G FC uplinks, 32 x 10GE + 16 x 16G FC downlinks• CX920 multi-plane switch module: 8 x 10GE+8 x 40GE uplinks, 16 x 10GE+16 x 40GE downlinks, LOM supported
Power supply units	6 x 3000 W/2000 W AC or 6 x 2500 W DC hot-swappable PSUs, support N+N or N+M redundancy
Fan modules	14 hot-swappable fan modules, support intelligent speed tuning and N+1 redundancy
Management	<ul style="list-style-type: none">• Complies with IPMI V2.0 standard, supports remote start-up and shut-down, reset, logging, SOL, KVM over IP, virtual media, and monitoring of hardware including fan modules and PSUs• Supports 1+1 redundancy• Provides local KVM port for server management
Power supply	110 V/220 V AC or -48 V DC or HVDC
Operating temperature	5°C–40°C (41°F–104°F), ASHRAE Class A3 compliant
Certification	UL, CE, FCC, and VCCI etc.
Dimensions (H x W x D)	530 mm x 442 mm x 840 mm (20.87 in. x 17.40 in. x 33.07 in.)

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Huawei CH121 V5 Compute Node

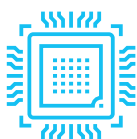
(CH121 V5 for short)



The CH121 V5 is optimized for virtualization, cloud computing, high-performance computing (HPC), and network function virtualization (NFV) applications.

It provides dense computing capability and super large memory capacity.

The CH121 V5 supports the full series of new-generation Intel® Xeon® Scalable Processors (with CPU power of up to 205 W), and provides up to 24 DDR4 DIMM slots, 2 hard drive slots (supporting NVMe SSDs or 4 M.2 SSDs), and one half-height half-length PCIe x16 standard card.



Superior Computing Power, Flexibility, and Openness

- Runs on the latest-generation Intel® Xeon® Scalable Processors, with an UltraPath Interconnect (UPI) bus speed of up to 10.4 GT/s between processors. Each processor supports up to 28 computing cores.
- Supports Intel® Turbo Boost, hyper-threading, and Advanced Vector Extensions (AVX-512), delivering enhanced computing performance for computing-intensive applications.
- Provides 24 DDR4 DIMM slots, and delivers memory speeds of up to 2,666 MT/s and memory capacities of up to 3 TB (with 128 GB DIMMs). This is ideal for application scenarios that require large-capacity memory.
- Supports 2 PCIe NVMe SSDs or 4 M.2 SSDs, flexibly meeting storage demands.
- Supports standard PCIe expansion slots, allowing customers to accelerate services as desired.



Intelligent Energy Conservation and Better Performance

- Employs innovative Dynamic Energy Management Technology (DEMT) to support smart energy conservation, and drives down power consumption by leveraging different technologies. These include component hibernation, automatic power-on/-off for multi-phase power supplies, speed tuning using the proportional-integral-derivative (PID) algorithm, and active-standby power supplies.
- Adopts carrier-class design, manufacturing processes, and stringent component selection to ensure high reliability and stability.



Intelligent Management, Integration, and Openness

- Intelligent O&M with full-lifecycle management, significantly improving deployment and O&M efficiency.
 - » Batch installation of OSs, slashing the average time taken by each server to minutes.
 - » Automated firmware upgrade, with flexible and configurable upgrade policies for different components and drivers.
 - » Stateless computing, allowing for the rapid replication of live-network configurations and swift active/standby failover.
 - » Fault Diagnosis and Management (FDM) for in-depth fault diagnosis, with an accuracy of up to 93% when diagnosing faults in core components.
- Provides standardized open interfaces and development guides, facilitating seamless integration with third-party management software.

Huawei CH121 V5 Compute Node

(CH121 V5 for short)



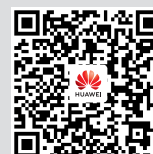
Form factor	2-socket blade server node in a half-width slot
Processors	1 or 2 Intel® Xeon® Scalable Processors of up to 205 W
Memory	24 DDR4 DIMM slots, with memory speeds of up to 2,666 MT/s, and memory capacity of up to 3 TB
Internal storage	2 x 2.5-inch SSDs, or SAS/SATA hard drives; 2 NVMe SSDs supported Or up to 4 x M.2 SSDs (SATA interface), individually hot-swappable
RAID support	2 x 2.5-inch SSDs or SAS/SATA hard drives (RAID 0 or 1) 4 x M.2 SSDs support RAID 0, 1, 5, 6, or 10
PCIe expansion	2 mezzanine cards (x16) Supports 1 half-height half-length PCIe x16 standard card (front accessible) for expansion
Operating systems	Microsoft Windows Server 2012 Red Hat Enterprise Linux SUSE Linux Enterprise Server Huawei FusionSphere Citrix XenServer VMware ESXi
Operating temperature	5°C–40°C (41°F–104°F), ASHRAE Class A3 compliant
Dimensions (H x W x D)	60.46 mm x 210 mm x 537.2 mm (2.38 in. x 8.27 in. x 21.15 in.)

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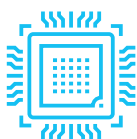
Huawei CH221 V5 I/O Expansion Compute Node (CH221 V5 for short)



The CH221 V5 provides superior computing performance and PCIe expansion capability.

It uses Intel® Xeon® Scalable processors and supports up to 24 DIMM slots, 2 PCIe cards, and 2 2.5" hard drives/SSDs.

The CH221 V5 is suitable for scenarios that require high computing performance and application acceleration, such as video rendering, AI, and HPC.



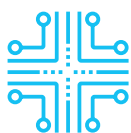
Outstanding Expandability

- Provides 2 standard PCIe full-height half-length slots for supporting high computing performance and application acceleration, such as video rendering, AI, and HPC.
- Supports the full series and all specifications of Intel® Xeon® Scalable Processors. Provides 2 28-core processors to deliver superior computing capability.



Low energy Consumption and High Quality

- Adopts the Dynamic Energy Management Technology (DEMT) and power capping technologies for best power consumption control, which remarkably reduces power consumption in low-load operating.
- Delivers high quality thanks to its carrier-class design, mature manufacturing process, and carefully selected components.



Intelligent Management, Integration, and Openness

- Intelligent O&M with full-lifecycle management, significantly improving deployment and O&M efficiency.
- Provides standardized open interfaces and development guides, facilitating seamless integration with third-party management software.

Huawei CH221 V5 I/O Expansion Compute Node (CH221 V5 for short)



Form Factor	Full-width 2-socket compute node
Number of Processors	1 or 2
Processor Model	Intel® Xeon® Scalable Processors
Memory	24 DDR4 DIMMs
Internal Storage	2 x 2.5-inch SSDs, or SAS/SATA hard drives; 2 NVMe SSDs supported Or up to 4 x M.2 SSDs (SATA interface), individually hot-swappable
RAID	RAID 0, 1, 5, 6, or 10
PCIe Expansion	2 mezzanine cards (x16) and 2 full-height half-length standard cards (1 PCIe x16 and 1 PCIe x8)
Operating Systems	Microsoft Windows Server 2008/2012 Red Hat Enterprise Linux SUSE Linux Enterprise Server Oracle Linux CentOS Huawei FusionSphere Citrix XenServer VMware
Operating Temperature	5°C - 40°C (41°F - 104°F)
Dimensions (H x W x D)	60.46 mm x 423 mm x 537.2 mm (2.38 in. x 16.65 in. x 21.15 in.)

For more information

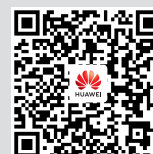
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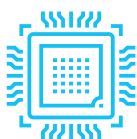
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Huawei CH225 V5 I/O Storage Compute Node (CH225 V5 for short)



The CH225 V5 provides superior computing performance and large storage capacity. It uses Intel® Xeon® Scalable Processors and supports up to 24 DIMM slots, 12 2.5" HDDs/NVMe SSDs, and 2 2.5" hard drives.

The CH225 V5 is suitable for scenarios that require high computing performance and large storage capacity, such as high-performance databases, real-time data analytics, and search service.



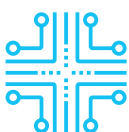
Superior Performance, Ultra-large Flash Memory

- Supports up to 12 2.5" HDDs/NVMe SSDs and 2 2.5" SAS/SATA HDDs or SSDs. Delivers industry-leading NVMe storage capacity per node.
- Supports the full series and all specifications of Intel® Xeon® Scalable Processors. Provides a three UPI connected system to deliver superior storage performance.



Low Energy Consumption and Compelling Efficiency

- Adopts the Dynamic Energy Management Technology (DEMT) and power capping technologies for best power consumption control, which remarkably reduces power consumption in low-load operating.
- Delivers high quality thanks to its carrier-class design, mature manufacturing process, and carefully selected components.



Intelligent Management, Integration, and Openness

- Intelligent O&M with full-lifecycle management, significantly improving deployment and O&M efficiency.
- Provides standardized open interfaces and development guides, facilitating seamless integration with third-party management software.

Huawei CH225 V5 I/O Storage Compute Node (CH225 V5 for short)



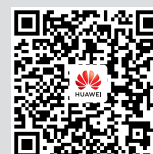
Form Factor	Full-width 2-socket compute node
Number of Processors	1 or 2
Processor Model	Intel® Xeon® Scalable Processors
Internal Storage	12 x 2.5" HDDs/NVMe SSDs, and 2 x 2.5" SSDs or SAS/SATA HDDs or 6 x M.2 (two of them are built-in storage)
RAID	RAID 0, 1, 10, 5, 50, 6, 60
PCIe Expansion	4 mezzanine cards (x16)
Operating Systems	Microsoft Windows Server 2008/2012 Red Hat Enterprise Linux SUSE Linux Enterprise Server Oracle Linux CentOS Huawei FusionSphere Citrix XenServer VMware
Operating Temperature	5°C - 40°C (41°F - 104°F)
Dimensions (H x W x D)	60.46 mm x 423 mm x 537.2 mm (2.38 in. x 16.65 in. x 21.15 in.)

For more information

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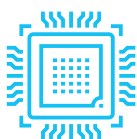
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Huawei CH242 V5 Compute Node

(CH242 V5 for short)



The CH242 V5, based on the latest-generation Intel® Xeon® Scalable Processors, provides high processing performance, scalability, and reliability to address computing-intensive applications and supports efficient, flexible mission-critical enterprise services. Use the CH242 V5 for large data sets and transaction-intensive databases, ERP, BI platform. It can also apply to cloud computing and virtualization.



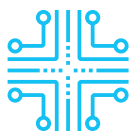
Superior Computing Power, Flexibility, and Openness

- Runs on the latest-generation Intel® Xeon® Scalable Processors, with an UltraPath Interconnect (UPI) bus speed of up to 10.4 GT/s between processors. Each processor supports up to 28 computing cores.
- 4-socket compute node installed in a full-width slot, supports up to 48 DDR4 DIMMS.
- Supports a maximum of four 2.5-inch SAS HDDs, SATA HDDs, or SSDs, four of them are compatible with NVMe SSDs, and provides one PCIe slot for standard PCIe card.
- Supports a maximum of eight M.2 SSD with hot-swappable.



Intelligent Energy Conservation and Better Performance

- Employs innovative Dynamic Energy Management Technology (DEMT) to support smart energy conservation, and drives down power consumption by leveraging different technologies. These include component hibernation, automatic power-on/-off for multi-phase power supplies, speed tuning using the proportional-integral-derivative (PID) algorithm, and active-standby power supplies.
- Adopts carrier-class design, manufacturing processes, and stringent component selection to ensure high reliability and stability.



Intelligent Management, Integration, and Openness

- Intelligent O&M with full-lifecycle management, significantly improving deployment and O&M efficiency.
 - » Batch installation of OSs, slashing the average time taken by each server to minutes.
 - » Automated firmware upgrade, with flexible and configurable upgrade policies for different components and drivers.
 - » Stateless computing, allowing for the rapid replication of live-network configurations and swift active/standby failover.
 - » Fault Diagnosis and Management (FDM) for in-depth fault diagnosis, with an accuracy of up to 93% when diagnosing faults in core components.
- Provides standardized open interfaces and development guides, facilitating seamless integration with third-party management software.

Huawei CH242 V5 Compute Node

(CH242 V5 for short)



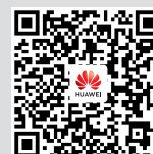
Form factor	Full-width 4-socket compute node
Processors	2 or 4 Intel® Xeon® Scalable Processors of up to 205 W
Memory	48 DDR4 DIMMs
Internal storage	4 x 2.5 " SAS/SATA HDDs, or SSDs, four of them are compatible with NVMe SSDs Or up to 8 x M.2 SSDs (SATA interface), individually hot-swappable
RAID support	RAID 0, 1, 10, 5, 50, 6, 60
PCIe expansion	4 PCIe x16 mezzanine cards Supports one half-height half-length PCIe x16 standard card
Operating systems	Microsoft Windows Server 2008/2012 Red Hat Enterprise Linux SUSE Linux Enterprise Server Huawei FusionSphere Citrix XenServer VMware ESXi
Operating temperature	5°C–40°C (41°F–104°F), ASHRAE Class A3 compliant
Dimensions (H x W x D)	60.5 mm x 423 mm x 525 mm (2.38 in. x 16.65 in. x 20.67 in.)

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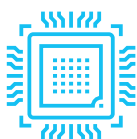


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Huawei CH121L V5 Liquid Cooling Compute Node (CH121L V5 for short)



As the liquid-cooled version of the CH121 V5 blade, CH121L V5 has been engineered and optimized to meet the demands of services such as virtualization, cloud computing, HPC, and NFV. CH121L V5 features high-density computing and ultra-large memory capacity. It runs on the latest Intel® Xeon® Scalable Processors, and supports the full series of processors with up to 205 W power. CH121L V5 provides 24 DDR4 DIMM slots, and supports 2 hard drive slots (for NVMe disks or 4 M.2 SSDs).



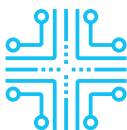
Superior Computing Power and Flexibility

- Runs on the latest Intel® Xeon® Scalable Processors, with UltraPath Interconnect (UPI) bus speeds of up to 10.4 GT/s between processors, and up to 28 computing cores per processor
- Supports Intel® Turbo Boost, hyper-threading, and Advanced Vector Extensions (AVX-512), delivering enhanced computing performance for compute-intensive applications
- Provides 24 DDR4 DIMMs, with memory speeds of up to 2,666 MT/s and capacities of up to 3 TB (with 128 GB per DIMM). This is ideal for application scenarios that require large-capacity memory
- Supports 2 PCIe NVMe SSD disks or 4 M.2 SSDs, flexibly meeting storage requirements



Smart Power Saving and Efficient Liquid Cooling

- Board-level liquid cooling and cabinet-level air-to-liquid heat exchange, eliminating the need for row air-conditioners and water chillers, with cooling PUE less than or equal to 1.1 and cooling power consumption down by 90%
- Employs innovative Dynamic Energy Management Technology (DEMT) for smart energy saving, and drives down power consumption by leveraging different technologies. These include component hibernation, automatic power-on/-off for multi-phase power supplies, speed tuning using the proportional-integral-derivative (PID) algorithm, and active-standby power supplies
- Ensures high reliability and stability by adopting carrier-class design, manufacturing processes, and stringent component selection, and using leak-proof quick connectors



Smart Management, Integration, and Openness

- Entire-lifecycle smart management, significantly improving deployment and O&M efficiency
- Provides standardized open interfaces and development guides, facilitating seamless integration with third-party management software

Huawei CH121L V5 Liquid Cooling Compute Node (CH121L V5 for short)



Form factor	Half-width single-slot 2S liquid cooling blade server node
Processors	1 or 2 Intel® Xeon® Scalable Processors, up to 205 W
Memory	24 DDR4 DIMM slots, with memory speeds of up to 2,666 MT/s, and memory capacity of up to 3 TB
Internal storage	2 x 2.5-inch SSDs or SAS/SATA HDDs; supports NVMe SSD disks Or up to 4 M.2 SSDs (with SATA interface); supports individually hot-swappable hard drives
RAID support	The 2 x 2.5-inch SSDs or SAS/SATA HDDs support RAID 0 and 1. The 4 M.2 SSDs support RAID 0, 1, 5, 6, and 10.
PCIe expansion	2 mezzanine cards (x16)
Operating systems	Microsoft Windows Server 2012 Red Hat Enterprise Linux SUSE Linux Enterprise Server Huawei FusionSphere Citrix XenServer VMware ESXi
Cooling mode	Board-level liquid cooling + air cooling
Operating temperature	5°C–40°C (41°F–104°F), ASHRAE Class A3 compliant
Dimensions (H x W x D)	60.46 mm x 215 mm x 525 mm (2.38 in. x 8.46 in. x 20.67 in.)

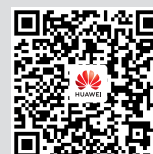
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The E9000 supports several types of switch modules: CX110 GE switch module, CX116 GE pass through module, CX220 16G FC switch module, CX310 10GE switch module, CX311 10GE/FCoE converged switch module, CX318 10GE pass through module, CX320 converged switch module, CX611 InfiniBand switch module, CX620/CX621 InfiniBand EDR switch module, CX710 40GE switch module, CX820 100G OPA switch module, and CX912 10GE/FC multi-plane switch module, CX916 10GE/FC multi-plane switch module, CX920 10GE/40GE multi-plane switch module. You can select the one that best suits your service requirements for network I/O. Their detailed specifications are described in the tables below.

CX110 GE switch module



Network interface	12 x GE + 4 x 10GE SFP+ uplink 32 x GE downlink Midplane interconnect (supports midplane stacking)
Network features	L2:VLAN/MSTP/LACP/Stack/IGMP/Smart Link/Monitor Link L3:RIP/OSPF/ISIS/BGP/VRRP/BFD/PIM/IPV6 QoS:ACL/CAR/DiffServ Security:IPSG/MFF/FSB/DAI/DHCP Snooping/sFlow/Netstream
Management port	2x RS232 management serial ports (one each for services and management)
Dimensions (H x W x D)	35.06 mm x 272.15 mm x 388.55 mm (1.38 in. x 10.71 in. x 15.30 in.)

CX116 GE pass-through module



Network interface	32 x GE uplink 32 x GE downlink
Dimensions (H x W x D)	35.06 mm x 272.15 mm x 388.55 mm (1.38 in. x 10.71 in. x 15.30 in.)

CX220 16G FC switch module



Network interface	8*16G FC uplink ports (SFP+), 4 ports activate in default, other 4 ports activate by license 16*16G FC downlink ports
Network features	Supports the FC mode and AG mode (NPV) Supports the F_Port, E_Port (license required), and N_Port Supports NPIVs, up to 255 NPIVs per port Supports the aggregation of up to eight 16GE ports by using a license Supports advanced zoning (default zoning, port/WWN zoning, and broadcast zoning)
Management port	2 console (RS232) port, one for device management, the other for FC switch module Support SOL/console, SSH, Web (https), SNMPv1/v3
Dimensions (H x W x D)	35.06 mm x 272.15 mm x 388.55 mm (1.38 in. x 10.71 in. x 15.30 in.)



CX310 10GE converged switch module

Network interface	16 x 10GE uplink 32 x 10GE downlink Midplane interconnect supported
Network features	L2: VLAN/MSTP/LACP/TRILL/Stack/IGMP/Smart Link/Monitor Link L3: RIP/OSPF/ISIS/BGP/VRP/BFD/PIM/IPv6 QoS: DCBX/PFC/ETS/ACL/CAR/DiffServ Security: IPSG/MFF/FSB/DAI/DHCP Snooping/sFlow/Netstream
Management port	2 x RS232 management serial ports (one each for services and management)
Dimensions (H x W x D)	35.06 mm x 272.15 mm x 388.55 mm (1.38 in. x 10.71 in. x 15.30 in.)



CX311 10GE/FCoE converged switch module

Network interface	16 x 10GE SFP+ and 8 x 8G FC SFP+ uplink 32 x 10GE downlink Midplane interconnect supported
Network features	L2: VLAN/MSTP/LACP/TRILL/Stack/IGMP/Smart Link/Monitor Link L3: RIP/OSPF/ISIS/BGP/VRP/BFD/PIM/IPv6 QoS: DCBX/PFC/ETS/ACL/CAR/DiffServ Security: IPSG/MFF/FSB/DAI/DHCP Snooping/sFlow/Netstream FC: supports the FC mode (full fabric) and TR mode (NPV) Supports the F_Port, E_Port (license required), and N_Port Supports NPIVs, up to 255 NPIVs per port Supports hard zoning and soft zoning
Management port	2 x RS232 management serial ports (one each for services and management)
Dimensions (H x W x D)	35.06 mm x 272.15 mm x 388.55 mm (1.38 in. x 10.71 in. x 15.30 in.)



CX318 10GE pass-through module

Network interface	Uplink: 32 x 10GE SFP+ ports Downlink: 32 x 10GE ports
Dimensions (H x W x D)	35.06 mm x 272.15 mm x 388.55 mm (1.38 in. x 10.71 in. x 15.30 in.)



CX320 10GE/40GE/FCoE/FC switch module

Network interface	8 x 10GE + 2 x 40GE uplink, with 8 x 10GE/8G FC flexible interface card optional 32 x 10GE downlink
Network features	L2/L3/SmartLink/Monitor Link/BFD/VRP/SmartChannel Supports FSB/FCF/NPV Openflow1.3/VXLAN
Dimensions (H x W x D)	35.06 mm x 272.15 mm x 388.55 mm (1.38 in. x 10.71 in. x 15.30 in.)



CX611 InfiniBand QDR/FDR switch module

Network interface	18 QDR/FDR InfiniBand QSFP+ uplink 16 QDR/FDR InfiniBand downlink
Network features	Multicast forwarding and replication/load balancing/re-route around failed link/VL/SL/SL to VL mapping/SM/SMA/Low latency forwarding/credit based flow control
Management port	In-band management
Dimensions (H x W x D)	35.06 mm x 272.15 mm x 388.55 mm (1.38 in. x 10.71 in. x 15.30 in.)



CX620/CX621 InfiniBand EDR switch module

Network interface	18 EDR InfiniBand uplink 16 EDR InfiniBand downlink
Network features	Compliant with IBTA 1.21 and 1.3 9 virtual lanes:8 data + 1 management 256 to 4Kbyte MTU Adaptive Routing
Dimensions (H x W x D)	35.06 mm x 272.15 mm x 388.55 mm (1.38 in. x 10.71 in. x 15.30 in.)



CX710 40GE switch module

Network interface	8 x 40GE QSFP+ uplink, among which 6*40GE uplink ports can be converted into four 10GE ports respectively 16 x 40GE downlink, each port can be converted into two 10GE ports Midplane interconnect supported
Network features	L2: VLAN/MSTP/LACP/TRILL/Stack/IGMP/Smart Link/Monitor Link L3: RIP/OSPF/ISIS/BGP/VRRP/BFD/PIM/IPV6 QoS: DCBX/PFC/ETS/ACL/CAR/DiffServ Security: IPSG/MFF/FSB/DAI/DHCP Snooping/sFlow/Netstream
Management port	2 x RS232 management serial ports (one each for services and management)
Dimensions (H x W x D)	35.06 mm x 272.15 mm x 388.55 mm (1.38 in. x 10.71 in. x 15.30 in.)



CX820-100G OPA switch module

Network interface	20 x 100G OPA QSFP+ uplink 16 x 100G OPA downlink
Network features	Intel® Omni-Path Fabric link Each port supports 9 x virtual lanes: 8 x data + 1 x management 256 to 10KB MTU Management port 1 x RS232 management serial port
Dimensions (H x W x D)	35.06 mm x 272.15 mm x 388.55 mm (1.38 in. x 10.71 in. x 15.30 in.)

CX912 10GE/F C multi-plane switch module



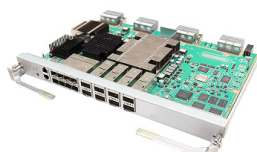
Network interface	16 x 10GE SFP+ and 8 x 8G FC SFP+ uplink, 4 FC ports activate in default, other 4 FC ports activate by license 32 x 10GE/16 x 8G FC downlink Midplane interconnect supported
Network features	L2: VLAN/MSTP/LACP/TRILL/Stack/IGMP/Smart Link/Monitor Link L3: RIP/OSPF/ISIS/BGP/VRP/BFD/PIM/IPv6 QoS: DCBX/PFC/ETS/ACL/CAR/DiffServ Security: IPSG/MFF/FSB/DAI/DHCP Snooping/sFlow/Netstream Supports the FC mode and AG mode (NPV) Supports the F_Port, E_Port (license required), and N_Port Supports NPIVs, up to 255 NPIVs per port Supports the aggregation of up to eight 8G ports by using a license Supports advanced zoning (default zoning, port/WWN zoning, and broadcast zoning)
Management port	2 RS232 management serial ports (one each for services and management)
Dimensions (H x W x D)	35.06 mm x 272.15 mm x 388.55 mm (1.38 in. x 10.71 in. x 15.30 in.)

CX916-10GE/FC multi-plane switch module



Network interface	8 x 10GE/25GE SFP+ and 2 x 40GE QSFP+ and 8 x 16G FC uplink One flexible interface card optional 32 x 10GE and 16 x 16G FC downlink Stacking through uplink supported
Network features	L2/L3/SmartLink/Monitor Link/BFD/VRP Openflow1.4/VXLAN FC: Integrate QLogic FC Switch
Management port	1 x RS232 management serial port
Dimensions (H x W x D)	35.06 mm x 272.15 mm x 388.55 mm (1.38 in. x 10.71 in. x 15.30 in.)

CX920-10GE/40GE multi-plane switch module



Network interface	8 x 10GE and 8 x 40GE uplink 16 x 10GE and 16 x 40GE downlink LOM supported Stacking through uplink supported
Network features	L2/L3/SmartLink/Monitor Link/BFD/VRP SmartChannel Openflow1.4/VXLAN
Management port	2 x RS232 management serial port
Dimensions (H x W x D)	35.06mm x 272.15mm x 388.55mm

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