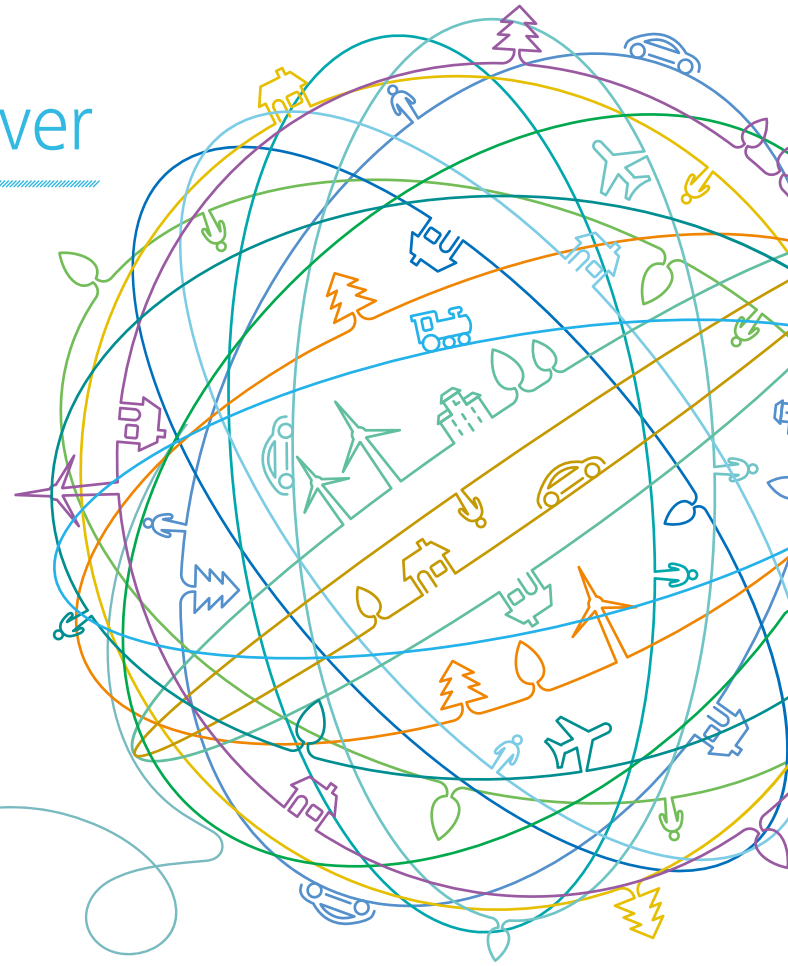
Huawei KunLun Mission Critical Server

KunLun 9008/9016/9032

Technical Specifications



Ushering In a New Mission Critical Server Era

KunLun Mission Critical Server

Openness is the IT industry trend. For a long time, enterprises have used closed mission critical servers that incur high O&M costs and hinder service innovation. They do not meet enterprises' strategic development requirements in digital economy era. Enterprises need to move their mission critical computing to open architectures. The new era for mission critical servers has come.

Based on the x86 open ecosystem, Huawei KunLun mission critical servers deliver industry-leading high performance and reliability. Compared to closed mission critical servers, KunLun has obvious advantages in terms of flexibility, interoperability, and cost-effectiveness. It helps enterprises accelerate service innovation and take the lead in the digital economy era.

KunLun Mission Critical Server

Huawei Node Controller (NC) interconnect chips and RAS 2.0 technology, delivering high stability and reliability, ultimate performance, and an open ecosystem:

Stable and reliable

Innovative RAS 2.0 technology: proactive failure analysis engine (PFAE), online CPU and memory module replacement, ensuring service continuity.

Ultimate performance

Innovative NC interconnect chips that enable high-speed interconnections of 32 processors, delivering 40% higher performance than RISC servers;
physical and logical partitioning, flexibly meeting service requirements.

Open ecosystem

Cooperating with the world's top partners in building open, comprehensive industry chains and E2E solutions, improving the economic efficiency of mission critical computing and enterprises' IT ROI.

Application Scenario

Database
Compatible with mainstream databases such as Oracle DB/IBM DB 2/SQL Server, 30% lower TCO and 40% higher performance

In-memory computing
12 TB/24 TB scale-up SAP HANA appliance, massive data real-time interaction and insight

HPC fat node
Support for 18x single-node computing resources, 25x memory bandwidth, and ns-level transmission latency for higher service processing efficiency

Cloud computing & virtualization
Elastic computing resources, unified management, and strong interoperability, simplifying O&M complexity

Highlights

Stable and reliable

RAS 2.0 proactive fault management for service continuity

- Multi-layer fault-tolerant architecture: fault-tolerant chips, firmware, and OSs, fully-redundant architecture, avoiding single point of failures.
- Proactive failure analysis engine (PFAE): OS-independent fault information collection and analysis, component-level proactive fault warning, locating, isolation, and replacement.
- Online CPU and memory module maintenance: Core components such as CPUs and memory modules can be maintained without shutting down the server, maximizing server uptime.
- Modular design for easy maintenance without opening the chassis cover: Tool-free maintenance, 8-inch touch-LCD for efficient diagnosis and maintenance, greatly improving O&M efficiency.

Ultimate performance

High-speed CPU interconnections, faster transaction response

- NC interconnect chip: enables interconnections among up to 32 CPUs, far exceeding the industry standard of eight CPU interconnections. A single KunLun server delivers up to 576 cores and 768 DIMMs to cater to ultra-large applications. Its transmission rate is improved by two orders of magnitude and can quickly respond to and efficiently handle surging online transactions.
- KL-Par partitioning: K-Par physical partitioning and L-Par logical partitioning, allowing flexible partitioning from a single core to 32 CPUs, maximizing resource utilization.
- Industry-leading performance: Industry-leading performance proven in SPEC CPU2006 and online transaction processing capability, 40% higher than closed mission critical servers.

Open ecosystem

Comprehensive industry chain support, E2E solution capabilities

- Complete, mature industry chain: Compatible with mainstream databases (Oracle DB/IBM DB2/SQL Server/SAP HANA), middleware, and OSs (Red Hat Linux/SUSE Linux/Windows Server). Cooperates with partners to promote industry chain development and meet enterprises' core requirements.
- Comprehensive solution capabilities: Huawei has a professional solution development team that provides one-stop services from consulting, planning, to after-sales O&M. Its extensive UNIX to Linux migration experience helps enterprises accelerate their transformation to open mission critical computing.
- Better economic benefits of mission critical computing: Compared with conventional UNIX servers, KunLun reduces TCO by over 30% and brings higher IT ROI.

KunLun 9008 Product Specifications

- Up to 8 CPUs, 144 cores, 6 TB memory capacity (32 GB DIMMs)
- Delivered with or without a cabinet

Category	Item	KunLun 9008
Basic configuration		One system compute enclosure (SCE) and one central management enclosure (CME)
CPU	Quantity	Up to 8 CPUs, support scaling up to 16/32-Sockets
	Type	Intel® Xeon® E7-4800/8800 v3 series CPUs
Memory	Capacity	Up to 6 TB (32 GB DIMMs)
	Quantity	Up to 192 DIMMs
	Type	16 GB/32 GB DDR4 DIMMs
Storage	Front I/O (FIO) module	Up to one FIO module
	Hard disk	Up to 12 x 2.5-inch hot-swappable SAS 3.0 HDDs/SSDs
	RAID	Up to two RAID controller cards of the same type (RAID level configurable), a maximum of up to 2 GB cache memory, a supercapacitor for power-off protection Option 1: RAID 0, 1, 10, and 1E Option 2: RAID 0, 1, 10, 5, 50, 6, and 60
Network port	Rear LAN on motherboard (LOM)	Up to two LOMs Specifications: 2-port GE-RJ45/4-port GE-RJ45/2-port 10GE SFP+/2-port 10GE RJ45
	Rear standard PCIe slot	Up to six rear standard PCIe 3.0 slots (non-hot-swappable) Or up to four rear standard PCIe 3.0 slots (hot-swappable)
	Front PCIe expansion slot	Up to six front standard PCIe 3.0 slots (non-hot-swappable, no connection to external cables) Up to two GPUs in a single system or in the same physical partition
DVD drive		The CME supports one SATA DVD-RW drive.
Cabinet door		Acoustic door with an 8-inch touch-LCD for local management
Power input	External socket	Single-phase three-core industrial plug, with dual AC power supplies in 2+2 redundancy mode
	Input voltage	Each industrial plug supports 200 V to 240 V AC at 50 Hz or 60 Hz, with up to 32 A input.
Power output	Rated output voltage	12 V DC
Mechanical specifications	Dimensions (H x W x D)	With a cabinet and an acoustic door: 2000 mm x 600 mm x 1550 mm (78.74 in. x 23.62 in. x 61.02 in.) Without a cabinet: 1 x SCE (352 mm x 447 mm x 855 mm/13.86 in. x 17.60 in. x 33.66 in.), 1 x CME (88 mm x 447 mm x 855 mm/3.46 in. x 17.60 in. x 33.66 in.)
	Weight	≤ 265 kg (584.33 lb) without a cabinet (The weight depends on the actual hardware configuration.)
Operating environment	Temperature	Operating temperature: 5°C to 40°C (41°F to 104°F) Storage temperature: –40°C to +65°C (–40°F to +149°F)
System management		Remote management, web UI, virtual KVM, standard protocols such as IPMI 2.0 and SNMP, touchscreen for local management (acoustic door required)
OS		Red Hat Enterprise Linux, SUSE Linux, Microsoft Windows Server, KunLun OS
Partitioning		Physical partitioning, logical partitioning

KunLun 9016 Product Specifications

- Up to 16 CPUs, 288 cores, 12 TB memory capacity (32 GB DIMMs)
- Delivered as a whole cabinet

Category	Item	KunLun 9016
Basic configuration		Two system compute enclosures (SCEs) and one central management enclosure (CME)
CPU	Quantity	Up to 16 CPUs, support scaling up to 32-Sockets
	Type	Intel® Xeon® E7-4800/8800 v3 series CPUs
Memory	Capacity	Up to 12 TB (32 GB DIMMs)
	Quantity	Up to 384 DIMMs
	Type	16 GB/32 GB DDR4 DIMMs
Storage	Front I/O (FIO) module	Up to two FIO modules (one for each SCE)
	Hard disk	Up to 24 x 2.5-inch hot-swappable SAS 3.0 HDDs/SSDs
	RAID	Up to four RAID controller cards of the same type (RAID level configurable), a maximum of up to 2 GB cache memory, a supercapacitor for power-off protection Option 1: RAID 0, 1, 10, and 1E Option 2: RAID 0, 1, 10, 5, 50, 6, and 60
Network port	Rear LAN on motherboard (LOM)	Up to four LOMs Specifications: 2-port GE-RJ45/4-port GE-RJ45/2-port 10GE SFP+/2-port 10GE RJ45
	Rear standard PCIe slot	Up to 12 rear standard PCIe 3.0 slots (non-hot-swappable) Or up to 8 rear standard PCIe 3.0 slots (hot-swappable)
	Front PCIe expansion slot	Up to 12 front standard PCIe 3.0 slots (non-hot-swappable, no connection to external cables) Up to two GPUs in a single system or in the same physical partition
DVD drive		The CME supports one SATA DVD-RW drive.
Cabinet door		Acoustic door with an 8-inch touch-LCD for local management
Power input	External socket	Single-phase three-core industrial plug, with dual AC power supplies in 2+2 redundancy mode
	Input voltage	Each industrial plug supports 200 V to 240 V AC at 50 Hz or 60 Hz, with up to 32 A input.
Power output	Rated output voltage	12 V DC
Mechanical specifications	Dimensions (H x W x D)	2000 mm x 600 mm x 1550 mm (78.74 in. x 23.62 in. x 61.02 in.)
	Weight	≤ 605 kg (1334.03 lb) (The weight depends on the actual hardware configuration.)
Operating environment	Temperature	Operating temperature: 5°C to 40°C (41°F to 104°F) Storage temperature: –40°C to +65°C (–40°F to +149°F)
System management		Remote management, web UI, virtual KVM, standard protocols such as IPMI 2.0 and SNMP, touchscreen for local management (acoustic door required)
OS		Red Hat Enterprise Linux, SUSE Linux, Microsoft Windows Server, KunLun OS
Partitioning		Physical partitioning, logical partitioning

KunLun 9032 Product Specifications

- Up to 32 CPUs, 576 cores, 24 TB memory capacity (32 GB DIMMs)
- Delivered as a whole cabinet

Category	Item	KunLun 9032
Basic configuration		Four system compute enclosures (SCEs) and one central management enclosure (CME)
CPU	Quantity	Up to 32 CPUs
	Type	Intel® Xeon® E7-4800/8800 v3 series CPUs
Memory	Capacity	Up to 24 TB (32 GB DIMMs)
	Quantity	Up to 768 DIMMs
	Type	16 GB/32 GB DDR4 DIMMs
Storage	Front I/O (FIO) module	Up to four FIO modules (one for each SCE)
	Hard disk	Up to 48 x 2.5-inch hot-swappable SAS 3.0 HDDs/SSDs
	RAID	Up to eight RAID controller cards of the same type (RAID level configurable), a maximum of up to 2 GB cache memory, a supercapacitor for power-off protection Option 1: RAID 0, 1, 10, and 1E Option 2: RAID 0, 1, 10, 5, 50, 6, and 60
Network port	Rear LAN on motherboard (LOM)	Up to eight LOMs Specifications: 2-port GE-RJ45/4-port GE-RJ45/2-port 10GE SFP+/2-port 10GE RJ45
	Rear standard PCIe slot	Up to 24 rear standard PCIe 3.0 slots (non-hot-swappable) Or up to 16 rear standard PCIe 3.0 slots (hot-swappable)
	Front PCIe expansion slot	Up to 24 front standard PCIe 3.0 slots (non-hot-swappable, no connection to external cables) Up to two GPUs in a single system or in the same physical partition
DVD drive		The CME supports one SATA DVD-RW drive.
Cabinet door		Acoustic door with an 8-inch touch-LCD for local management
Power input	External socket	Single-phase three-core industrial plug, with dual AC power supplies in 2+2 redundancy mode
	Input voltage	Each industrial plug supports 200 V to 240 V AC at 50 Hz or 60 Hz, with up to 32 A input.
Power output	Rated output voltage	12 V DC
Mechanical specifications	Dimensions (H x W x D)	2000 mm x 600 mm x 1550 mm (78.74 in. x 23.62 in. x 61.02 in.)
	Weight	≤ 962 kg (2121.21 lb) (The weight depends on the actual hardware configuration.)
Operating environment	Temperature	Operating temperature: 5°C to 40°C (41°F to 104°F) Storage temperature: –40°C to +65°C (–40°F to +149°F)
System management		Remote management, web UI, virtual KVM, standard protocols such as IPMI 2.0 and SNMP, touchscreen for local management (acoustic door required)
OS		Red Hat Enterprise Linux, SUSE Linux, Microsoft Windows Server, KunLun OS
Partitioning		Physical partitioning, logical partitioning

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