Huawei KunLun Mission Critical Server

KunLun 9008/9016/9032
Technical Specifications

KunLun Mission Critical Server

KunLun supports both single-node scale-up and multi-node scale-out and incorporates Huawei's innovative RAS 2.0 technology, featuring high stability and reliability, ultimate performance, and open ecosystem:

Stable and reliable

Innovative RAS 2.0 technology, proactive failure analysis engine (PFAE), intelligent memory guarding system (IMG), and online memory module replacement, ensuring service continuity. (Note 1)

Ultimate performance

Support for scale-up and scale-out, 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
Certified for operating full-series SAP HANA of 512 GB to 16 TB, 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

Note 1: KunLun 9008/9016 supports memory module hot swap in SAP HANA scenarios. This hot swap feature is under R&D for KunLun 9008 V5 adopting a brand-new processor. KunLun 9008 V5 is planned to support CPU and memory module hot swap when it adopts the second-generation Intel® Xeon Scalable Processor (codename: Cascade Lake).

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 memory module maintenance: Core components such as memory modules can be maintained without shutting down the server, maximizing server uptime. (Note 1)
- 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.

- Flexible resource scalability: supports scale-up to 32 CPUs, provides up to 768 CPUs cores and 32 TB memory per node, and supports scale-out and unified management of multiple nodes, meeting the requirements of ultra-large applications and being more responsive to online transaction surges.
- 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.

Ultimate performance
High-speed CPU interconnections, faster transaction response

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.

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KunLun 9008 V5 Product Specifications

Category	Item	KunLun 9008 V5
Basic configuration		One system compute enclosure (SCE) and one central management enclosure (CME) (Note 1)
Processors		2/4/6/8 Intel® Xeon® Scalable processors (Skylake) with a maximum TDP of 205 W
Memory		96 DDR4 DIMM slots and up to 12 TB memory capacity
Local storage		Up to 48 x 2.5-inch SAS/SATA HDDs or 40 x 2.5-inch NVMe SSDs; supports external storage of M.2 drives (supporting hardware RAID)
RAID		RAID 0, 1, 10, 5, 50, 6, or 60; optional supercapacitor for power-off protection for the cache; RAID state transition; RAID configuration memory; self-diagnosis; web-based remote configuration
LOM network ports		2 x 10GE + 2 x GE ports
PCIe expansion		Up to 18 PCIe 3.0 slots
Partitioning	Physical partitioning K-Par	Two physical partitions are supported.
	Logical partitioning (L-Par)	Up to 40 logical partitions per host; 1–96 CPU cores and 1 GB to 4 TB memory capacity per partition; online expansion of CPUs, DIMMs, and drives
Management		Provides comprehensive management features such as fault diagnosis, automated O&M, and hardware security hardening; supports mainstream standard interfaces such as SNMP and IPMI 2.0, facilitating integration with third-party management software; provides remote management interfaces based on HTML5 and VNC KVM; supports features such as Agentless to simplify management. Optionally configured with Huawei eSight management software to provide advanced management features such as automated firmware upgrade, enabling smart and automated entire-lifecycle management
Resource Expansion Enclosure (REE)	PCIe slots	Up to 30 standard PCIe 3.0 slots
	Drives	Up to 12 x 2.5-inch SAS HDDs/SSDs
	RAID	RAID 0, 1, 10, 5, 50, 6, or 60; optional supercapacitor for power-off protection for the cache; RAID state transition; RAID configuration memory; self-diagnosis; web-based remote configuration
DVD drive		Up to one SATA DVD-RW drive
Cabinet door		Acoustic door with an 8-inch LCD touchscreen for local management (management enclosure required)
Fan Modules		Eight hot-swappable counter-rotating fan modules in N+1 redundancy mode
Power supply units	System compute enclosure	Four hot-swappable PSUs in N+N redundancy mode: 2000 W AC Titanium, 2500 W DC Platinum, or 3000 W AC Platinum
	Central management enclosure (CME) and REE	By default, each chassis is configured with two AC PSUs that support 1+1 redundancy.
Mechanical specifications	Dimensions	Cabinet with acoustic doors (H x W x D): 2000 mm x 600 mm x 1550 mm SCE (H x W x D): 325.4 mm x 447 mm x 840 mm CME (H x W x D): 86.1 mm x 447 mm x 750 mm
Environmental specifications	Temperature	Operating temperature: 5°C to 40°C (41°F to 104°F) (ASHRAE Class A3 compliant)
OS and virtualization software		Red Hat Enterprise Linux (RHEL), SUSE Linux Enterprise Server (SLES), Microsoft Windows Server, VMware ESX For details, visit http://support.huawei.com/onlinetoolsweb/ftca.

Note 1: Supports delivery of basic features without a CME. A CME is required for delivery of advanced features such as logical partitioning.

- Up to 8 CPUs, 224 cores, and 12 TB memory

- Standard cabinet

KunLun 9008 Product Specifications

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/v4 series processors
Memory	Capacity	Up to 8 TB
	Quantity	Up to 192 DIMMs
	Type	16 GB/32 GB DDR4 DIMMs
Front I/O (unavailable when I/O expansion enclosure is configured)	Quantity	Up to 1 front I/O module (FIO) for the SCE
	Hard disk	Up to 12 x 2.5-inch hot-swappable SAS 3.0 HDDs/SSDs (up to 24 SSDs on HANA)
	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
	Front PCIe expansion slot	Up to 6 PCIe 3.0 slots Up to 2 GPUs in a single system or in the same physical partition
Rear I/O	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 6 PCIe 3.0 slots
Expansion enclosure	Quantity	Up to one expansion enclosure
	PCIe slot	Up to 30 PCIe 3.0 slots
	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
DVD drive		The CME supports one SATA DVD-RW drive.
Cabinet door		Acoustic door with an 8-inch touchscreen LCD for local management
Power input	External socket	Single-phase three-core industrial plug with dual AC power supplies in 1+1 or 2+2 redundancy, or three-phase five-core industrial plug with dual AC power supplies in 1+1 redundancy
	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)	Cabinet with acoustic doors (H x W x D): 2000 mm x 600 mm x 1550 mm SCE (H x W x D): 325.4 mm x 447 mm x 840 mm CME (H x W x D): 86.1 mm x 447 mm x 750 mm
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, WebUI, virtual KVM, standard protocols such as IPMI 2.0 and SNMP, touchscreen for local management (acoustic door required)
OS		Red Hat Linux, SUSE Linux, Microsoft Windows Server
Partitioning		Physical partitioning, logical partitioning

- Up to 8 CPUs, 192 cores, and 8 TB memory

- Delivered with or without a cabinet

KunLun 9016 Product Specifications

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/v4 series processors
Memory	Capacity	Up to 16TB
	Quantity	Up to 384 DIMMs
	Type	16 GB/32 GB DDR4 DIMMs
Front I/O (unavailable when I/O expansion enclosure is configured)	Quantity	Up to 2 front I/O module (FIO) for the 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
	Front PCIe expansion slot	Up to 12 PCIe 3.0 slots Up to 2 GPUs in a single system or in the same physical partition
Rear I/O	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 PCIe 3.0 slots
Expansion enclosure	Quantity	Up to one or two expansion enclosures
	PCIe slot	Up to 60 PCIe 3.0 slots
	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
DVD drive		The CME supports one SATA DVD-RW drive.
Cabinet door		Acoustic door with an 8-inch touchscreen LCD for local management
Power input	External socket	Single-phase three-core industrial plug with dual AC power supplies in 1+1 or 2+2 redundancy, or three-phase five-core industrial plug with dual AC power supplies in 1+1 redundancy
	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)	Cabinet with acoustic doors (H x W x D): 2000 mm x 600 mm x 1550 mm SCE (H x W x D): 325.4 mm x 447 mm x 840 mm CME (H x W x D): 86.1 mm x 447 mm x 750 mm
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, WebUI, virtual KVM, standard protocols such as IPMI 2.0 and SNMP, touchscreen for local management (acoustic door required)
OS		Red Hat Linux, SUSE Linux, Microsoft Windows Server
Partitioning		Physical partitioning, logical partitioning

- Up to 16 CPUs, 384 cores, and 16 TB memory

- Delivered as a whole cabinet

KunLun 9032 Product Specifications

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/v4 series processors
Memory	Capacity	Up to 32TB
	Quantity	Up to 768 DIMMs
	Type	16 GB/32 GB DDR4 DIMMs
Front I/O	Quantity	Up to 4 front I/O module (FIO) for the 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
	Front PCIe expansion slot	Up to 24 PCIe 3.0 slots Up to 2 GPUs in a single system or in the same physical partition
Rear I/O	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 PCIe 3.0 slots
Expansion enclosure	Quantity	Up to four expansion enclosures
	PCIe slot	Up to 120 PCIe 3.0 slots
	Hard disk	Up to 48 x 2.5-inch hot-swappable SAS 3.0 HDDs/SSDs
	RAID	Up to 8 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
DVD drive		The CME supports one SATA DVD-RW drive.
Cabinet door		Acoustic door with an 8-inch touchscreen LCD for local management
Power input	External socket	Single-cabinet solution: single-phase three-core industrial plug with dual AC power supplies in 4+4 redundancy, or three-phase five-core industrial plug with dual AC power supplies in 2+2 redundancy Dual-cabinet solution (for each cabinet): single-phase three-core industrial plug with dual AC power supplies in 2+2 redundancy, or three-phase five-core industrial plug with dual AC power supplies in 1+1 redundancy
	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)	Cabinet with acoustic doors (H x W x D): 2000 mm x 600 mm x 1550 mm SCE (H x W x D): 325.4 mm x 447 mm x 840 mm CME (H x W x D): 86.1 mm x 447 mm x 750 mm
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, WebUI, virtual KVM, standard protocols such as IPMI 2.0 and SNMP, touchscreen for local management (acoustic door required)
OS		Red Hat Linux, SUSE Linux, Microsoft Windows Server
Partitioning		Physical partitioning, logical partitioning

■ Up to 32 CPUs, 768 cores, and 32 TB memory

■ Delivered as a whole cabinet