



OceanStor 9000 V5 Scale-Out NAS

Huawei OceanStor 9000 V5 scale-out NAS storage system features a fully symmetric distributed architecture and extensive scale-out capabilities that deliver superior performance and provide a super-large single file system for shared storage of unstructured data.

OceanStor 9000 V5 is ideal for diverse applications and storage resource sharing fields, such as the video surveillance, entertainment, education, and energy industries, as well as research fields covering satellite mapping, gene sequencing, backup and archiving.

Fully Symmetric Distributed Architecture: Impressive Parallel Read/Write Capabilities and Superb Performance

- **High-performance read/write access:** Achieves up to 2.8 GB/s of bandwidth per node and industry-leading performance on a single disk. When flash disks are configured, the bandwidth of a single node reaches up to 5 GB/s.
- **Network acceleration:** Supports 10GE, 25GE, 40GE, InfiniBand and a variety of other networking models; supports Remote Direct Memory Access (RDMA) and TCP Offload Engine (TOE) to improve transmission performance.
- **Linear scalability:** Linear increase in system performance as nodes are added, with up to 700 GB/s of bandwidth. When flash disks are configured, the system bandwidth can up to TB/s level.
- **Mixed storage of videos and pictures:** The A single node supports 1,200-channel video recording at 2 Mbit/s or 800-channel video recording at 4 Mbit/s, stores up to 7,000 pictures per second, and enables tens of millions of pictures to be retrieved within seconds. It supports Huawei or third-party streaming media software.

Linear Scaling of Capacity and Performance in a Super-Large Single File System

- **Single file system:** A single file system of more than 140 PB simplifies management and maintenance while eliminating data silos caused by multiple namespaces.
- **Impressive expansion capabilities:** Seamless expansion from 3 to 288 nodes enables linear expansion of capacity and performance.

- **Even data distribution:** The shared-nothing symmetric distributed architecture evenly distributes data and metadata to all nodes, eliminating system bottlenecks.
- **Ultra-high utilization:** Besides support for high reliability, EC redundancy permits a maximum disk utilization of 95%.

Open Convergent Storage System Designed for Diverse Applications

- **Support for multiple types of interfaces:** NFS, CIFS, NDMP, FTP, OpenStack Manila and other interfaces enable the system to support diverse applications and implement data management throughout the entire lifecycle.
- **Support for varied node types:** To suit different applications, various types of nodes are supported.
- **Integrated management:** One set of software centrally manages IT devices, provides analysis reports, simplifies management, and improves operational efficiency.

Visual and Unified Resource Management

- **Flexible configuration:** Directory-based redundancy ratio policies provide multiple data protection levels.
- **Automatic statistics collection and analysis:** Automatic performance statistics collection and analysis help customers use resources efficiently.
- **Automatic deployment:** The software platform is automatically deployed and configured, and the one-click capacity expansion feature enables customers to add a single node in just 60 seconds.
- **Rights management:** Access control over IP addresses, users, and user groups ensure that storage pools are secure and mutually isolated.

Info Series Software for Intelligent Storage Management

InfoEqualizer, Huawei's load-balancing software, manages connections between clients and OceanStor 9000 V5.

- Client connection loads are balanced across nodes and automatic balancing between capacity and performance is implemented to optimize cluster resources.
- Intelligent unified management is implemented with support for node failovers and fallbacks.
- Load balancing is implemented based on domain names, and a variety of load-balancing policies are supported.

InfoTier, Huawei's Dynamic Storage Tiering (DST) software

- InfoTier dynamically stores data on different nodes based on data access frequency and implements intelligent migration of frequently accessed data (hot data). The software fully leverages the advantages of different types of storage media and reduces the Total Cost of Ownership (TCO).
- A variety of data migration policies and migration priorities are supported to accommodate ever-changing service needs.

InfoAllocator, Huawei's quota management software

- Space quota management is implemented based on users, user groups, and directories, to meet different customer requirements.
- The software allows flexible and easy access to storage space, with quota nesting management.

InfoProtector, Huawei's industry-leading data reliability and availability mechanism

- Erasure Coding (EC) technology implements N+M data protection and protects data from a concurrent failure of four nodes.
- Automatic reconstruction is available, allowing multiple nodes to concurrently reconstruct data at a speed of up to 2 TB/hour.

InfoStamper, Huawei's snapshot software

- Directory-level snapshots offer quick data recovery.
- The software supports manual and scheduled snapshots (daily/weekly/monthly).

InfoLocker, Huawei's WORM functionality software

- InfoLocker offers protection against data loss, malicious modification, and deletion.
- The software allows users to set a WORM clock and protection period.

InfoReplicator, Huawei's asynchronous remote replication software

- InfoReplicator shortens the system recovery time and is applicable to disaster recovery, data backup, and long-distance data migration scenarios.
- The software supports 1:N and N:1 replication for different types of directories.

InforRevive, Huawei's surveillance video and image restoration software

- Restoration capabilities ensure that the failure of multiple disks does not affect video streaming. Only data on the failed or damaged disks is lost.

InfoStreamDS, Huawei's surveillance streaming media access software

- In video surveillance scenarios, video and image streams can be directly written into the storage system without passing through other transit servers.
- Single-node deployment supports streaming media access.
- Video buffering is available. That is, the front-end device can send the videos stored on the storage medium to the platform after the connection is restored.

InfoContainer, VM service support software

- In video surveillance scenarios, the open, decoupled platform using VM features permits the installation of streaming media access software from third-party vendors.

Technical Specifications

Model	S25X	P25X	P36X	P12X	C36X
Hardware Specifications					
System Architecture	Fully symmetric distributed architecture				
Number of Nodes	3 to 288				
CPUs per Node	2 x Intel® Xeon® Gold series	2 x Intel® Xeon® Silver series	2 x Intel® Xeon® Silver series 2 x Intel® Xeon® Gold series	1 x Intel® Xeon® Silver series	
NVDIMM	16 GB hardware-level power failure protection				
Cache per Node	Standard configuration: 128 GB, scalable to 352 GB	Standard configuration: 48 GB, scalable to 352 GB	Standard configuration: 48 GB, scalable to 352 GB	Standard configuration: 32 GB, scalable to 160 GB	
System Disk Types	2 x 1.2 TB 10K RPM SAS disks	2 x 600 GB 10K RPM SAS disks			
Data Disk Types	2.5-inch SSDs	2.5-inch SSDs and SAS disks	3.5-inch SSDs, SATA disks, and NL-SAS disks		
Number of Disks per Node	Standard configuration: 15 x 2.5-inch 960 GB/1.92	Standard configuration: 1 x 2.5-inch 960 GB SSD + 24 x	Standard configuration: 1 x 3.5-inch 960 GB SSD + 35 x	Standard configuration: 12 x 3.5-inch 2 TB/4 TB/6 TB/8	Standard configuration: 36 x 3.5-inch 2 TB/4 TB/6

Model	S25X	P25X	P36X	P12X	C36X
	TB/3.84 TB/7.68 TB SAS SSDs (Scalable to 25 SAS SSDs/node based on actual performance requirements)	2.5-inch 1.2 TB/1.8 TB SAS disks (SSD/HDD configuration ratio adjustable based on actual performance requirements)	3.5-inch 2 TB/4 TB/6 TB/8 TB/10 TB/14 TB SATA or 2 TB/4 TB/6 TB NL-SAS disks (SSD/HDD configuration ratio adjustable based on actual performance requirements)	TB/10 TB/14 TB SATA or 2 TB/4 TB/6 TB NL-SAS disks (SSD/HDD configuration ratio adjustable based on actual performance requirements)	TB/8 TB/10 TB/14 TB SATA or 2 TB/4 TB/6 TB NL-SAS disks
Front-End Network Types	10GE, 25GE, 40GE, InfiniBand, and 1GE				
Internal Network Types	10GE, 25GE, and InfiniBand				
Application Scenarios	OPS-intensive		Large-capacity and high-bandwidth	Small-capacity	Video surveillance and archiving
Software Features					
Data Protection Levels	N+1, N+2, N+3, and N+4 (data still available even if four nodes fail)				
File System	OceanStor DFS, which supports global namespace and can be dynamically expanded				
Value-Added Features	Dynamic storage tiering (InfoTier) Automatic load balancing of client connections (InfoEqualizer) Space quota management (InfoAllocator) Snapshot (InfoStamper) WORM (InfoLocker) Remote replication (InfoReplicator) Performance acceleration (InfoTurbo) Surveillance video and image restoration (InfoRevive) Data migration (InfoMigrator) Anti-virus (InfoScanner) File aggregation Third-party VM service support (InfoContainer) Huawei surveillance streaming media access (InfoStreamDS)				
Thin Provisioning	Support for thin provisioning that does not require manual configuration				
Data Self-Healing	Automatic, concurrent, and quick data reconstruction, at a maximum reconstruction speed of 2 TB/hour				
System Expansion	One-click online expansion, with less than 60 seconds needed for expansion of a single node				
Global Cache	Up to 100 TB of global cache				
Supported Operating Systems	Windows, Linux, UNIX, and Mac OS				
Supported Protocols	NFS, CIFS, FTP, FTPS, HTTP, NDMP, NIS, Microsoft Active Directory, OpenStack Manila, and LDAP				

Model		S25X	P25X	P36X	P12X	C36X
System Management		Support for users with different management rights, and domain- and rights-based user management Alarm notification by email, SMS, and SNMP				
Bad Disk Detection		Automatic bad disk detection and alarm notification with support for batch replacement of bad disks, eliminating the need for immediate disk replacement and reducing manual maintenance workloads				
Physical Specifications						
Power Supply (1+1 Redundancy)		100 V to 127 V AC, 200 V to 240 V AC, and 240 V DC				
Dimensions (H x W x D)	Node	2 U: 86.1 mm x 447 mm x 748 mm	2 U: 86.1 mm x 447 mm x 748 mm	4 U: 175 mm x 447 mm x 748 mm	2 U: 86.1 mm x 447 mm x 748 mm	4 U: 175 mm x 447 mm x 748 mm
	Cabinet	Maximum size: 2,000 mm x 600 mm x 1,200 mm				
Weight		Fully loaded with 2.5-inch disks: ≤ 30 kg	Fully loaded with 2.5-inch disks: ≤ 30 kg	Fully loaded with 3.5-inch disks: ≤ 57 kg	Fully loaded with 3.5-inch disks: ≤ 30 kg	Fully loaded with 3.5-inch disks: ≤ 57 kg
Typical Power		420 W	420 W	580 W	310 W	490 W
Operating Temperature		5°C to 35°C when the altitude ranges from -60 m to +1,800 m When the altitude is higher than 1,800 m but lower than, or equal to, 3,000 m, the ambient temperature drops by 0.6°C for every 100 m increment in altitude.				
Operating Humidity		20% RH to 80% RH				

Model	S12A	P36A	C36A	P12A
Hardware Specifications				
System Architecture	Fully symmetric distributed architecture			
Number of Nodes	3 to 288			
CPUs per Node	2 x Kunpeng 920 with 48 cores Single CPU 2.6 GHz of dominant frequency	2 x Kunpeng 920 with 32 cores Single CPU 2.6 GHz of dominant frequency	2 x Kunpeng 920 with 48 cores Single CPU 2.6 GHz of dominant frequency	2 x Kunpeng 920 with 48 cores Single CPU 2.6 GHz of dominant frequency
Power failure protection	16 GB hardware-level power failure protection			
Cache per Node	Standard configuration: 128 GB, scalable to 256 GB	Standard configuration: 64 GB, scalable to 256 GB	Standard configuration: 48 GB, scalable to 256 GB	
System Disk Types	2 x 1.2 TB 10K RPM	2 x 600 GB 10K RPM SAS disks		

Model	S12A	P36A	C36A	P12A
	SAS disks			
Data Disk Types	3.5-inch SAS SSDs	3.5-inch SAS SSDs, NVMe SSDs, SATA disks, and NL-SAS disks		
Number of Disks per Node	Standard configuration: 1 2 x 3.5-inch 960 GB/1.92 TB /3.84 TB/ 7.68 SSDs	Standard configuration: 1 x 3.5-inch 1.92 TB SSD + 35 x 3.5-inch 4 TB/6 TB/8 TB/10 TB/14 TB SATA or 4 TB/6 TB NL-SAS disks (SSD/HDD configuration ratio adjustable based on actual performance requirements)	Standard configuration: 36 x 3.5-inch 4 TB/6 TB/8 TB/10 TB/14 TB SATA or 4 TB/6 TB NL-SAS disks	Standard configuration: 1 x 3.5-inch 1.92 TB SSD + 11 x 3.5-inch 4 TB/6 TB/8 TB/10 TB/14 TB SATA or 4 TB/6 TB NL-SAS disks
Front-End Network Types	10GE, 25GE, 40GE, 100G InfiniBand, and 1GE			
Internal Network Types	10GE, 25GE, and 100G InfiniBand			
Application Scenarios	OPS-intensive	Large-capacity and high-bandwidth Video surveillance and archiving		Small-capacity
Software Features				
Data Protection Levels	N+1, N+2, N+3, and N+4 (data still available even if four nodes fail)			
File Systems	OceanStor DFS, which supports global namespace and can be dynamically expanded			
Value-Added Features	Dynamic storage tiering (InfoTier) Automatic load balancing of client connections (InfoEqualizer) Space quota management (InfoAllocator) Snapshot (InfoStamper) WORM (InfoLocker) Remote replication (InfoReplicator) Performance acceleration (InfoTurbo) Surveillance video and image restoration (InfoRevive) Data migration (InfoMigrator) Anti-virus (InfoScanner) File aggregation File filtering Third-party VM service support (InfoContainer) Huawei surveillance streaming media access (InfoStreamDS)			
Thin Provisioning	Supports thin provisioning that does not require manual configuration			
Data Self-Healing	Automatic, concurrent, and quick data reconstruction, at a maximum reconstruction speed of 2 TB/hour			
System Expansion	One-click online expansion, with less than 60 seconds needed for expansion of a single node			
Global Cache	Up to 73 TB of global cache			

Model	S12A	P36A	C36A	P12A
Supported Operating Systems	Windows, Linux, UNIX, and Mac OS			
Supported Protocols	NFS, CIFS, FTP, FTPS, HTTP, NDMP, NIS, Microsoft Active Directory, OpenStack Manila, and LDAP			
System Management	Support for users with different management rights, and domain- and rights-based user management Alarm notification by email, SMS, and SNMP			
Bad Disk Detection	Automatic bad disk detection and alarm notification with support for batch replacement of bad disks, eliminating the need for immediate disk replacement and reducing manual maintenance workloads			
Physical Specifications				
Power Supply (1+1 Redundancy)	100 V to 127 V AC, 200 V to 240 V AC, and 240 V DC			
Dimensions (H x W x D)	Node	2 U: 86.1 mm x 447 mm x 790 mm	4 U: 175 mm x 447 mm x 790 mm	2 U: 86.1 mm x 447 mm x 790 mm
	Cabinet	Maximum size: 2,000 mm x 600 mm x 1,200 mm		
Weight	Fully loaded with 3.5-inch disks: ≤ 32 kg	Fully loaded with 3.5-inch disks: ≤ 65 kg		Fully loaded with 3.5-inch disks: ≤ 32 kg
Typical Power	500 W	800 W		470 W
Operating Temperature	When the altitude is -60 to +3,050 m, the ambient temperature is 5°C to 40°C (41°F to 104°F) (complying with the ASHRAE CLASS A3 and A4 standards). According to the ASHRAE 2015 standard, when the configuration meets the requirements of Classes A1 and A2 and the altitude exceeds 900 m, the operating temperature decreases by 1°C each time the altitude increases by 300 m. When the Class A3 is configured and the altitude exceeds 900 m, the operating temperature decreases by 1°C each time the altitude increases by 175 m. When Class A4 is configured and the altitude exceeds 900 m, the operating temperature decreases by 1°C each time the altitude increases by 125 m.			
Operating Humidity	8% RH to 90% RH			

For More Information

To learn more about Huawei storage, please contact your local Huawei office or visit Huawei Enterprise website: <http://e.huawei.com>.



Huawei Enterprise APP



Huawei IT

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