



# The Fastest Scale-Out NAS

The Huawei OceanStor 9000 Scale-out NAS features a symmetric distributed architecture that delivers superior performance, extensive scale-out capabilities, and a super-large single file system providing shared storage for unstructured data.

The OceanStor 9000 is ideal for Big Data service scenarios, such as film and TV, satellite mapping, gene sequencing, energy exploration, and scientific research, education, and provider services. With advanced processing features and data lifecycle management, the OceanStor 9000 helps customers build industry's most efficient Big Data storage capabilities.

## Highlights

### ■ Outstanding performance

High-performance read/write access; exclusive InfoTurbo acceleration technology achieving up to 2.5 GB/s in bandwidth over a single client; 400 GB/s in system throughput.

### ■ Flexible space

Smooth scale-out from 3 to 288 nodes; up to 100 PB in capacity for a single file system; simplified management and maintenance; elimination of data islands in multiple namespaces.

### ■ Open convergence

Support for NFS, CIFS, NDMP, FTP, HDFS, Amazon S3/OpenStack Swift, and numerous other interfaces; support for file and object storage; one system carries multiple service applications for complete management over the entire data lifecycle.

## Fully symmetrical distributed architecture featuring impressive parallel read-write capabilities

### High-performance read/write access

Exclusive InfoTurbo acceleration technology achieves up to 2.5 GB/s in bandwidth over a single client.

### Network acceleration

Support 10 GE, InfiniBand and a variety of other networking schemes; supports RDMA mode transmission and TOE offload, to improve system transmission performance.

### Linear scalability

Linear increase in system performance as nodes are added with up to 400 GB/s in bandwidth.

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

### Single-file system

A single file system of up to 100 PB simplifies system 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

Ensures up to 95% disk utilization without compromising inter-node data reliability.

## Open Convergence Storage System Designed for Diversified Applications

### Multiple interface support

NFS, CIFS, NDMP, FTP, HDFS, Amazon S3/OpenStack Swift, and other interfaces to allow the system to support diversified applications and achieve data management throughout the entire lifecycle.

### Support for varied node types

Support for various types of nodes to suit different applications.

### Integrated management

One set of software centrally manages IT devices, provides analysis reports, simplifies management, and improves operation efficiency.

## Visualized and Unified Resource Management

### Flexible configuration

Directory-based redundancy ratio settings provide a variety of data protection levels for optimizing performance, space utilization, and reliability.

### 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 within 60 seconds.

### Rights management

Access controls for IP addresses, users, and user groups ensure that storage pools are secure and mutually isolated.

## Info Series Software Brings Intelligent Management to Large-Scale Storage

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

Manages access to IP addresses in a unified manner and supports automatic allocation, failover, and fallback for node IP addresses.

Implements load balancing based on domain names and supports a variety of load-balancing policies.

Includes zone-based management for nodes, allowing an independent load-balancing policy and an independent domain name to be configured for each zone.

### InfoTier, Huawei's Dynamic Storage Tiering (DST) software, ensures that frequently accessed data (hotspot data) is on the fastest performance tier.

DST is implemented between performance and capacity nodes, fully leveraging the advantages of different types of storage media and reducing Total Cost of Ownership (TCO).

A variety of data migration policies and migration priorities are supported to accommodate changing service needs.

## **InfoAllocator, Huawei's quota management software, manages storage space usage.**

Implements space quota management based on users, user groups, and directories, meeting different customer requirements.

Allows flexible and easy access to storage space with quota nesting management.

## **InfoProtector, Huawei's proprietary data protection software, ensures reliable data with redundant storage.**

N+M data protection technology protects data against a concurrent failure of four nodes.

Multiple nodes reconstruct data concurrently at a speed of up to 1 TB/hour

## **InfoExplorer, Huawei's fast file retrieval software, provides flexible options for quick retrieval of target files from a large number of files.**

Retrieval time is shortened from dozens of hours to several seconds, improving search efficiency and convenience.

The built-in, full-text retrieval function supports fuzzy search based on file name, path, user name, and user-defined tag.

## **InfoStamper, Huawei's Snapshot software, provides directory level snapshot for quick data recovery.**

Directory-level snapshots, quick data recovery.

Support for manual and scheduled snapshots (daily/weekly/monthly).

## **InfoLocker, Huawei's WORM functionality software, provides enterprise level WORM function.**

Protection against data loss, malicious modification, and deletion.

Supports setting of WORM clock and protection period.

## **InfoReplicator, Huawei's asynchronous remote replication software for disaster recovery.**

Shortens the time needed to perform a system restore; applicable to disaster recovery, data backup, and long-distance data migration scenarios.

Supports 1:N and N:1 replication for different types of directories.

## Technical Specifications

| Model                            | P25E   | P36E   | P12E   | C36E   | C72  |
|----------------------------------|--|--|--|--|--|
| Hardware Specifications          |  |  |  |  |  |
| System architecture              | Fully symmetrical distributed architecture   |  |  |  |  |
| Number of nodes                  | 3 to 288   |  |  |  | 2 to 144   |
| CPUs per node                    | 2 x Intel E5 series  |  | 1 x Intel E5 series  |  | 2 x Intel Atom   |
| NVDIMM                           | 8 GB NVDIMM  |  |  |  | — —  |
| Cache per node                   | Standard configuration: 48 GB, scalable to 256 GB  |  | Standard configuration: 32 GB, scalable to 128 GB  |  | Standard configuration: 64 GB                          |
| Data disk type                   | 2.5-inch SSD and SAS disks   | 3.5-inch SSD, SATA, and NL-SAS disks   |  |  | 3.5-inch SATA disks                                    |
| Number of disks per node         | Standard configuration: 1 x 2.5-inch 600 GB SSD + 24 x 2.5-inch 900 GB/1.2 TB/1.8 TB SAS (The SSD/HDD configuration ratio can be adjusted based on actual performance requirements.) | Standard configuration: 1 x 3.5-inch 600 GB SSD + 35 x 3.5-inch 2 TB/4 TB/6 TB/10 TB SATA or 2 TB/4 TB/6 TB NL-SAS (The SSD/HDD configuration ratio can be adjusted based on actual performance requirements.) | Standard configuration: 12 x 3.5-inch 2 TB/4 TB/6 TB/10 TB SATA or 2 TB/4 TB/6 TB NL-SAS (The SSD/HDD configuration ratio can be adjusted based on actual performance requirements.)                                   | Standard configuration: 36 x 3.5-inch 2 TB/4 TB/6 TB/10 TB SATA or 2 TB/4 TB/6 TB NL-SAS | Standard configuration: 72 x 2 TB/4 TB/6 TB/10 TB SATA |
| Front-end network type           | 10GE, InfiniBand, and 1GE  |  |  | 10GE and 1GE   | 1GE  |
| Internal network type            | 10GE and InfiniBand  |  |  | 10GE   |  |
| Application scenarios            | OPS-intensive  | Large-capacity and high-bandwidth  | Small-capacity   | Video surveillance and archiving   |  |
| Software Features                |  |  |  |  |  |
| Data protection level            | N+1, N+2, N+3, N+4 (Data is still usable even if 4 nodes failed.)  |  |  |  |  |
| File system                      | OceanStor DFS, which supports the global namespace and can be dynamically expanded up to 100 PB  |  |  |  |  |
| Value-added NAS Storage features | Dynamic storage tiering (InfoTier)<br>Space quota management (InfoAllocator)<br>WORM (InfoLocker)<br>Performance acceleration (InfoTurbo)<br>Data Migration (InfoMigrator)           |  | Automatic load balancing of client connections (InfoEqualizer)<br>Snapshot (InfoStamper)<br>Remote replication (InfoReplicator)<br>Surveillance video and imagery restoration (InfoRevive)<br>Anti-virus (InfoScanner) |  |  |

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| Value-added object storage feature | Object-level deduplication<br>HTTPs Encrypted transmission<br>Multi-tenant<br>Disaster recovery (InfoMetro)  |      |      |      |     |
| Thin provisioning                  | Support for thin provisioning, which does not need to be configured  |      |      |      |     |
| Data self-healing                  | Automatic, concurrent, and quick data reconstruction, with maximum reconstruction speed at 1 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  |      |      |      |     |
| Operating system                   | Windows, Linux, UNIX, and Mac OS   |      |      |      |     |
| Supported protocols                | NFS, CIFS, FTP, HDFS, Amazon S3/OpenStack Swift, NDMP, NIS, Microsoft Active Directory, and LDAP   |      |      |      |     |
| System management                  | Support for users with different management rights, and domain- and rights-based user management<br>Alarm notification by email, SMS, and SNMP   |      |      |      |     |
| Bad disk detection                 | Automatic bad disk detection and alarm notification as well as batch replacement of bad disks, avoiding the need for immediate replacement while freeing up maintenance personnel to handle more pressing tasks. |      |      |      |     |

### Physical Features

|                           |         |  |   |  |   |   |
|---------------------------|---------|--|---|--|---|---|
| Power supply              |         | 100V to 127V AC and 200V to 240V AC, 240V DC   |   |  |   | 200V to 240V AC   |
| Dimensions<br>(H x W x D) | Node    | 2U, 86.1mm×<br>447mm×748mm   | 4U, 175mm×<br>447mm×748mm                                   | 2U, 86.1mm×<br>447mm×748mm                               | 4U, 175mm×<br>447mm×748mm                                   | 4U, 175mm ×<br>446mm × 790mm                              |
|                           | Cabinet | Maximum size: 2000 mm x 600 mm x 1200 mm (78.4 in. x 23.62 in. x 47.24 in.)  |   |  |   |   |
| Weight                    |         | Fully loaded with<br>2.5-inch disks:<br>≤ 30 kg (66 lb.)   | Fully loaded with<br>3.5-inch disks:<br>≤ 57 kg (125.4 lb.) | Fully loaded with<br>3.5-inch disks:<br>≤ 30 kg (66 lb.) | Fully loaded with<br>3.5-inch disks:<br>≤ 57 kg (125.4 lb.) | Fully loaded with<br>3.5-inch disks:<br>≤ 96 kg (212 lb.) |
| Typical power             |         | 420 W  | 680 W   | 280 W  | 680 W   | 920W  |
| Operating temperature     |         | 5°C to 35°C (41°F to 95°F) when the altitude ranges from –60 m to +1,800 m (–196.85 ft to +5,905.44 ft)<br>When the altitude is higher than 1,800 m (5,905.44 ft) but lower than or equal to 3,000 m (9,842.4 ft),<br>the ambient temperature drops by 0.6°C (1.08°F) for every –100 m (–328.08 ft) increment in altitude. |   |  |   |   |
| Operating humidity        |         | 20% RH to 80% RH   |   |  |   |   |

### For More Information

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



Huawei Enterprise APP





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