

Huawei OceanStor 6810/18510/18810 High-End Hybrid Flash Storage Systems are designed to provide excellent data services for critical enterprise applications. The systems feature the industry-leading SmartMatrix architecture, active-active solution for SAN and NAS, flash acceleration technology, high-performance hardware platform, and various solutions designed to improve efficiency and data protection. Together, they provide optimal reliability and performance to meet the data storage requirements of various scenarios, including email systems of large enterprises, large-scale data warehouses, massive small-file sharing, and cloud computing. This makes them an ideal choice for the government, telecom, finance, manufacturing, and healthcare sectors.

### 7-Nines Reliability

Sustainable development is becoming a key focus of enterprises in various sectors, prompting many to upgrade to intelligent storage systems. Moreover, diverse services and data types are raising the requirements for IT systems. Now, they must be able to consolidate multiple types of services and ensure stable service running. Huawei OceanStor 6810/18510/18810 high-end hybrid flash storage systems meet these needs from five dimensions: architecture, product, data, solution, and O&M. Their reliable end-to-end architecture ensures 99.99999% service availability for all service scenarios.

#### Architecture – fully interconnected design

Huawei OceanStor 6810/18510/18810 storage systems adopt the innovative SmartMatrix architecture that comprises the front-end and back-end full-mesh and multi-controller multi-active deployment, achieving high reliability and performance balancing.

Specifically, this architecture tolerates the failure of three out of four or seven out of eight controllers without interrupting services, setting a new benchmark for storage reliability. Each front-end interface module is connected to four controllers, which allows services on the faulty controller to fail over to the normal controller within seconds, without disrupting any host links or affecting upper-layer services. The fully symmetric active-active design (meaning the LUNs do not belong to any controller) enables the application server to access LUNs through any controller. As for performance balancing, thanks to the load balancing algorithm, services simultaneously run on multiple controllers to reduce the pressure on each controller. In the unlikely event that any controller fails, other controllers can take over services smoothly without interrupting any services.

### Product – enhanced hardware and software

Huawei OceanStor 6810/18510/18810 storage systems use a fully redundant architecture and support dual-port NVMe disks and hot swap to prevent single points of failure.

Specifically, the hot-swappable I/O interface module makes replacing and upgrading interface modules easier. Also, with the Huawei RAID 2.0+ technology, it takes only 15 minutes to reconstruct a 1 TB disk, greatly improving data reliability. The RAID reconstruction technology allows you to promptly adjust the RAID member disks in the event of a disk failure, and the service will not be interrupted even if more than 3 disks fail consecutively.

### Data – ransomware protection solution

Huawei OceanStor 6810/18510/18810 storage systems adopt the SAN+NAS ransomware protection solution that features the Air Gap technology and high-density snapshots to effectively defend against ransomware attacks and support fine-grained data restoration, protecting your systems from ransomware loss. In addition, the honeyfile and the end-to-end (E2E) data encryption solution, comprising the HyperEncryption function and the native or external key management deployments, works with the storage systems to implement static data encryption, preventing data leakage even in the event of disk loss.\*

### Solution – gateway-free active-active solution

Huawei OceanStor 6810/18510/18810 storage systems run core enterprise services, meaning they tolerate no data loss or service interruption. The active-active solution is an ideal choice for such scenarios. Huawei OceanStor 6810/18510/18810 storage systems use the gateway-free active-active solution for SAN and NAS to reduce faulty nodes, simplify system deployment, and improve system reliability. In addition, the active-active solution implements load balancing active-active mirroring and non-disruptive cross-site failover, preventing core applications from breaking down. Also, the active-active solution can be smoothly upgraded to a geo-redundant 3DC/4DC data protection solution to provide a higher level of data protection. The industry's only Storage + Optical Connection Coordination (SOCC) solution ensures efficient mitigation of active-active/replication link sub-health issues and completes link switchover within 2 seconds.

### O&M – non-disruptive upgrade

Huawei OceanStor 6810/18510/18810 storage systems adopt a modular software architecture, meaning 95% of upgrades can be performed in the user space within 1 second, with no need to restart controllers. In the remaining scenarios that require controllers to be restarted, the unique front-end interconnect I/O module connects four internal links to each controller in an enclosure, which means that during the upgrade, if any controller restarts, service links will seamlessly fail over to another controller without affecting the host or links.

## Flash-Like Performance

### Dynamic adaptive data layout (DADL)

Huawei OceanStor 6810/18510/18810 storage systems adopt the global cold and hot data sensing and data collaboration algorithms that support system auto-learning in all scenarios. The algorithms enable the storage systems to sense changes in service models, and hot and cold data, thus helping promptly locate hot data in various scenarios. Also, the elastic convergence of storage cache and tiers resolves the challenges faced in the traditional practice and fuels data acceleration, which results in optimal data layout and simplified configuration.

### ROW architecture without compromising performance

The systems adopt redirect-on-write (ROW) and multi-point-in-time technologies to build performance-uncompromised snapshots and clones. Snapshots can be created by creating pointers, with no need to copy data, and the overall storage performance will not be affected in the event of high-density snapshots. Also, the storage performance remains at a high level even when the data protection feature is enabled.

### Leading specifications

The storage systems use a multi-core and multi-thread high-performance processing platform. Specifically, controllers are interconnected using the remote direct memory access (RDMA) technology, enabling a single enclosure to provide up to 1,280 GB/s system bandwidth. In addition, the storage systems support end-to-end NVMe architecture. The front-end of the system is equipped with 768 host ports, which support 64 Gbps FC-NVMe/25 Gbps RoCE; the back-end adopts the NVMe over Fabrics (100 Gbps) and SAS 3.0 (12 Gbps) high-speed ports, which meet users' requirements to access core databases at high concurrency and low latency.

### Endless Evolution

Huawei OceanStor 6810/18510/18810 storage systems support hybrid workloads such as blocks, files, virtualization, and containers, which meets the users' elastic service development requirements, improves storage resource utilization, and effectively reduces the total cost of ownership (TCO). In addition, balanced SAN and NAS services, supercharged by the Hyper and Smart features, provide diversified data protection and efficiency improvement capabilities for block and file systems. This provides users with comprehensive services.

The combination of private and public clouds, cloud backup, and container services has supercharged the user's smooth migration of data to the cloud.

DME interconnects with mainstream IT service management platforms like ServiceNow and Ansible, reducing O&M costs.

### Technical specifications

| Model  | OceanStor 6810  | OceanStor 18510  | OceanStor 18810 |
|--|---|--|-----------------|
| Hardware Specifications  |   |  |                 |
| Maximum Number of Controllers  | 16  | 32   | 32              |
| Maximum Cache (Dual-Controller; Expands with Controllers)            | 512 GB to 16 TB   | 512 GB to 32 TB  | 1 TB to 32 TB   |
| Supported Storage Protocols  | FC, iSCSI, NFS, CIFS, FC-NVMe, NVMe over RoCE, FTP*, HTTP*, NDMP, S3, SFTP* and NVMe over TCP   |  |                 |
| Front-End Port Types   | 8/16/32/64 Gbps FC, 1/10/25/40/100 Gbps Ethernet, 25/100 Gbps RoCE  |  |                 |
| Back-End Port Types  | 100 Gbps RDMA/SAS 3.0   |  |                 |
| Maximum Number of Hot-Swappable I/O Modules per Controller Enclosure | 28  |  |                 |
| Maximum Number of Front-End Ports per Controller Enclosure           | 80  | 96   |                 |
| Maximum Number of Disks  | 3200  | 6400   | 9600            |
| Disk Types   | NVMe TLC SSD, SAS TLC SSD, SAS, NL-SAS  |  |                 |
| Software Specifications  |   |  |                 |
| RAID Levels  | RAID 10*, 5, 6 and RAID-TP (tolerating simultaneous failure of three disks)   |  |                 |
| Value-Added Features   | SmartAcceleration, SmartVirtualization, SmartMigration, SmartThin, SmartQoS, SmartQuota, SmartMulti-Tenant, SmartCompression, SmartDedupe, SmartContainer*, SmartMigration for NAS, SmartMobility, SmartMove, HyperSnap, HyperReplication, HyperClone, HyperMetro, HyperCDP, HyperLock, HyperMetro-Inner*, HyperDetect, HyperDetect for SAN, HyperEncryption, HyperLink, CloudVxLAN, CloudBackup*, NFS+ |  |                 |
| Storage Management Software  | DeviceManager, UltraPath, DME IQ  |  |                 |
| Electrical Specifications  |   |  |                 |
| Power Supply   | 200 V to 240 V AC±10%, 240 V DC±20%   | Cabinet: 200 V to 240 V AC±10%, 346 V to 415 V AC±10%, 192 V to 288 V DC   |                 |
| Dimensions (H x W x D)   | Controller enclosure:<br>175 mm x 447 mm x 865 mm<br>SAS disk enclosure:<br>86.1 mm x 447 mm x 410 mm<br>NVMe disk enclosure:<br>86.1 mm x 447 mm x 620 mm<br>NL-SAS disk enclosure:<br>175 mm x 447 mm x 488 mm  | Maximum cabinet dimensions: 1200 mm x 600 mm x 2000 mm<br>Controller enclosure: 175 mm x 447 mm x 865 mm<br>SAS disk enclosure: 86.1 mm x 447 mm x 410 mm<br>NVMe disk enclosure: 86.1 mm x 447 mm x 620 mm<br>NL-SAS disk enclosure: 175 mm x 447 mm x 488 mm |                 |
| Weight (Incl. Disk Units)  | Controller enclosure ≤ 88.2 kg<br>SAS disk enclosure ≤ 19.65 kg<br>NL-SAS disk enclosure ≤ 43.9 kg<br>Smart NVMe disk enclosure ≤ 33.95 kg  | Controller enclosure ≤ 88.2 kg<br>SAS disk enclosure ≤ 19.65 kg<br>NL-SAS disk enclosure ≤ 43.9 kg<br>Smart NVMe disk enclosure ≤ 33.95 kg<br>System cabinet ≤ 700 kg<br>Disk cabinet ≤ 600 kg   |                 |
| Operating Temperature  | -60 m to +1800 m altitude: 5°C to 35°C (cabinet) or 40°C (enclosure)<br>1800 m to 3000 m altitude: The maximum temperature threshold decreases by 1°C for every altitude increase of 220 m  |  |                 |
| Operating Humidity   | 10% to 90% RH   |  |                 |

\*Contact Huawei sales staff if you need this specification.

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





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