

OceanStor Dorado 3000 All-Flash Storage System

Fast

50% higher performance than the previous generation

E2E NVMe for 0.05 ms of ultra-low latency

FlashLink® intelligent algorithms

Intelligent

Extensive intelligent software features (Smart series) 3-layer management:

- 365-day capacity trends prediction
- 60-day performance bottleneck prediction
- 14-day disk fault prediction
- Immediate solutions for 93% of problems

Simplified

One device integrates multiple functions for easy management

System configuration success in 3 steps and resource readiness in 5 minutes

A-A architecture for non-disruptive upgrade (NDU) management

Huawei OceanStor Dorado 3000 is an entry-level storage system in the OceanStor Dorado all-flash series. It features an innovative hardware platform, FlashLink® intelligent algorithms, and end-to-end (E2E) NVMe architecture, which combine to deliver a 50% higher performance than the previous generation at an ultra-low 0.05 ms latency. The intelligent algorithms are built into the storage system to make storage more intelligent during the application operations. Furthermore, the all active-active (A-A) architecture and simplified GUI design help simplify Operations and Maintenance (O&M).

Excelling in scenarios such as virtualization, OA, and branches, Huawei OceanStor Dorado 3000 all-flash storage is a trusted option for small and medium-sized businesses (SMBs) in the carrier, finance, government, manufacturing, and other fields. The storage system provides cost-effective services, making it ideal for the IT applications of SMBs.

Product Features

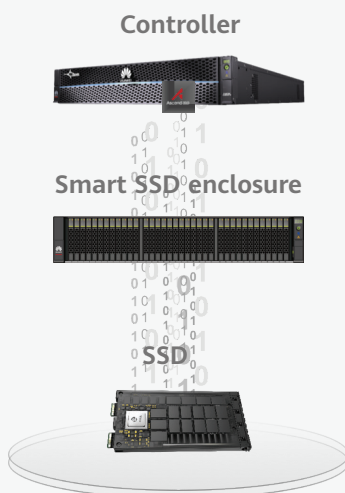
Fast

Innovative hardware platform:

The hardware platform of Huawei storage enables E2E data acceleration, improving the system performance by 50% compared to the previous generation.

- ✓ The intelligent multi-protocol interface module hosts the protocol parsing previously performed by the general-purpose CPU, expediting the front-end access performance by 20%.
- ✓ The computing platform offers industry-leading performance with 25% higher computing power than the industry average.
- ✓ The intelligent accelerator module analyzes and understands I/O rules of multiple application models based on machine learning frameworks to implement intelligent prefetching of memory space. This improves the read cache hit ratio by 50%.

FlashLink®



- ✓ The intelligent SSD hosts the core Flash Translation Layer (FTL) algorithm, accelerating data access in SSDs and reducing the write latency by half.
- ✓ The intelligent hardware has a built-in Huawei storage fault library that accelerates component fault location and diagnosis, and shortens the fault recovery time from 2 hours to just 10 minutes.

Intelligent algorithms:

Most flash vendors lack E2E innate capabilities to ensure full performance from their SSDs. OceanStor Dorado 3000 runs industry-leading FlashLink® intelligent algorithms based on self-developed controllers, disk enclosures, and operating systems.

- ✓ **Many-core balancing algorithm:** Taps into the many-core computing power of a controller to maximize the data processing capability.
- ✓ **Service splitting algorithm:** Offloads reconstruction services from the controller enclosure to the smart SSD enclosure to ease the load pressure of the controller enclosure for more efficient I/O processing.
- ✓ **Cache acceleration algorithm:** Accelerates batch processing with the intelligent module to bring intelligence to storage systems during application operations.

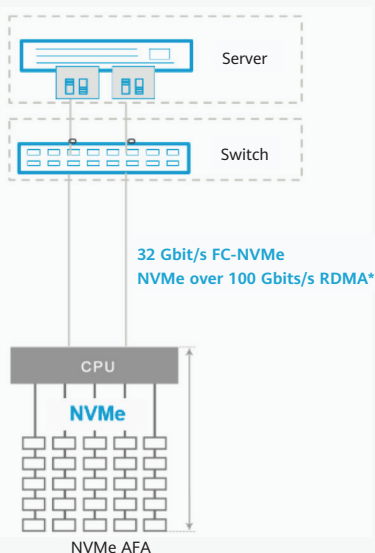
The data layout between SSDs and controllers is coordinated synchronously.

- ✓ **Large-block sequential write algorithm:** Aggregates multiple discrete data blocks into a unified big data block for disk flushing, reducing write amplification and ensuring stable performance.
- ✓ **Independent metadata partitioning algorithm:** Effectively controls the performance compromise caused by garbage collection for stable performance.
- ✓ **I/O priority adjustment algorithm:** Ensures that read and write I/Os are always prioritized, shortening the access latency.

FlashLink® intelligent algorithms give full play to all flash memory and help Huawei OceanStor Dorado achieve unparalleled performance for a smoother service experience.

E2E NVMe architecture for full series:

All-flash storage has been widely adopted by enterprises to upgrade existing IT systems, but always-on service models continue to push IT system performance boundaries to a new level. Conventional SAS-based all-flash storage cannot break the bottleneck of 0.5 ms latency. NVMe all-flash storage, on the other hand, is a future-proof architecture that implements direct communication between the CPU and SSDs, shortening the transmission path. In addition, the quantity of concurrencies is increased by 65,536 times, and the protocol interaction is reduced from four times to two, which doubles the write request processing. Huawei is a pioneer in adopting end-to-end NVMe architecture across the entire series. OceanStor Dorado 3000 uses the industry-leading 32 Gb FC-NVMe/25 Gb RoCE protocols at the front end and adopts Huawei-developed link-layer protocols to implement failover within



seconds and plug-and-play, thus improving the reliability and O&M. It also uses a 100 Gb RDMA protocol at the back end for E2E data acceleration. This enables latency as low as 0.05 ms and 10x faster transmission than SAS all-flash storage.

Linear increase of performance and capacity:

Unpredictable business growth requires storage to provide simple linear increases in performance as more capacity is added to keep up with ever-changing business needs. OceanStor Dorado 3000 supports scale-out of 16 controllers, and IOPS increases linearly as the quantity of controller enclosures increases, matching the performance needs of future business development.

Intelligent

On and off-cloud synergy:

Huawei OceanStor Dorado 3000 all-flash system combines general-purpose cloud intelligence with customized edge intelligence over a built-in intelligent hardware platform, providing incremental training and deep learning for a personalized customer experience. The DME-IQ intelligent O&M and management platform collects and analyzes over 190,000 device patterns on the live network in real time, extracts general rules, and enhances basic O&M.



Intelligence throughout service lifecycle:

Intelligent management covers resource planning, provisioning, system tuning, risk prediction, and fault location, and enables 60-day and 14-day predictions of performance bottlenecks and disk faults respectively, and immediate solutions for 93% of problems detected.

Extensive intelligent software features:

Thin provisioning and data reduction improve space utilization; intelligent QoS improves service quality; and intelligent heterogeneous virtualization and data migration combine to ensure simplified system lifecycle management.

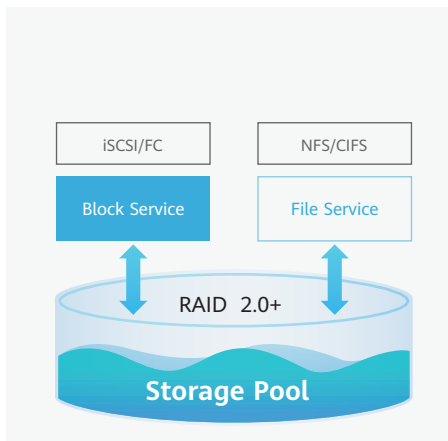
Simplified

Simple management*:

Huawei OceanStor Dorado 3000 delivers SAN and NAS services and supports their parallel access. Built-in containers support storage and compute convergence. The convergence of cross-generation devices allows for joint resource usage. As such, multiple functions are converged to simplify management and greatly reduce the TCO.

Simple configuration:

A brand-new graphical user interface (GUI) greatly simplifies the configuration process of traditional storage. This facilitates storage system configuration in



just three steps and resource readiness in just five minutes, without assistance from dedicated personnel. This meets the key requirements of SMBs for simple and easy-to-use IT systems.

Simple O&M:

The active-active architecture ensures there is no LUN ownership, meaning a LUN does not belong to any specific controller. In addition, load balancing and non-disruptive upgrade (NDU) are supported. O&M personnel do not need to prepare much on the host side before an upgrade, greatly improving O&M efficiency.

Technical Specifications

Model	OceanStor Dorado 3000
Hardware Specifications	
Maximum Number of Controllers	16
System Cache	128~1536GB
Supported Storage Protocols	FC, iSCSI, FC-NVMe, NVMe over RoCE, NFS, CIFS, NDMP, NFS over RDMA
Front-End Port Types	8/16/32 Gbps FC/FC-NVMe, 10/25/40/100 GbE, 25 Gbps NVMe over RoCE/NFS over RDMA
Back-End Port Types	SAS 3.0/ 100 Gb RDMA
Maximum Number of Hot-Swappable I/O Modules per Controller Enclosure	6
Maximum Number of Front-End Ports per Controller Enclosure	40
Maximum Number of SSDs	1,200
SSDs	1.92 TB/3.84 TB/7.68 TB/15.36TB/30.72TB palm-sized NVMe SSD, 960 GB/1.92 TB/3.84 TB/7.68 TB/15.36 TB SAS SSD
Software Specifications	
Supported RAID Levels	RAID 5, RAID 6, RAID 10* and RAID-TP (tolerates simultaneous failures of 3 SSDs)
Number of LUNs	8,192
Value-Added Features	SmartDedupe, SmartVirtualization, SmartCompression, SmartMigration, SmartThin, SmartQoS, SmartQuota, SmartMulti-Tenant, SmartMigration for NAS, SmartMobility for NAS, SmartMobility for Object, SmartMove, HyperSnap, HyperReplication, HyperClone, HyperMetro, HyperCDP, HyperLock, HyperEncryption, CloudVxLAN
Storage Management Software	DeviceManager UltraPath DME-IQ
Physical Specifications	
Power Supply	Controller enclosure: 100V~240V AC±10%, 192V~288V DC, -48V to -60V DC Disk enclosure: 100V~240V AC±10%, 192V~288V DC, -48V to -60V DC
Dimensions (H x W x D)	SAS controller enclosure: 86.1mm X 447mm X520mm NVMe controller enclosure: 86.1mm X447mm X620mm SAS SSD enclosure: 86.1mm X 447mm X410mm Smart NVMe SSD enclosure: 86.1mm X447mm X620mm
Weight(Incl. Disk Units)	SAS controller enclosure: ≤ 30 kg NVMe controller enclosure: ≤ 32 SAS SSD enclosure: ≤ 20 kg Smart NVMe SSD enclosure: ≤ 35 kg
Operating Temperature	-60 m to +1800 m altitude: 5°C to 35°C (bay) or 40°C (enclosure)
Operating Humidity	10% RH to 90% RH 1800 m to 3000 m altitude: The max. temperature threshold decreases by 1°C for every altitude increase of 220 m

*For further details on specifications with an asterisk for a specific project, please contact Huawei sales.

For More Information

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



Huawei Enterprise APP



Huawei IT



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