HUAWEI

Data Sheet

New-Gen OceanStor Dorado 3000/5000/6000/8000/18000 Converged All-Flash Storage Systems

We are witnessing a transformative shift towards an intelligent world that is driven by large AI models. Rapidly evolving technologies and algorithms are no longer just a trend, and enterprise IT systems must adapt to and accommodate AI technology. The challenge now lies in how to integrate AI into conventional services. In addition, as the data keeps growing and is widely scattered, data privacy and data leakage prevention become key focus. A secure storage solution must be able to effectively prevent such risks.

Huawei's New-Gen OceanStor Dorado Converged All-Flash Storage rises to the occasion. It is designed to set a benchmark for all-flash storage, thus accelerating the evolution of enterprises' mission-critical applications in the AI era. The new-gen storage converges blocks, files, and objects for diverse mission-critical applications.

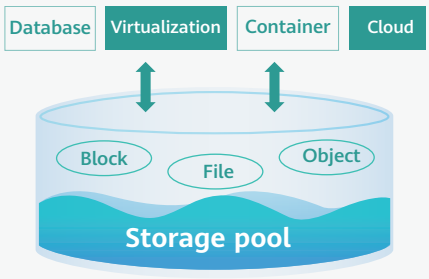
The new-gen storage uses the industry-leading FlashLink® intelligent disk-controller-DPU collaboration algorithm to provide more than 100 million IOPS and 0.03 ms ultra-low latency, ensuring optimal experiences for large-scale mission-critical applications in the AI era. The new-gen storage also uses the SmartMatrix full-mesh technology with solid stability and the active-active setup that integrates block, file, and object to achieve high reliability. Built-in ransomware detection can protect both SAN and NAS data. Empowering AI-ready data infrastructure, New-Gen OceanStor Dorado Converged All-Flash Storage is widely applicable across sectors, including finance, government, carrier, manufacturing, healthcare, education, energy, transportation, and emerging sectors.

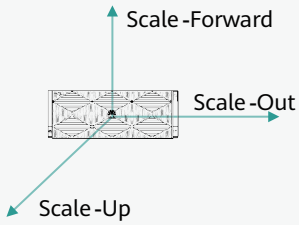
Converged

In the AI era, storage faces many challenges due to the rapid growth in the scale and types of applications and data. Huawei New-Gen OceanStor Dorado Converged All-Flash Storage innovatively converges cutting-edge tech to help manage complex services and ever-changing data.

Protocol convergence:

As production service types and large AI models continue to expand and evolve, converged storage of blocks and files cannot keep up with evolving user service needs. Typical object storage uses a scale-out storage architecture, which pales in comparison to traditional enterprise storage in terms of high performance (such as for AI scenarios) and reliability. Huawei's New-Gen OceanStor Dorado Converged All-Flash Storage uses a block-, file-, and object-native parallel architecture to provide ultra-low latency (µs–ms) and comprehensive data services. In particular, it improves the performance and reliability of object services and provides quality storage services for diverse enterprise data.





3D scaling convergence:

By using NVMe over Fabric technology between controller enclosures and disk enclosures, the new-gen storage enables on-demand capacity expansion of controllers and disk enclosures. This enables scale-out of up to 128* controllers and EB-level scale-up capabilities. In addition, the new-gen storage allows for scale-forward of diverse heterogeneous computing power with FPGA and other technologies, to host heavy-load features such as data reduction. This fully unleashes processor computing power, enables advanced features, and ensures uncompromised controller performance.

Cross-gen convergence:

Data volumes are increasing from gigabytes to terabytes and then to petabytes, which makes data migration for storage upgrades a challenge. Long service waits and frequent service interruptions severely hinder user experience. The new-gen storage uses FlashEver to allow new-gen and previous-gen devices to coexist in the same controller enclosure, system, and active-active pair. This enhances performance, capacity, and reliability. In addition, the new-gen storage supports cross-gen replication, tiering, seamless migration, and even zero data migration for smooth upgrading with zero service interruption.

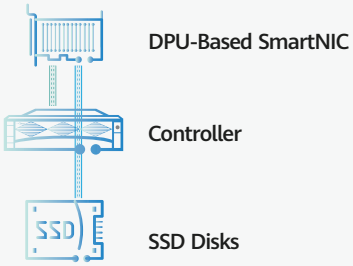
FLASH EVER

Ever Fast

In the digital-intelligent era, data volume is growing rapidly, and the number of applications has skyrocketed from thousands to millions. This surge in access traffic presents significant challenges for storage performance. Huawei's New-Gen OceanStor Dorado All-Flash Storage innovates hardware and software, providing up to 100 million IOPS and 0.03 ms ultra-low latency.

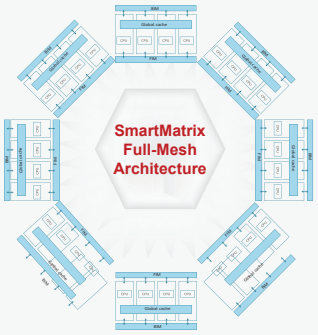
High-performance Kunpeng processors at its core, the new-gen storage delivers a significant leap in processing capabilities. What's more, it's equipped with 64 Gbit/s FC, and PCIe 5.0, which triples the system performance compared with the previous generation. Huawei's New-Gen OceanStor Dorado All-Flash Storage stands out as the first to feature end-to-end NVMe, offering full support for NVMe over Fabric protocols, including NVMe over RoCE, NVMe over FC, and NVMe over TCP. This means the system can fully capitalize on NVMe protocols while reducing system latency to just 0.03 ms.

Huawei's New-Gen OceanStor Dorado Converged All-Flash Storage adopts the FlashLink® dedicated intelligent algorithm to largely improve SSD utilization. FlashLink® allows the processors of controllers, disks, and smart disk enclosures to collaborate, making the most of SSDs for I/O collaboration, garbage collection, and cold and hot data separation designs. With the upgraded algorithms and innovative adoption of DPU-based SmartNICs, the new-gen storage also supports the separation of data flow and control flow, allowing massive data to flow directly to memory and disks via DPU-based SmartNICs. This addresses the CPU bandwidth and computing power bottlenecks, ultimately improving performance by 50% on the same hardware.



Ever Solid

New-Gen OceanStor Dorado Converged All-Flash Storage delivers up to 99.99999% system reliability thanks to improvements in components, architectures, systems, and the storage solutions as a whole. In addition, it provides industry-leading ransomware detection and recovery across all scenarios to cope with ransomware attacks against mission-critical applications and prevent key enterprise data from being compromised.

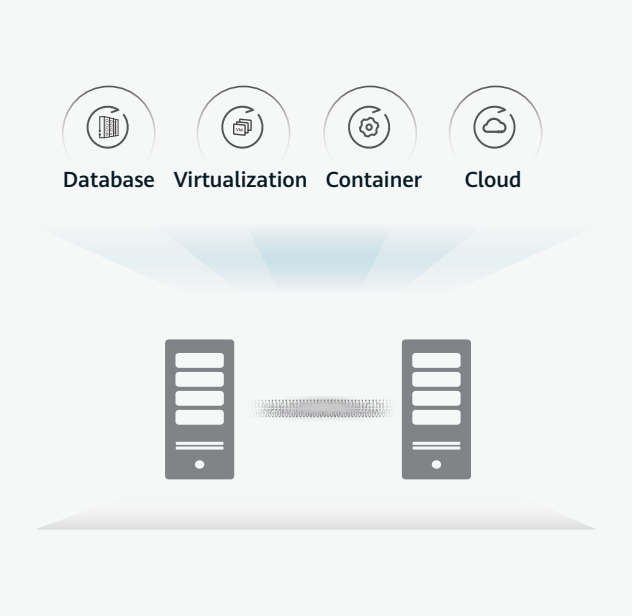


The SmartMatrix full-mesh architecture is Huawei's dedicated architecture for its high-end storage systems. It first evolved from back-end sharing to front-end and back-end sharing, and has been upgraded again to include smart disk enclosure sharing. The new-gen storage enables global sharing. It features controller enclosures that have been decoupled from the disk enclosures but both remain globally interconnected through the back-end RoCE network*. Technologies like the symmetric active-active software architecture, global cache, and cross-enclosure RAID enable the tolerance for the failure of any controller enclosure, disk enclosure, or cabinet. Moreover, the system can tolerate the failure of 7 out of 8 controller enclosures without data loss or service interruption in extreme conditions.

Huawei's New-Gen OceanStor Dorado Converged All-Flash Storage adopts RAID 2.0+, which supports RAID-TP to tolerate the simultaneous failure of three disks. The system is also equipped with innovative dynamic reconstruction technology. If there are fewer available disks than RAID member disks in a storage pool, the system retains the number of parity columns (M) and reduces the number of data columns (N) during reconstruction. Therefore, even if there are fewer available disks than RAID member disks in a storage pool due to consecutive disk faults or disk replacement, reconstruction can still be performed properly while ensuring user data redundancy.

The active-active solution is widely regarded as the most effective way for ensuring service continuity. It not only ensures zero service interruption and zero data loss if a single system is faulty, but also balances the service loads between two storage systems. In this way, the two storage systems provide services at the same time, and users can access the nearest storage system. The new-gen storage supports the gateway-free, integrated active-active solution for block, file, and object protocols*, which delivers RPO=0, RTO≈0 solution for all services.

New-Gen OceanStor Dorado Converged All-Flash Storage provides a diverse array of DR solutions for mission-critical applications in distributed databases, containers, and Huawei Cloud Stack to ensure service continuity. For Huawei Cloud Stack, the industry's unique active-active solutions in and across AZs, and across regions ensure zero data loss for cloud VMs. The system also provides industry-leading failover instead of switchover for stateful container nodes and the industry's unique active-active solutions across K8s clusters and K8s DR Star solutions, to ensure uninterrupted services in the event of a failure in the host, storage, or cluster. In addition, it offers a solution with RPO = 0 for Oracle ADG. Synchronous replication of storage logs and asynchronous replication of Oracle ADG enable zero data loss if the primary site is faulty, which ensures extreme performance and reliability.



Tolly Report for Huawei MRP Ransomware Protection Solution

Ransomware attack methods are becoming increasingly sophisticated in the AI era. To improve ransomware detection accuracy and ensure data resilience at a finer level of granularity, Huawei's New-Gen OceanStor Dorado Converged All-Flash Storage uses a built-in AI-based ransomware detection module. What's more, I/O-level ransomware detection implements AI-driven sequence modeling for I/O behaviors and semantic modeling for file contents, achieving a 99.99% of detection rate.

To intercept ransomware and safeguard your data, New-Gen OceanStor Dorado Converged All-Flash Storage employs a range of technical measures, including network-storage collaboration; pre-event, in-event, and post-event detection; data backup; and security isolation. In a test by industry-leading validation and verification service provider Tolly Group, Huawei's MRP solution achieved a 100% detection rate for ransomware samples.

AI-Powered

AI is transforming a wide range of industries. Huawei's New-Gen OceanStor Dorado Converged All-Flash Storage fully unlocks the value of AI. By improving performance, enhancing resilience, and simplifying O&M, the new-gen storage is bringing enterprises' mission-critical applications into the AI era.

Using the Artificial Intelligence for IT Operations (AIOps) technology, New-Gen OceanStor Dorado ingests and analyzes vast amounts of O&M data, such as logs, monitoring information, and application performance data, to provide deep insights and help O&M teams make better decisions. The AIOps tool DME, which is used to power intelligent O&M and a data brain, significantly increases O&M efficiency and data productivity. Along with unsupervised small models and a RAG knowledge base, DME can proactively detect log anomalies and locate fault root causes within 5 minutes, which makes O&M much more efficient.

Technical Specifications

Model	OceanStor Dorado 3000	OceanStor Dorado 5000	OceanStor Dorado 6000	OceanStor Dorado 8000	OceanStor Dorado 18000
Number of Controllers	2-16	2-32	2-32	2-64*	2-128*
Specifications of a Single Controller Enclosure					
Cache	128 GB–256 GB	256 GB–768 GB	1024 GB–2048 GB	1 TB–4 TB	2 TB–6 TB*
Number of Disks	200	400	600	1200	1600
Effective Capacity	1 PiB	3 PiB	8 PiB	16 PiB	24 PiB
I/O Module Slots	6	12	12	28	28
Onboard Front-End Ports	8 x 10 Gb + 8 x 1 Gb	N/A	N/A	N/A	N/A
Onboard Back-End Ports	4 x SAS 3.0 or N/A	4 x SAS 3.0 or 4 x 100 Gbit/s RDMA		N/A	N/A
Front-End Port Rates	16/32/64 Gbit/s FC, 10/25/40/100 GbE, 25/100G RoCE				
Front-End Port Types	FC，FC-NVMe，iSCSI，NVMe over RoCE，NVMe over TCP，NFS，SMB，NFS over RDMA，S3				
Back-End Port Types	SAS 3.0, 100 Gbit/s RDMA			100 Gbit/s RDMA	
Supported Disk Types	960 GB/1.92 TB/3.84 TB/7.68 TB SAS SSD 3.84 TB/7.68 TB/15.36 TB/30.72 TB NVMe SSD 3.84 TB/7.68 TB/15.36 TB/30.72 TB NVMe SED			3.84 TB/7.68 TB/15.36 TB/30.72 TB NVMe SSD 3.84 TB/7.68 TB/15.36 TB/30.72 TB NVMe SED	
Function Modules	Data reduction module				
Software Features					
RAID	RAID 5, RAID 6, RAID 10, RAID-TP	RAID 5, RAID 6, RAID 10, RAID-TP, cross-enclosure RAID*			
Block Features	HyperSnap, HyperReplication, HyperClone, HyperMetro, HyperCDP, HyperLink, HyperDetect SmartThin, SmartQoS, SmartMulti-Tenant, SmartMigration, SmartErase, SmartVirtualization, SmartDedupe, SmartCompression				
File Features	HyperSnap, HyperReplication, HyperClone, HyperMetro, HyperCDP, HyperLink, HyperLock, HyperDetect, SmartQuota, SmartQoS, SmartMulti-Tenant, SmartMove, SmartMigration, SmartErase, SmartMobility, SmartDedupe, SmartCompression, CloudVxLAN*, CloudBackup*				
Object Features	HyperSnap, HyperClone, HyperCDP SmartQoS, SmartErase, SmartThin, SmartDedupe, SmartCompression				
Client Software	UltraPath				
Storage Management Software	DeviceManager, DME, DME IQ, OceanStor BCManager				
Supported Clients	Windows, Linux, VMware, UNIX				
Supported Container Features	CSI, CDR, CSM				
Physical Specifications					
Power Supply	Controller enclosure: 100 V–240 V AC±10%, 192 V–288 V DC		Controller enclosure: 200 V–240 V AC±10%, 192 V–288 V DC		
	SAS disk enclosure: 100 V–240 V AC±10%, 192 V–288 V DC Smart NVMe SSD enclosure: 100 V–240 V AC±10%, 192 V–288 V DC			Smart NVMe SSD enclosure: 100 V–240 V AC±10%, 192 V–288 V DC	
Dimensions (H × W × D)	SAS controller enclosure: 86.1 mm × 447 mm × 520 mm; NVMe controller enclosure: 86.1 mm x 447 mm x 620 mm	SAS controller enclosure: 86.1 mm × 447 mm × 820 mm; NVMe controller enclosure: 86.1 mm × 447 mm × 920 mm		Controller enclosure: 175 mm x 447 mm x 865 mm; Max. cabinet dimensions: 2000 mm x 600 mm x 1200 mm	
	SAS disk enclosure: 86.1 mm x 447 mm x 410 mm Smart NVMe SSD enclosure: 86.1 mm x 447 mm x 620 mm			Smart NVMe SSD enclosure: 86.1 mm x 447 mm x 620 mm	
Weight (Incl. Disk Units)	SAS controller enclosure ≤ 30 kg NVMe controller enclosure ≤ 32 kg	SAS controller enclosure ≤ 45 kg NVMe controller enclosure ≤ 50 kg		Controller enclosure ≤ 97 kg; System cabinet ≤ 700 kg; Disk cabinet ≤ 600 kg	
	SAS disk enclosure ≤ 20 kg Smart NVMe SSD enclosure ≤ 35 kg			Smart NVMe SSD enclosure ≤ 35 kg	
Operating Temperature	–60 m to +1800 m altitude: 5°C to 35°C (cabinet) or 40°C (enclosure) 1800 m to 3000 m altitude: The max. temperature threshold decreases by 1°C for every altitude increase of 220 m				
Operating Humidity	10% RH to 90% RH				

* Contact Huawei sales staff if you need this specification.

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/.

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