# OceanStor UDS
Massive Storage System

Huawei OceanStor UDS massive storage system (UDS for short) employs high-density and energy-saving storage nodes based on ARM architecture, as well as P2P distributed storage engines to bring extensive scalability and bally low total cost of ownership (TCO). The UDS can combine with the various application systems to provide enterprises and service providers with end-to-end solutions, such as mass resource pool, web disk, cloud backup, and active archive.
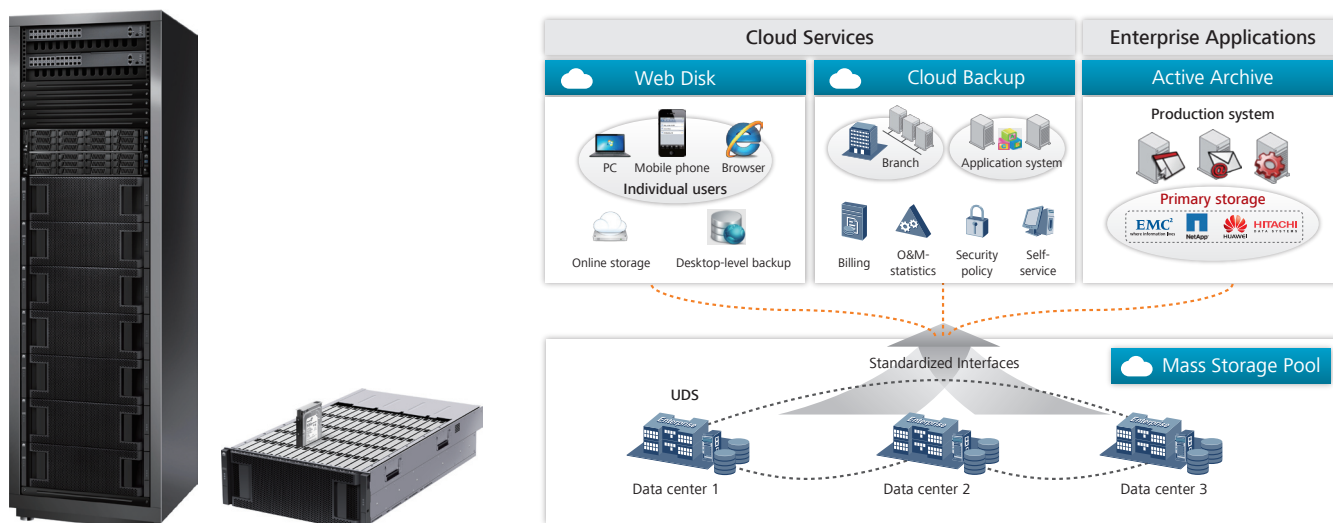
Essentials

Unlimited Scalability

- **EB-Level Scalability:** Supports in-service terabyte-to-exabyte capacity expansion and on-demand storage resource allocation.
- **Fine-grained extension:** Supports linear performance increase along with capacity expansion. The minimum extension unit is SmartDisks (a SmartDisk is the smallest storage unit integrating ARM processor and disk in the UDS).
- **Cross-region unified storage pool:** Offers a unified storage pool for multiple data centers and cross-regional data redundancy.

Extreme Reliability

- **SmartDisk:** Complete faults isolation by providing independent CPU and network resources for each SmartDisk. Any SmartDisk failure will be treated as single point of failure which does not affect the others. Achieves high data durability based on tiered reliability mechanism from the smallest SmartDisk level to cross-region data center level.
- **Self-healing:** Offers a powerful self-healing function with parallel data recovery on multiple nodes. Self-healing procedure is transparent to the application systems.

- **Data security:** Takes multidimensional measures, such as multi-tenants, encryption, and data partitioning to protect privacy of user data.

Low TCO

- **High-density and low energy consumption complete machine design:** Incorporates high-density (75 disk slots in 4U enclosure) complete machine design to provide more than 2 PB storage capacity per cabinet. Employs delicate energy consumption control, ARM processors reduce the system power consumption by 50% and decrease the maximum power consumption per terabyte to 4.2 Watt.
- **Exemption from immediate maintenance:** Boasts intelligent system monitoring and analysis. Design for unattended system management which eliminates the need for immediate replacement of faulty parts.
- **Platform openness and easy integration:** System can be easily integrated with applications via standardized interfaces and API/SDK while keeping the capability of carrying multiple applications on one platform, protecting customer investments.

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Technical Specifications

Model	UDS Massive Storage System
Hardware Specifications	
System architecture	Distributed object storage architecture (the system consists of access nodes, storage nodes, and switches)
SmartDisk	Smallest storage unit integrating ARM processor, disk, and network interfaces
Storage node	4 U high-density storage node with 75 disk slots; max. 300 TB capacity per enclosure; max. 2 .1PB capacity per cabinet
Disk types	Enterprise-grade SATA disks
Service ports	Single access node: 2x10GE (a data center supports up to 168 storage nodes) Single storage node: 4x10GE
System configuration	Minimum configuration per cabinet: two access nodes+one storage node+two 10GE switches Maximum configuration per cabinet: two access nodes+seven storage nodes+two 10GE switches
Software Specifications	
Max. number of buckets	100 million
Max. number of objects in one bucket	50 million
Max. number of objects	10 billion
Interface compatibility	Amazon S3 interface; CommVault Simpana backup interfaces
Multi-data-center deployment	Support data redundancy between three data centers, or unified storage resource pool across regions
Multi-Tenant	Support Account, Group and User
Resumable transfer	Supported (applicable to large-scale data migration)
Storage optimization measure	Support data deduplication and compression
Data security	Strict AK/SK authentication; bucket-based or object-based access control list (ACL)
Data durability	Support flexible N + M data redundancy policy, Single data center up to 99.9999%
Online expansion	One-touch capacity expansion and performance improvement without interrupting or degrading services
Data self-healing	Automatic object-level data recovery based on multiple nodes processing in parallel, max recovery speed is more than 1 TB per hour
immediate maintenance unnecessary	Automatic detection of disk failure rate; in-time alarm notification; batch replacement of fault disks, eliminating the need for immediate replacement and reducing required maintenance manpower
Solution Specifications	
Web disk	Secure and convenient shares accessible to PC clients, mobile phone clients, and browsers Various data sharing modes including automatic data synchronization, sharing with friends/groups, and external links
Cloud backup	To provide users with online backup services based on the public cloud, support for optimized WAN transmission, user access authentication and encryption, etc. Meet the demand of multi-tenancy, cross-regional data backup
Active archive	Tiered storage and compatibility with heterogeneous storage, achieving maximum ROI from storage devices of different cost-effectiveness Archived data accessible at any time; transparent data migration; neglectable changes to the existing network
Physical Specifications	
Access node	AC power supply: 100 V to 127 V or 200 V to 240 V in 1+1 redundancy Power consumption: 350 W (no disks) Dimensions (H x W x D): 86.1 mm x 446 mm x 585 mm (2 U) Weight: 18.5 kg (unloaded enclosure)
Storage node	AC power supply: 90 V to 264 V in 2+2 or 1+1 redundancy Power consumption: 1350 W (maximum) Dimensions (H x W x D): 176.5 mm x 446 mm x 790 mm (4 U) Weight: 45.2 kg (unloaded enclosure); 97.7 kg (fully loaded enclosure)