

 FusionStorage

One Data Center, One Storage
Ever-New Storage, Data Migration Free
Data Intelligence

Huawei FusionStorage is an intelligent distributed storage product that can be easily scaled-out to support business of today, and harness that of tomorrow. It is the storage system that can provide elastic on-demand services powered by cloud infrastructure and meet critical workload requirements. The in-house FusionStorage uses storage system software to integrate local storage resources from general-purpose servers into a fully distributed storage pool. It provides block, object, big data, and file storage for upper-layer applications as required. All these combined help deliver high performance, large capacity, and robust scalability for complex workloads in the cloud and Artificial Intelligence (AI) era. This document describes FusionStorage distributed block storage.

FusionStorage, Huawei's new-generation intelligent distributed storage, provides a variety of enterprise-grade data service features, such as data reduction, active-active, asynchronous remote replication, snapshots, and QoS, to help you easily obtain the flexibility and efficiency in data access needed to cope with ever-changing dynamics. Extensively compatible with mainstream containers, virtualization, and cloud platforms, it also provides open Application Program Interfaces (APIs), and can be integrated into the OpenStack cloud infrastructure.

FusionStorage is widely adopted in a wide variety of scenarios, including cloud resource pools and critical workload databases for financial institutions, carriers, governments, and public utilities.

Features

One Data Center, One Storage

Resilient, efficient storage for critical workloads

FusionStorage integrates storage media, such as HDDs and SSDs, into a large-scale storage pool using distributed technologies, providing industry standard interfaces for upper-layer applications and clients. This enables on-demand storage resources while removing bottlenecks such as unbalanced hardware resource utilization encountered by siloed storage systems running on traditional DCs. FusionStorage can start small and scale out to thousands of nodes in a large-scale storage cluster, enabling linear performance growth as capacity expands.

To better support the cloud migration of critical workloads, FusionStorage uses unique FlashLink® performance acceleration technology, intelligent stripe aggregation, I/O priority scheduling, cache algorithms, along with data identification and processing to work with NVMe SSD, and deliver 1 millisecond stable latency, even when data reduction is enabled. The FusionStorage distributed block storage system satisfies your I/O-intensive, latency-sensitive, and capacity-hungry needs and is ready to supercharge your business of today as well as that of the future.

Comprehensive enterprise-grade features, powering HA data centers

FusionStorage provides highly available storage services for enterprise applications. At the I/O, system, and DC levels, it uses cutting-edge technologies like end-to-end Data Integrity Fields (DIFs), multi-type data redundancy protection modes, comprehensive system sub-health checks and self-healing, distributed active-active, and asynchronous replication.

It supports multi-copy and Erasure Coding (EC) data redundancy protection modes. A single FusionStorage system tolerates the simultaneous failure of up to four nodes or four cabinets, meaning system reliability remains uncompromised even if nodes are faulty. EC technology improves disk space utilization three-fold compared to the traditional three-copy mode, reducing hardware investments while offering a variety of redundancy ratios for flexible selection and on-demand deployment. It leverages dynamic deduplication and

compression on SSDs or HDDs used as primary storage to reduce storage space. Based on front-end application loads, FusionStorage automatically chooses between inline deduplication and post-process deduplication to ensure a high data reduction ratio and provide stable storage performance.

FusionStorage provides the industry's only cross-cluster, gateway-free distributed active-active feature. This allows you to build active-active systems with zero RPO and close-to-zero RTO in Oracle RAC or VMware virtualization scenarios, and obtain six-nines solution-level availability to ensure always-on services. Moreover, by supporting asynchronous replication with an RPO of seconds, you can effortlessly build DR solutions of different protection levels.

Extensive compatibility, the ideal choice for next-gen cloud infrastructure

FusionStorage is compatible with diverse software and hardware platforms. FusionStorage block storage with an open architecture works seamlessly with a variety of containers and computing virtualization platforms to provide a data storage layer to DCs (private, public, hybrid cloud) with scale-out capabilities on demand. This allows you to effortlessly build an open cloud platform without worrying over vendor lock-in when selecting an infrastructure. It is the first distributed storage that goes deep into the ARM-based hardware platform. With abundant computing power provided by Huawei 64-bit ARMv8 Kunpeng series processors, FusionStorage offloads some storage functions to the chip layer to accelerate software performance, delivering 20% more IOPS than other hardware platforms under the same configuration. FusionStorage also uses a high-density computing design to reduce power consumption by 20% while using the same computing power.

Ever-New Storage System Without Any Data Migration

FusionStorage allows hardware of different generations to share one pool, and hardware from different platforms to share one cluster. When the hardware lifecycle ends, continuous hardware upgrade takes place without requiring traditional forklift upgrade and data migration. A data flow control mechanism is provided to update the storage system without affecting ongoing applications.

Intelligent Data Services and System O&M

A unified system management platform, which helps you efficiently and effectively run your business, comprises the Data Service Subsystem (DSS) and Operations and Maintenance Subsystem (OMS). With this platform, FusionStorage uses workload analysis and identification to intelligently and automatically provision resources with a single click, improving efficiency in preparing application environments. Its intelligent risk prediction shields storage resource service risks in advance, helping accurately implement capacity expansion, procurement, and service change decision-making. Intelligent fault locating provides a comprehensive system sub-health check and processing mechanism to implement intelligent fault locating and one-click automatic service recovery.

Typical Application Scenarios

Virtualization/Cloud resource pool

FusionStorage provides an ultra-high quantity of data storage resource pools featuring on-demand resource provisioning and elastic capacity expansion in virtualization and cloud environments. It improves storage deployment, expansion, and O&M efficiency using general-purpose servers to reduce TCO.

Typical industry scenarios: Internet finance channel access clouds; development and testing clouds; cloud-based services; and B2B cloud resource pools in carriers' BOM domains; e-Government cloud; and Safe City cloud.

Mission-critical database

FusionStorage delivers enterprise-grade capabilities, such as distributed active-active and stable, low latency, to ensure efficient and stable operations of mission-critical databases (OLAP/OLTP).

Specifications

Item	Description
System Architecture	Fully distributed architecture
Scalability	3 to 4,096 nodes
Multiple Resource Pools	1 to 128 pools
Storage Access Protocol	iSCSI, SCSI, and OpenStack Cinder
Data Redundancy Protection	<ul style="list-style-type: none"> • EC: Supports N+M redundancy protection (M takes the value of 2, 3, or 4) and applies to SSDs or HDDs used as primary storage; • Multi-copy modes: 2 or 3
System Security Policies	Disk, node, and cabinet levels
Snapshots	Uses the ROW mechanism and supports consistency snapshots
Linked Clone	Supported
Data Encryption	Supported
Active-Active	Supported
Asynchronous Replication	Supported, as short as 15 seconds of RPO
DIF	Supported
Thin Provisioning	Supported
Data Reduction	Dynamic deduplication and compression can be enabled or disabled on-demand, which applies to SSDs or HDDs used as primary storage
QoS	Controls IOPS, bandwidth, latency, and performance bursts
Data Self-Healing	Automatic concurrent reconstruction at 4 TB per hour
System Sub-Health Check	Sub-health check and processing for disks, interface modules, nodes, along with networks
Deployment Methods	Independent and converged deployment of compute and storage nodes
Compatible Networks	GE/10GE/25GE TCP/IP, 10GE/25GE RoCE (RDMA), and 40/56/100 Gbit/s InfiniBand
Compatible Platforms	Huawei FusionSphere, VMware vSphere, Microsoft Windows Hyper-V, OpenStack, and containers ¹
Compatible Storage Media	NVMe SSDs, SAS SSDs, SATA SSDs, SAS HDDs, NL-SAS HDDs, and SATA HDDs
Typical Storage Node	<ul style="list-style-type: none"> • FusionStorage TaiShan 2280 Reference Architecture (RA), ARM-based, value-added packages included; • FusionStorage TaiShan 5280 RA, ARM-based, value-added packages included

Note: 1. iSCSI can be connected to containers.

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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HUAWEI TECHNOLOGIES CO., LTD.
Bantian, Longgang District
Shenzhen 518129, P. R. China
Tel: +86-755-28780808

www.huawei.com