

MacroSAN MS5500

High Performance Storage Systems





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Product Overview

MacroSAN MS5500 is a storage product which is oriented to large and medium size data centers. It integrates lots of advanced design concept and architecture technology to provide safe, reliable, flexible storage platform. MS5500 supports maximum 24 controllers and dual controllers supports maximum 768GB cache. It can guarantee data safety by symmetric dual-active, replication, mirror image and snapshots. Furthermore, based on open data storage platform (ODSP), MS5500 can realize interface development, customized function development and function migration. MS5500 reaches the leading level in performance, reliability, function and management.

According to different configurations, MS5500 can be classified as MS5520 and MS5580.

Product Features

Leading Cache Capability

Leading cache capability: Dual controllers support max. 768GB cache and is comparable to high-end storage specification to meet the user's demands for performance.

High-performance system architecture: MS5500 adopts advanced technologies such as Intel new multi-core processor technology, a new generation of PCI-E 3.0 bus, SAS high-speed technologies and supports 10/40Gb/s iSCSI, 8/16Gb/s FC and 10Gb/s FCoE host interfaces

Full support of IPv6: MS5500 fully support IPv4/v6 dual protocol stacks and meet any need of deployment, application and management under IP network.

Stable and Reliable

Fully redundant and modular design: MS5500 adopts fully redundant architecture to guarantee system reliability. Main components including chassis of controller, controller, power supply, fan, battery and host interface card adopt modularized design and support online plug in and online replacement. When individual component has a failure, it can realize rapid fault isolation and replacement to avoid more damages to the whole system.

Perfect hardware safety strategy: Specific IDDC+CRAID technology help to reduce 80% of system downtime and 80%-95% of data reconstruction time. CRAID allows up to 3 disk failures in a RAID5 array with no data loss. Cooperating with the disk power control technology, IDDC can sequent the disk power up to avoid the power overload that normally is caused by simultaneous electrifying of lots disks.

Cache power lost protection: When the accident occurs and the controllers lose power, the controllers can brush the data in the cache to the disks for permanent preservation with the built-in battery.

Cache freezing technology: When system failure causes data in the cache cannot be written into disk, the data in the cache can be freeze to avoid the loss. After the system recovery, the freeze data can be written into the disks automatically.

Controller auto-recovery technology: Based on the cache mirroring, controllers can automatically power down and power up to restore to normal operating status when it fails. During the recovery, the other controller can take all workload without data loss and service interruption.

MS5500 has been widely applied to government, finance, education, hospital and electric power energy industries to realize seamless integration between storage system and service systems.

Flash-Oriented Intelligent Storage Platform

High performance of solid-state storage media has been recognized by the industry. By the ODSP storage software platform, MS series storage products integrate the leading hard disk technology with its high-performance system architecture to provide extreme flash memory integration solution.

Intelligent storage media identification realizing extreme performance: ODSP can intelligent identify the storage media and automatically implement optimization algorithm to solid-state storage media, reduce the disk operating frequency, shorten IO path and provide extreme performance.

Global SSD wear leveling extending SSD life: CRAID3.0 technology cut SSD into many small blocks to form a global storage media pool. By the discrete algorithm, the application's IOs can be distributed to all blocks intelligently and averagely, to balance the SSD wear and greatly extend the SSD life.

Fully compatible with HDD array to effectively protect customer investment: Based on ODSP unified storage software platform, MS series storage product with SSD is fully compatible with the HDD to easily build perfect data protection solution, such as intelligent storage tiering, CDP, SDAS (symmetrical dual active storage), eta, to avoid data isolation, realize free flow of data and protect customer investment.

Multi-Dimensions Expansion

Scale-out expansion: By revolutionary CloudSAN horizontal SAN expansion architecture, MS5500 can horizontally expand to 24 controllers to form a large-scale and parallel storage system. MS5500 can deal with many concurrent events in the form of multiple tasks.

Scale-up expansion: Controllers adopt PCI-E 3.0 channel technology and SAS3.0 technology to guarantee end-to-end high performance. Dual controllers can support 768GB memory cache, 12.8TB Level 2 cache and 1,500 hard disks to fully meet the user's requirements for storage expansion capability.

Heterogeneous virtualization: MS5500 built-in heterogeneous virtualization engine can integrate IP SAN and FC SAN storage devices into MS5500 unified storage resource pool. By integration of different brands and different architectures products, the customer is unnecessary to concern the devices management and only pay attention to the storage resource management. It efficiently lowers management difficulty and maintenance cost, greatly increase resource utilization rate.

Smooth upgrade: Based on ODSP software platform, MS5500 supports smooth upgrade to higher products by only replacements of controllers without data migration. Smooth upgrade effectively protects users' investment.

Rich Software Functions

MS5500 provides rich data protection functions including data snapshots, data reproduction, data mirroring, symmetric dual-active storages and so on. Based on these features, MS5500 can provide the solutions to protect the data from online to near line, from local to remote, and easily provide multi-level and cross-region storage solution for the users.

Leading symmetric dual-Active storages: MS5500 can be directly connected to realize symmetric dual-active storages without any third party software/hardware. When one of dual-active storages fails, the other can take over the services automatically, zero RPO and RTO.

Intelligent storage tiering: Realize free flow of data on different type of disk according to data access frequency.

Intelligent cache scheduling: MS5500 adopts asymmetric cache scheduling technology to dynamically adjusts reading and writing cache sizes for LUN real-time performance demands and QoS demands.

Dynamic load balancing: Support dynamic load balancing between controllers, adjusts workload between controllers without interruption to eliminate performance bottleneck and realize rigorous service level target.

Intelligent thin provisioning: the system can automatically identify applications IO and dynamic distribute the storage resource to greatly reduce the capacity planning difficulty.

Services quality control (QoS): Integrate and virtualize storage system resources including CPU, cache and broadband, to guarantee the prioritized applications requests with higher IOPS throughput bandwidth and lower response latency.

Product Specifications

Model	MS5520	MS5580
Processor	Intel multi-core processor	Intel multi-core processor
Max. number of controllers	24	
Max. cache size	384GB	768GB
Max. level 2 caching	12.8 TB (expand with controller)	
Port types	1/10/40Gb Ethernet module, 8/16Gb FC module, 10Gb FCoE module, 24/48Gb SAS module, etc., etc.	
Type of disk	SSD, SAS, NL-SAS and SATA	
Max. number of hard disk	1516	
Max. number of SSD	1000	
Max. number of storage pool	60	
Max. number of LUN in 1 storage pool	1024	
Hard Disk Protection	Support periodic hard disk detection, Support intelligent dynamic adjustment of hard disk detection speed.	
RAID and hot spare	RAID/CRAID (CRAID3.0) 0, 1, 10, 5, 6, etc., Support dedicated hot spare, global hot spare, free disk hot spare.	
CRAID features	CRAID group allows errors of multiple hard disks, tolerates physical faults of any three disks, and supports ordinary reconstruction, partial reconstruction and rapid reconstruction.	
LUN synchronization	Support no synchronization, inspection synchronization and rapid synchronization.	
Operation system support	AIX, HP-UX, Solaris, Windows, Linux, VMware, etc.	
Multi-path compatibility	Compatible with multi-path software supporting ALUA features	
Management software	MacroSAN management software suites, including basic storage management, CRAID, system monitoring, log, alarming, and other functions.	
Management mode	Support graphics, command line interface, provide Webservice interface, and provide SMI-S, Cinder management interface	
Advanced features	Intelligent thin provisioning, intelligent storage tiering, intelligent data migration, performance monitoring, data snapshots, data replication, data mirroring, symmetrical dual active storage, service quality control (QoS).	
Expansibility	Support data deduplication, multi-tenancy	
Performance	IOPS=295004.28 (SPC-1 test result)	
NAS features (expandable)	Support CIFS, NFS and FTP protocols Support dual notes and multi notes	
Virtualization software support	Support of virtual machine: VMware, Citrix, Hyper-V, KVM, etc. Value added features of virtualized environment: support VMware VAAI, VASA and SRM, etc.	
Power supply	Input: 100V~127V/200V~240V AC; 60Hz/50Hz	
Temperature	Operating temperature: 0°C-40°C, recommend 10°C-35°C Non-operating temperature: -20°C-60°C	
Humidity	Operating humidity: 10%-85%, no condensation; recommend 20%-80%, no condensation Non-operating humidity: 10%-90%, no condensation.	



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