



SANGFOR aStor

Enterprise Distributed Storage

The Only Secured Data Storage You Need



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Make Your Digital Transformation

Simpler and Secure

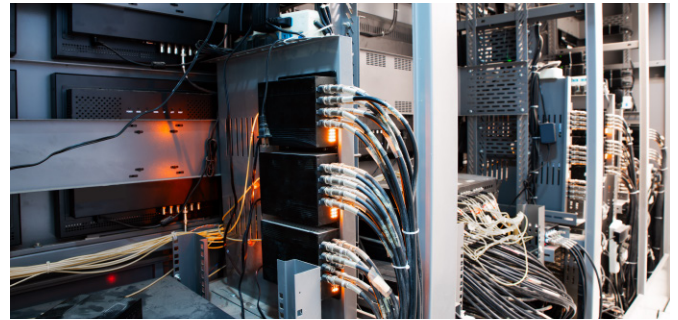
Challenges

Organizations and industries are accelerating the adoption of emerging technologies such as big data, cloud computing, AI, and 5G. Businesses and services are becoming more and more diverse, posing a variety of challenges to traditional storage architectures.



Inflexible capacity expansion

Traditional storage devices can only be expanded per disk group or disk array, and the performance is limited by the storage controller; the larger the capacity expansion, the more serious the performance degradation.



Operations and maintenance difficulties

Traditional storage devices are managed in isolation, making it difficult to troubleshoot faults quickly when they arise.

Storage devices need to be purchased for different business applications, which does not allow for unified management and leads to high management costs.

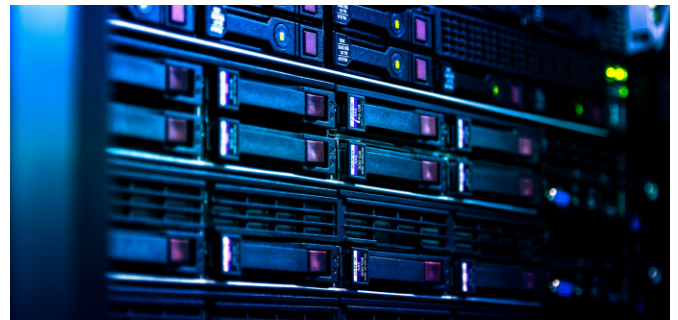


Rapid data growth leads to high TCO

The hardware of traditional storage needs to be refreshed when it reaches its end of life, and the cost of technology refreshment is very high.

Newly purchased equipment requires data migration, which consumes a large amount of resources like manpower and capital.

The accessories of traditional storage are sold in bundles. To expand the capacity, you can only purchase the original hard disks, which are more expensive than the market price.



Unable to meet high throughput demands

The performance of traditional storage architectures is limited by storage controllers and cannot provide high throughput performance.

Performance degradation is serious when the amount of unstructured data exceeds 100 million objects, leading to instability.

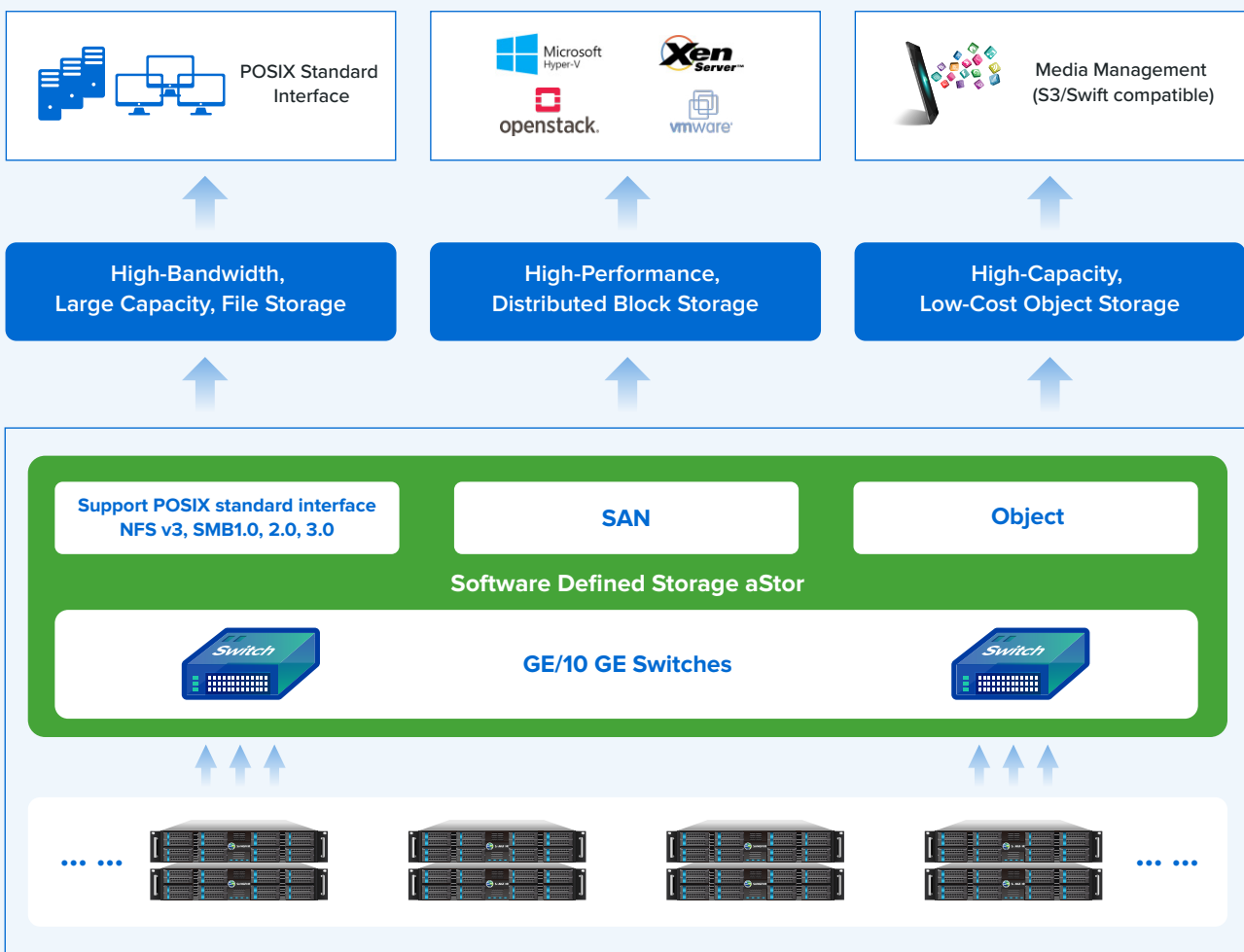
Solution

Software-defined storage (SDS) uses software to consolidate storage resources into a storage resource pool for elastic expansion and on-demand allocation. Sangfor Enterprise Distributed Storage (aStor) is a storage solution based on the software-defined design and adopts a symmetric distributed architecture.

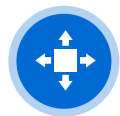
Sangfor aStor allocates storage resources (high-performance storage, low-cost large-capacity storage, etc.) based on the needs of business applications. Sangfor aStor can be delivered as an integrated software + hardware solution or a software-only solution. It supports block, file, and object storage in a single physical or virtual appliance.



Software Defined Storage System Architecture



Values of Software-Defined Distributed Storage (SDDS)



Distributed Architecture for Flexible Expansion

Software-defined storage adopts a distributed architecture, which provides scalability and on-demand expansion without prior planning when capacity and performance no longer meet requirements.



Parallel Processing for High Performance

Software-defined storage delivers extremely high throughput and IOPS performance through multi-node parallel processing of data. Distributed resource allocation caters to both structured and unstructured performance requirements.



Manage the Entire Cluster in One Interface

The Sangfor aStor cloud storage platform unifies the management of block, file, and object storage and supports integration with third-party cloud management platforms.



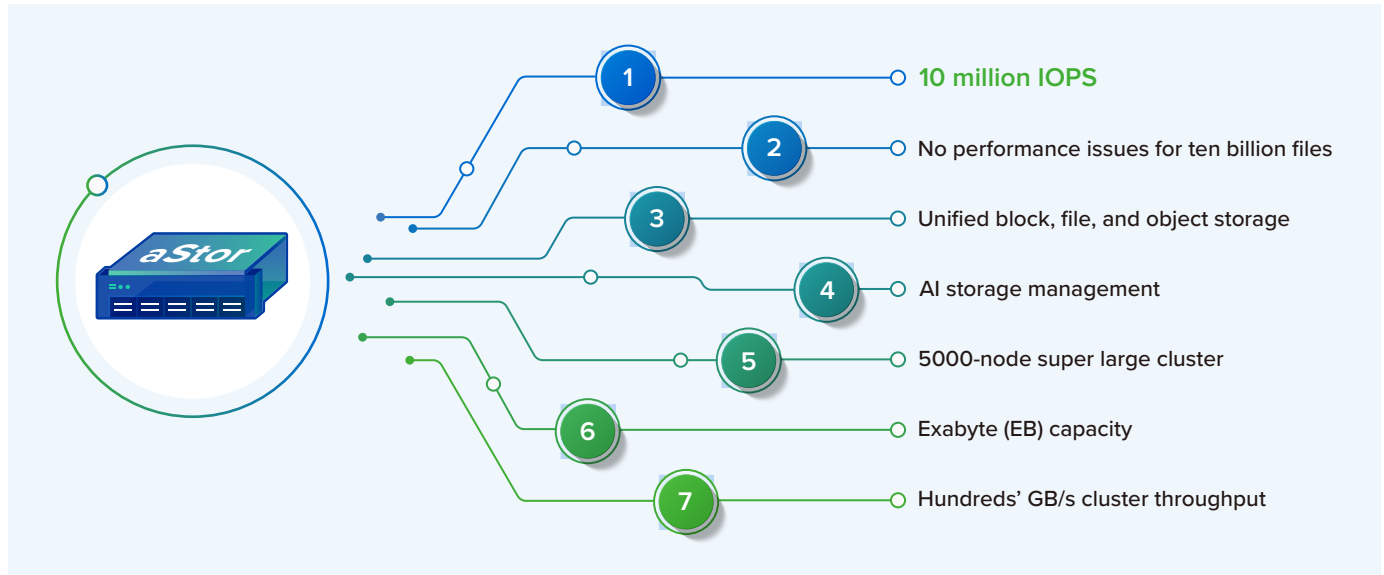
Software-Defined Architecture for Lower TCO

Sangfor aStor achieves low TCO by constructing storage resource pools using standard X86 servers and distributed storage software.

- One platform provides block, file, and object storage, removing the need to purchase separate storage resources.
- Software-defined storage provides one-stop operations and maintenance, one-click monitoring, and one-click migration for easier O&M and data management.
- No need to purchase software licenses when refreshing the hardware; only the hardware device will be replaced.

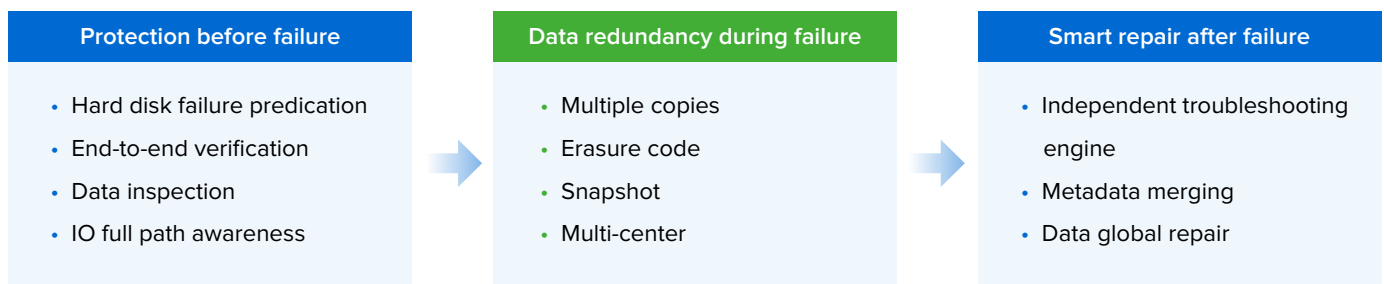
Advantages of Sangfor aStor

Sangfor aStor builds a reliable, high-performance, and intelligently managed distributed unified storage platform with lower TCO.



High Reliability

Using technologies such as sub-health monitoring, fault monitoring, and rapid fault repair, Sangfor aStor provides all-round protection before, during, and after failures to achieve 99.9999% data reliability on low-specification hardware.



Before Failures: Potential data risks are discovered in advance and automatically repaired through sub-health monitoring, data verification, data inspection, etc.

During Failures: Data redundancy is provided by multiple copies, erasure code, snapshot replication, and other technologies to ensure that data is not lost.

After Failures: Sangfor aStor includes a lot of optimizations and improvements to address the slow performance of traditional repairs to ensure that service is recovered quickly after a failure. With technologies such as metadata merging and repairing and data global distributed repairing, data reconstruction is dozens of times faster than traditional methods to achieve data recovery within 10-30 minutes.

>> High Performance

Sangfor's aStor storage system achieves high performance and low cost through remote direct memory access (RDMA) and intelligent caching.



Structured Data Scenario

- Configuration: 3 Nodes 2U Servers, 2xSSD + 6xHDD
- 340K IOPS 4KB Random R/W
- 400K TPM for database applications
- Similar performance to a mid-range all-flash disk array at 50% of the cost



Unstructured Data Scenarios

- Configuration: 3 Nodes 2U Servers, 2xSSD + 6xHDD
- Continuously write 10 billion small files, performance jitter does not exceed 5%

>> High IOPS



Hot cache hit rate reaches 90%

aStor' built-in heat map algorithm uses a multi-dimensional scoring mechanism to capture core hot data effectively. Thus, business systems directly hit and read data from the high-performance resource pool at a 90% hit rate.



Small IO read and write performance increased by 65%

Using high-speed SSD as the aStor cache medium, the system automatically identifies small IOs when data is written and writes them to the cache first to improve the processing efficiency of small IOs. When reading data, it preferentially retrieves hot data from the SSD high-performance resource pool to improve read and write performance. The combination of intelligent caching and layering can increase the small IO processing performance by 65%.

>> No jitter when processing 10 billion small files with 3 nodes



Distributed database solves massive metadata management problems

Sangfor aStor comes with the innovative distributed database PhxKV. Using its distributed architecture and independent algorithms, it supports high-performance processing of hundreds of billions of metadata, and the performance jitter does not exceed 5%.

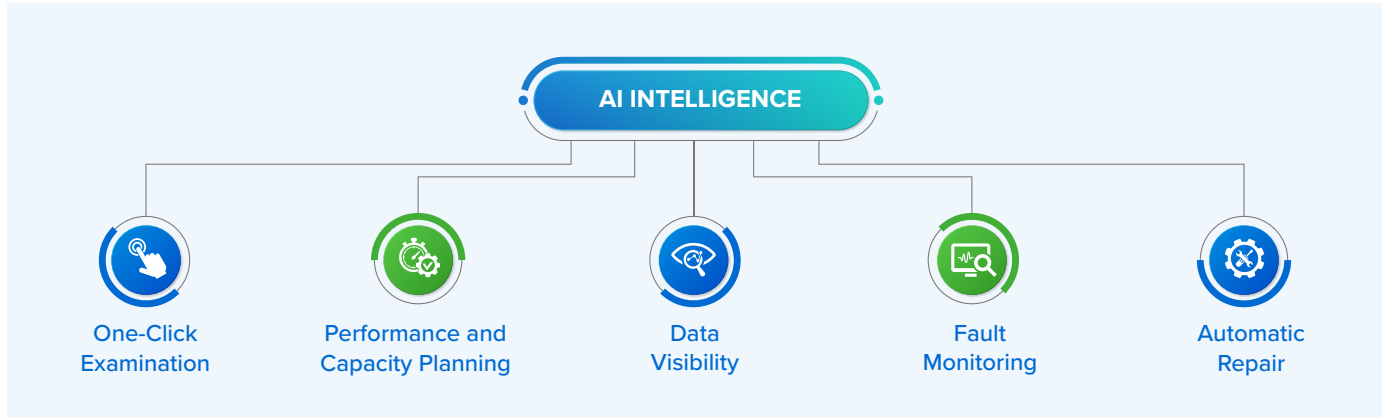


Merge small files to improve small IO processing performance

Sangfor aStor utilizes the SSD cache layer to merge random small IOs into large continuous IOs, thereby improving the HDD's processing performance of random IOs by 80%.

Smart Management

The AI-enabled software-defined storage platform realizes autonomous intelligent management.



Through the AI intelligent storage management system, Sangfor aStor provides automated operations and maintenance to effectively reduce O&M costs.



Failure Prediction

Hard disks are consumables, and they will be in a sub-health state for a period of time before failure, such as frequent jitter, long delays, and increased temperature. Sangfor's AI system can detect hard disks in a sub-health state 15 days in advance with over 98.5% accuracy and flag them for replacement before failure occurs.

02

Trend Analysis

Performance and capacity planning recommendations are provided through data analysis to help users realize dynamic and reasonable resource planning and avoid errors or wastage caused by manual calculations.

03

Smart QoS

Video processing and database systems have different performance requirements. Sangfor aStor intelligently understands the characteristics of business systems and automatically adjust the IO path and resource allocation through algorithm optimization. It optimizes performance without human intervention for better user experience and resource utilization.

Scenarios

UNIFIED STORAGE

Unified Storage

- ▶ One storage platform provides block, file, and object storage to meet the diverse storage needs for modern applications and reduce TCO.

Agile Delivery

- ▶ aStor storage appliances can be delivered in as fast as 30 minutes. Logical storage resource pools can be created in minutes, ideal for on-demand flexible allocation.

Flexible Expansion

- ▶ aStor can expand automatically by inserting disks or nodes. The storage system supports automatic identification, integration, and a configuration wizard to provide a seamless expansion process and ensure stable operation.

Typical Scenarios

- ▶ Private cloud data center, multi-application hybrid business

UNSTRUCTURED DATA PRESERVATION AND ARCHIVING

Cost-Effective

- ▶ Build storage resource pools using standard servers and manage storage clusters using software capabilities. Storage resources can be allocated on demand, system management data can be visualized, and operations & maintenance is simple and convenient.

Reduce Migration Costs

- ▶ The aStor storage platform supports automatic data migration when replacing old equipment, with a data migration speed of 1TB/30min achieved through the internal scheduling algorithm. It is quick and automatic without the need for human intervention, reducing data and business security risks caused by manual migration.

High Scalability

- ▶ Sangfor aStor can be expanded to a 5000-node cluster to provide EB-level (1 billion GB) storage capacity. It will meet the storage needs of large amounts of unstructured data in the future.

Typical Scenarios

- ▶ Medical PACS, libraries, archives, court electronic files, geological mapping data, satellite images, etc.

INTELLIGENT VIDEO SURVEILLANCE

High Scalability

- ▶ Sangfor aStor supports thousands of nodes to meet the video data storage needs of hundreds of thousands HD cameras for 90 days.

INTELLIGENT VIDEO SURVEILLANCE

Tens of billions of small file processing performance without jittering

- ▶ Sangfor aStor supports the writing of tens of billions of images under a standard 3-node deployment without affecting performance, meeting the image data storage needs for facial recognition of intelligent security.

Simple Management

- ▶ Intelligent management enables monitoring and management of the entire cluster. When a disk is in a sub-health state or having stability issues, the aStor management platform can identify the source of the problem among thousands of disks so that data is quickly migrated or recovered to reduce the impact from the disk failure.

Typical Scenarios

- ▶ Smart city, smart community

CLOUD STORAGE AND DATA BACKUP

Cost-effective cloud storage/backup

- ▶ Sangfor aStor uses container technology to integrate and deploy data storage applications such as cloud storage, backup and data archiving into the aStor platform. Sangfor aStor also provides a range of storage services to meet various storage needs.

Better scalability for future performance and capacity expansion

- ▶ The aStor platform uses a fully symmetric distributed architecture that enables smooth scaling of capacity and performance to meet growing data storage needs while providing ultra-high performance.

SANGFOR aStor - ENTERPRISE DISTRIBUTED STORAGE

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AVAILABLE SOLUTIONS

IAG - Internet Access Gateway

Secure User Internet Access Behaviour

NGAF - Next Generation Firewall

Smarter AI-Powered Perimeter Defence

Endpoint Secure - Endpoint Security

The Future of Endpoint Security

Cyber Command - Network Detection and Response

Smart Efficient Detection and Response

TIARA - Threat Identification, Analysis and Risk Assessment

Smart Threat Analysis and Assessment

IR - Incident Response

Sangfor Incident Response – One Call Away

Cyber Guardian - Managed Threat Detection & Response Service

Faster Response Through Human/AI Collaboration

HCI - Hyper-Converged Infrastructure

Fully Converge Your Data Center

MCS - Managed Cloud Services

Your Exclusive Digital Infrastructure

VDI - aDesk Virtual Desktop Infrastructure

Seamless Experience, Secure and Efficient

Access - Secure Access Service Edge

Simple Security for Branches & Remote Users

aStor - Enterprise Distributed Storage

The Only Secured Data Storage You Need

SD-WAN

Boost Your Branch with Sangfor



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