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VirtualStor™ FlashGo

GO FLASH NOW

Highlight

FlashGo SF2224E

1.0M IOPS ; 0.5ms Latency ; iSCSI target ; 2x40Gb NIC

FlashGo SF2224P + SF2224S

1.2M IOPS ; 0.5ms Latency ; Volume QoS ; 2x100Gb NVMeoF & RoCEv2

- NVMe enclosure with state-of-the-art dual-controllers
- Multiple RAID Groups and Scale-up capability through 2U24 NVMe JBoF
- SMart NVMe flash module 2TB / 4TB (/ 8TB coming soon)
- SIMO RAID with smart GC, 70% Usable capacity and Multiple RAID groups for scalability
- Full-featured Volume management, Thin-Provision, Snapshot and Clone
- Efficient data reduction, Inline compression and Deduplication ; 3:1 Average data reduction
- Easy-to-use web UI, CLI management interface

Facing rapid growth in data volumes and strong demand for high-speed data transfers, a successful IT systems upgrade, with enterprise data at its core, calls for high-performance and low-latency storage.

VirtualStor™ FlashGo NVMe flash arrays are the latest solution for this requirement – and they are available already !

Powered by Silicon Motion's flash controller technology and smart flash management, VirtualStor™ FlashGo provides high performance (1.2 million IOPS), low latency, a full storage feature set with efficient data reduction and robust data protection for 99.999% availability. VirtualStor™ FlashGo offers unparalleled performance at a compelling price. Whether enterprise is small or large, choose VirtualStor™ FlashGo NVMe flash array without compromising on hybrid storage or SAS/SATA flash array.

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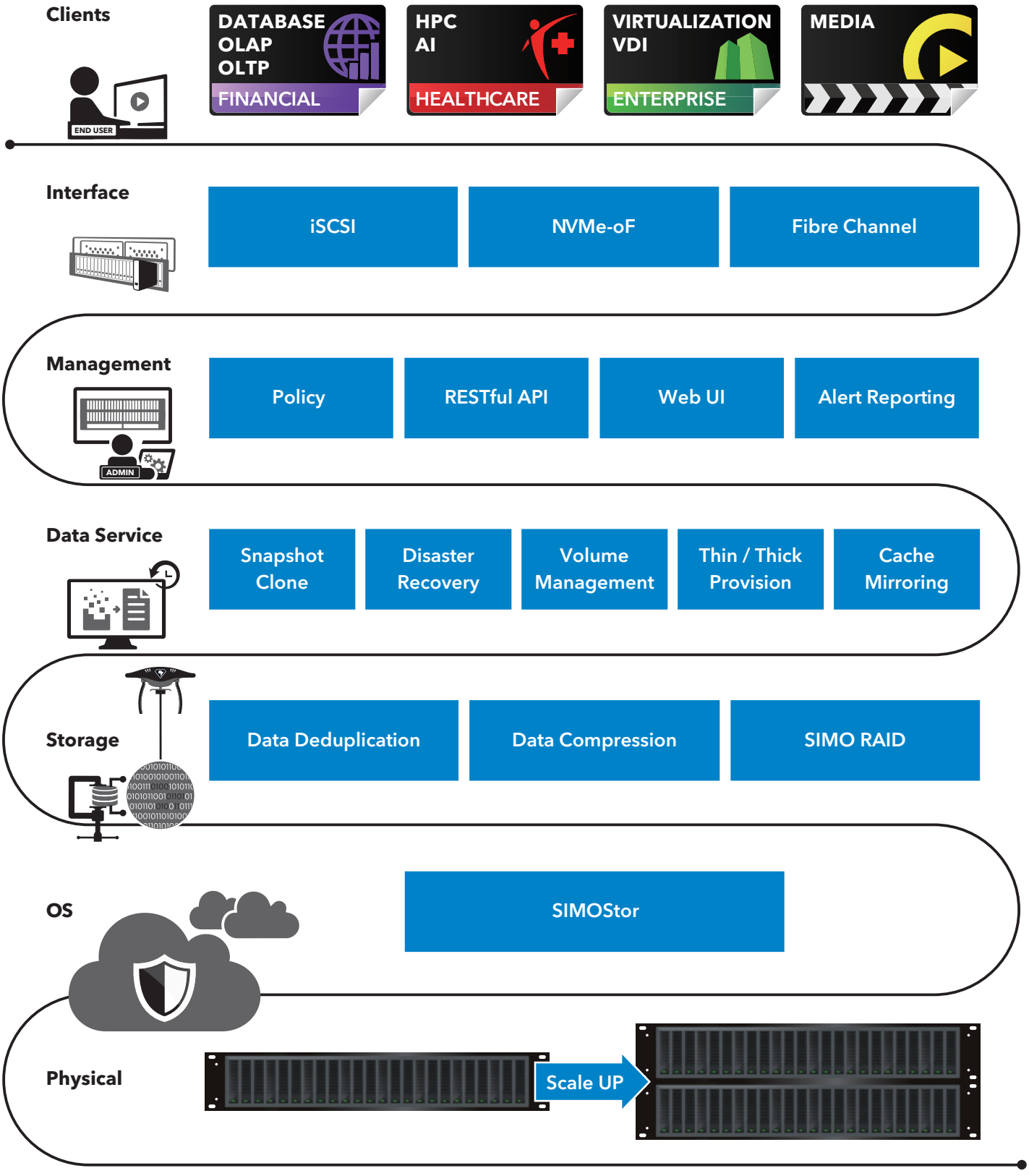
VirtualStor™ FlashGo Architectural Overview



Specification	Value
Networking Protocol	• iSCSI • NVMe-oF • Fibre Channel
iSCSI	• Maximum iSCSI Target: 512 • One iSCSI supports Maximum LUN: 256 • iSCSI LUN clone/snapshot support
Volume Management	• Maximum single volume size: 128TB • Maximum volume: 2048 • Maximum volume snapshots: 128 • Maximum system snapshots: 2048*128 • Block size: 4K and 512byte • QoS
Data Reduction	• Inline compression • Inline deduplication • 3：1 • Thin/Thick provision
Support RAID Type	• SIMO RAID • Multi-RAID group • Scale-up capable
NVMe SSD Management	• Smart life prediction • Smart GC
High Availability	• 99.999% • Power loss protection
Virtualization	• VMware • Bigtera VirtualStor™ ConvergerOne
Management interface	• Web UI • RESTful API

Model	FlashGo SF2224E	FlashGo SF2224P+SF2224S
Picture		
System Size	2U enclosure with dual controllers	2U+2U enclosure with dual controllers
System Configure	Entry-Level Model	High-Performance Model
Storage	SMart Flash 2TB / 4TB	SMart Flash 4TB
Data Disks	12 / 24 NVMe SSD	24 / 48 NVMe SSD
IOPS	1.0M IOPS	1.2M IOPS
Latency	0.5ms Latency	0.5ms Latency
Platform	2-way Intel Purley	2-way Intel Purley
Cache	256GB	512GB
Battery	Battery backup for C2F	Battery backup for C2F
Interconnect	NTB	NTB
Flexible IO	2x40Gb QSFP+ & DR 2x10G SFP+	2x100Gb QSFP28 & DR 2x10G SFP+

About Bigtera

Established in 2012, Bigtera is the innovator of Enterprise Software Defined Storage (SDS) solutions. Now we are part of Silicon Motion Technology (NASDAQ: SIMO). Our mission is to help customers to transform their existing storage into cutting edge SDS infrastructure to fit their application workloads.

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To find more about Bigtera Software Defined Storage (SDS) solutions, visit www.bigtera.com
Contact us: info@bigtera.com

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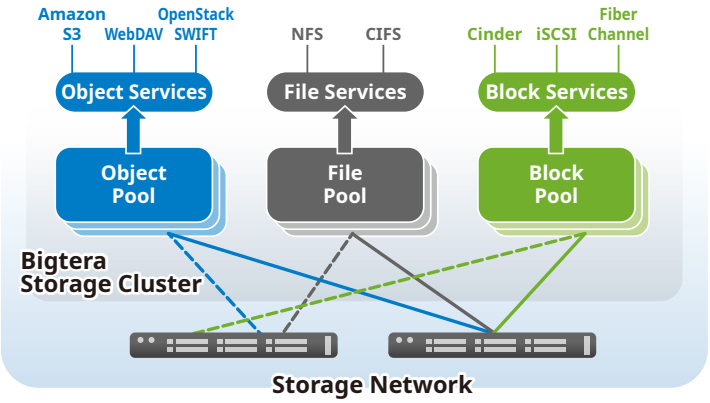
VirtualStor™ Scaler 8.0

Petabyte-Scale Storage That Expands and Defines on Demand

VirtualStor™ Scaler 8.0 is Bigtera's latest generation of software defined distributed storage. Based on the standard X86 storage server, providing S3, NAS, SAN and other storage protocols. Extensive functions, superior performance and reliable data protection, coupled with Bigtera's exclusive S3-to-S3 seamless object migration, are suitable for enterprises or data centers that need to process large amounts of data, such as AI, big data, cloud storage, etc.; for example, telecommunications, medical, education, media, finance and so on.



Product Features

Software Defined / Unified Storage

- **Scale-out architecture:** a distributed storage architecture based on X86 processors that allows for horizontal expansion of capacity and performance.
- **Unified storage:** supporting iSCSI, FC, Cinder RBD, NFS, CIFS, FTP and other protocols, to meet the data access and sharing between a variety of operating systems and virtual platforms.
- **Object storage:** compatible with S3, OpenStack Swift, WebDAV and other object storage protocols, to meet the needs of reading and writing huge amounts of data.

Data Security / High Availability

- **Data redundancy:** supporting 2 - 10 data replicas, EC erasure code N+M data fault-tolerant protection, to ensure that data is not lost when the server fails.
- **Decentralized design:** ensuring that the management of the entire cluster is not affected by any node failure.
- **Hardware RAID support:** automatic data reconstruction and recovery mechanism after hard disk failure to further protect the data availability of the system.
- **Local data protection:** SAN storage supports online snapshot, volume clone, etc. Object storage supports version control, WORM, and Server-Side Encryption (SSE). The NAS shared folder supports the recycle bin.
- **Fault domain:** supporting different fault domain levels, including disk, host, rack, server room, data center, etc.
- **Remote replication:** remote replication across data center, support volumes, folders, S3 buckets, and can also be copied to Amazon S3 cloud storage or other NAS brands, providing multiple levels of data protection and disaster recovery.

Enriched Software Functions / High Read-Write Performance

- **SSD cache:** With the self-developed BigteraStore storage engine, SSD is adopted as caching to improve read-write performance.
- **Multi-tenant storage:** tenants can hierarchically manage their different virtual storage, use different IP gateways, and configure different performances.
- **Seamless data migration:** data migration does not interrupt business. Supporting SAN, NAS, and object storage.
- **Storage consolidation:** consolidating other brands of storage resources into the resource pool, to reuse old equipments for cost saving.
- **QoS policy:** managing the read-write performance of volumes, folders, and even files according to the performance requirements of different applications.
- **Quota:** quotas with different granularity, including storage pools, tenant virtual storage, volumes, folders, S3 bucket and NAS users, and S3 users.
- **Alert notifications:** supporting mail alert, SNMP, and WeChat.
- **Data recovery optimization:** providing incremental recovery and QoS configuration for data recovery.
- **VAAI:** efficiently support for VMware virtualization technology.
- **SSD life prediction:** early warning before SSD life wearing out.
- **AD/LDAP integration:** NAS file system supports Windows AD and LDAP and supports account mapping.
- **Data life cycle management:** supporting object storage life cycle management, and periodically archives cold data to Amazon S3 or other brands of object storage.
- **Server-side Copy:** offloading file copy to the storage server to reduce network traffic to clients and improve file copy performance.

Typical Application Scenarios

Object Storage for Large Amount of Data

Single namespace, no directory tree structure bottleneck, improve the reading and writing efficiency of large number of small files, and support access and retrieval of hundreds of millions of files.

Cloud Platform and Virtualization

Seamlessly connect various cloud management or virtual platforms, meet the storage needs of various virtualization and cloud infrastructure, and simplify the storage architecture.

Storage for multimedia

On-demand expanding storage resource pools provide scalable, high-throughput and high-availability media back-end storage for systems such as non-linear editing, content production, broadcasting, media asset management, and image archiving.

Reuse and consolidate old storage

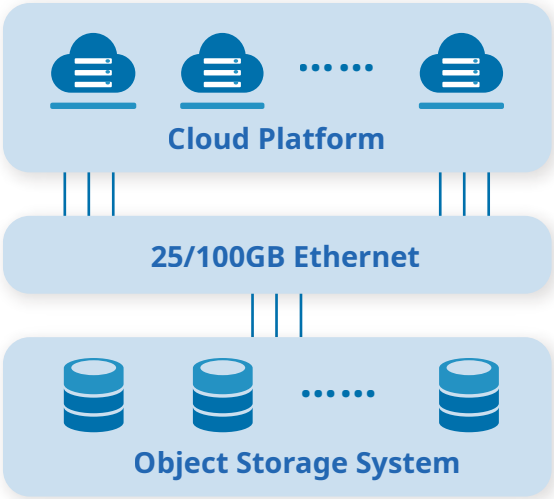
Seamlessly migrating the data on the old storage to eliminate the pain points that need to stop and interrupt the service when a large number of data are migrated; consolidating the free space on the old storage and further expanding the storage pool.

Industrial Solutions

Object Storage Solutions for Data Centers

Solution description: in the fields of biotechnology and earth science, the increasing amount of data processing makes the data center need a huge amount of storage space larger than 2PB, and it also has higher requirements for bandwidth throughput, so as to complete the calculation in a shorter time and improve the prediction accuracy.

Customer value: VirtualStor Scaler object storage meets the requirements of the data center for large volumes and large amounts of simultaneous reads and writes. Object storage has no performance bottleneck on directory structure and can easily provide 12 GB/s total bandwidth throughput, providing a stable and reliable service for the computing center.



Typical Configuration

Types of Storage Nodes	V2120	V4240	V4360	V4600
Form Factor	2U	4U	4U	4U
Number of Hard Drives Per Node	12	24	36	60
Standard Interface	4 * 10Gb	4 * 10Gb	4 * 10Gb	4 * 25Gb
Types of Supporting Hard Drives	SATA/NL-SAS: 2TB/4TB/6TB/8TB/10TB/12TB/14TB			
Types of Cache SSD	SATA SSD / NVMe SSD			
Storage Software	Bigtera VirtualStor™ Scaler 8.0			
Storage Protocol	NFS / CIFS / iSCSI / FC / Amazon S3 / OpenStack Swift / Cinder RBD / WebDAV			
Data Redundancy Mode	RAID mode, multiple copy mode, erasure code mode N+M			

Note: VirtualStor Scaler is deployed from three nodes, and the above configurations are single-node configurations.

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VirtualStor™ ConvergerOne

A Hyper-Converged Platform for Rapid Innovation

In order to carry out digital transformation smoothly, and stand out in business competitions through rapid innovation, IT infrastructure must be highly flexible to meet the requirement of the rapidly changing environment. The traditional three-tier IT infrastructure is divided into computing, network, and storage resources, which greatly increases the complexity of resource expansion and subsequent management and maintenance, and is difficult to avoid information discrete causing "information islands" and resulting in inefficiency.
The VirtualStor™ ConvergerOne hyper-converged platform based on software-defined and virtualization technology is the answer to the problem. VirtualStor™ ConvergerOne integrates computing, storage, and network resources, and provides an IT architecture that can deliver services agilely and has low operation and maintenance costs.

Product Features

Software Defined Infrastructure

The VirtualStor™ ConvergerOne hyper-converged platform integrates computing, storage and networking, which can be configured and managed on a unified management platform. The use of resources is more flexible, which greatly reduces the total cost of ownership (TCO), and perfectly solves the various challenges in the IT architecture.

Flexible Expansion

VirtualStor™ ConvergerOne integrates all disks in the server cluster into a virtual storage pool. Adding new nodes can increase computing resources, storage capacity, and storage performance at the same time, and can expand solely for performance or space according to needs to meet the requirements of various application scenarios. Virtual-Stor™ ConvergerOne storage resources can be connected to JBOD for scaling-up, and to VirtualStor Scaler for storage node scaling-out.

High-availability Cluster

VirtualStor™ ConvergerOne provides embedded data multiple copy mechanism (up to 10 replicas) to ensure the high availability of the embedded storage pool, which is suitable as a deployment basis for application programs. In addition, VirtualStor™ ConvergerOne provides multiple high-availability migration mechanisms for virtual machines, which make the software services reach high availability of 99.999%.

Unified Management Interface

VirtualStor™ ConvergerOne provides a unified management platform that simplifies management of computing and storage resources. It also displays current resource usage and health status of the cluster in a single Web interface management platform.

GPU and PCI Hardware Direct Access

VirtualStor™ ConvergerOne supports direct use of physical hardware resources in the server, such as GPU or other PCI interface cards, in virtual machines through Passthrough settings to meet the needs of AI scenarios or VDI virtual desktops.

Resource Isolation Settings

VirtualStor™ ConvergerOne can allocate CPU and Memory resources to system virtualization and storage services through settings. Avoiding abnormal operations due to excessive use of resources by one service.

Rapid Deployment of Application Programs

VirtualStor™ ConvergerOne adopts SDS software-defined storage technology, programming a "Virtual Storage" in the cluster, which can provide standard NAS and SAN services, access directly according to the needs of application programs, without the need of connecting to traditional NAS or SAN storage equipment. The data is actually distributed on the nodes of the host disks in the cluster. It simplifies application program deployment, and reduces the labor cost of maintaining a large number of equipment.

Low Total Cost of Ownership

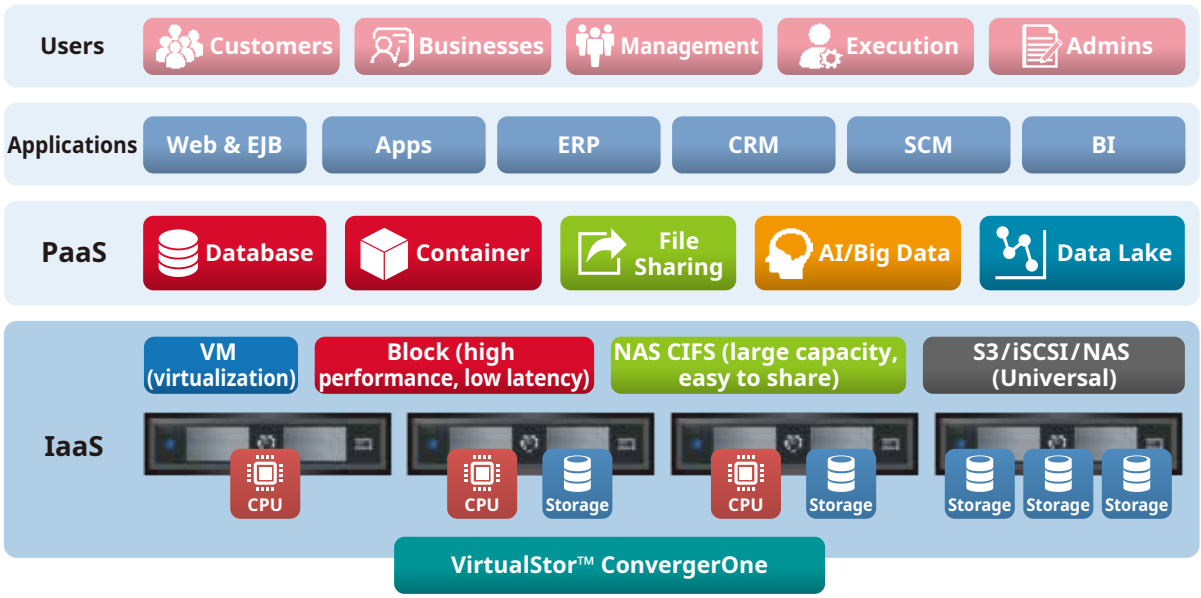
VirtualStor™ ConvergerOne simplifies the three-tier infrastructure of traditional data centers, and integrates network, computing and storage services, thus saves the management cost of separately managing various resources. The embedded data protection mechanism also ensures high storage availability and data security.

Use and Deployment Scenarios

VirtualStor™ ConvergerOne integrates virtualization and decentralized storage for customers, providing a ready-to-use infrastructure. It is suitable as an environment for small and medium enterprises, branch offices or educational institutions to deploy various application software services or R&D testing systems. It can scale-out nodes according to the need for expanding the computing or storage capability. It can also become a more complete application program operating platform by matching with the appropriate PaaS, such as database, container (Kubernetes or Docker), big data or AI platform. The conceptual architecture is as the below figure:

Usage Scenarios

Unified management of application programs and data eliminates the need for data relocation, and saves time and cost. Establishing a sandbox for innovation through virtualization, a rapid experimentation and innovation. SaaS and PaaS software platform providers can be aligned to create a complete and ready-to-use solution.



Typical Configuration

VirtualStor™ ConvergerOne can configure the hardware according to the requirements of the deployed application software. Followings are a few different configurations. For small-scale R&D testing or experimental use in educational institutions, thin configuration can be used, which configures with fewer CPU cores and memories. If the core business of the enterprise or applications such as AI require large amount of computing resources, the standard configuration can be used. For large-capacity data storage or disaster-tolerant backup, large-capacity configuration can be used.

Thin Configuration	Standard Configuration	Large-capacity Configuration
2U4N Small and Medium Private Cloud	2U4N Small and Medium core applications	2U1N Large Scale Storage
CPU: 8 cores	CPU: 16 cores or more	CPU: 20 cores or more
Memory: 64GB	Memory: 192GB	Memory: 256GB
SSD+HDD: Hard RAID and On-demand Configuration	SSD+HDD: Hard RAID and On-demand Configuration	SSD+HDD: On demand Configuration of large-capacity SSD and HDD

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