High-Performance, Exabyte-Scale Storage Solution

High-Capacity Public and Private Cloud Storage Powered by Intel® Xeon® Processor E5 Family

With the expanding use of Big Data analytics, personal storage, and other workloads, cloud computing is experiencing an explosive growth of storage demand for Petabyte (PB) to Exabyte (EB) capacities. 80 percent of this stored content is for non-structured data, such as video, audio, images, and text. How to effectively manage this massive non-structured data has become a significant issue for IT managers. The traditional SAN and NAS storage architectures do not meet the intensive I/O and massive parallel access requirements for high-performance non-structured data.

The ParaStor Cloud Storage System leverages the Intel® Xeon® processor E5 family, Intel® Data Center SSDs, and Intel® Ethernet, plus the rich experiences accumulated by Sugon in parallel computing and massive data processing to eliminate the bottleneck of traditional storage systems. The ParaStor Cloud Storage System delivers parallel, high-bandwidth access rates to a massive file system, providing an unprecedented storage performance experience to our customers.

"ParaStor, a large-scale storage system, which is constructed with high performance, high availability, and low TCO; is constructed with relatively inexpensive industrial standard Intel X86 units. It is designed for video, pictures, email, or other unstructured data storage."

– XinFeng Zhang, Product Director, Sugon

High-Performance and Capacity for Demanding Applications

The ParaStor Cloud Storage System delivers extreme bandwidth and massive EB-level storage space. It is ideal for a wide range of demanding applications across multiple industries, including mechanical simulation, life sciences, weather analysis and modeling, and more.

Extreme Scalability

Based on an advanced architecture, the ParaStor Cloud Storage System is highly scalable, so customers can expand capacity and data access channels by simply adding drives and data controllers, thus achieving high system aggregate bandwidth and storage space. With the addition of data controllers, all the physical resources (CPU, cache, network bandwidth, and drive read-write bandwidth) can automatically load balance and meet the parallel data access requirements from tens of thousands of clients.
## Integrated High Reliability and Availability

Using a highly available and fully redundant design, ParaStor provides timely system warning, accurately locates faults, and delivers superior fault tolerance recovery, helping to ensure 24/7 continuous availability.

## Built on Intel® Technologies

The powerful Intel Xeon processor E5 family provides a strong foundation for the ParaStor Cloud Storage System. These processors are designed for architecting next-generation solutions designed for efficiency, performance, and agile services delivery across cloud deployments. ParaStor leverages the Intel® Streaming SIMD Extensions (Intel® SSE) instruction set for high-performance N+M erasure code, while Intel® Ethernet Controllers with TCP Offload Engine (TOE) improve CPU utilization by freeing processor cycles for computing instead of communications.

## Intel® Solid State Drive Data Center Family

The Intel SSD Data Center family drives offer high performance, low latency, and high endurance for enterprise and service provider needs. They have proven end-to-end data protection and better reliability standards than JEDEC requirements, while maintaining up to 90% IOPS consistency on all product lines. Intel® PCIe SSDs also offer amazing NVMe performance for storage needs.

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<th>FEATURE</th>
<th>BENEFIT</th>
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<tr>
<td>EB-level single namespace</td>
<td>Creates a virtual storage pool with EB capacity for users. All clients can share and access all data under the same name space, simplifying massive data management.</td>
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<td>Asymmetric multi-cluster architecture</td>
<td>Helps ensure that a single component failure does not disrupt availability of data.</td>
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<td>Redundant networking support</td>
<td>Multiple connections can load balance and provide fail-over to an active port or adapter if one stops working.</td>
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<td>Multi-channel, parallel data, and storage operations</td>
<td>Striping technology evenly distributes I/O operations to multiple data controllers and provides multiple parallel transmission channels for data. Paralleled I/O effectively improves the read-write bandwidth of storage system and IOPS. The aggregate I/O bandwidth of the system enables linear scalability as capacity is increased.</td>
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<td>Fast, automatic data recovery</td>
<td>A data fault tolerance reconstruction algorithm and distributed recovery mechanism provides exceptional data recovery rates.</td>
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<td>Automatic tiered storage</td>
<td>Identifies the disk types and divides storage resources into fast and slow storage tiers, enabling configurable, automatic data migration for transparent data life cycle management.</td>
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<td>Intuitive, graphic monitoring, and management interface</td>
<td>Simplifies installation, maintenance, and real-time monitoring to improve management efficiency.</td>
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System Components

The ParaStor Cloud Storage system includes four main components: oPara™ index controller, oStor™ data controller, MGR™ management controller, and oApp™ application server.

oPara stores the meta data, manages name space, and system data indexing; externally provides single global mapping; and supports the operation of multiple nodes in an Active-Active cluster mode.

oStor provides data storage space, using a high performance data access engine for parallel processing of data requests, and supports redundant data protection between multiple oStor nodes.

MGR provides a unified interface for centralized deployment, monitoring, alarm management, and other IT functions; supports two MGRs to operate in Active-Standby mode.

oApp provides POSIX-compliant data interfaces and stores all the client data for fast, parallel access.
### PARAMETER | SPECIFICATION
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**System** | 
Index nodes | 128 max.
Storage nodes | 4,096 max.
Client operating system support | Linux* x86_64 (kernel 2.6.32 and up)
Windows* XP SP3, 32/64-bit
Windows* Server 2003* 32/64-bit
Windows* 7 32/64-bit
Windows* 8 32/64-bit
Data access interface support | POSIX, NFS, CIFS, FTP, RESTful, HDFS
Credential management support | NIS, Microsoft* Active Directory*, LDAP
Load balancing | Across index controllers and data controllers based on capacity and performance
Between NAS nodes, based on PUT capacity and polling
**Components** | 
MGR-G20 | CPU: Intel® Xeon® processor E5 family
Memory: 32-768 GB
Networking: 2X 1 GB Ethernet (Management); 1/10/40 GB Ethernet or FDR/EDR Infiniband* or 100 GB Intel OPA (Data)
oPara-G20 | CPU: Intel Xeon processor E5 family
Memory: 64-1536 GB
Networking: 2X 1 GB Intel® Ethernet (Management); 1/10/40 GB Intel® Ethernet or InfiniBand® Architecture FDR/EDR (Data)
Storage: 480 GB Intel® Data Center SSDs in RAID6
oStor-G20-24 (4U) | CPU: Intel Xeon processor E5 family
Memory: 32-1536 GB
Networking: 2X 1 GB Intel Ethernet (Management); 1/10/40 Gb Ethernet or FDR/EDR Infiniband or 100 GB Intel OPA (Data)
Storage: Up to 24 3.5" (2.5"-compatible) hot-pluggable drives (7.2k 3.5" SATA, 7.2k 3.5" SAS, 10k 2.5" SAS, 2.5" Intel® Data Center SSD SATA)
oStor-G20-36 (4U) | CPU: Intel Xeon processor E5 family
Memory: 32-1536 GB
Networking: 2X 1 GB Intel Ethernet (Management); 1/10/40 GB Ethernet or FDR/EDR Infiniband or 100 GB Intel OPA (Data)
Storage: Up to 36 3.5" (2.5"-compatible) hot-pluggable drives (7.2k 3.5" SATA, 7.2k 3.5" SAS, 10k 2.5" SAS, 2.5" Intel Data Center SSD SATA)

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**ENABLE YOUR CLOUD WITH HIGH-PERFORMANCE DATA STORAGE**

Designed for public and private cloud deployments and powered by Intel Xeon E5 family processors, Intel Data Center SSDs, and Intel Ethernet, ParaStor Cloud Storage System provides a scalable, reliable, and high-performance storage solution for your rapidly expanding data needs.

**GET MORE INFORMATION**

For more information, visit [www.sugon.com](http://www.sugon.com), or call customer service at 8610-56308000. You can also contact Sugon branches distributed throughout the state. For contact information, please log onto the official web site of Sugon.

To learn more about Intel storage products and technologies, visit [www.intel.com/storage](http://www.intel.com/storage).

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1. IDC Research

Intel technologies' features and benefits depend on system configuration and may require enabled hardware, software or service activation. Performance varies depending on system configuration. No computer system can be absolutely secure. Check with your system manufacturer or retailer or learn more at [www.intel.com/storage](http://www.intel.com/storage).

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