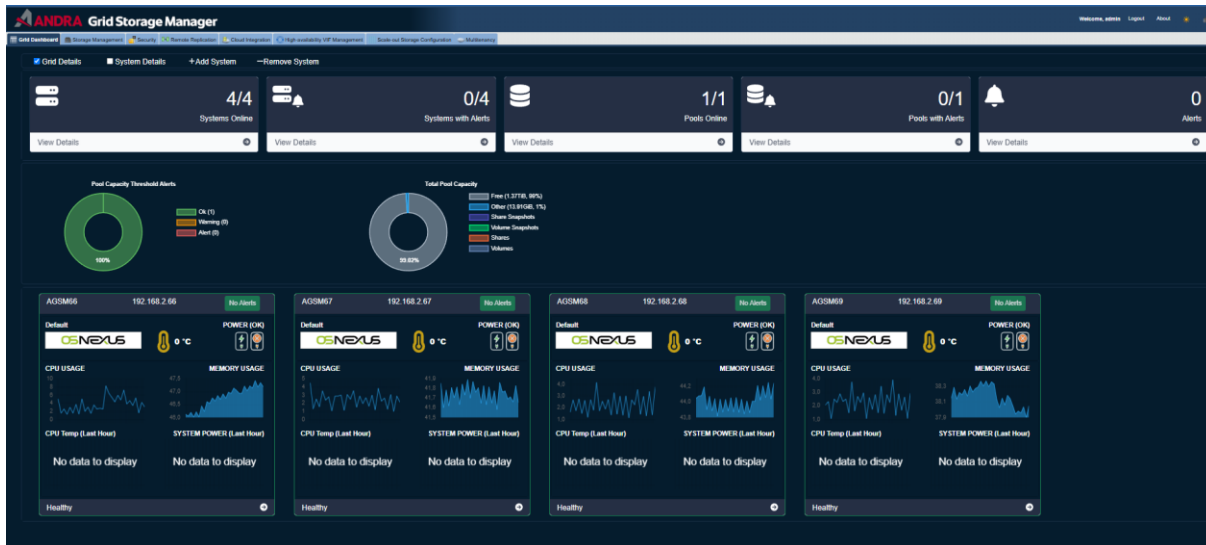# STORANDER

STORANDER Object One Platform

The STORANDER Object One Platform combines the best and most modern in the world of object (S3) and file (NFS) access storage. The STORANDER Object One Platform is built on STORANDER hardware based on Storage Super Server Supermicro's dual-processor, Intel XEON 6 CPUs, Intel and Mellanox Ethernet adapters, and STORANDER software - the ANDRA Grid Storage Manager environment (Powered by OSNEXUS).


STORANDER Object One Platform is designed and built for 24/7 operations. All approved components are thoroughly tested, and the platform's architecture eliminates Single Point of Failure (SPOF). STORANDER Object One Platform is dedicated to serving the critical and most demanding workload in your organization. On-site 7/24 hardware maintenance and software support for five years are standard terms and are included with the STORANDER Object One Platform.

Andra Grid Storage Manager is a unified software-defined storage platform providing file, block and object storage that addresses a broad spectrum of application workloads. Designed with unique storage grid technology, AGSM's federated storage management across all systems so that multiple storage clusters spanning multiple sites may be managed within a single grid. This empowers IT organizations with the flexibility they need to reduce costs while increasing security, performance, and uptime.

Grid Technology AGSM's storage grid technology provides unified management of AGSM servers and clusters. The grid management system is built into every system so that administrators can log in and manage their storage grid from any system without having to install and maintain additional software. Each grid can scale to over 100PB and may contain multiple scale-out and scale-up storage clusters.

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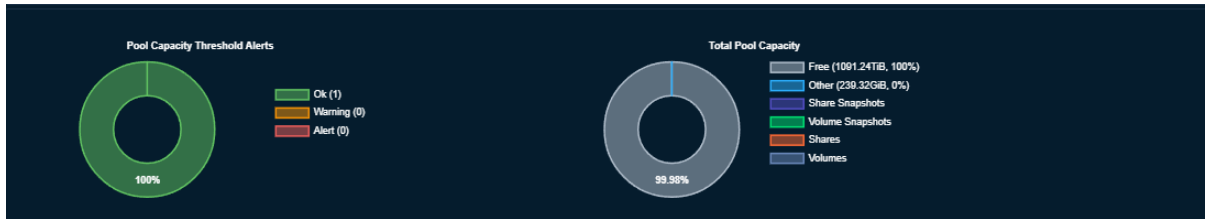
Storage grids can also span sites and datacenters. AGSM has powerful access control, encryption, and security compliance features.

AGSM management offers GUI (Graphical User Interface), CLI (Command Line Interface), and API (Application Programming Interface). The user may use the AWS S3 API if it is convenient.

Flexible tuning of storage layout offers Replica/Mirrored (r=3;r=4) for single or multisite configuration. Erasure coding standard features offers schemes from 2k+2m to 20k + 4m. Dual site configuration standard layouts are 3k+5m and 4k+6m. Triple site layouts are 3k+3m, 7k+5m and 15k+9m. Force setup option allows any Erasure Coding scheme setup. The STORANDER Object One Platform 6-node cluster with triple mirror storage layout protection offers data durability of ≈ 0.999999999999999. That's 15 nines — or a 1 in 1 quadrillion chance of losing data. Erasure coding resilience, node redundancy, and rapid healing make 14 nines data durability.

Stored data is protected in the unlikely event of node failure, as well as simultaneous node failure and SSD NVMe failure located in any other node. Data are always accessible during a single component failure.

AGSM proactively monitors the state of NVMe SSD space and the integrity of stored data objects, and automatically moves fragments of objects stored in worn-out NAND flash memory blocks or unhealthy NVMe SSDs.

Extensive notification services are configurable through Alert Manager. AGSM GUI allows easy configuration of SNMP, email alerting, types of alerting, and integration with several ITSM platforms such as AlertOps, Dynatrace, Freshservice, Google Chat, ServiceNow, Lightstep, Atlassian OpsGenie, Microsoft Teams, PagerDuty, Squadcast, Splumk On-Call, and more. AGSM offers easy integration with RabbitMQ, an open-source message broker software that implements the Advanced Message Queuing Protocol (AMQP).
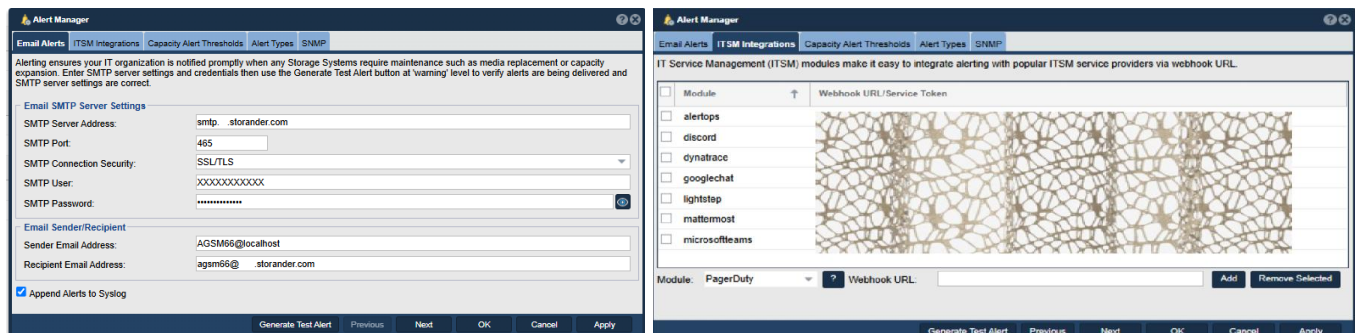
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End-to-End Encryption and Security AGSM delivers end-to-end security coverage, enabling multi-layer data protection on-the-wire and for data-at-rest. With NIST 800-53, 800-171, HIPAA, and CJIS compliance and FIPS 140-2 certification, AGSM provides advanced security features required by government and regulated industries. In addition, AGSM has advanced RBAC capabilities as well as immutability / WORM support.

Unified File, Block & Object Storage AGSM delivers both scale-up and scale-out configurations with file, block, and object storage types. Scaleout configurations provide high-performance NAS and S3-compatible object storage with scalability to over 50PB per cluster. Scale-up configurations provide SAN and NAS storage with less hardware making it more cost effective but are generally limited to 6PB or less per cluster.

STORANDER Object One Platform is tested and supported by a backup solution such as Veeam and Commvault as an S3 backup repository target.

The STORANDER Object One Platform can be protected against physical location disasters or geographical power blackouts. A whole platform copy can be created to tape or other removable media.

Storage SuperServer SSG-222B is 2U front-loading all-flash storage server with 24 E3.S NVMe drives and PCIe 5.0

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AGSM cluster is built from 4 to 64 nodes. Nodes are being added online with no interruption to the workload. Storage capacity and workload utilization are distributed automatically.

Each node is equipped with two M.2 SSDs for AGSM boot operation and 512 GB high speed DDR5 memory, expandable to 4 TB.

Each node is populated with two Intel XEON 6 model 6710E processors.

Each node is equipped with redundant power supplies.

The Intel Xeon 6 model 6710E is a 64-core, 64-thread server processor launched in June 2024 as part of Intel's Sierra Forest-SP platform. Designed for high-density, energy-efficient workloads.

Cores/Threads: 64 cores and 64 threads, utilizing single-threaded Crestmont E-cores.

Base/Turbo Frequency: 2.4 GHz base, boosting up to 3.2 GHz.

Cache: 96 MB shared L3 cache.

Fabrication: Built on Intel's 5nm "Intel 3" process.

Each node is equipped with two to four of dedicated 25/100/200 Gbit Ethernet adapters for intra-cluster communication (East/Weast) workload and client workload (North/South).

- Intel 25GbE Intel® Ethernet Network Adapter E810 quad port
- Mellanox ConnectX®-5 100 Gbit Ethernet Adapter Card dual port
- Mellanox ConnectX®-6 200 Gbit Ethernet Adapter Card dual port

Single node offers up to 16 x 25 Gbit Ethernet ports or up to 8 x 100 Gbit Ethernet ports or up to 8 x 200 Gbit Ethernet ports or mix of above mentioned interfaces.

Each node offers dedicated IPMI RJ45, two USB 3.0 ports and VGA port.
Each node offers dedicated dual 10 Gbit Ethernet RJ 45 AGSM management ports.

Each node is populated with 8-packs of Micron 6550 61.44 TB ION NVMe SSD. An 8-pack of Micron 6550 61.44 TB ION NVMe SSD is being added online with no interruption to the workload. Storage capacity and workload utilization are distributed automatically.

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The Micron 6550 ION SSD is the world's first 60TB PCIe Gen5 data center SSD, built to deliver unparalleled performance, energy efficiency and density. It's ideal for meeting the increasing demands of AI workloads in AI data lakes, high-performance computing (HPC), big data and analytics environments.

With capacity 61.44TB, the 6550 ION SSD provides the high capacity needed for growing SDS workloads while delivering best-in-class performance and up to 20% lower SSD power consumption than competitive SSDs.

As the first 60TB SSD in an E3.S form factor, the 6550 ION SSD provides industry-leading storage density and helps customers reduce their data center footprint up to 67%.

The 6550 ION SSD is designed for end-to-end security, it safeguards data with features like SED, SPDM 1.2 and secure encrypted environment (SEE).

STORANDER Object One Platform* vital components technical links:

- Intel® Xeon® 6710E Processor
    - https://www.intel.com/content/www/us/en/products/sku/240363/intel-xeon-6710e-processor-96m-cache-2-40-ghz/specifications.html
- SAMSUNG 32 GB Registered DIMM DDR 5 speed 5600 Mbps
    - https://semiconductor.samsung.com/dram/module/rdimm/m321r4ga3eb0-cwm/
- Micron 6550 ION SSD E3.S 61.44 TB

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- https://assets.micron.com/adobe/assets/urn:aaid:aem:823ddb16-1baa-4439-b06c-da66b36274d5/renditions/original/as/6550-ion-nvme-ssd-tech-prod-spec.pdf
- Intel® Ethernet Network Adapter E810-XXVDA4
  - https://www.intel.com/content/www/us/en/products/sku/192560/intel-ethernet-network-adapter-e810xxvda4/specifications.html
- Mellanox ConnectX®-5 Ethernet Adapter Card (100 Gbit dual port)
  - https://network.nvidia.com/files/doc-2020/pb-connectx-5-en-card.pdf
- Mellanox ConnectX®-6 Ethernet Adapter Card (200 Gbit dual port)
  - https://resources.nvidia.com/en-us-accelerated-networking-resource-library/networking-overal-dp
- Supermicro SuperServer SSG-222B-NE3X24R
  - https://www.supermicro.com/manuals/superserver/2U/MNL-2795.pdf
- Andra Grid Storage Manager (Powered by OSNEXUS)
  - https://wiki.osnexus.com/index.php?title=OSNEXUS_QuantaStor_Documentation

*STORANDER Object One Platform** is designed and integrated under the strict rule of following norm and certification standards: PN-EN ISO 9001:2015, PN-EN ISO 14001:2015, PN-EN ISO/IEC 27001:2017

STORANDER Object One Platform

The STORANDER Object One Platform SKU list.

SKU	Description	Remarks
AG-SO1-N1	STORANDER Object One Platform node	min. q'ty = 4
AG-512R-M5	512 GB DDR5 memory upgrade	max. 7 per node
AG-61S3-M1	8-pack of Micron 6550 ION SSD E3.S 61.44 TB	min. 1 – max. 3 per node
AG-25GE-810	Dual pack - Intel® Ethernet Network Adapter E810-XXVDA4 (25 Gbit quad port)	min. 1 – max. 2 per node
AG-100G-C5	Dual pack - Mellanox ConnectX®-5 Ethernet Adapter Card (100 Gbit dual port)	min. 1 – max. 2 per node
AG-200G-C6	Dual pack - Mellanox ConnectX®-6 Ethernet Adapter Card (200 Gbit dual port)	min. 1 – max. 2 per node
AGSM-1TB	Andra Grid Storage Manager (Powered by OSNEXUS) – 1 TB	Based on raw capacity
AG-SO1-INSX	STORANDER Object One Platform on-site installation & configuration services	Up to 8 nodes. Multiply if needed.