

# SLS 4U-96



## A highly efficient, scale-out in a box Server Less Storage appliance for next- generation object-based and cloud applications.

### Use cases

#### 1. Backup repository

Traditional VTLs do not scale enough and are expensive, SLS offers a lower \$/GB, higher performance, better data protection and remote replication capabilities.

#### 2. Big Data and IoT foundation

Enterprises are collecting data and starting to build data lakes. SLS allows to store data at the lowest \$/GB and it is ready for the demanding throughput necessary for Big Data and web-scale Applications.

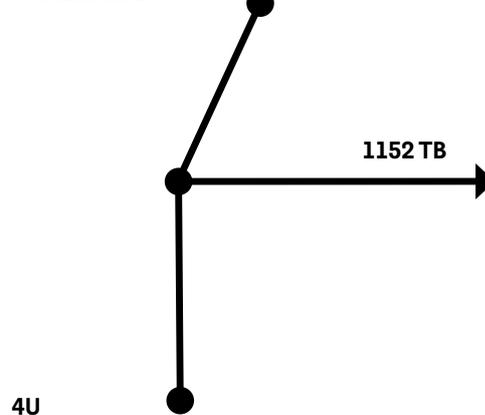
#### 3. Storage consolidation

The TCO of traditional file storage systems is becoming unsustainable, while distributed organizations want to cut costs and have more control over data. SLS has top notch \$/GB and supports standard APIs as well as file access methods.

#### 4. Object storage

More and more applications require a scalable object storage back-end. SLS joins the benefits of scale-out infrastructure with the simplicity and ease of use of the appliance form factor of the platform by running processing natively on the same platform.

96 Nano-nodes



Server Less Storage, or SLS, makes PetaByte-scale object storage accessible to anyone from the smallest business to the largest hyperscalers. SLS's unique ARM-based nano-node architecture minimizes fault domains to the single disk level and provides a fully redundant high-performance scale-out infrastructure in a 4U box.

SLS addresses the complexity and efficiency issues of modern IT infrastructures with an innovative, all-in-one solution that takes full advantage of SDS technology, the power efficiency of ARM CPUs, a high-speed fabric back-end, and a 40Gb/s Ethernet front end.

SLS is powered by SDS, our next generation, open source object storage and data processing platform, which offers unique characteristics in terms of scalability, resiliency, and ease of use. With SLS we are going a step further by eliminating the complexity of scale-out clusters and improving overall efficiency to drive down TCO.

### Key benefits

#### \$/GB

Extremely low TCO for the most sustainable infrastructure

#### Scalability

96 x 8, 10 or 12TB nano-nodes per chassis for unmatched capacity

#### Efficiency

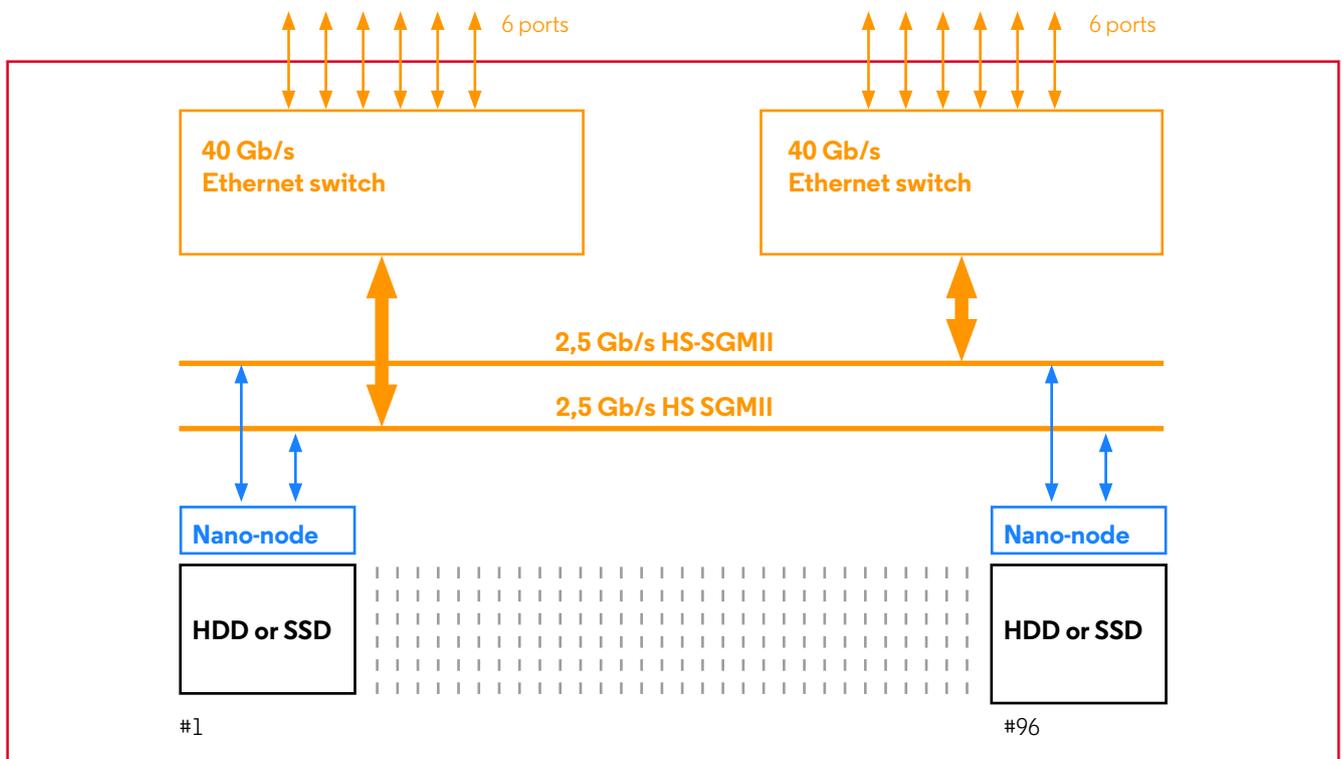
2 x 6 ports 40Gb/s switches for back-back expansion and front-end connectivity

# SLS Architecture

The scalability and efficiency of a PetaByte scale-out storage system in a compact 4U chassis with the ease of use of OpenIO SDS perfect for service providers and enterprises of any scale.

SLS appliances are based on the new innovative ARM-based nano-node architecture. SLS appliances can host up to 96 nano-nodes, each one with a dedicated 3.5" HDD or SSD, and dual 2.5Gb/s SGMII ports, dual 6-port 40Gb/sec Ethernet back-end switches for external connectivity, and N+1 power supplies.

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## Power efficient ARM-based nano-node architecture

Each nano-node is a fully functional cluster node with RAM, Flash memory for metadata, dual 2.5Gb/s network connections, and a port for one large capacity HDD or SSD. But it only uses 3W of power.

## High speed fabric interconnect

Nano-nodes have redundant 2.5Gb/s High-Speed connections to two 6-port 40Gb/s Ethernet switches, allowing back to back chassis expansion as well as the necessary bandwidth for any front-end application.

## SLS chassis

A 4U chassis, a rack in a box, with 96 nano-node slots, and all the passive and active components to provide power, cooling, and platform management. And no single point of failure.

## SDS software

Our next generation object storage platform with its unique characteristics such as our Conscience technology and the never-rebalance design, replication and erasure coding, as well as the use of standard protocols and APIs.

# SLS Components

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## Nano-node

Scale-out  
building block



- A power efficient Dual core ARMv8 Cortex-A53 CPU equipped with 2GB of RAM and flash memory for quick metadata access
- 2 high-speed 2.5Gb/s HS-SGMII ports per nano-node
- 1 high-capacity 3.5" SSD or HDD
- Power management that allows each 3.5" HDD to be turned on, set to idle, and shut down individually, to significantly reduce system power consumption for near-line archives

## SLS 4U-96 chassis

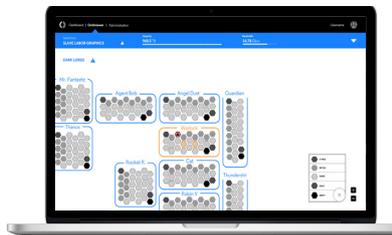
Rack-in-a-box



- From 3 to 96 hot swappable nano-nodes per appliance, for a maximum of 960TB, with 10TB HDDs, or 1152TB, with recently introduced 12TB HDDs
- Two 6-port 40Gb/s switches for both client connectivity and direct chassis interconnect, which can scale up to more than 10PB per rack
- 4 N+1 power supplies and 5 removable fan modules
- No Single Point Of Failure

## SDS software

Next generation  
object storage



- Automatic nano-node discovery, setup and load balancing
- Easy to use management via a web GUI, CLI and API
- Local and geo-distributed object replica or erasure coding
- Quick fault detection and recovery
- Call-home support notifications
- S3, Swift and Native object APIs
- Multiple file sharing access methods: NFS, SMB, FTP, FUSE
- Fully compatible with existing x86 and ARM based SDS installations

## Support services

### Hardware

- Next Business Day (24-48h) advancement replacement

### SDS

#### Standard

- Rolling upgrades, with no cluster downtime
- Emergency fixes, when required
- Unlimited number of technical support incidents
- 24x7 coverage for urgent priority issues
- Business hours assistance for critical and non-critical issues via email, chat, ticketing system
- Administration Web UI

#### Premium

- Proactive support
- Business hours assistance for critical and non-critical issues with response time commitment
- Capacity planning
- Initial tuning benchmarking
- Level 3 support direct access

# SLS Specifications

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## Nano-node

CPU	→ Dual core Cortex-A53 up to 1.2GHz → 32KB-I/32KB-D L1 cache with Parity/ECC protection
Memory	→ 2GB 16-bit SDRAM (DDR3/L-1600) → 4MB SPI Flash (Bootloader) → 32GB eMMC v5.0 (OS/Applications and data)
Wireline Networking	→ 2 x 2.5GbE (HS-SGMII)
Storage	→ 1 x SATA 3.0
Peripheral Interface	→ 1 x I2C → 1 x UART
Form Factor	→ Fixed 4U Rack-Mountable → 442 (19") x 176 (4RU) x 910 mm (WxDxH) without rack ear → 483 (19") x 176 (4RU) x 964 mm (WxDxH) with rack ear → 50KG (100lbs) without disk
Power	→ 4 x 80+ N+1 Redundant Power 1000w(High Side) / 800W(Low Side) → AC 90~264V Full Range, 5~10A , 47~63Hz
Cooling	→ 5 x 8cm removable cooling FAN module

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Cooling	→ 5 x 8cm removable cooling FAN module
Switch	→ Dual redundant Ethernet switch board → 6 x QSFP+ (40Gbps) on each switch board → Dual 2.5G HS-SGMII to each 3.5" HDD slot → 1 x Out-of-Band GbE management port (RJ-45) → 1 x Console port (RJ-45)
Storage	→ 96 x 3.5" HDD (6 x row with 16 x 3.5" HDD per row) → Drive Interface: SATA 3.0 or IP/Ethernet
Management	→ Optional BMC module supporting IPMI
Environmental	→ Operating Temperature: 5°C ~ 35°C (41°F ~ 95°F) → Relative Humidity: 10% ~ 85% Non-condensing

## Contact

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