Simple and Scalable Storage

From Nexenta, Seagate & Supermicro

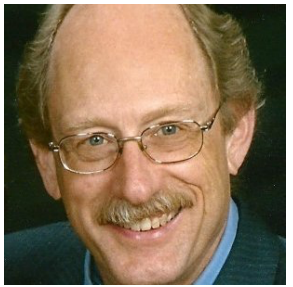
Supermicro Total Storage Solution for Nexenta

We Keep IT Green™

Today's Speakers

Paul McLeod
Product Director

Thomas Cornely
Chief Product Officer



Craig McCombs
Sr. Manager Ecosystems Solutions

Partnering to Bring You A Simplified SDS Appliance

SUPERMICRO

nexenta®
Global Leader in Software-Defined Storage.

SEAGATE

Simple, Scalable, High-Availability Storage for Seamless "Out-of-the Box" Deployments

- ✓ Leverage hardware and software innovation from industry leaders
- ✓ Enterprise feature set for your essential applications and workloads
- ✓ Easy to purchase and support - all through Supermicro

NVMe
SSD
HDD

Addressing Key Enterprise Storage Challenges

No Compromise

- Flexible & agile solution
- All-Flash & Hybrid Options
- Industry leading TCO

Enterprise Feature Set

- Unified block & file services
- In-line data reduction
- High performance replication

Delivering Simplicity & Scale

- Intuitive UI & advanced Analytics
- VMware, Hyper-V Integration
- SDS appliance w/ scalable options

High Availability

Data Integrity

Fully Integrated Solutions

Highly Agile & Flexible

Application-specific Optimizations

Highly Scalable & Manageable

NVMe

SSD

HDD

Simple to Deploy, Highly-Available Servers

Fully Redundant Hot-Swap Design

- Redundant Hot-swap nodes
- Redundant Hot-swap fans and power supplies

Unified File and Block Connectivity

- Unified File (NFS and SMB) and Block (FC and iSCSI) services
- Full suite of enterprise data services
- Inline data reduction

3-Year Service Included

- ✓ 3-Year Next Business Day Onsite*
- ✓ Remote installation service
- ✓ Optional Service upgrades available for 4-hour response and up to 5 years of coverage*

All-Flash

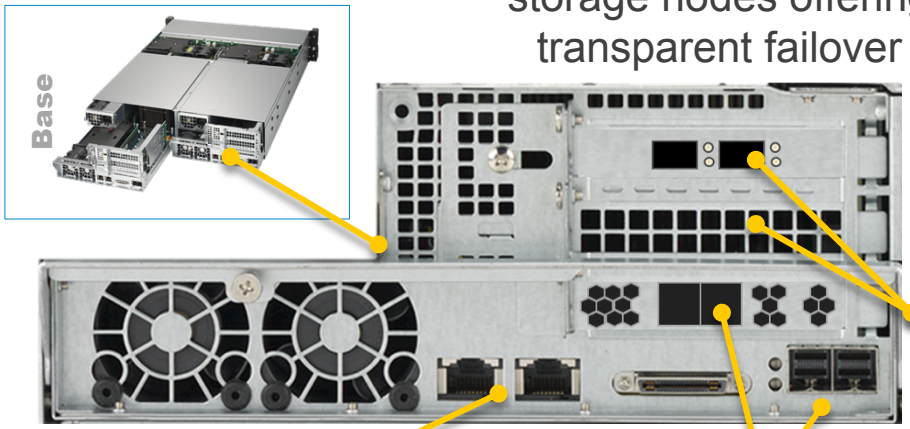
Hybrid & All-Disk

*Response time SLA dependent on location of equipment, best effort may be used if outside the SMCI service area

Hardware Architecture

Reliable

Fully redundant Hot-swap/HA storage nodes offering transparent failover



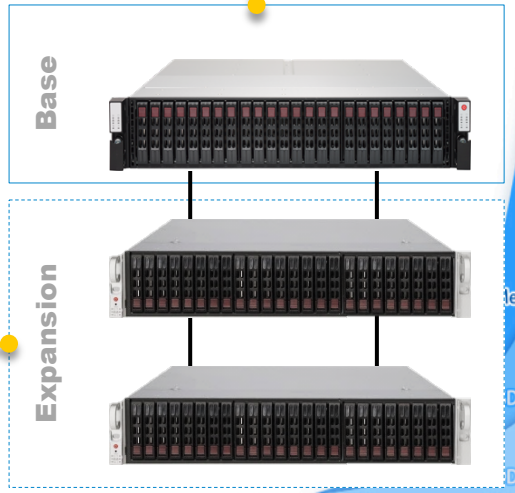
2x slots for user selectable networking
- Ethernet 10G SFP+
- Fibre Channel

Built-in 10GBase-T Networking
With IPMI link between nodes for easy remote manageability

4x 12G/sec SAS3 expansion ports

Affordable

The Total Solution for Nexenta lets users select an application optimized base deployment and scale as their needs grow

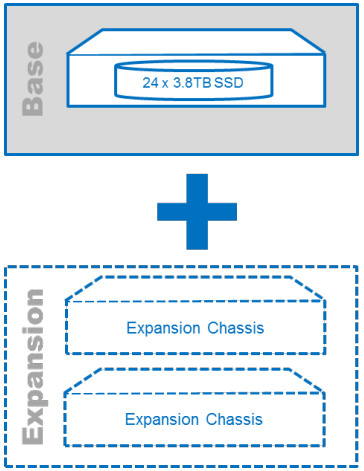


Expandable

Each SBB Supports up to 2x JBOD expansion chassis

System Expansion

Each model supports predefined capacity configurations. This allows users to deploy fully expanded systems from the start or simply expand by designated increments as their needs grow.



1. Choose base system with media and performance that meets your requirement

- ✓ 1.9 TB SSD
- ✓ 3.8TB SSD
- ✓ Performance-Hybrid model using SSD caching and 2TB rotational media
- ✓ Hybrid model using SSD caching and 4TB rotational media
- ✓ Archive model with All rotational media (8TB drives)

2. Select usable capacity

- ✓ Predefined capacity increments based on media and pool configuration

Performance & High Availability

All Flash

Hybrid

Archive

IOP Performance

Use Cases: High Performance VM, Databases, Analytics, Mail Servers

- Up to 4 10GbE / 16Gbps FC
- Capacity: **15TB to 184TB usable**
- 1.9TB & 3.8TB drive configs
- Up to 2x 24-Bay all Flash Expansion JBODs Supported

Mixed Workload

Use Cases: Virtual Environments, Home Share, Enterprise Block & Files

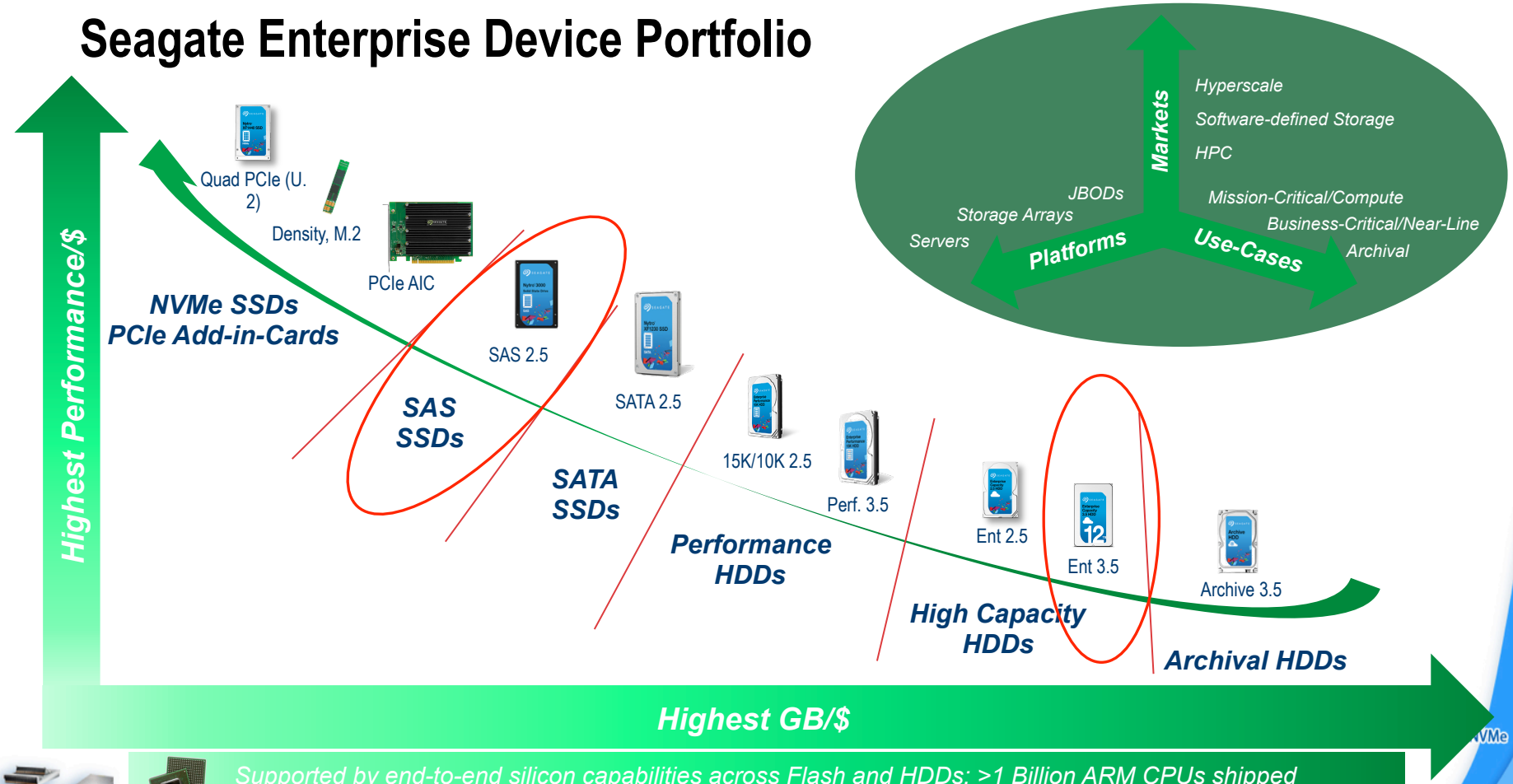
- Up to 4 10GbE / 16Gbps FC
- Capacity: **20TB to 272TB usable**
- 2 Hybrid configs, options based on workload
- Up to 2x 44-Bay Expansion JBODs Supported

Online Archive

Use Cases: Back-up, Disaster Recovery, Archive

- Up to 4 10GbE / 16Gbps FC
- Capacity:**128TB to 640TB usable**
- High capacity triple parity
- Up to 2x 44-Bay Expansion JBODs Supported

Seagate Enterprise Device Portfolio



Supported by end-to-end silicon capabilities across Flash and HDDs; >1 Billion ARM CPUs shipped
Silicon technology/IP spans Flash and HDD Portfolio across PCIe, SAS and SATA

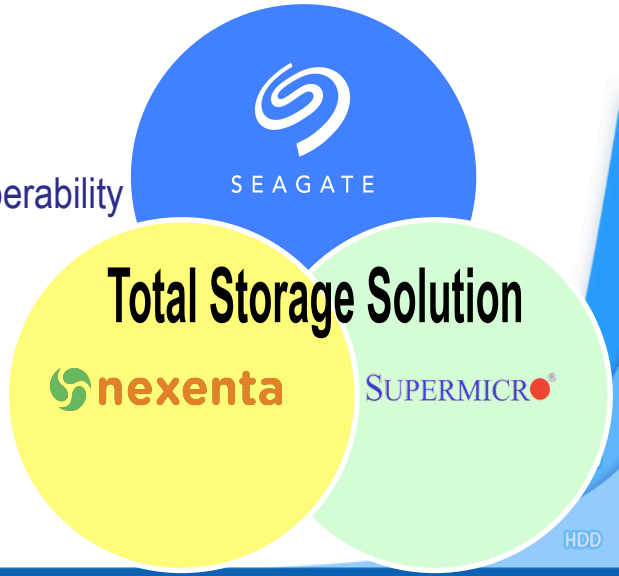
NVMe
SSD
HDD

Seagate 1200.2 SAS SSD

Unleashes the Full Performance Potential of an SDS All-Flash or Hybrid Array Solution

Enterprise storage solution empowered by:

- Seagate 1.9 TB or 3.8 TB SAS SSDs
  - Endurance of 3 DWPD
- Delivers scalable, high performance with certified turn-key SSDs
  - Expand user capacity up to 184TB
- Key industry-leading partnership produces reliable solutions
  - Seagate understands close engagements with technical partners produce best-in-class solutions
  - Solution fully integrated and tested by Nexenta for verified interoperability
  - Seagate's SSDs meet all enterprise storage performance and management requirements



Seagate 1200.2 SAS SSD

Industry-Leading Capacity, Performance, and Endurance (3 DWPD)

All-Flash-Array based on Seagate SAS SSDs

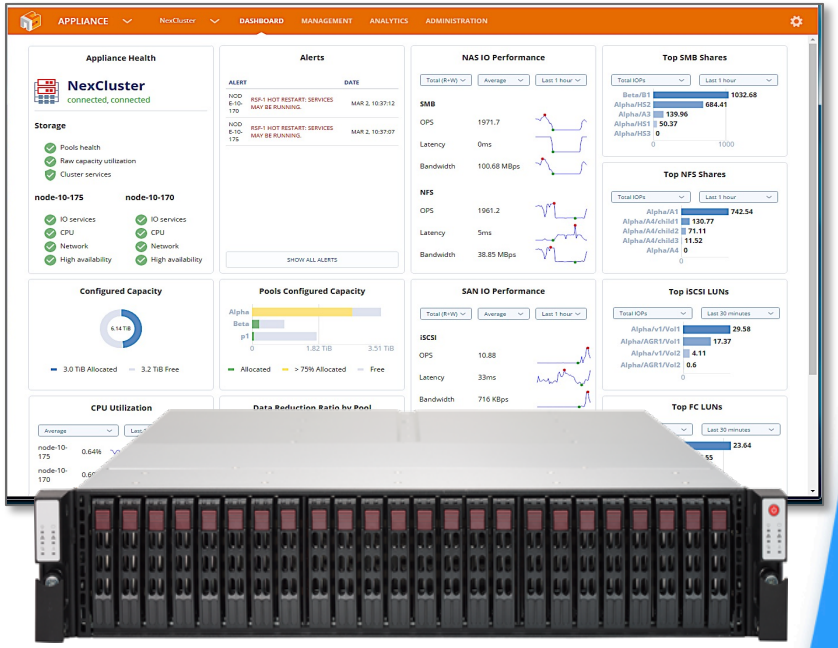
- Scaling performance and capacity without breaking the bank
- Accelerate applications and support more users
- Reduce power, space and cooling requirements
- SSD designed for most demanding enterprise applications
  - 2,500,000 hour MTBF with 5-year SSD warranty
  - T10 E2E and power loss data integrity protection
  - Enhanced reliability, data protection and security options (SD&D, SED, FIPS)

Key Specifications	
Capacity (TB)	1.9 / 3.8
Form Factor	2.5 in × 7 or 15mm
Interface / Architecture	Dual 12Gb/s SAS
Sequential R / W (MB/s) Peak 128KB	1,850 / 850
Random Read (IOPS) Peak 4KB QD32	190,000
Random Writes (IOPS) Peak 4KB QD32	35,000
Power: Operating Modes (W)	9.0 to 12.0

Built With Full-Featured 5th Generation Storage Software

Small Form Factor Cluster Unified File (NFS, SMB) & Block (FC, iSCSI) Services

- Ships with NexentaStor 5 & NexentaFusion
  - File: NFSv3/ NFSv4/ CIFS/ SMB3
  - Block: iSCSI/ Fibre Channel
- Inline data reduction, unlimited snapshots & clones
- Thin Provisioning
- Storage Quality of Service (QoS)
- Long distance replication (scheduled & continuous async)
- Ecosystem integration including
  - VMware , VAAI, VVOL & vCenter Plugin
  - Hyper-V, OpenStack (Cinder & Manila) & Docker
- Management includes NexentaFusion, Self-Documenting REST APIs, CLI, & SNMP



Available in High Performance, Low Latency All-Flash & Scalable Hybrid Configs

NVMe
SSD
HDD

Enterprise Grade Full Featured Storage Solution

Small Form Factor Cluster Unified File (NFS, SMB) & Block (FC, iSCSI) Services

- Ships with NexentaStor 5 & NexentaFusion
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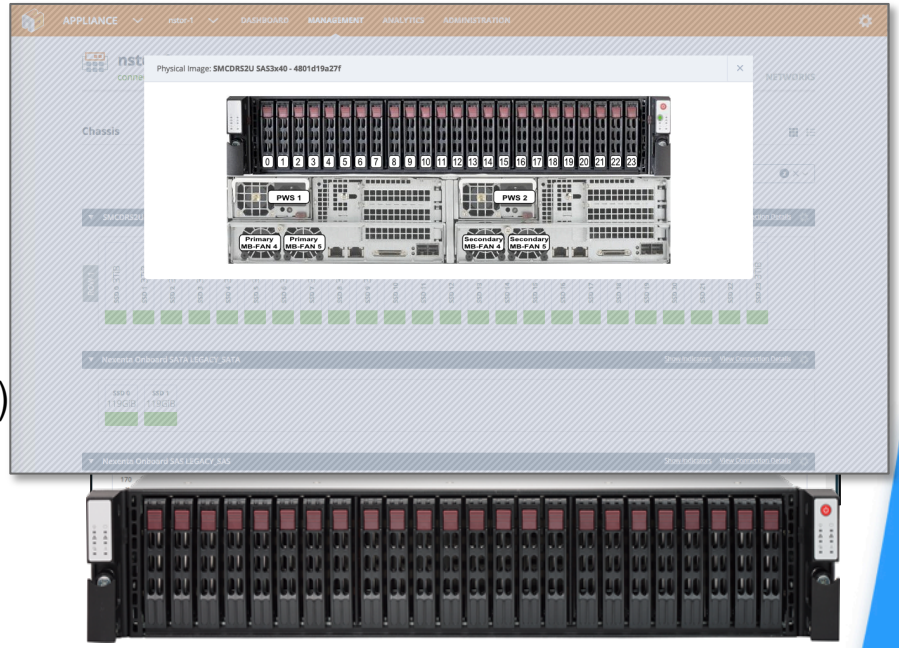

Available in High Performance, Low Latency All-Flash & Scalable Hybrid Configs

NVMe
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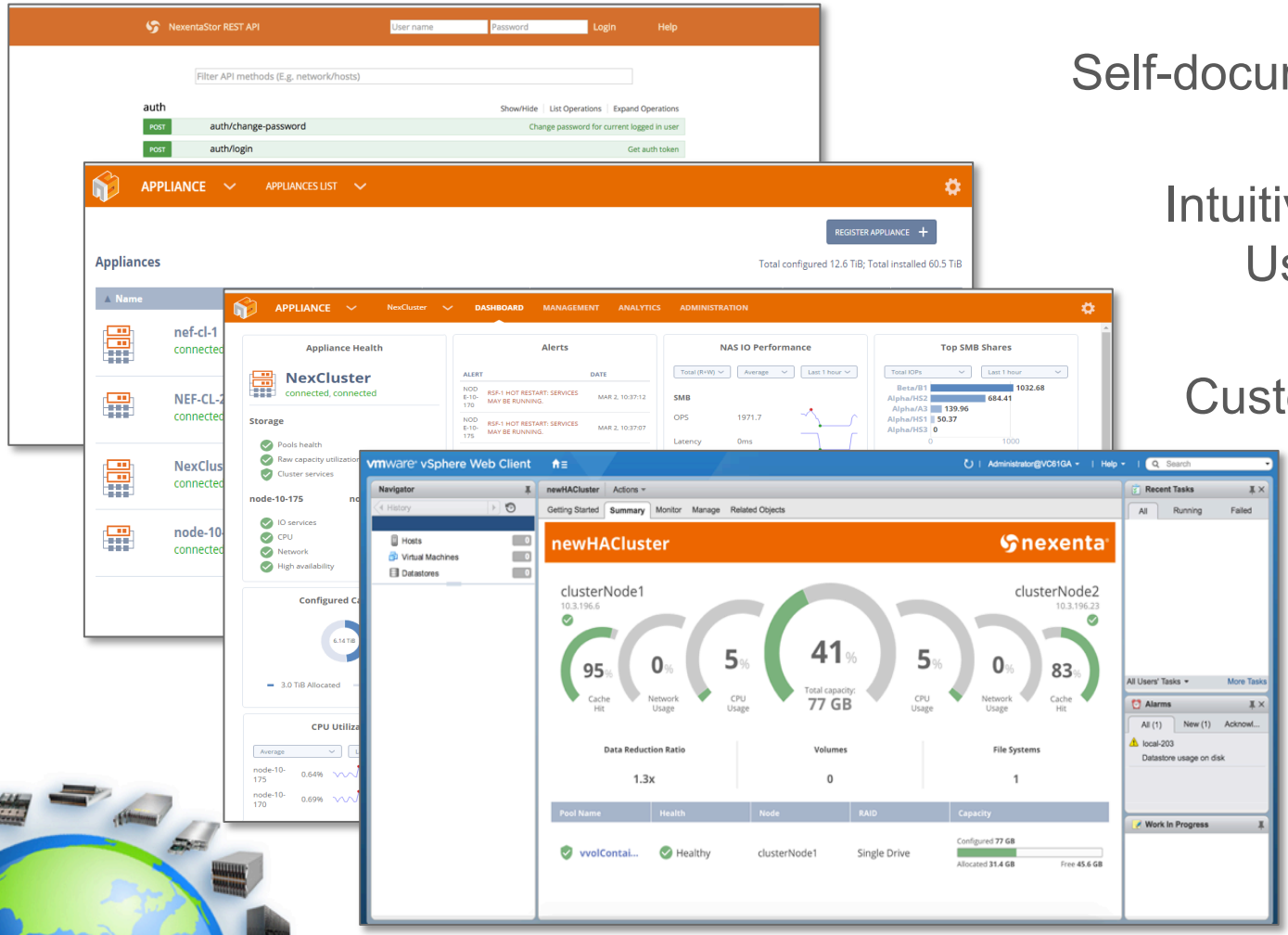
Ease of Management & Integration



Self-documenting REST API

Intuitive Multi-System User Interface

Customizable Analytics Dashboards

Familiar VMware Integration

NVMe

SSD

HDD

Targeting Broad Set of Enterprise & Cloud Workloads

Model	All Flash 	Hybrid 	Archive 
Application	Microsoft SQL Server, SAP, ORACLE, Microsoft Exchange	vmware, openstack, Microsoft Hyper-V	OneNote, PowerPoint, Word, Excel, Outlook	veeam, COMMVAULT, VERITAS
Workload	Transactional Enterprise Apps	Virtual Machines Virtual Desktops	Enterprise File Servers	NFS / Block Backup & Archive

Inline compression on full system
Unlimited Snapshots & Clones, Storage QoS
HA & long distance replication (Scheduled and Continuous Asynch)
Total Freedom = Single software stack, spanning all use cases and hardware configurations

High performance block and file services
Enterprise grade support and services

Scalability up to 640TBs (usable)
Unlimited file system size
Cost efficient data protection

Preloaded w. Basic Configuration for Simple On-Site Install

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Cabling Diagram

The following diagram covers t
- How to connect the manage
- How to connect JBODs inclu

2U Unified Storag

Note: Ensure the IPM

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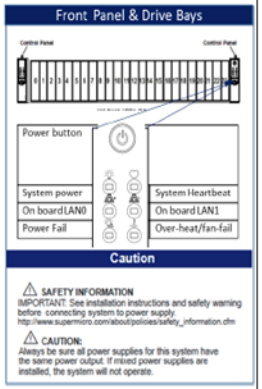
- Connect the left side on-board ports to yo
- Configure your laptop with a static IP: 192
- Connect your laptop to the right side port
- Run through the configuration steps outli
- Connect your laptop to the right side port
- Repeat through the configuration steps w



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Configure Management IP Interface

Execute the following steps on each node

- Complete configuration of NodeA
  9. Verify that the lan0 link is up (this is the link to your management network

```
CLI@newnameA>link list

NAME     CLASS  STATE    OVER     MTU   SPEED

lan0     phys   up       lan0     1500  10000
```

  10. Create a static management IP interface lan0/mgmt on NodeA lan0 (replace a.b.c.d/24 below with your IP address and netmask)

```
CLI@newnameA>ip create static lan0/mgmt a.b.c.d/24
```

  11. Add a default gateway (replace a.b.c.d below with your gateway IP)

```
CLI@newnameA>route create default a.b.c.d
```

  12. Add a DNS server (replace a.b.c.d with your DNS IP address)

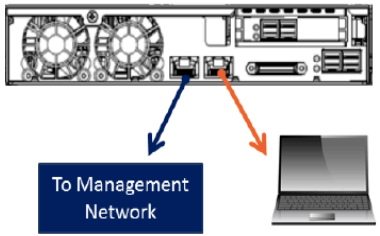
```
CLI@newnameA>net create dns a.b.c.d
```

  13. Verify that you can access the Internet:

```
CLI@newnameA>ping 8.8.8.8

8.8.8.8 is alive
```

  14. Activate your NexentaStor software license as described on the license activation page (below)
- Repeat steps 1 through 14 above on NodeB, using 192.168.128.11 as the default IP



Pre-set configuration interfaces:
- Node A: 192.168.128.10
- Node B: 192.168.128.11

Log in credentials:
user: admin; password: Nexent@123

Total Solution for Nexenta

Included Services

3-Year On-Site Next Business Day Service (OSNBD3)

Standard Business Hours, Next Business Day (9am to 5pm) Response
Service is available 8 hours per day within standard business hours, Monday to Friday, excluding local holidays. A Supermicro authorized representative will arrive at the customer's site to begin hardware maintenance service the next day after the service request has been received and defective parts have been determined and shipped

Remote High-Availability Installation

Includes setup and testing of one cluster between two Nexenta nodes. Also includes auto-scrub and auto- snap functions, as well as HA Cluster health check verification, complete Systems Integration Guide documentation.

Next Business Day Onsite-All service provided 9am to 5pm*	
Duration	3 Year - OSNBD3
Point of Contact	24 Hours x7 days
Web Portal Access	**YES**
Help Desk / Technical Support via Phone	**YES**
Case Management Access to Supermicro service management team	**YES**
Escalation management Access to Supermicro Service management team	**YES**
Onsite Engineer	Next Business Day
Remote / Online Diagnostic & Support	No, Uplift Available
Nexenta Remote / System Installation & configuration	Included

Appliance, Service, & Support ONLY available in North America, United Kingdom, and Germany

Capacity Options

System Single Slides

All-Flash 2010/2020 – Based on 1.92TB SSDs

- **All-Flash Array: 15TB to 61TB Usable**
  - Expand using single 2U/24 expansion shelves
- **File and Block Storage**
  - Fibre Channel & iSCSI
  - NFSv3 / NFSv4 / SMB 3
- **Each Controller node:**
  - 4x SAS3/12Gb/s storage expansion ports
  - 2x onboard 10GBase-T / RJ45 ports
  - 2x available slots for optional FC HBA or 10GbE NICs
- **Built with Seagate 1.92TB SSDs**
  - Dual-parity device protection
  - Effective capacity* from 41TiB to 166TiB

Rear View

All-Flash Array

Model: SSG-2028R-NEX2010

Starts half populated with 1.92TB SSD

Base	15TB	30TB
Base & 1 Shelf	46TB	61TB

Usable Capacity Options for SSG-2028R-NEX2010 & SSG-2028R-NEX2020

All-Flash 2030/2040 – Based on 3.84TB SSDs

- **All-Flash Array: 30TB to 184TB Usable**
  - Expand using up to 2x 2U/24 expansion shelves
- **File and Block Storage**
  - Fibre Channel & iSCSI
  - NFSv3 / NFSv4 / SMB 3
- **Each Controller node:**
  - 4x SAS3/12Gb/s storage expansion ports
  - 2x onboard 10GBase-T / RJ45 ports
  - 2x available slots for optional FC HBA or 10GbE NICs
- **Built with Seagate 3.84TB SSDs**
  - Dual-parity device protection
  - Effective capacity* from 82TiB to 502TiB

Rear View

All-Flash Array

Model: SSG-2028R-NEX2020

Starts half populated with 3.84TB SSD

Base	30TB	61TB
Base & 1 Shelf	92TB	122TB
Base & 2 Shelves	153TB	184TB

Usable Capacity Options for SSG-2028R-NEX2030 & SSG-2028R-NEX2040

Hybrid Performance 4010 – Based on 2TB HDDs

- **Hybrid Performance: 20TB to 106TB Usable**
  - Expands using up to 2x 4U/44 expansion shelves
- **File and Block Storage**
  - Fibre Channel & iSCSI
  - NFSv3 / NFSv4 / SMB 3
- **Each Controller node:**
  - 4x SAS3/12Gb/s storage expansion ports
  - 2x onboard 10GBase-T / RJ45 ports
  - 2x available slots for optional FC HBA or 10GbE NICs
- **Built with Seagate 2TB HDDs**
  - Mirrors with 1 to 3 hot-spare devices
  - Effective capacity* from 27TiB to 145TiB

Rear View

Hybrid Performance

Model: SSG-6048R-NEX4010

Starts fully populated

Base		20TB
Base & 1 Shelf	40TB	62TB
Base & 2 Shelves	84TB	106TB

Usable Capacity Options for SSG-6048R-NEX4010

Hybrid Capacity 4020 – Based on 4TB HDDs

- **Hybrid Capacity: 48TB to 272TB Usable**
  - Expands using up to 2x 4U/44 expansion shelves
- **File and Block Storage**
  - Fibre Channel & iSCSI
  - NFSv3 / NFSv4 / SMB 3
- **Each Controller node:**
  - 4x SAS3/12Gb/s storage expansion ports
  - 2x onboard 10GBase-T / RJ45 ports
  - 2x available slots for optional FC HBA or 10GbE NICs
- **Built with Seagate 4TB HDDs**
  - Dual-parity device protection with 3 hot-spares
  - Effective capacity* from 65TiB to 371TiB

Rear View

Hybrid Capacity

Model: SSG-6048R-NEX4020

Starts fully populated

Base		48TB
Base & 1 Shelf	96TB	160TB
Base & 2 Shelves	208TB	272TB

Usable Capacity Options for SSG-6048R-NEX4020

Archive 4030 – Based on 8TB HDDs

- **Archive Array 128 - 640TB usable**
  - Expands using up to 2x 4U/44 expansion shelves
- **File and Block Storage**
  - Fibre Channel & iSCSI
  - NFSv3 / NFSv4 / SMB 3
- **Each Controller node:**
  - 4x SAS3/12Gb/s storage expansion ports
  - 2x onboard 10GBase-T / RJ45 ports
  - 2x available slots for optional FC HBA or 10GbE NICs
- **Built with Seagate 8TB HDDs**
  - Triple-parity device protection
  - Effective capacity* from 140TiB to 698TiB

Rear View

Archive

Model: SSG-6048R-NEX4030

Starts fully populated

Base		128TB
Base & 1 Shelf	256TB	384TB
Base & 2 Shelves	512TB	640TB

Usable Capacity Options for SSG-6048R-NEX4030

System *Matrix*

	All-Flash		Hybrid		Archive
					
Available Models	SSG-2028R-NEX2010 SSG-2028R-NEX2020	SSG-2028R-NEX2030 SSG-2028R-NEX2040	SSG-6048R-NEX4010	SSG-6048R-NEX4020	SSG-6048R-NEX4030
Max BW (100% Read)	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
Max 8KB IOPS (Mix R:W)	180,000	180,000	70,000	40,000	25,000
Storage Media	1.9TB SAS SSD	3.8TB SAS SSD	2TB SAS 7k RPM	4TB SAS 7k RPM	8TB SAS 7k RPM
Pool Configuration	All-Flash, Dual Parity		Hybrid, Mirrors 3 Hot Spares	Hybrid, Dual Parity 3 Hot Spares	All-Disk, Triple Parity
Raw Capacity (TB)	23 to 92	46 to 276	42 to 218	84 to 420	176 to 880
Usable Capacity (TB)	15 to 61	30 to 184	20 to 106	48 / 272	128 to 640
Usable Capacity (TiB)	15 to 55	92 to167	18 to 96	44 /247	154 to 582
Effective Capacity (TiB)	41 to166	82 to 502	27 to 145	65 to 371	140 to 698
Expansion Chassis	Up to 2x 2U/24 bay - all flash JBODs supported (72 bays total)		Up to 2x 4U/44-bay JBODs supported (112 bays total)		

Performance & High Availability

All Flash

Hybrid

Archive

IOP Performance

Use Cases: High Performance VM, Databases, Analytics, Mail Servers

- Capacity: 15TB to 184TB usable
- 1.9TB & 3.8TB drive configs
- Up to 2x 24-Bay all Flash Expansion JBODs Supported

$2/ GB, usable

Mixed Workload

Use Cases: Virtual Environments, Home Share, Enterprise Block & Files

- Capacity: 20TB to 272TB usable
- 2 Hybrid configs, options based on workload
- Up to 2x 44-Bay Expansion JBODs Supported

$0.65/ GB, usable

Online Archive

Use Cases: Back-up, Disaster Recovery, Archive

- Capacity:128TB to 640TB usable
- High capacity media configuration
- Up to 2x 44-Bay Expansion JBODs Supported

$0.45/ GB, usable

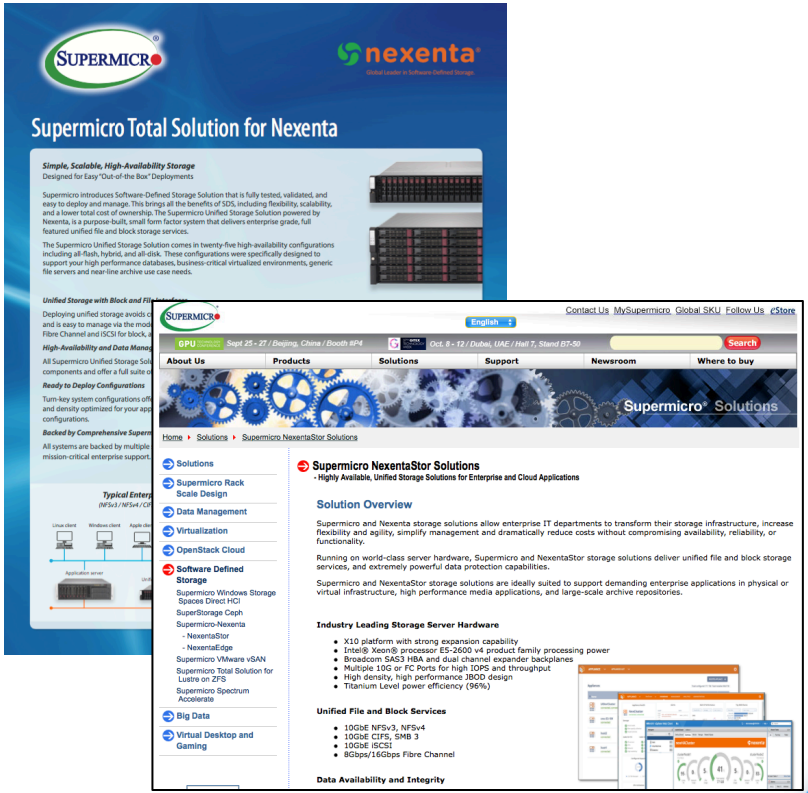
- Usable $/GB is based on max capacity for each config, US MSRP pricing
- Pricing may slightly vary by region. Contact sales@supermicro.com to receive an official quote

To Learn More:

- **Contact Solution Specialist**
  - supermicro@nexenta.com
  - marketing@supermicro.com

- **Product Details**
  - Visit Supermicro SDS Solutions Page: **http://bit.ly/SMCI_SDS**

- **Contact Your Local Supermicro Reseller or Distributor for A Quote**
  - Distributors include Lifeboat (US), Northamber (UK), Boston (UK), and others in your region



NVMe
SSD
HDD

Questions?

Thank You

supermicro@nexenta.com

We Keep IT Green™

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