

SDS Ultra Scale-Out Storage

OPEN STANDARDS AT ENTERPRISE-CLASS SERVICE LEVELS

The storage software is based on the SDS Ultra enterprise platform and supported by our partners Red Hat and SUSE, thus enabling IT organizations to benefit from open standards without implementation and operational risks.

UNLIMITED SCALABILITY OF CAPACITY AND PERFORMANCE

Think big, start small: SDS Ultra Storage scales capacity and performance linearly through the addition of storage nodes. Starting with four nodes, the architecture can support up to 500 nodes in environments with unpredictable data growth. It supports object, block and file access with one architecture.

Features

SDS Ultra Hybrid Scale-Out Storage is a software defined storage solutions include the following characteristics:

- **Automation** – Simplified management that reduces the cost of maintaining the storage infrastructure
- **Standard Interfaces** – APIs for the management, provisioning and maintenance of storage devices and services
- **Virtualized Data Path** – Block, File and/or Object interfaces that support applications written to these interfaces
- **Scalability** – Seamless ability to scale the storage infrastructure without disruption to the specified availability or performance
- **Transparency** – The ability for storage consumers to monitor and manage their own storage consumption against available resources and costs.

In this age of rapidly expanding data growth and the advent of cloud frameworks, such as OpenStack, retail outlets are constantly adjusting to new challenges and realigning to market needs. Storage systems with Linux-based open source software using standard server hardware have already established themselves on the market as being reliable and flexible. The following offers you hardware components that allow you to optimally use SDS Ultra storage.

A configuration can start small and grow in line with the business, minimizing the need for upfront investments, re-engineering and disruption to production systems. Keeping pace with changes makes agile storage infrastructure very attractive for OpenStack users, cloud service providers, research institutes, telecommunication and media broadcasting companies.



SDS Ultra Hybrid Scale-Out Storage provides advanced features for a storage system:

- **Scale-Out Capability:** easily scale out by adding a new node to a cluster, the cluster will be increased both capacity and bandwidth. Cluster can be expanded up to 500 nodes. Data is replicated to at least one node in the cluster.
- **Distributed file system:** creates a cluster with a single file system and single global namespace;
- **Flexible Protection:** SDS Ultra is software defined storage with flexible protection configuration levels without Raid cards. This feature allows failure of up to 4 disks or more or 1 node in a cluster without data loss. Protection can apply for folder level, important data should be placed in high level protection folders, otherwise will be stored in lower level protection ones. In case of failure, the system will try to retain the protection level by shrinking available space.
- **High Availability:** No single point of failure; self-healing design protects against disk or node failure; includes back-end intra-cluster failover via 25/100GbE Ethernet switch
- **Data Rebalancing:** data in full nodes will be transferred to the new node as soon as it is inserted to a cluster, this results in a data balance between nodes in the cluster.
- **Standard Hardware:** SDS Ultra uses standard IT hardware, no special hard disk required. Hard disks with different sizes can be used in the same node with full utilization of capacity.
- **Intuitive monitoring interface:** data, performance and connection to the system are monitored and displayed intuitively on monitoring interfaces.
- **Converged Infrastructure:** SDS Ultra provides both application servers and storage in one infrastructure with virtualization. This allows users to deploy applications such as web applications, transcoding services, QC services, Integration services... in virtual machines across nodes in the cluster with hot swap failover capability.
- **Fully compatible with MAM systems:** SDS Ultra is fully compatible with Media Assets Management (MAM) application for building distributed MAM Systems. Proxy Generator converts high-resolution file originated content to low bit-rate frame accurate browsable material (Proxy). Proxy media are transcoded at local storages before transferring to the central system for previewing while high-res media are retained in local storages for fast operations.
- **Video Processing:** Built-in Transcode engine for transcoding high-res videos to lowres files for previewing without need of MAM systems. Transcoding processes are load balanced between nodes.
- **Easy integration with third party software:** SDS Ultra uses standard IT protocols such as SMB, NFS, FTP... allows it to integrate with third party software systems to manage user access to storage resources with strict permissions.

Migration Service:

SDS_MIGR-ONL License

Migrate data from existing hardware infrastructure to distributed storage SDS software. In this case, the service supports uninterrupted migration from existing hardware and software to the SDS platform

DBST_MIGR-ONL License

Migrate the database from the existing hardware & software infrastructure to the new hardware infrastructure. In this case, the service supports uninterrupted migration from existing hardware and software to the new hardware platform

Specifications

Hardware platform	SDS Ultra			
Storage management	GUI management console			
Min configuration	4 Storage nodes Data replication			
Max storage nodes	500			
Note	Usable capacity might be reduced by the number of replicas or the usage of erasure coding			
Data replication capabilities	Split-site configuration, asynchronous replication, active-active synchronization			
Network support	NFS, SMB, FTP, LDAP/AD			
Applications	object, block, and file system storage in a single unified storage cluster			
Storage Nodes	Storage Standard			
Node type	P200 Balanced		P200 Performance \ P200 Virtualization	P400 Large Storage
Operating System	1+1 redundant 960GB SSD SATA Rocky Linux 9.4 Software Defined storage - V17.2.7 Quincy	1+1 redundant 960GB SSD SATA Rocky Linux 9.4 Software Defined storage - V17.2.7 Quincy	1+1 redundant 960GB SSD SATA Rocky Linux 9.4 Software Defined storage - V17.2.7 Quincy	1+1 redundant 960GB SSD SATA Rocky Linux 9.4 Software Defined storage - V17.2.7 Quincy
SSD NVMe (Per Node)	1-2 PCIe 3.1 x4 NVMe SSD	1-4 PCIe 4.0 x4 NVMe SSD	1-4 PCIe 3.1 x4 NVMe SSD	1-2 PCIe 3.1 x4 NVMe SSD
HDD/SSD (Per Node)	1-12 3.5" Hot-swap with SAS/SATA 16-port Host Bus Adapter	1-16 3.5" Hot-swap with SAS/SATA 8-port Host Bus Adapter	1-24 3.5" Hot-swap with SAS/SATA 16-port Host Bus Adapter	1-36 3.5" Hot-swap with SAS/SATA 8-port Host Bus Adapter
ECC Memory (Per Node)	16 DIMM slots Up to 2TB ECC DDR4-3200MHz	16 DIMM slots Up to 4TB ECC DDR5-4800MHz	16 DIMM slots Up to 6TB ECC DDR4-3200MHz	8 DIMM slots Up to 2TB ECC DDR4-3200MHz
CPU Type (Per Node)	Intel Xeon Scalable Processor Options - 01 Intel Xeon Processor 8-Core 2.6GHz	Intel Xeon Scalable Processor Options - 02 Intel Xeon Processor 10-Core 2.7GHz - 02 Intel Xeon Processor 8-Core 2.6GHz	Intel Xeon Scalable Processor Options - 02 Intel Xeon Processor 10-Core 2.7GHz - 02 Intel Xeon Processor 8-Core 2.6GHz	Intel Xeon Scalable Processor Options - 02 Intel Xeon Processor 10-Core 2.7GHz - 02 Intel Xeon Processor 8-Core 2.6GHz
Network (Per Node)	1-2 Ethernet Adapter	1-2 Ethernet Adapter	1-3 Ethernet Adapter	1-2 Ethernet Adapter
Options	HDD Options: 8, 12, 14, 16 or 18TB SATA 6.0Gb/s 7200RPM SSD Options: 0.96, 1.92 or 3.84 TB NVMe Memory Options: 16 or 32GB ECC Network Options: 10/25GbE(4x SFP28), 40GbE or 100GbE Cards (2x QSFP28)	HDD Options: 8, 12, 14, 16 or 18TB SATA 6.0Gb/s 7200RPM SSD Options: 0.96, 1.92 or 3.84 TB NVMe Memory Options: 16 or 32GB ECC Network Options: 10/25GbE(4x SFP28), 40GbE or 100GbE Cards (2x QSFP28)	HDD Options: 8, 12, 14, 16 or 18TB SATA 6.0Gb/s 7200RPM SSD Options: 0.96, 1.92 or 3.84 TB NVMe Memory Options: 16 or 32GB ECC Network Options: 10/25GbE(4x SFP28), 40GbE or 100GbE Cards (2x QSFP28)	HDD Options: 8, 12, 14, 16 or 18TB SATA 6.0Gb/s 7200RPM SSD Options: 0.96, 1.92 or 3.84 TB NVMe Memory Options: 32 or 64GB ECC Network Options: 10/25GbE(4x SFP28), 40GbE or 100GbE Cards (2x QSFP28)
Power	800W - Redundant Titanium Level Power Supplies	1200W - Redundant Titanium Level Power Supplies	1600W - Redundant Titanium Level Power Supplies	1200W - Redundant Titanium Level Power Supplies
Form Factor	2U	3U	2U	4U
Accessories	Transceiver Optic SFP28 SR 10/25GbE PWRCRD, IEC320 C13-C14, 250V/13A [x2]	Transceiver Optic SFP28 SR 10/25GbE PWRCRD, IEC320 C13-C14, 250V/13A [x2]	Transceiver Optic SFP28 SR 10/25GbE PWRCRD, IEC320 C13-C14, 250V/13A [x2]	Transceiver Optic SFP28 SR 10/25GbE PWRCRD, IEC320 C13-C14, 250V/13A [x2]
Support Services	Standard/Premium support and NBD Online Service, Price per TB per month	Standard/Premium support and NBD Online Service, Price per TB per month	Standard/Premium support and NBD Online Service, Price per TB per month	Standard/Premium support and NBD Online Service, Price per TB per month

Specifications

Storage Service Nodes		
Node type	Monitor	Management
Operating System	Rocky Linux 9.4; 01 SSD Software Defined storage - V17.2.7 Quincy	Rocky Linux 9.4; 01 SSD Software Defined storage - V17.2.7 Quincy
HDD/SSD (Per Node)	1-12 3.5" Hot-swap with SAS 3.0 12Gb/s 16-port Host Bus Adapter	1-4 3.5" Hot-swap with SAS 3.0 12Gb/s 16-port Host Bus Adapter
ECC Memory (Per Node)	8 DIMM slots Up to 1TB ECC DDR4-3200MHz	8 DIMM slots Up to 1TB ECC DDR4-3200MHz
CPU Type (Per Node)	Intel® Xeon® Scalable Processor - 01 Intel Xeon Processor 8-Core 2.6GHz	Intel® Xeon® Scalable Processor - 01 Intel Xeon Processor 8-Core 2.6GHz
Network (Per Node)	1-2 Ethernet Adapter	1 Ethernet Adapter
Options	CPU Options: 8C SSD Options: 0.96, 1.92 or 3.84 TB SATA Memory Options: 16 or 32GB ECC Network Options: 10/25GbE(2x SFP28), 40GbE or 100GbE Cards (2x QSFP28)	CPU Options: 8C SSD Options: 0.96, 1.92 or 3.84 TB SATA Memory Options: 16 or 32GB ECC Network Options: 10/25GbE(2x SFP28), 40GbE or 100GbE Cards (2x QSFP28)
Power Supply	800W-Redundant Power Supplies	400W-Redundant Power Supplies
Form Factor	2U	1U
Accessories	Transceiver Optic SFP28 SR 10/25GbE PWRCRD, IEC320 C13-C14, 250V/13A [x2]	Transceiver Optic SFP28 SR 10/25GbE PWRCRD, IEC320 C13-C14, 250V/13A [x2]
Support Services	Standard/Premium support and NBD Online Service, Price per TB per month	Standard/Premium support and NBD Online Service, Price per TB per month

Storage Nodes

P200 Balanced Nodes

P20096 96TB HDD Storage Node 	P20144 144TB HDD Storage Node 	P20168 168TB HDD Storage Node 
CPU Total 8 Physical Cores	CPU Total 8 Physical Cores	CPU Total 8 Physical Cores
Drive configuration 96TB (12 x 8TB HDD) 1.92TB (2 x 960GB SSD)	Drive configuration 144TB (12 x 12TB HDD) 3.84TB (2 x 1.92TB SSD)	Drive configuration 168TB (12 x 14TB HDD) 3.84TB (2 x 1.92TB SSD)
Memory 256GB (8 x 32GB DDR4)	Memory 256GB (8 x 32GB DDR4)	Memory 256GB (8 x 32GB DDR4)
Networking 2x 10GbE or 25GbE	Networking 2x 10GbE or 25GbE	Networking 2x 10GbE or 25GbE
Data resiliency High availability per service / protocol	Data resiliency High availability per service / protocol	Data resiliency High availability per service / protocol
Storage protocols Ceph-FS, RBD, S3 RADOS	Storage protocols Ceph-FS, RBD, S3 RADOS	Storage protocols Ceph-FS, RBD, S3 RADOS
Storage Type Block, File, Object	Storage Type Block, File, Object	Storage Type Block, File, Object
Management 1x 1GbE, IPMI	Management 1x 1GbE, IPMI	Management 1x 1GbE, IPMI
Video Proxy Multithreaded and multi node Processing	Video Proxy Multithreaded and multi node Processing	Video Proxy Multithreaded and multi node Processing
Power supply Dual Redundancy Power 120v-240v 50Hz-60Hz	Power supply Dual Redundancy Power 120v-240v 50Hz-60Hz	Power supply Dual Redundancy Power 120v-240v 50Hz-60Hz
Dimensions H: 2RU W: 17.2 inches / 437 mm D: 25.6 inches / 650mm	Dimensions H: 2RU W: 17.2 inches / 437 mm D: 25.6 inches / 650mm	Dimensions H: 2RU W: 17.2 inches / 437 mm D: 25.6 inches / 650mm

P22192 192TB HDD Storage Node 	P22256 256TB HDD Storage Node 	P22288 288TB HDD Storage Node 
CPU Total 16 or 20 Physical Cores	CPU Total 16 or 20 Physical Cores	CPU Total 16 or 20 Physical Cores
Drive configuration 192TB (12 x 16TB HDD) 15.36TB (4 x 3.84TB SSD)	Drive configuration 256TB (16 x 16TB HDD) 15.36TB (4 x 3.84TB SSD)	Drive configuration 288TB (16 x 18TB HDD) 15.36TB (4 x 3.84TB SSD)
Memory 512GB (16 x 32GB DDR5)	Memory 512GB (16 x 32GB DDR5)	Memory 512GB (16 x 32GB DDR5)
Networking 4x 10GbE or 25GbE	Networking 4x 10GbE or 25GbE	Networking 4x 10GbE or 25GbE
Data resiliency High availability per service / protocol	Data resiliency High availability per service / protocol	Data resiliency High availability per service / protocol
Storage protocols Ceph-FS, RBD, S3 RADOS	Storage protocols Ceph-FS, RBD, S3 RADOS	Storage protocols Ceph-FS, RBD, S3 RADOS
Storage Type Block, File, Object	Storage Type Block, File, Object	Storage Type Block, File, Object
Management 1x 1GbE, IPMI	Management 1x 1GbE, IPMI	Management 1x 1GbE, IPMI
Video Proxy Multithreaded and multi node Processing	Video Proxy Multithreaded and multi node Processing	Video Proxy Multithreaded and multi node Processing
Power supply Dual Redundancy Power 120v-240v 50Hz-60Hz	Power supply Dual Redundancy Power 120v-240v 50Hz-60Hz	Power supply Dual Redundancy Power 120v-240v 50Hz-60Hz
Dimensions H: 3RU W: 17.2 inches / 437 mm D: 25.6 inches / 650mm	Dimensions H: 3RU W: 17.2 inches / 437 mm D: 25.6 inches / 650mm	Dimensions H: 3RU W: 17.2 inches / 437 mm D: 25.6 inches / 650mm

P200 Performance Nodes

P20160 160TB HDD Storage Node	P20240 240TB HDD Storage Node	P20280 280TB HDD Storage Node
		
CPU Total 16 Physical Cores	CPU Total 16 Physical Cores	CPU Total 16 Physical Cores
Drive configuration 160TB (20 x 8TB HDD) 3.84TB (4 x 960GB SSD)	Drive configuration 240TB (20 x 12TB HDD) 7.68TB (4 x 1.92TB SSD)	Drive configuration 280TB (20 x 14TB HDD) 7.68TB (4 x 1.92TB SSD)
Memory 384GB (12 x 32GB DDR4)	Memory 384GB (12 x 32GB DDR4)	Memory 384GB (12 x 32GB DDR4)
Networking 4x 10GbE or 25GbE	Networking 4x 10GbE or 25GbE	Networking 4x 10GbE or 25GbE
Data resiliency High availability per service / protocol	Data resiliency High availability per service / protocol	Data resiliency High availability per service / protocol
Storage protocols Ceph-FS, RBD, S3 RADOS	Storage protocols Ceph-FS, RBD, S3 RADOS	Storage protocols Ceph-FS, RBD, S3 RADOS
Storage Type Block, File, Object	Storage Type Block, File, Object	Storage Type Block, File, Object
Management 1x 1GbE, IPMI	Management 1x 1GbE, IPMI	Management 1x 1GbE, IPMI
Video Proxy Multithreaded and multi node Processing	Video Proxy Multithreaded and multi node Processing	Video Proxy Multithreaded and multi node Processing
Power supply Dual Redundancy Power 120v-240v 50Hz-60Hz	Power supply Dual Redundancy Power 120v-240v 50Hz-60Hz	Power supply Dual Redundancy Power 120v-240v 50Hz-60Hz
Dimensions H: 2RU W: 17.2 inches / 437 mm D: 34 inches / 863.6mm	Dimensions H: 2RU W: 17.2 inches / 437 mm D: 34 inches / 863.6mm	Dimensions H: 2RU W: 17.2 inches / 437 mm D: 34 inches / 863.6mm



CPU
Total 16 Physical Cores

Drive configuration
192TB (24 x 8TB HDD)
7.68TB (4 x 1.92TB SSD)

Memory
512GB (16 x 32GB DDR4)

Networking
4x 10GbE or 25GbE

Data resiliency
High availability per
service / protocol

Storage protocols
Ceph-FS, RBD, S3 RADOS

Storage Type
Block, File, Object

Management
1x 1GbE, IPMI

Video Proxy
Multithreaded and multi node
Processing

Power supply
Dual Redundancy Power
120v-240v 50Hz-60Hz

Dimensions
H: 2RU
W: 17.2 inches / 437 mm
D: 34 inches / 863.6mm



CPU
Total 16 Physical Cores

Drive configuration
288TB (24 x 12TB HDD)
7.68TB (4 x 1.92TB SSD)

Memory
512GB (16 x 32GB DDR4)

Networking
4x 10GbE or 25GbE

Data resiliency
High availability per
service / protocol

Storage protocols
Ceph-FS, RBD, S3 RADOS

Storage Type
Block, File, Object

Management
1x 1GbE, IPMI

Video Proxy
Multithreaded and multi node
Processing

Power supply
Dual Redundancy Power
120v-240v 50Hz-60Hz

Dimensions
H: 2RU
W: 17.2 inches / 437 mm
D: 34 inches / 863.6mm



CPU
Total 16 Physical Cores

Drive configuration
336TB (24 x 14TB HDD)
7.68TB (4 x 1.92TB SSD)

Memory
512GB (16 x 32GB DDR4)

Networking
4x 10GbE or 25GbE

Data resiliency
High availability per
service / protocol

Storage protocols
Ceph-FS, RBD, S3 RADOS

Storage Type
Block, File, Object

Management
1x 1GbE, IPMI

Video Proxy
Multithreaded and multi node
Processing

Power supply
Dual Redundancy Power
120v-240v 50Hz-60Hz

Dimensions
H: 2RU
W: 17.2 inches / 437 mm
D: 34 inches / 863.6mm

P200 Virtualization Nodes

P20144_VM+ 144TB HDD Storage Node	P20168_VM+ 168TB HDD Storage Node	P20192_VM+ 192TB HDD Storage Node
		
CPU Total 16 Physical Cores	CPU Total 16 Physical Cores	CPU Total 16 Physical Cores
Drive configuration 144TB (12 x 12TB HDD) 7.68TB (2 x 3.84TB SSD)	Drive configuration 168TB (12 x 14TB HDD) 7.68TB (2 x 3.84TB SSD)	Drive configuration 192TB (12 x 16TB HDD) 7.68TB (2 x 3.84TB SSD)
Memory 384GB (12 x 32GB DDR4)	Memory 384GB (12 x 32GB DDR4)	Memory 384GB (12 x 32GB DDR4)
GPU Type 1x 6GB GDDR6 With ECC	GPU Type 1x 6GB GDDR6 With ECC	GPU Type 1x 16GB GDDR6 With ECC
Networking 4x 10GbE or 25GbE	Networking 4x 10GbE or 25GbE	Networking 4x 10GbE or 25GbE
Data resiliency High availability per service / protocol	Data resiliency High availability per service / protocol	Data resiliency High availability per service / protocol
Storage protocols Ceph-FS, RBD, S3 RADOS	Storage protocols Ceph-FS, RBD, S3 RADOS	Storage protocols Ceph-FS, RBD, S3 RADOS
Storage Type Block, File, Object	Storage Type Block, File, Object	Storage Type Block, File, Object
Management 1x 1GbE, IPMI	Management 1x 1GbE, IPMI	Management 1x 1GbE, IPMI
Built-in VMs, Container Deployment and Management	Built-in VMs, Container Deployment and Management	Built-in VMs, Container Deployment and Management
Video Proxy Multithreaded and multi node Processing	Video Proxy Multithreaded and multi node Processing	Video Proxy Multithreaded and multi node Processing
Power supply Dual Redundancy Power 120v-240v 50Hz-60Hz	Power supply Dual Redundancy Power 120v-240v 50Hz-60Hz	Power supply Dual Redundancy Power 120v-240v 50Hz-60Hz
Dimensions H: 2RU W: 17.3 inches / 439 mm D: 27.5 inches / 698.5mm	Dimensions H: 2RU W: 17.3 inches / 439 mm D: 27.5 inches / 698.5mm	Dimensions H: 2RU W: 17.3 inches / 439 mm D: 27.5 inches / 698.5mm

P20240_VM+ 240TB HDD Storage Node 	P20280_VM+ 280TB HDD Storage Node 	P26192_VM+ 192TB HDD Storage Node 
CPU Total 16 Physical Cores	CPU Total 16 Physical Cores	CPU Total 16 Physical Cores
Drive configuration 240TB (20 x 12TB HDD) 7.68TB (4 x 1.92TB SSD)	Drive configuration 280TB (20 x 14TB HDD) 7.68TB (4 x 1.92TB SSD)	Drive configuration 192TB (24 x 8TB HDD) 7.68TB (4 x 1.92TB SSD)
Memory 384GB (12 x 32GB DDR4)	Memory 384GB (12 x 32GB DDR4)	Memory 512GB (16 x 32GB DDR4)
GPU Type 1x 12GB GDDR6 With ECC	GPU Type 1x 12GB GDDR6 With ECC	GPU Type 1x 12GB GDDR6 With ECC
Networking 4x 10GbE or 25GbE	Networking 4x 10GbE or 25GbE	Networking 4x 10GbE or 25GbE
Data resiliency High availability per service / protocol	Data resiliency High availability per service / protocol	Data resiliency High availability per service / protocol
Storage protocols Ceph-FS, RBD, S3 RADOS	Storage protocols Ceph-FS, RBD, S3 RADOS	Storage protocols Ceph-FS, RBD, S3 RADOS
Storage Type Block, File, Object	Storage Type Block, File, Object	Storage Type Block, File, Object
Management 1x 1GbE, IPMI	Management 1x 1GbE, IPMI	Management 1x 1GbE, IPMI
Built-in VMs, Container Deployment and Management	Built-in VMs, Container Deployment and Management	Built-in VMs, Container Deployment and Management
Video Proxy Multithreaded and multi node Processing	Video Proxy Multithreaded and multi node Processing	Video Proxy Multithreaded and multi node Processing
Power supply Dual Redundancy Power 120v-240v 50Hz-60Hz	Power supply Dual Redundancy Power 120v-240v 50Hz-60Hz	Power supply Dual Redundancy Power 120v-240v 50Hz-60Hz
Dimensions H: 2RU W: 17.2 inches / 437 mm D: 34 inches / 863.6mm	Dimensions H: 2RU W: 17.2 inches / 437 mm D: 34 inches / 863.6mm	Dimensions H: 2RU W: 17.2 inches / 437 mm D: 34 inches / 863.6mm

P400 Large Node

SDS Ultra P40504 504TB HDD Storage Node 	SDS Ultra P40576 576TB HDD Storage Node 	SDS Ultra P40648 648TB HDD Storage Node 
CPU Total 16 Physical Cores	CPU Total 16 Physical Cores	CPU Total 16 Physical Cores
Drive configuration 504TB (36 x 14TB HDD) 3.84TB (2 x 1.92TB SSD)	Drive configuration 576TB (36 x 16TB HDD) 3.84TB (2 x 1.92TB SSD)	Drive configuration 648TB (36 x 18TB HDD) 3.84TB (2 x 1.92TB SSD)
Memory 256GB (8 x 32GB DDR4)	Memory 256GB (8 x 32GB DDR4)	Memory 256GB (8 x 32GB DDR4)
Networking 2x 10GbE or 25GbE	Networking 2x 10GbE or 25GbE	Networking 2x 10GbE or 25GbE
Data resiliency High availability per service / protocol	Data resiliency High availability per service / protocol	Data resiliency High availability per service / protocol
Storage protocols Ceph-FS, RBD, S3 RADOS	Storage protocols Ceph-FS, RBD, S3 RADOS	Storage protocols Ceph-FS, RBD, S3 RADOS
Storage Type Block, File, Object	Storage Type Block, File, Object	Storage Type Block, File, Object
Management 1x 1GbE, IPMI	Management 1x 1GbE, IPMI	Management 1x 1GbE, IPMI
Power supply Dual Redundancy Power 120v-240v 50Hz-60Hz	Power supply Dual Redundancy Power 120v-240v 50Hz-60Hz	Power supply Dual Redundancy Power 120v-240v 50Hz-60Hz
Dimensions H: 4RU W: 17.2 inches / 437 mm D: 27.5 inches / 699mm	Dimensions H: 4RU W: 17.2 inches / 437 mm D: 27.5 inches / 699mm	Dimensions H: 4RU W: 17.2 inches / 437 mm D: 27.5 inches / 699mm

Storage Services Nodes

Storage Monitor M20011 11TB SSD Storage Node	Storage Manager SM20003 3TB SSD Storage Node	Storage Manager SM20007 7TB SSD Storage Node
		
CPU Total 8 Physical Cores	CPU Total 8 Physical Cores	CPU Total 8 Physical Cores
Drive configuration 11TB (12 x 960GB SSD)	Drive configuration 3.84TB (4 x 960GB SSD)	Drive configuration 7.68TB (8 x 960GB SSD)
Memory 128GB (8 x 16GB DDR4)	Memory 128GB (8 x 16GB DDR4)	Memory 128GB (8 x 16GB DDR4)
Networking 2x 10GbE or 25GbE	Networking 2x 10GbE or 25GbE	Networking 2x 10GbE or 25GbE
Data resiliency Provided via redundant NICs	Function Manages Ceph using Ceph Commands	Function Manages Ceph using Ceph Commands
Function Maintains Ceph cluster resiliency and recovery	Node Type Management Node	Node Type Management Node
Node Type Monitor Node	Management 1x 1GbE, IPMI	Management 1x 1GbE, IPMI
Management 1x 1GbE, IPMI	Operating System Linux; 1 x SSD Software Defined Storage Enterprise	Operating System Linux; 1 x SSD Software Defined Storage Enterprise
Operating System Linux; 1 x SSD Software Defined Storage Enterprise	Power supply Dual Redundancy Power 120v-240v 50Hz-60Hz	Power supply Dual Redundancy Power 120v-240v 50Hz-60Hz
Power supply Dual Redundancy Power 120v-240v 50Hz-60Hz	Dimensions H: 1RU W: 17.3 inches / 439 mm D: 19.98 inches /507 mm	Dimensions H: 1RU W: 17.3 inches / 439 mm D: 19.98 inches /507 mm
Dimensions H: 2RU W: 17.3 inches / 439 mm D: 27.5 inches / 698.5mm		