Invitation

Supermicro's Software-Defined Storage (SDS) Solutions for Today's Workloads

Join our upcoming course on **Supermicro's Software-Defined Storage (SDS) Solutions for Today's Workloads, on May 11th, 2023, 11:00am PDT,** and gain a comprehensive understanding of Supermicro diverse storage solutions, including:

WEKA

Qumulo

OSNEXUS — STORAGE MADE SIMPLE.

- WekaIO Distributed Parallel File Storage
- Qumulo-Ready All-NVMe Server/Hybrid-NVMe Platform
- All-Flash NVMe Storage
- File Storage
- AI/Hybrid NAS
- Hardware Appliance Models
- Simplified Cloud-Density Storage,
- OSNexus - QuantaStor™
- Flexible Building Blocks

Expert panelists will discuss how channel partners can leverage by **selling Supermicro's verified and tested solutions for accelerated market deployment**. We will present real-life case studies and examples of successful implementation in various industries. Join us on **May 11, 2023 at 11:00am PDT** to stay ahead of the curve and take your storage solutions to the next level.

Supermicro Marketing

Supermicro Software-Defined Storage Solutions for Today's Workloads

Presenters

Paul Mcleod - Product Director, Storage

A seasoned technology professional with over 15 years of experience in the enterprise storage industry. Strong customer advocate with deep understanding of the storage domain, experience in a variety of products and technologies. Skilled presenter and a frequent speaker at industry events, and conferences around the world. He is also a regular contributor to industry publications and has written articles on a variety of storage topics.

Rick Chang – Product Manager, Storage Building Blocks

Rick Chang has been driving product strategies and developing new solutions in the Hybrid Cloud and Enterprise Infrastructure markets for about a decade. Rick worked on the first commercially successful All-Flash array. Previously at Broadcom, Rick was the product management lead for data management solutions and appliances. He is a frequent speaker in executive briefings and customer visits.

William Li – Director, Solution Management

William Li is experienced in software-defined storage solutions as well as cloud-defined storage solutions. William has the technical know-how from the file/block/object storage down to the level of electronic devices. William is also a CEPH & OpenStack certified administrator. With his role as a director of solution product at Supermicro, he works closely with enterprise software partners to deliver turn-key solutions.

AGENDA

- Intro & Benefits - Why Software Defined?

- Common Applications & SDS Solutions – extensive portfolio

  - AI & HPC storage workloads WekaIO, All-Flash NVMe Storage

  - File Storage - AI / Hybrid NAS - Supermicro Qumulo-Ready All-NVMe Server / Hybrid-NVMe Platform

  - Cloud-Density Storage - Osnexus - QuantaStor™, Flexible building blocks

- VALUE ADD – Selling Supermicro Software Defined Solutions

- Q/A

- Act NOW – Price Promotion until June

Supermicro Software-Defined Storage Solutions for Today's Workloads – Channel Training
May 11, 2023

Presnters:

- Paul Mcleod - Product Director, Storage

- William Li – Director of Solutions Management

- Rick Chang – Product Manager, Storage Building Blocks

May 11th, 2023, 11:00am PDT

The Industry's Broadest Portfolio of Servers

Universal GPU
Multi-Architecture Flexibility with Future-Proof Open-Standards-Based Design
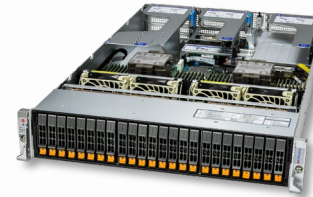
PCIe GPU
High Performance and Flexibility for AI, 3D Simulation and the Metaverse

SuperBlade®
Highest Density Multi-Node Architecture for HPC Applications

Hyper
Best-in-class Performance and Flexibility Rackmount Server

BigTwin®
Industry-leading Multi-node Architecture

GrandTwin™
Multi-Node Architecture Optimized for Single-Processor Performance

FatTwin®
Multi-Node 4U Advanced Twin Architecture with 8 or 4 Nodes

CloudDC
All-in-one Rackmount Platform for Cloud Data Centers

WIO
Industry's Widest Variety of I/O Optimized Servers

Petascale All-Flash
Revolutionary Petascale NVMe for Unprecedented Density and Capacity

Multi-Processor
Highest Performance and Flexibility for Enterprise Applications

Hyper-E
Best-in-class Performance and Flexibility for Edge Data Centers

SuperEdge
High-Density Computing and Flexibility at the Intelligent Edge

IoT/5G
Compact Form Factors for 5G and Edge computing

SuperWorkstation
For High Performance Desktop Workloads

Mainstream
Versatile Entry-Level for Enterprise Applications

PCIe 5.0 Storage Family Roadmap

New Components Refresh and Continuous Architectural Innovations

1U and 2U EDSFF Petascale All Flash

Brand New 1U and 2U E1 and E3

1U 12 & 2U 24-bay Scale-Out Storage

New Chassis Upgrade and Supports Multiple Architectures

2U, 3U and 4U Enterprise Storage Building Blocks

Refresh with New Processor and Expanders

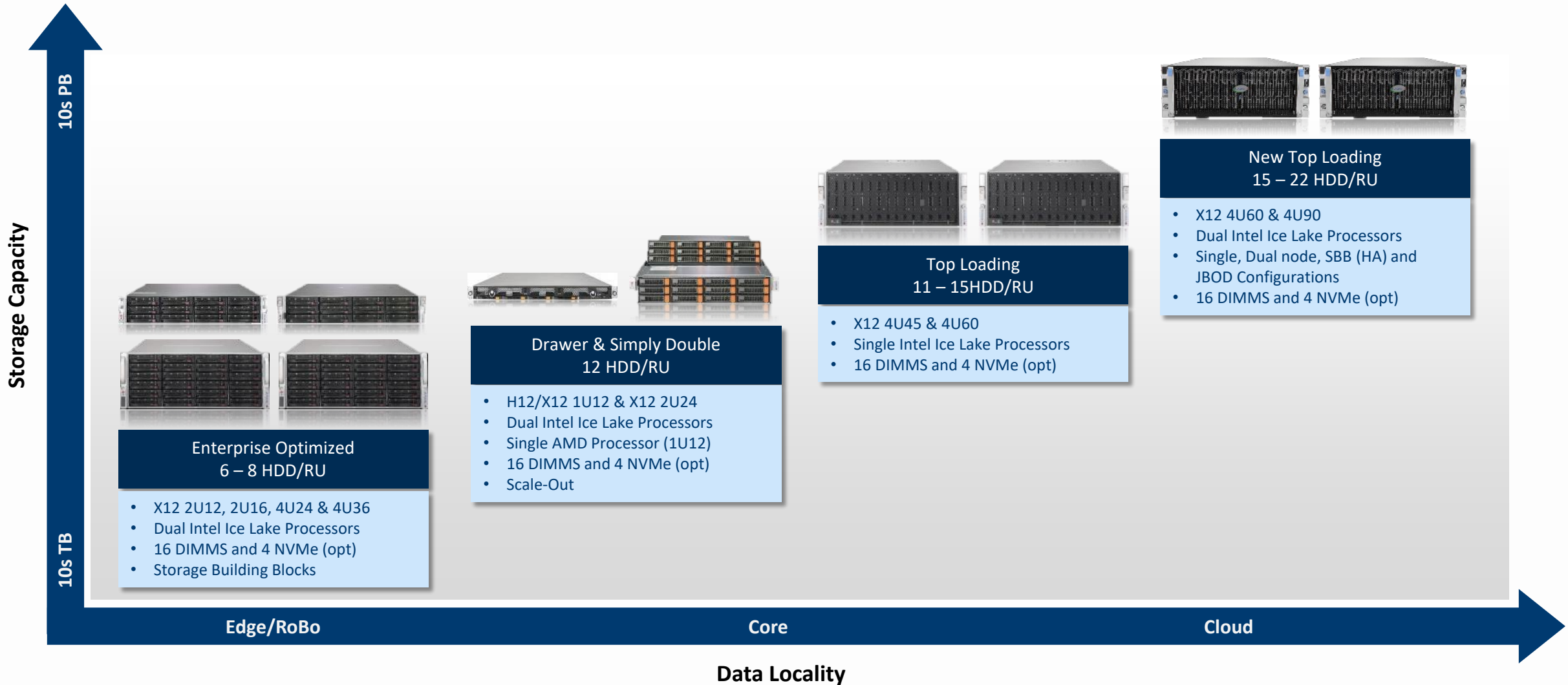## 4U 60 and 90-bay Cloud Scale Top Loading

Refresh with New Processor and Expanders

SuperStorage 3.5" HDD Storage Family

Completed LFF Storage Platform for Storage-Centric Data Center from Edge to Cloud

Storage Capacity (vertical axis, 10s TB → 10s PB)

Data Locality (horizontal axis: Edge/RoBo → Core → Cloud)

Enterprise Optimized
6 – 8 HDD/RU

- X12 2U12, 2U16, 4U24 & 4U36
- Dual Intel Ice Lake Processors
- 16 DIMMS and 4 NVMe (opt)
- Storage Building Blocks

Drawer & Simply Double
12 HDD/RU

- H12/X12 1U12 & X12 2U24
- Dual Intel Ice Lake Processors
- Single AMD Processor (1U12)
- 16 DIMMS and 4 NVMe (opt)
- Scale-Out

Top Loading
11 – 15HDD/RU

- X12 4U45 & 4U60
- Single Intel Ice Lake Processors
- 16 DIMMS and 4 NVMe (opt)

New Top Loading
15 – 22 HDD/RU

- X12 4U60 & 4U90
- Dual Intel Ice Lake Processors
- Single, Dual node, SBB (HA) and JBOD Configurations
- 16 DIMMS and 4 NVMe (opt)

4U Cloud Scale Top Loading Family

Unmatched Storage Capacity & Enterprise Grade Performance & Serviceability

60 or 90-Bay Single Node

SSG-640SP-E1CR60 & SSG-640SP-E1CR90
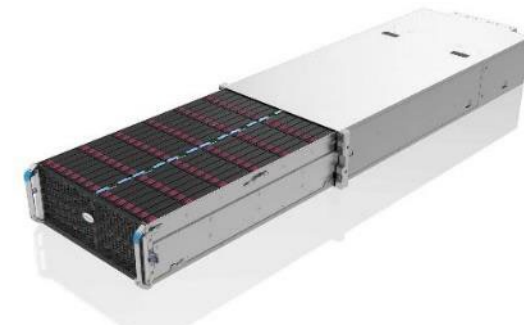
60 or 90-Bay Dual Node (Twin)

SSG-640SP-DE1CR60 & SSG-640SP-DE1CR90

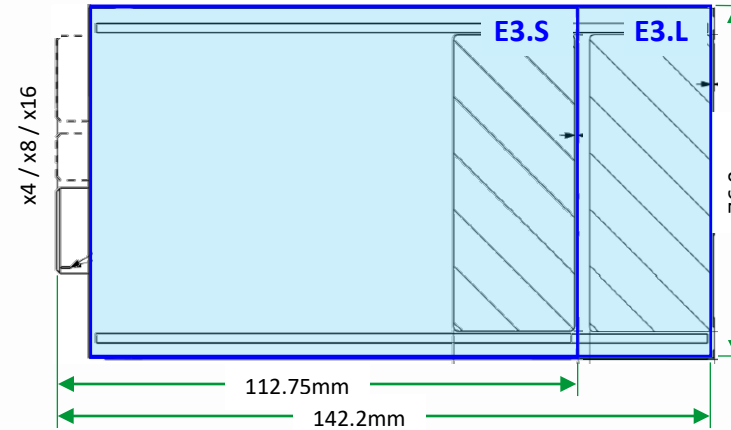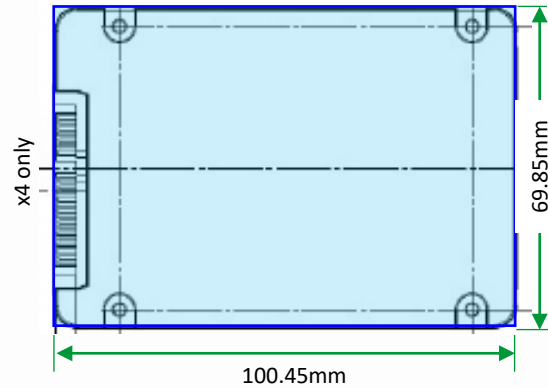## 60 or 90-Bay Dual Node (SBB)

SSG-640SP-DE2CR60 & SSG-640SP-DE1CR90

60 or 90-Bay JBOD

CSE-947SE1(2)C-R1K66JBOD; CSE-947HE1(2)C-R1K05JBOD

NVMe SSD Form Factor Comparison

U.2
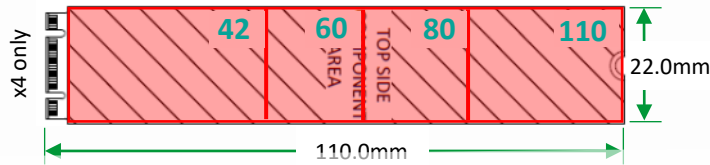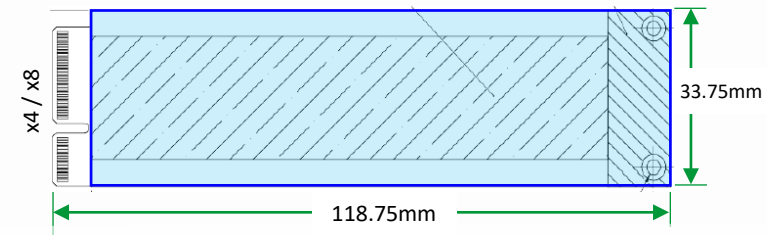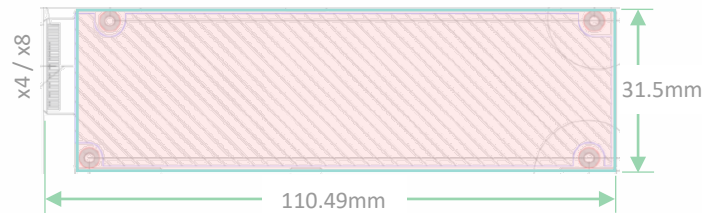- Thickness: 7.0mm/15.0mm
- Max Power: 25W

M.2 (Board)
- Thickness: 4.3mm MAX
- Max Power: 8W

E1.S (Board)
- Thickness: 5.9mm / 8.01mm
- Max Power: 12W/16W

E1.L
- Thickness: 9.5mm/18.0mm
- Max Power: 25W/ 40W

E3.S/2T
- Thickness: 7.5mm/16.8mm
- Max Power: 25W/40W

E3.L/2T
- Thickness: 7.5mm / 16.8mm
- Max Power: 40W/ 70W

E1.S
- Thickness: 9.5mm/15.0mm/25.0mm
- Max Power: 20W/20W/25W

*Reference: 3.5" HDD Dimension: 147mm x 101.6mm, thickness: 25.4mm/26.1mm

PCIe 5.0 Petascale Storage Family

Nex Generation Ultra High Performance and Density All-NVMe Storage Platform

Intel DP 1U and 2U EDSFF Petascale All Flash

Shipping!

SSG-121E-NES24R (1U24 E1.S)

SSG-121E-NE316R (1U16 E3.S)

"CXL Bay" Option (1U12 E3.S + CXL)

SSG-221E-NE324R (2U32 E.S)

AMD UP 1U and 2U EDSFF Petascale All Flash

ASG-1115S-NE316R (1U16 E3.S)

"CXL Bay" Option (1U12 E3.S + CXL)

ASG-2115S-NE332R (2U32 E.S)

Application, Access Protocol & Scale
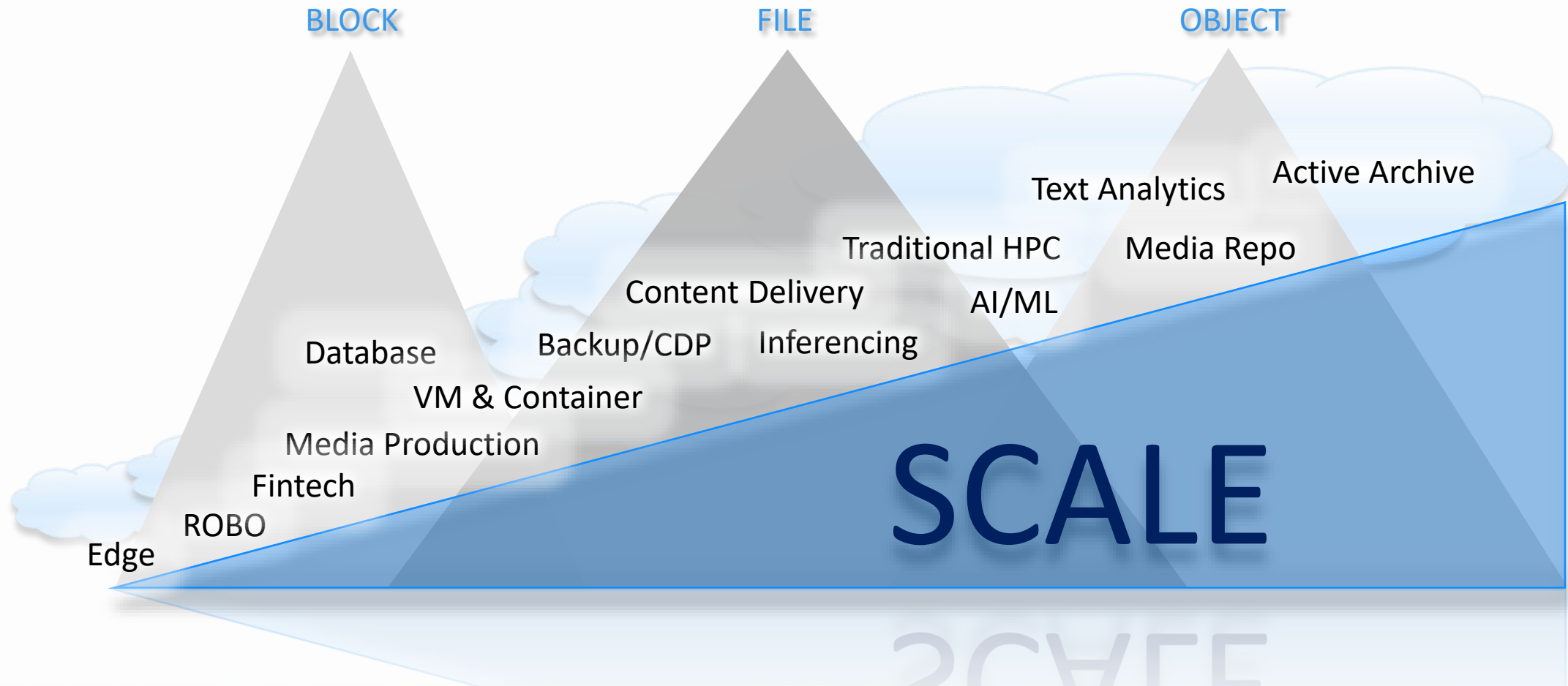
BLOCK

FILE

OBJECT

Active Archive

Text Analytics

Traditional HPC

Media Repo

Content Delivery

AI/ML

Database

Backup/CDP

Inferencing

VM & Container

Media Production

SCALE

Fintech

ROBO

Edge

Software Defined Vendors

Scale Performance	On-Prem / Hybrid	Scale Capacity

Traditional/Monolithic SAN/NAS

HPC/PFS   Scale-out SAN

VM & Containerized @Scale

Entry Enterprise/Tiered

VM/HCI & Converged

DAS/JBOD/JBOF

Backup   Object Storage

Scale-out NAS   Archive

Analytic Applications

Software Defined Vendors

Scale Performance

On-Prem / Hybrid

Scale Capacity

Traditional/Monolithic SAN/NAS

HPC/PFS   Scale-out SAN

VM & Containerized @Scale

Entry Enterprise/Tiered

VM/HCI & Converged

DAS/JBOD/JBOF

Backup   Object Storage

Scale-out NAS   Archive

Analytic Applications

WEKA

Qumulo

OSNEXUS

WEKA Unified Data Platform for AI/ML & HPC

GPU-Enabled Resources

HPC / Compute Grid

Containers & Microservices

Traditional Access Protocols

NVIDIA GPUDirect Storage

Weka POSIX Client

Kubernetes CSI-Plugin

SMB, NFS, S3

Scale Out to Cost-Effective Data Lake and Burst to Public Cloud

10-20% Flash

80-90% Object

ACTIVE SCALE

SCALITY

CLOUDIAN

Weka Certified Object Storage

ceph

*On-Prem Copy

Public Cloud

DR / Business Continuity

WEKA Backend process

WEKA POSIX driver

GLOBAL NAMESPACE

Supermicro WekaIO-Ready System
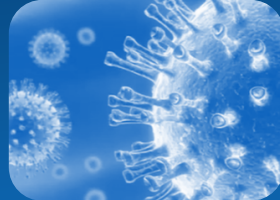
The Fastest Software-Defined Parallel File Storage System Simplicity, Scale, Speed
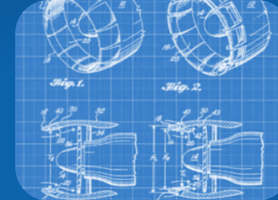

AL/ML   LIFE SCIENCES   FINANCIAL SERVICE   M&E   MANUFACTURING   HPC

AS-1114S-WN10RT

1U1N

- Single AMD EPYC™ 7003/7002 System
- 2x 960GB M.2
- 10x 7.68/15.36TB NVMe

AS -2114S-WN24RT

2U1N

- Single AMD EPYC™ 7003/7002 System
- 2x 960GB M.2
- 24x 7.68/15.36TB NVMe

AS -F1114S-RNTR

4U8N

- Single AMD EPYC™ 7003/7002 System
- 2x 960GB M.2
- 48x 7.68/15.36TB NVMe

SYS-220BT-HNTR

2U4N
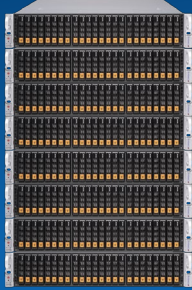
- Dual 3rd Gen Intel® System
- 2x 960GB M.2
- 24x 7.68/15.36TB NVMe (6 per node)

SYS-220BT-DNTR

2U2N

- Dual 3rd Gen Intel® System
- 2x 960GB M.2
- 24x 7.68/15.36TB NVMe (12 per node)

Weka Storage Node – PCIe Gen 4 SYS Overview

	H12 (AMD Gen4)		X12 (Intel Gen4)	
Supermicro SKU	**8x AS -1114S-WN10RT** (1U 1N)	**8x AS -2114S-WN24RT** (2U 1N)	**2x SYS-220BT-HNTR** (2U 4N)	**4x SYS-220BT-DNTR** (2U 2N)
Form Factor	8U	16U	4U	8U
Usable Capacity	363TB	726TB	218TB	436TB
Storage Media NVMe	**80x** (**10x** 7.68TB/node) Gen4	**160x** (**20x** 7.68TB/node) Gen4	**48x** (**6x** 7.68TB/node) Gen4	**96x** (**12x** 7.68TB/node) Gen4
CPU	**8x** AMD EPYC̀ 7003/7002	8x AMD EPYC™ 7003/7002	**16x** 3th Gen Intel (Ice Lake)	**16x** 3th Gen Intel (Ice Lake)
Memory	2048GB	2048GB	2048GB	2048GB
Network	**16x** Single -port Mellanox CX-6 200G VPI	**16x** Single -port Mellanox CX-6 200G VPI	**16x** Single -port Mellanox CX-6 200G VPI	**16x** Single -port Mellanox CX-6 200G VPI
IOPS*	10.2M (1.275M per node)	8.4M (1.05M per node)	8.5M (1.06M per node)	11.28M (1.41M per node)
Bandwidth*	235GB/s (29.4GB/s per node)	280GB/s (35GB/s per node)	202GB/s (25GB/s per node)	286GB/s (35.8GB/s per node)
I/O Latency	< 200us	< 200us	< 200us	< 200us

Weka Ready Nodes for PCIe GEN 5

ASG -WK1032C-GEN5

Coming soon

1U 16 E3.S NVMe

* w/ 2x CX-7 single port IB/eth 400GbE OSFP Gen5x16
** Read -13GB/s* per NVMe drive, **208 GB/s** aggregated by 16x NVMe
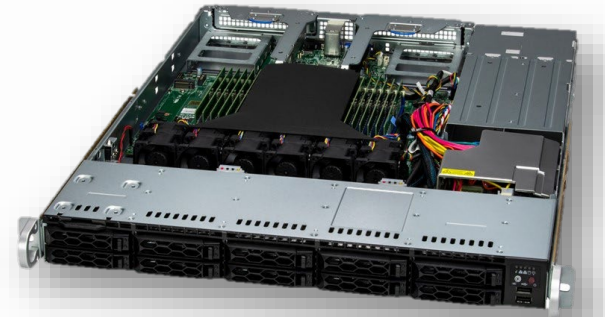(performance capped at NIC speed)

AS -WK1032C-GEN5

1U 10 U.3 NVMe

* w/ 2x CX-7 single port IB/eth 400GbE OSFP Gen5x16
** Read -13GB/s* per NVMe drive, **130 GB/s** aggregated by 10x NVMe
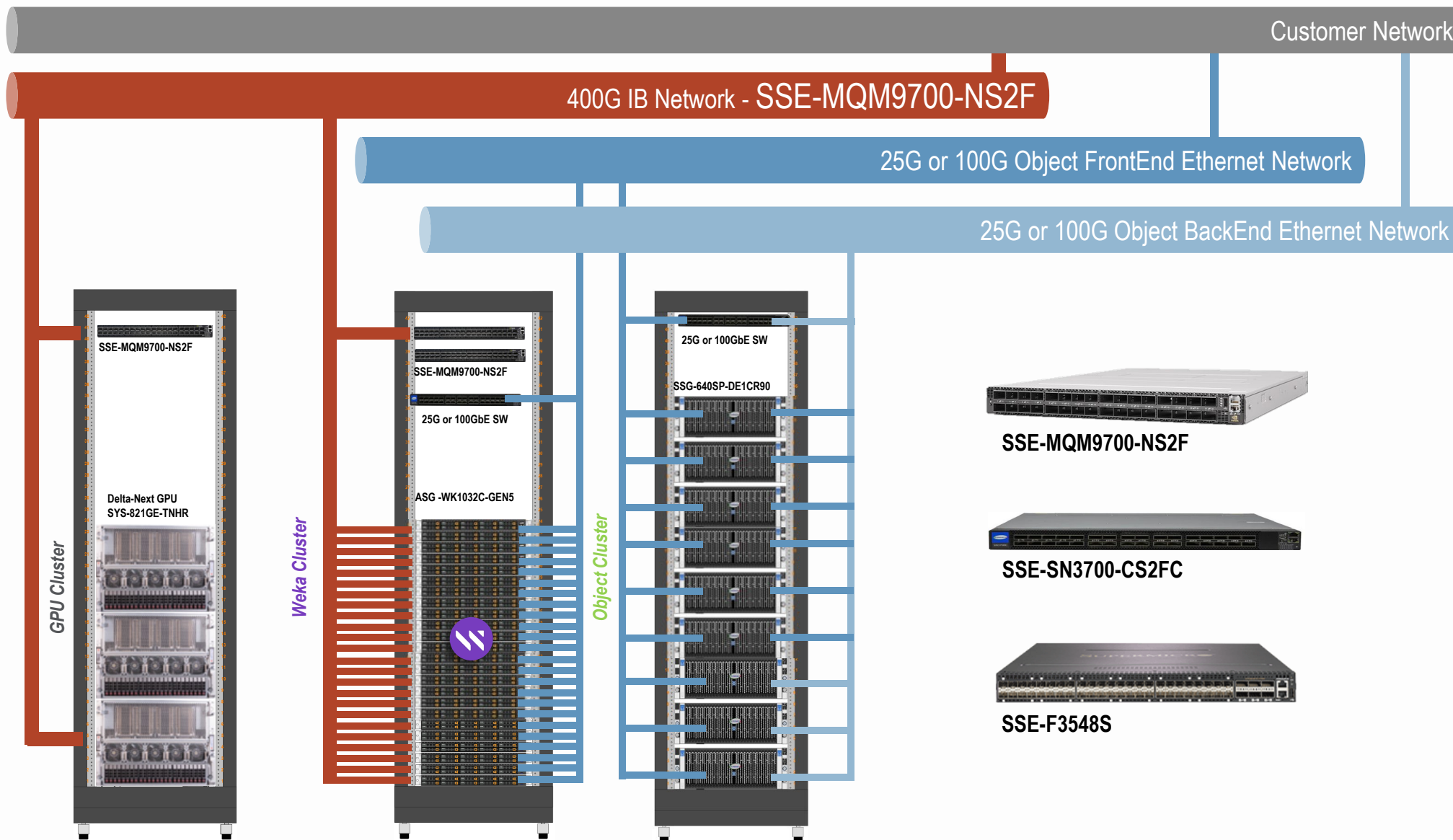(performance capped at NIC speed)

WekaFS is included and pre-installed from SMCI

*CX-7 : 50GB/s per port, 100GB/s for 2x NICs
** **Ref to Samsung 1743,** https://www.storagenewsletter.com/2021/12/28/samsung-pm1743-pcie-5-0-2-5-inch-edsff-e3-s-up-to-15tb-ssd-with-6-gen-v-nand/
For sales requests, please contact Weka-PM@supermicro.com

Reference Architecture

Customer Network

400G IB Network - SSE-MQM9700-NS2F

25G or 100G Object FrontEnd Ethernet Network

25G or 100G Object BackEnd Ethernet Network

SSE-MQM9700-NS2F

25G or 100GbE SW

SSE-MQM9700-NS2F

SSG-640SP-DE1CR90

25G or 100GbE SW

Delta-Next GPU
SYS-821GE-TNHR

ASG -WK1032C-GEN5

GPU Cluster

Weka Cluster

Object Cluster

SSE-MQM9700-NS2F

SSE-SN3700-CS2FC

SSE-F3548S

For reference only, layout varies depending on actual system quantity
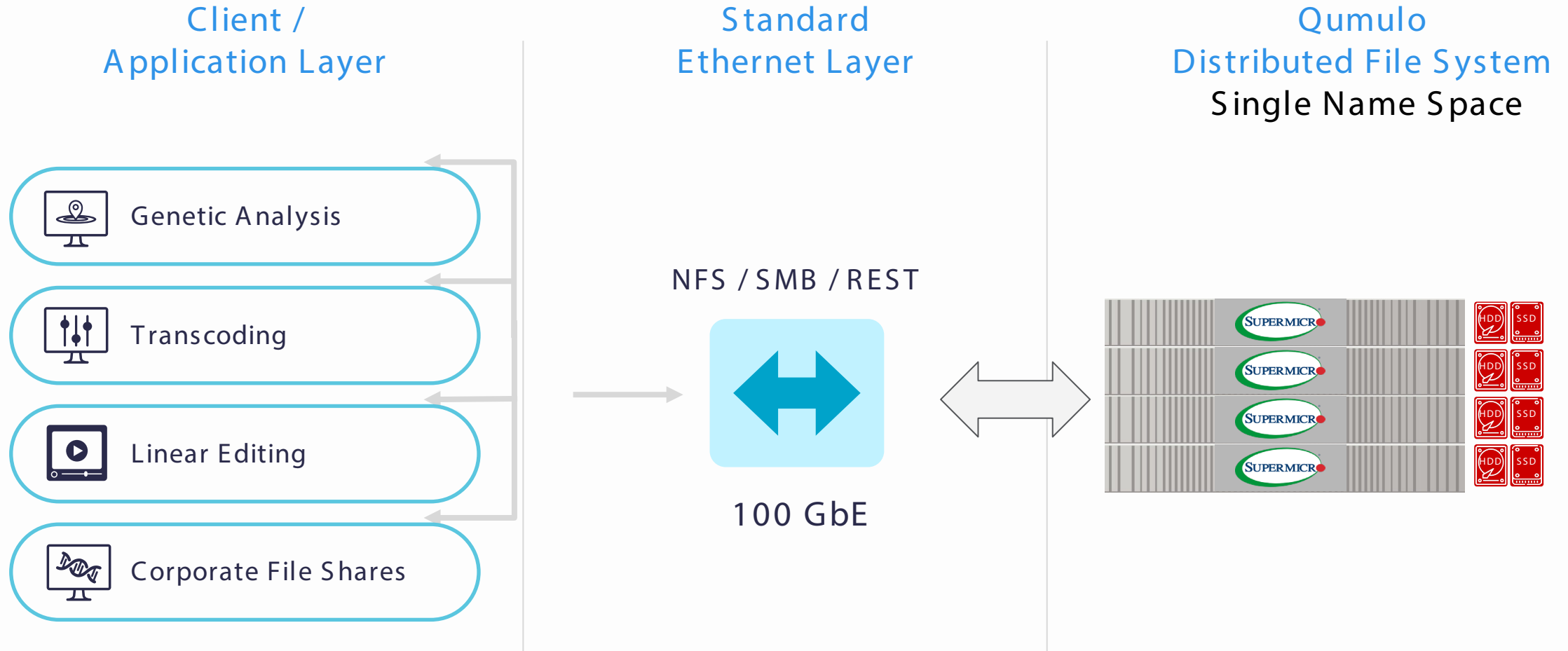
Qumulo

All-flash distributed file system allows you to manage full data cycle on single platform

William Li – Director of Solutions Management

Node Based Distributed File System

**Client /
Application Layer**

**Standard
Ethernet Layer**

**Qumulo
Distributed File System**
Single Name Space

Genetic Analysis

Transcoding

Linear Editing

Corporate File Shares

NFS / SMB / REST

100 GbE

Supermicro & Qumulo All-flash Bundles

Reference Architecture

NVMe AS – 1114S-WN10RT

OEM BOM*	30TB RAW	76TB RAW	153TB RAW
Form Factor	1U	1U	1U
Usable Entry Capacity	68TB	174TB	348TB
Usable Max Capacity	2.2PB	5.7PB	11.4PB
NVMe Drives	8 x 3.84TB	10 x 7.68TB	10 x 15.36TB
HDD Drives	N/A	N/A	N/A
Networking	2x 2p 100GbE		
CPU	AMD EPYC 7443P		
Memory	128GB		

For sales requests, please contact Qumulo-PM@supermicro.com

Supermicro & Qumulo Hybrid Bundles

Reference Architecture

Hybrid ASG-1014S-ACR12N4H

Performance Class	Active License - SFT-QLO-SWSBSL1-**x**Y			General Purpose - SFT-QLO-SWSBSGP-**x**Y		
Unit Raw Capacity	**96TB**	**216TB**	**240TB**	**96TB**	**216TB**	**240TB**
Usable Entry Capacity	223TB	503TB	559TB	223TB	503TB	559TB
Usable Max Capacity	7.6PB	17.1PB	19PB	7.6PB	17.1PB	19PB
NVMe Drives	4x 960G, 1.92TB, or 3.84TB	4x 1.92TB, 3.84TB, or 7.68TB		4x 960G, 1.92TB, or 3.84TB	4x 1.92TB, 3.84TB, or 7.68TB	
HDD Drives	12x 8TB	12x 18TB	12x 20TB		12x 18TB	12x 20TB
Networking	1x 2p 100GbE			1x 2p 25GbE		
CPU	AMD EPYC 7313P/7232P					
Memory	96 GB (6 × 16GB)					

Areas of Focus

Media & Entertainment
VFX, Rendering, Editing, MAM, Animation

Healthcare
PACS, VNA's, Diagnostic Imagery

Public/Universities
Digital libraries, VSS, HPC Labs, GIS

Research Computing
Simulation, Analytics HPC (replace GPFS)

IOT & Analytics
Modeling, Simulations

Surveillance
Video Security, Body camera, Video analytics Genetec, Milestone

Imaging
Aerial imagery GIS, Mapping, LIDAR

Enterprise File
eDiscovery, User Directory, Active workloads

Life Sciences
Genetic Sequencing Microscopy

Manufacturing
ADAS, Automotive Aerospace

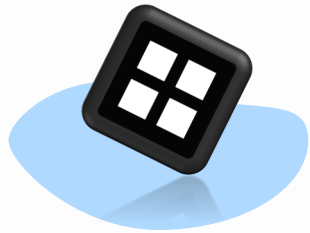**Rich Media & Video** **General Purpose File** **Analytics**

OSNEXUS

QuantaStor scale-up & scale-out unified file, block, and object storage

William Li – Director of Solutions Management

QuantaStor

A software-defined storage platform which bare-metal installs onto commodity x86 servers and VMs to turn them into storage systems

Storage Grid Technology
Built-in to the platform and unifies management of QuantaStor storage servers and clusters across racks, sites, and clouds.
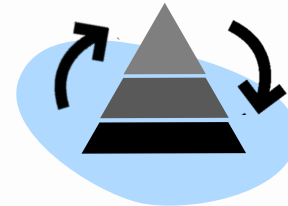
End-to-End Security
Advanced RBAC, end-to-end encryption support, and compliance with NIST 800-53, 800-171, HIPAA & CJIS.

Built-on an Open Storage Foundation
Integrated with enterprise-grade open storage technologies (Ceph & ZFS).

Unified File, Block & Object
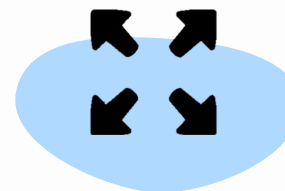All major storage protocols are supported including NFS/SMB, iSCSI/FC, and S3.

Automated Storage Tiering
Let IT Administrators automate data movement across the grid, making it easier to keep the most important and recent set of files on all-flash storage

Flexibility
Broadest hardware portfolio and deep hardware integration

Narrow Down Design Options

Scale-up File
(NFS/SMB)

Scale-out File
(NFS/SMB/CephFS native)

Scale-out Object
(S3 compatible)

Scale-up Block
(iSCSI/FC/NVMeoF)

Scale-out Block
(iSCSI/FC/NVMeoF)

M&E

Server Virtualization

Scale-up NAS

HER

Data Lake

Scale-out NAS

OpenStack

Scale-out SAN

Scale-up SAN

HPC

VDI

Back up/ archive

Media archive

Scale-out S3 Object

CDN

WORM Archive

QuantaStor
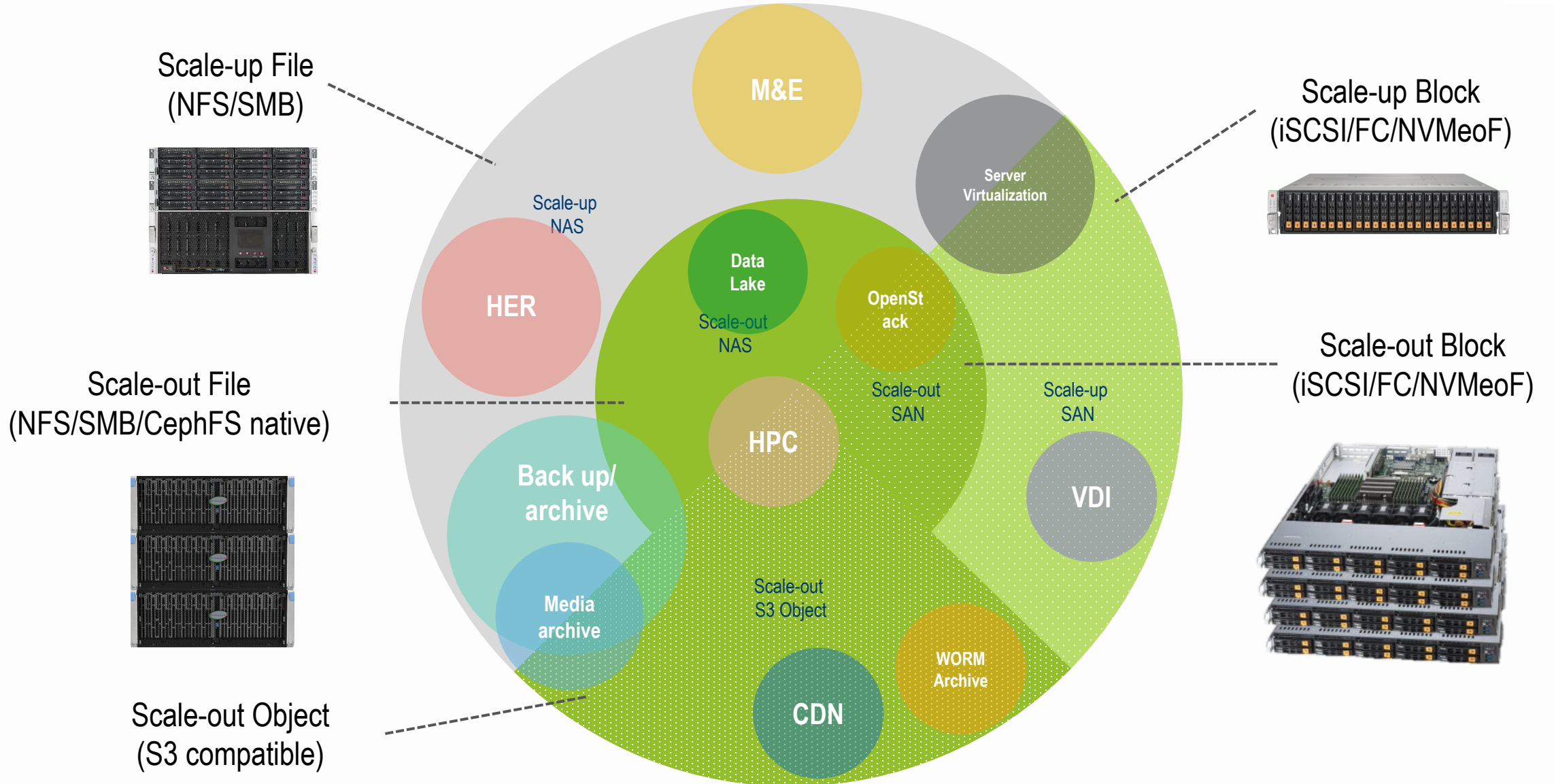
Support Scale-out & Scale-up Architectures

Scale-up Storage Cluster
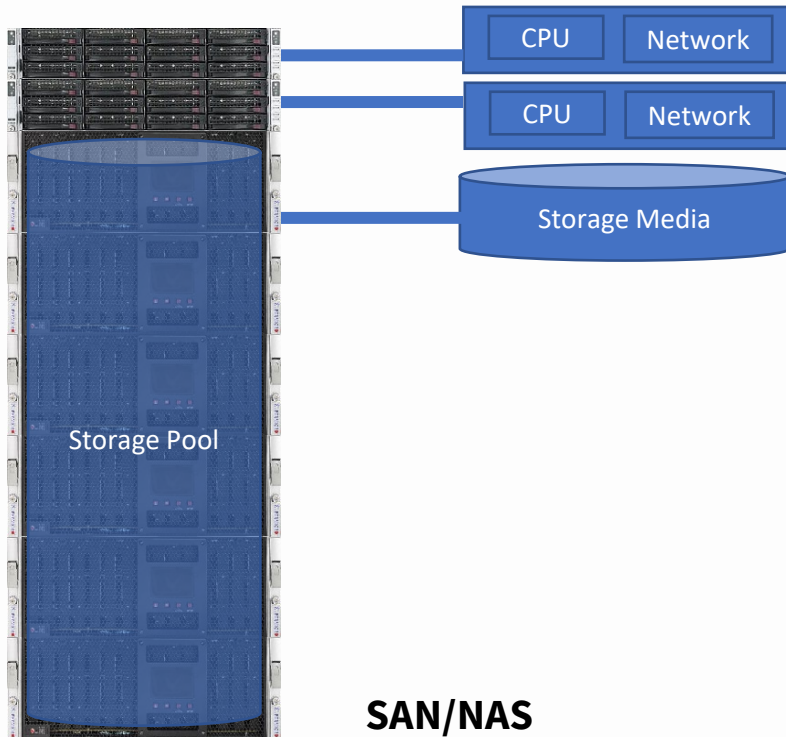
Scale-out Storage Cluster

CPU	Network
CPU	Network

Storage Media

Storage Pool

SAN/NAS

CPU | Network | Storage Media

Storage Pool
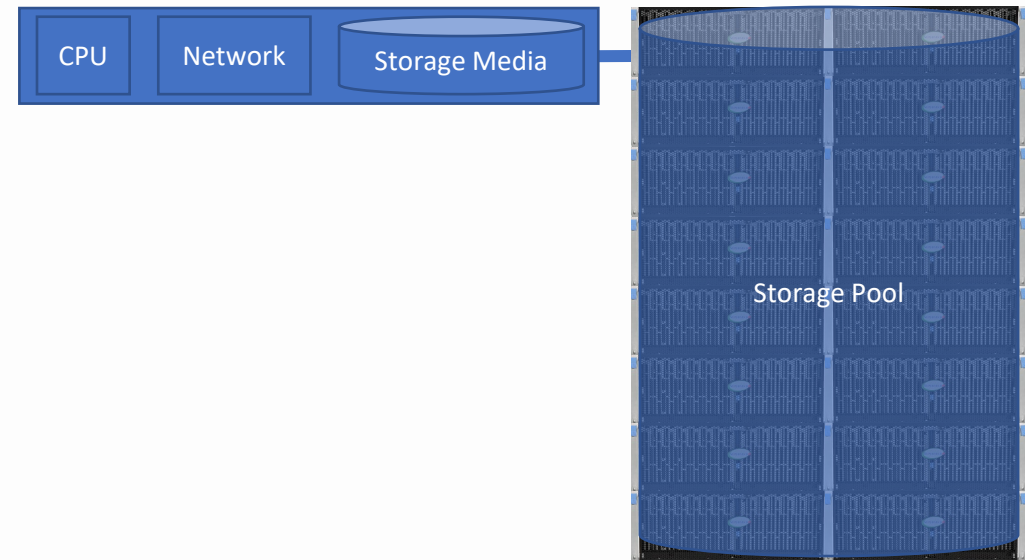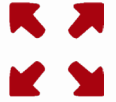
SAN/NAS & S3

SMCI SKU Selection & Solution Design Tools

Scale-Out			
Config tool >> https://www.osnexus.com/ceph-designer?conf=smc			
NVMe	H13	A S - 1 1 2 5 H S - T N R	**NEW**
NVMe	X13	S Y S - 2 2 1 H - T N R	**NEW**
NVMe	X13	S S G - 1 2 1 E - N E S 2 4 R	**NEW**
NVMe	H12	A S - 2 1 1 4 S - W N 2 4 R T	
NVMe	H12	A S - 1 1 1 4 S - W N 1 0 R T	
NVMe	X12	S Y S - 2 2 0 B T - D N T R	
NVMe	X12	S Y S - 2 2 0 B T - H N T R	
	X12	S S G - 6 4 0 S P - E 1 C R 6 0	
	X12	S S G - 6 4 0 S P - D E 1 C R 6 0	
	X11	S S G - 6 0 4 9 S P - E 1 C R 6 0 / 9 0	
	X11	S S G - 6 0 4 9 S P - D E 1 C R 6 0 / 9 0	
NVMe	X11	S S G - 1 0 2 9 P - N E L 3 2 R	
NVMe	X11	S S G - 1 0 2 9 P - N E S 3 2 R	
NVMe	X11	S Y S - 2 0 2 9 U - T N 2 4 R 4 T	
	X11	S S G - 6 0 4 9 P - E 1 C R 4 5 H	
	X11	S S G - 6 0 4 9 P - E 1 C R 6 0 H	
	X11	S S G - 6 0 4 9 P - E 1 C R 2 4 L	

Scale-Up			
Config tool >> https://www.osnexus.com/zfs-designer?conf=smc			
Head Node		X12	S Y S - 1 2 0 H - T N R
		X12	S Y S - 1 2 0 C / 6 2 0 C - T N 1 0 R
		X12	S Y S - 6 1 0 U / 6 2 0 U - T N R
		X11	S S G - 6 0 2 9 P - E 1 C R 1 2 H / L
		X11	S S G - 2 0 2 9 P - E 1 C R 2 4 H / L
	2N2N NVMe	X11	S S G - 2 0 2 9 P - D N 2 R 2 4 L
	4U2N	X11	S S G - 6 0 4 9 S P - D E 2 C R 6 0 / 9 0
	4U2N	X12	S S G - 6 4 0 S P - D E 2 C R 6 0 / 9 0
JBOD	90Bay		S C 9 4 7 H E 2 C - R 2 K 0 5 J B O D
	90Bay		C S E - 9 4 6 E D - R 2 K J B O D
	60Bay		C S E - 9 4 7 S E 2 C - R 1 K 6 6 J B O D
	44Bay		C S E - 8 4 7 E 2 C - R 1 K 2 3 J B O D
	24Bay		C S E - 2 1 6 B E 2 C - R 6 0 9 J B O D
	24Bay		C S E - 8 4 6 B E 2 C - R 1 K 0 3 J B O D
	12Bay		C S E - 8 2 6 B E 2 C - R 6 0 9 J B O D

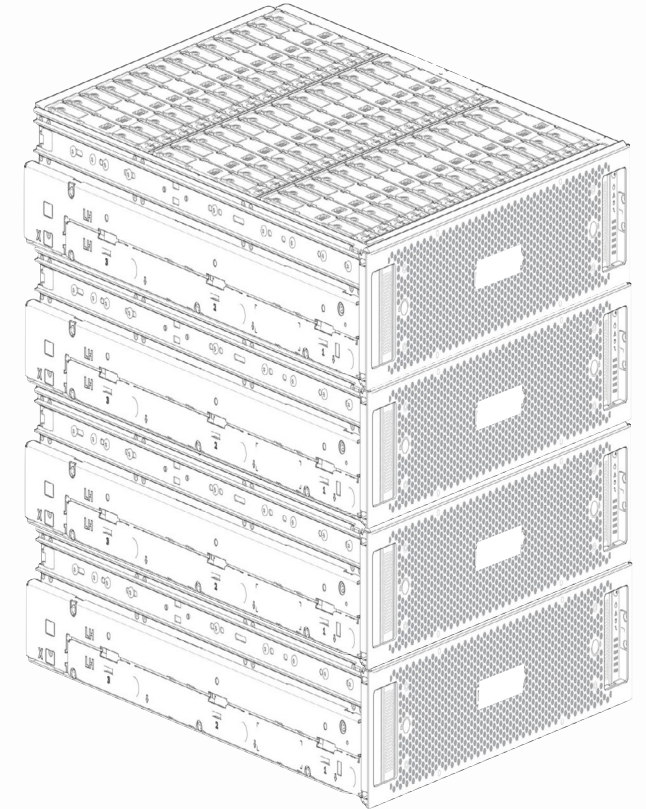For sales requests, please contact Osnexus-PM@supermicro.com

Scale Flexibly: Storage Building Blocks for 2023

Supermicro Advantages

- Denser (more bays in fewer RUs)

- Higher capacity with latest drives (not just 7.68TB SSDs)

- Affordable SATA HDDs supported (not just SAS HDDs)

- Lower cost single-controller design (not hardwired for dual controllers)
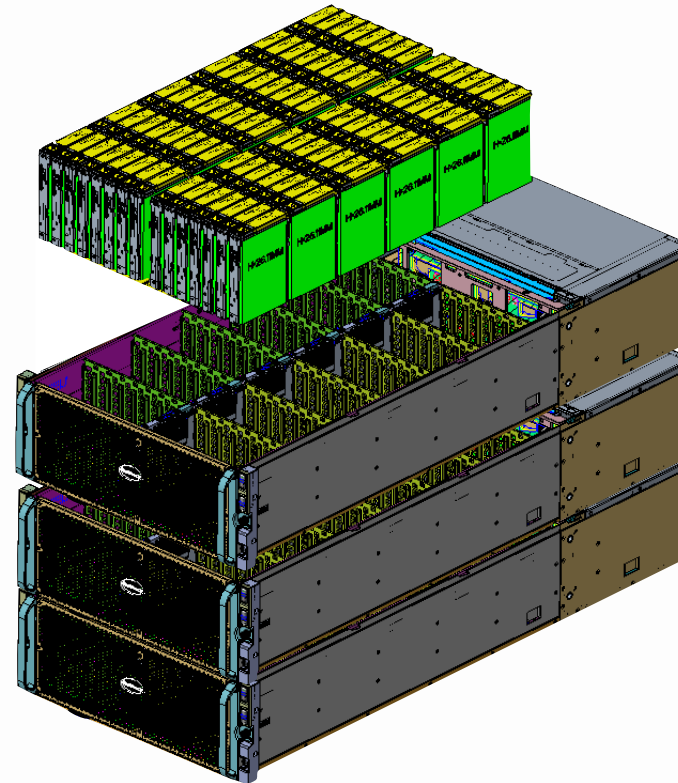
6PB in 12RU with Supermicro   6PB in 20RU with key Competitor

Channel Promotion: Priced for this Quarter

Special pricing for Top-Loading Expansion

Best Performance and Value for Enterprise and Cloud Storage

CSE-947HE1C-R2K05JBOD
90 bays in 4RUs!

OR

SE-947HE2C-R2K05JBOD
Dual Expanders!

+ SEAGATE

- Receive special bundle deal $3000 off on Supermicro Top Loading Storage Expansion JBOD

- Fully Populated with 90 drives.

- Promotion Period: **April 2023 – June 2023**

- Contact your Supermicro sales representative for more details; terms and conditions apply

VALUE of Selling Supermicro Software Defined Solutions

Vertically integrated solutions:	SDS solutions that are vertically integrated offer resellers a complete, all-in-one solution that simplifies inventory management and reduces complexity, providing a competitive advantage in the market.
Increased revenue & higher margins:	Vertically integrated SDS solutions can be easily upsold or bundled with other products and services, providing resellers with an opportunity to increase revenue and margins.
Faster time to market:	SDS solutions offer increased agility and faster time to market, as storage resources can be quickly provisioned and configured to meet the changing needs of the organization.
Flexibility	SDS solutions offer resellers more options and allow them to tailor solutions to meet the unique needs of each customer.
Cost savings:	SDS solutions help reduce costs by making use of existing hardware resources.
Advanced features:	SDS solutions offer advanced features and functionality that differentiate from standard component-based storage, providing additional value to resellers and their customers.

Thank you - QA

Seed
Q & A

Promotional Bundle – Program Details

Top-Loading Expansion Program

For a limited time, Supermicro offers great instant savings on
fully populated 90-bay Expansion Storage with Seagate 20TB drives bundle

Terms and Conditions:
- Promotion Period:
  - **Single expander 90-bay Top Loading model: Now – June/2023**
  - **Dual expander 90-bay Top Loading model: Now – June/2023**
- Requires qualified Seagate drives installed to each system's full capacity (90 drives)
  - **Seagate 20TB 3.5" 7200RPM SAS3 12Gb/s 256M Hard Drive (HDD-A20T-ST20000NM002D)**
  - **Seagate 20TB 3.5" 7200RPM SATA3 6Gb/s 256M Hard Drive (HDD-T20T-ST20000NM007D)**
- First 100 units for this promotion. Special approval required by PMs for volume deal
- Purchased items including the installed components for discount must be shown on the same order
- Orders are subject for reviews and approval by PM
- Promotion is applicable on the order date, not ship date
- No substitutions allowed; must be qualifying products listed above
- This promotion program is not applicable to SPA projects