



New Generation X13/H13 Storage Server Introduction

Hank Kuan

Manager, System Product Management

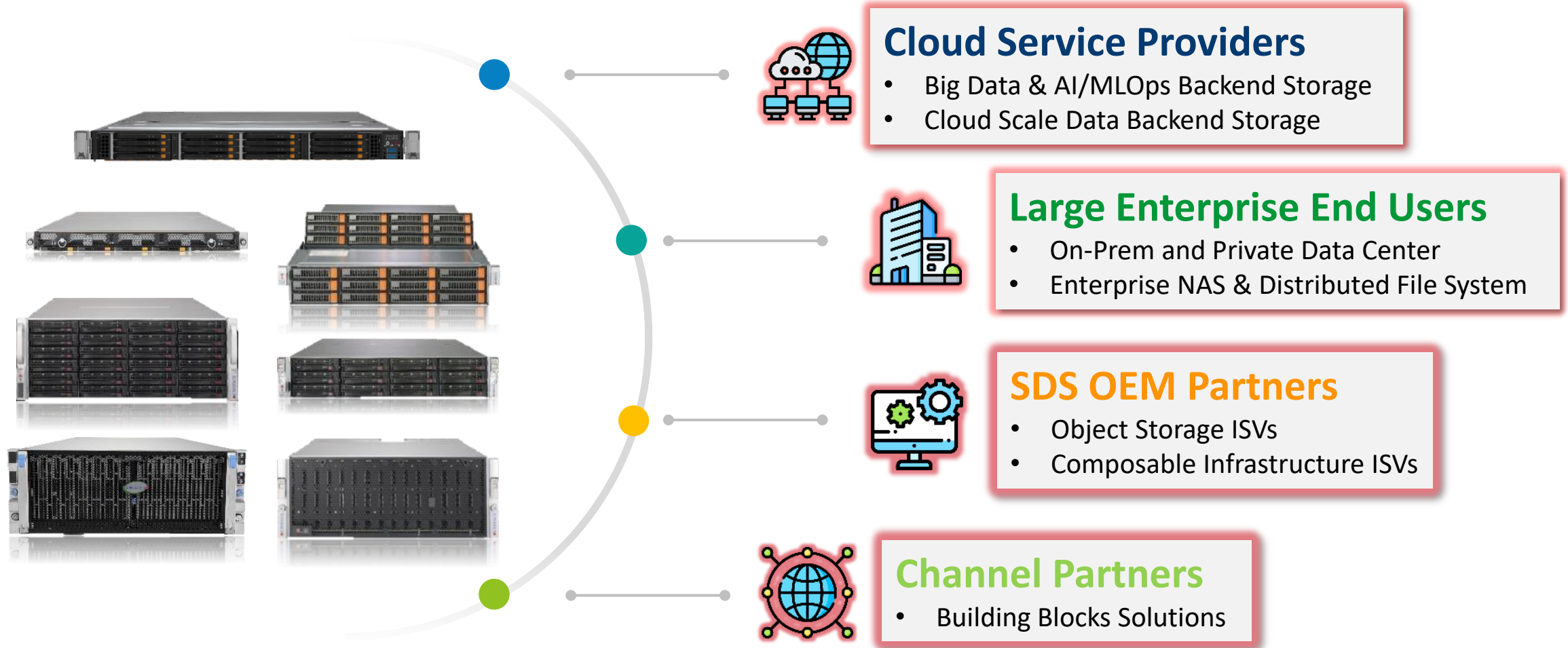
E: hankk@supermicro.com



SuperStorage Go-To Market Strategy



Comprehensive Storage Solutions For All Segment Customers



PCIe 5.0 Storage Family Roadmap

New Components Refresh and Continuous Architectural Innovations

1U and 2U EDSFF Petascale All Flash New




Brand New 1U and 2U E1 and E3

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



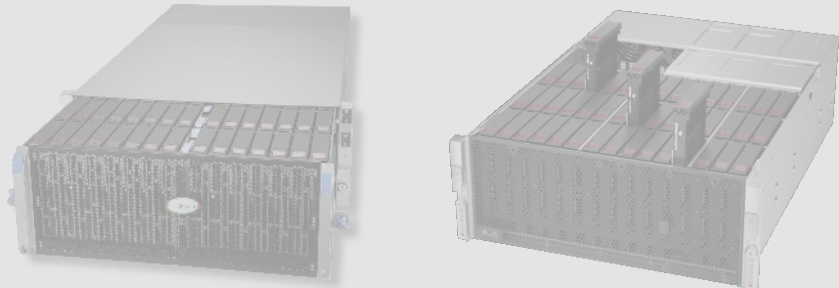
New Chassis Upgrade and Supports Multiple Architectures

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



Refresh with New Processor and Expanders

4U 60 and 90-bay Cloud Scale Top Loading



Refresh with New Processor and Expanders

Gen5 Petascale All-Flash Storage



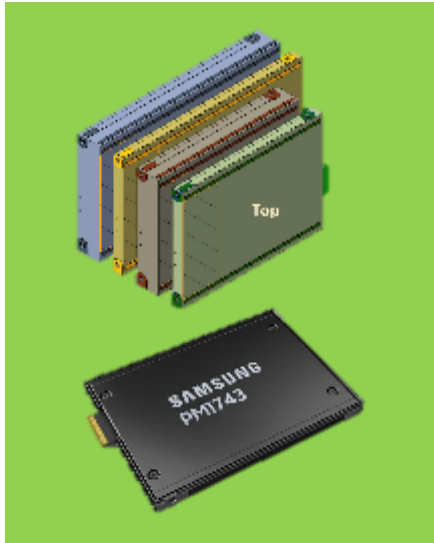
Benefits of EDSFF SSDs

For Both System Architects/Designers and Data Center End-Users

EDSFF E1.S



EDSFF E3



EDSFF E1.L

Capacity Scaling

- Wider PCBs for more flexible NAND Chip layouts

Performance Scaling

- Scalable Connector Design, Multiple Link widths (x4, x8, x16) and support different power profiles

Thermal Efficient

- Improvements for thermal and cooling management

Future Proofed

- Common connector for all form factors and more robust signal integrity for future PCIe generations

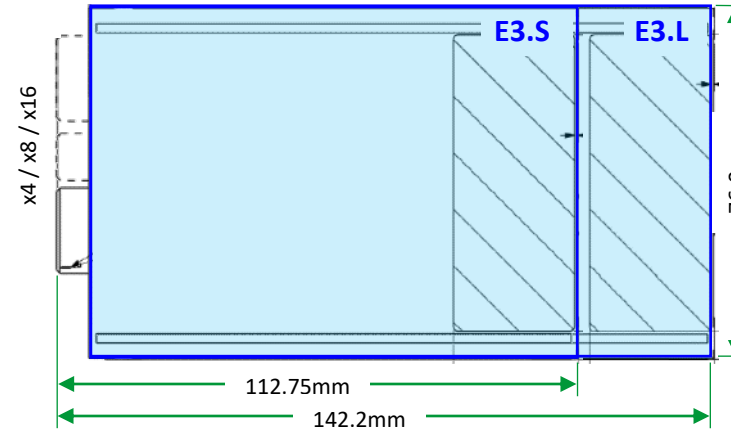
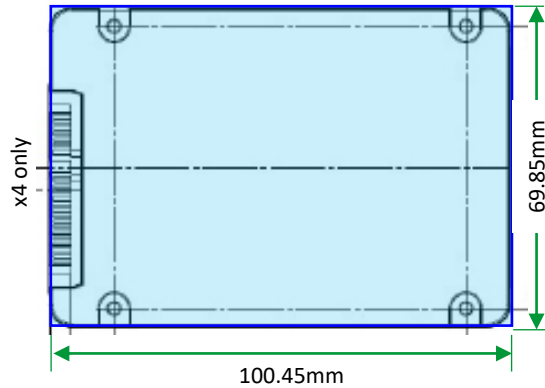
Solution Range

- Wide range of power profiles (20W - 70W) for higher capacity/performance SSDs, SCM and networking

NVMe SSD Form Factor Comparison

U.2

- Thickness: 7.0mm/15.0mm
- Max Power: 25W



E3.S/2T

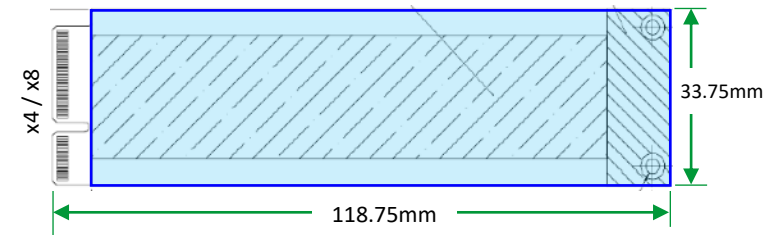
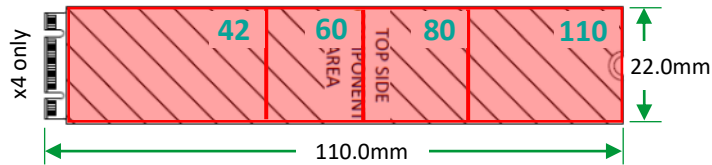
- Thickness: 7.5mm/16.8mm
- Max Power: 25W/40W

E3.L/2T

- Thickness: 7.5mm / 16.8mm
- Max Power: 40W/ 70W

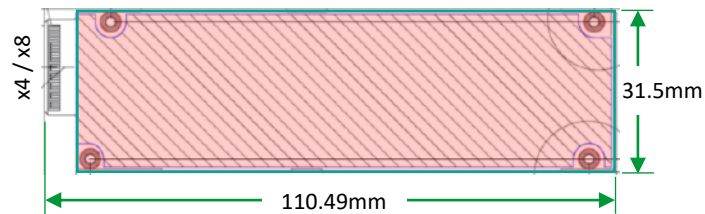
M.2

- Thickness: 4.3mm MAX
- Max Power: 8W



E1.S

- Thickness: 5.9mm / 8.01mm
- Max Power: 12W/16W

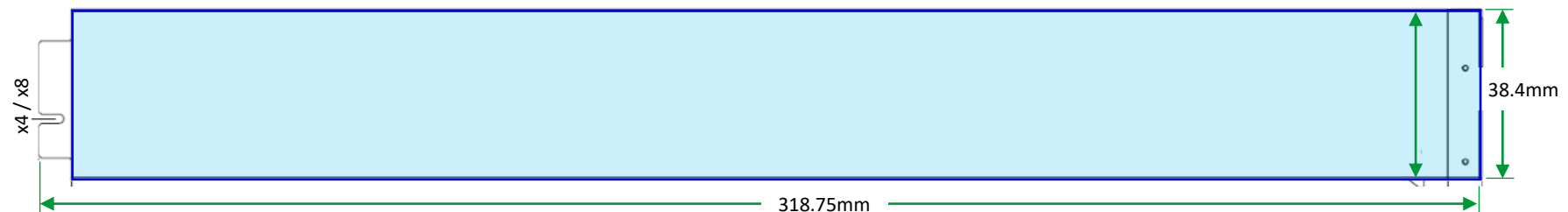


E1.S

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

E1.L

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



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

Petascale All-NVMe Storage Key Advantages

Extreme Performance and Capacity to Support Software-Defined Data Center Workloads

Performance Consolidate

230+ GB/s 128KB Sequential write performance
30M+ IOPS 4KB Random Read

Cooling Efficiency

- New EDSFF connectors and system level design thermal optimization

Capacity Consolidate

1PB All-NVMe storage in 2U
*w/ 30TB SSD

Applications flexible

- TLC, QLC and CXL support
- High performance database
- Hyperconverged infrastructure
- AI/MLOps storage
- Virtualization & dense VDI
- High performance Obj storage

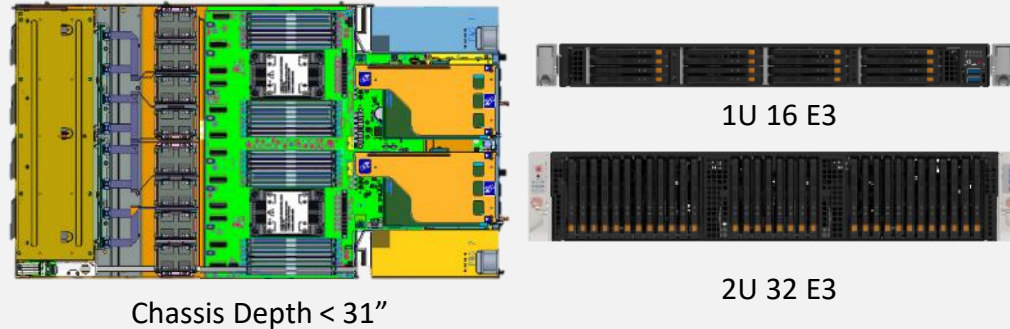


Gen5 EDSFF All-NVMe Storage Design Highlights



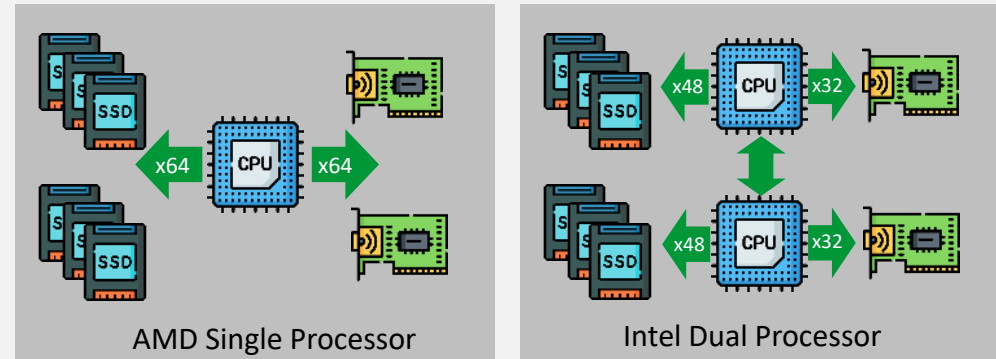
Next Generation and Purposed-built All-NVMe Storage Platforms

New Unified Chassis



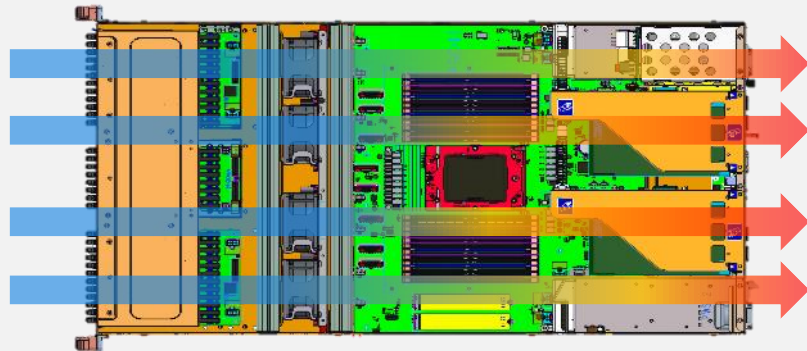
Supports 1U, 2U and E3.S 1T and 2T, x4 (SSD)

Balanced Architecture



Balanced PCIe Lanes for Storage IO and Network

Thermal Efficiency



Improved Cooling Air flow by EDSFF Orthogonal Connectors and BPN Design

Future Ready

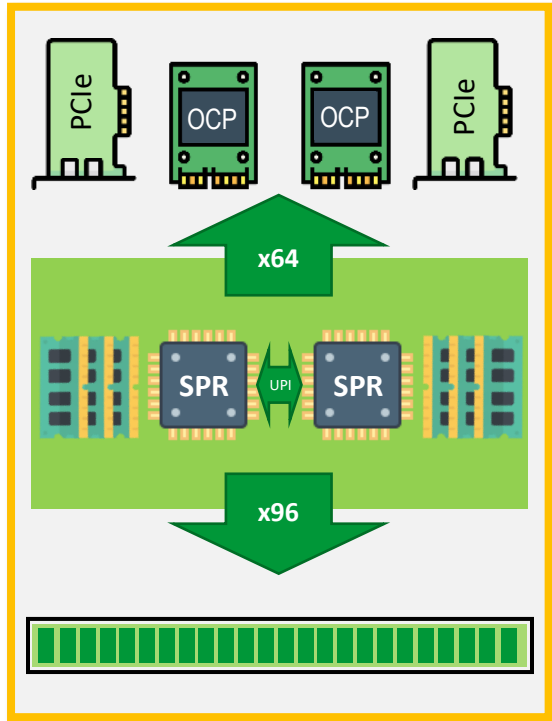


Supports PCIe 5.0 Architecture and EDSFF Family (E1.S, E3.S 1T x4, 2T x8)

X13 Petascale Flexible 1U Topology

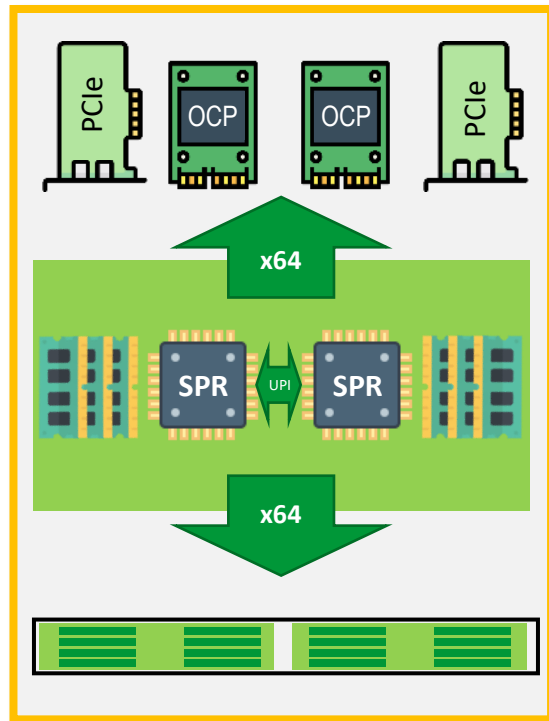
Total 160 PCIe 5.0 IO Lanes and Provide Balanced Front Storage and Rear IO Bandwidth in 1U Design

Ultra High Performance Storage



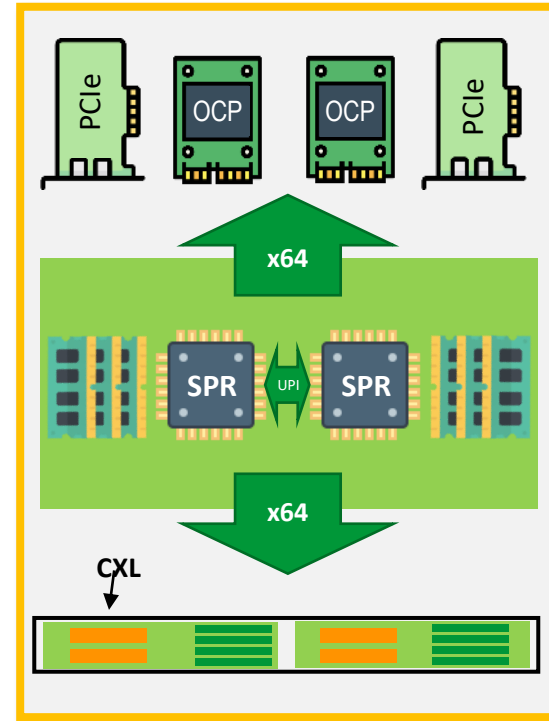
1U 24x E1.S SSD (x4)

Ultra High Performance and Capacity Storage



1U 16x E3.S SSD (x4)

High Performance & Memory Hybrid Storage



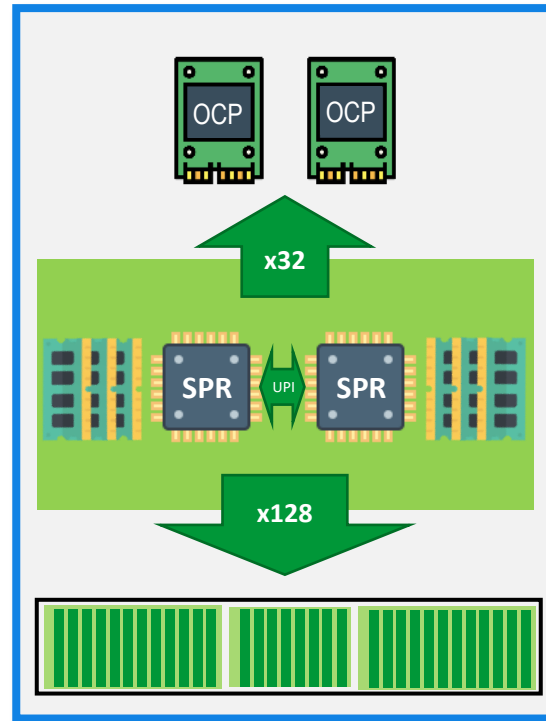
1U 8x E3.S SSD (x4) & 4x E3.S CXL (x8)

Not Released

X13 Petascale Flexible 2U Topology

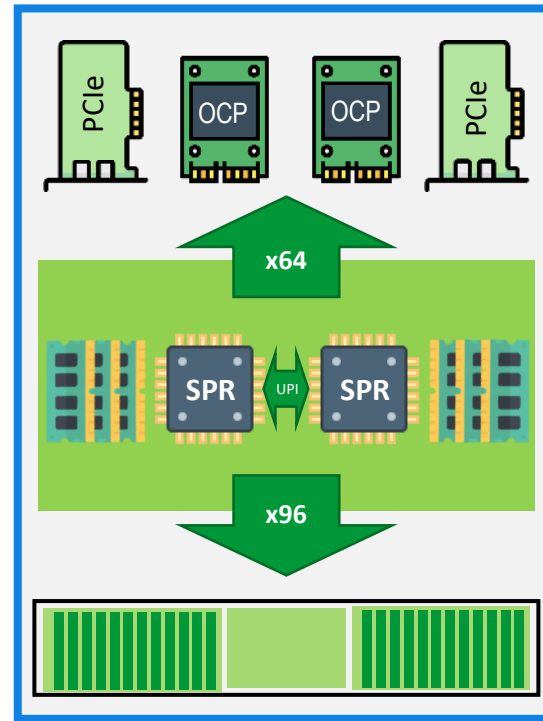
Total 160 PCIe 5.0 IO Lanes and Provide Balance Front Storage and Rear IO Bandwidth in 2U Design

Ultra High Performance and Density Storage



2U 32x E3.S SSD (x4)

High Performance and Balanced Storage



2U 24x E3.S SSD (x4)



X13 1U Petascale All-Flash

PCIe 5.0 Slots
Up to 2 x16 slots +
2 AIOMs

DDR5 Slots
Up to 32 DIMMs

Dual Processor
Up to 270W TDP

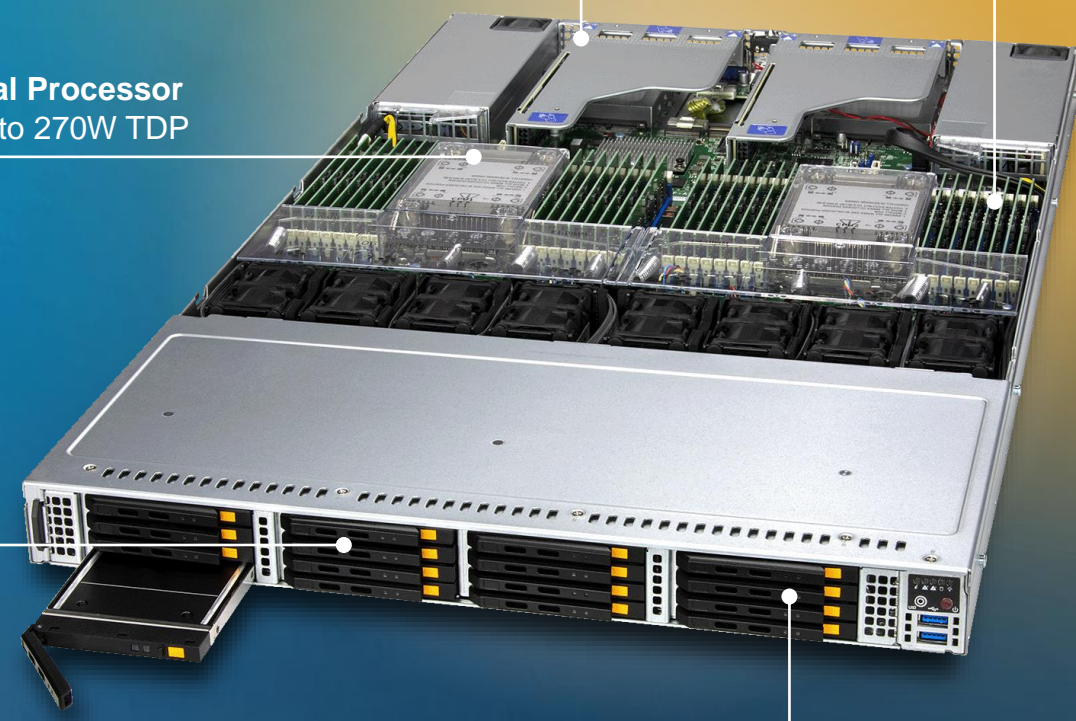
E1.S/E3.S EDSFF
Next-gen form factor

Optional E3.S 2T x8
CXL Support

Redundant Power Supply
1600W (Titanium level,)

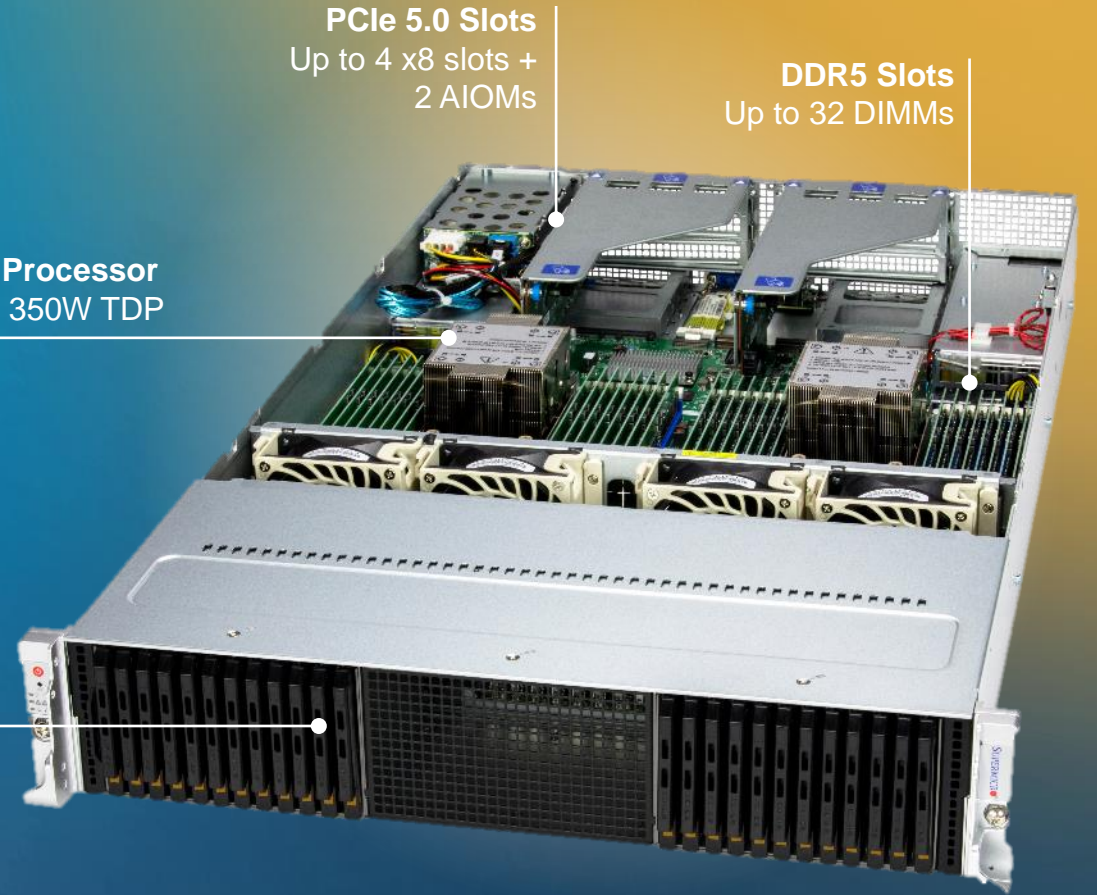
PCIe 5.0 Slots
x16 AIOMs

PCIe 5.0 Slots
x16 slots





X13 2U Petascale All-Flash



PCIe 5.0 Slots
Up to 4 x8 slots +
2 AIOMs

DDR5 Slots
Up to 32 DIMMs

Dual Processor
Up to 350W TDP

E3.S EDSFF
Up-to 32 E3.S 1T slots

Redundant Power Supply
2000W (Titanium level)



Hot swap U.2

PCIe 5.0 Slots
x16 AIOMs

PCIe 5.0 Slots
four x8 or two x16
slots

X13 Petascale All-Flash Specification Highlights



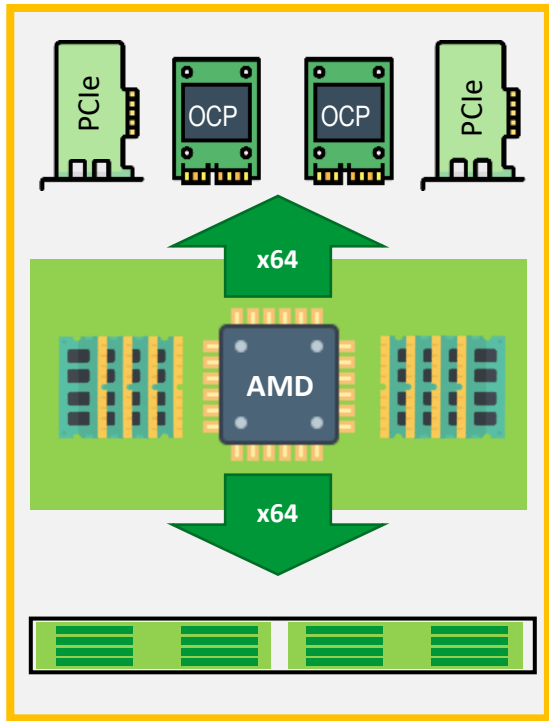
	1U E1.S All-Flash	1U E3.S All-Flash	1U E3.S Hybrid All-Flash	2U E3.S All-Flash
Model Number	SSG-121E-NES24R	SSG-121E-NE316R	SSG-121E-NE316R	SSG-221E-NE324R
CPU	Dual 4 th Gen Intel® Xeon® Scalable Processors up to 350W TDP			
Memory	32 DIMM slots with 2DPC; Up to 8TB DDR5			
Expansion		2 PCIe 5.0 x16 FH slots 2 PCIe 5.0 x16 AIOM slots		2 PCIe 5.0 x16 FH slots or 4 PCIe 5.0 x8 FH slots 2 PCIe 5.0 x16 AIOM slots
Storage	24 hot-swap 9.5mm/15mm E1.S drive bays	16 hot-swap 7.5mm E3.S drive bays	8 hot-swap 7.5mm E3.S drive bays and 4 E3.S 2T x8 CXL drive bays	32 hot-swap 7.5mm E3.S drive bays
Networking	via AIOM			
Power Supplies	Redundant 2000W Titanium level	Redundant 1600W Titanium level	Redundant 1600W Titanium level	Redundant 2000W Titanium level
Workloads	Software-defined Storage, In-Memory Computing, Data Intensive HPC, Private & Hybrid Cloud, NVMe Over Fabrics Solution			

H13 Petascale Flexible Topology

The 128 PCIe 5.0 IO Lanes and Provide Balance Front Storage and Rear IO Bandwidth in both 1U and 2U Design

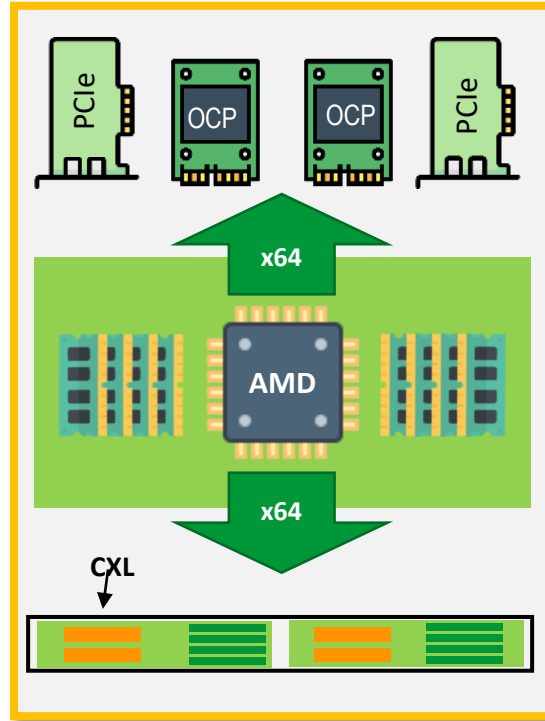
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Ultra High Performance Storage



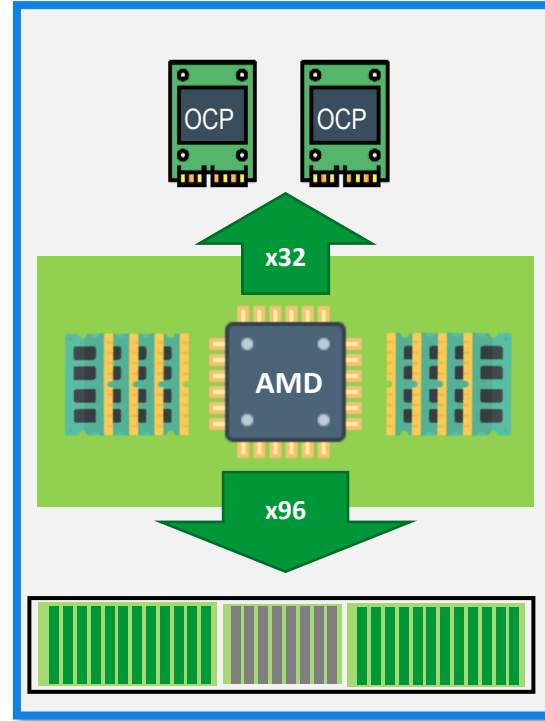
1U 16x E3.S SSD (x4)

High Performance & Memory Hybrid Storage



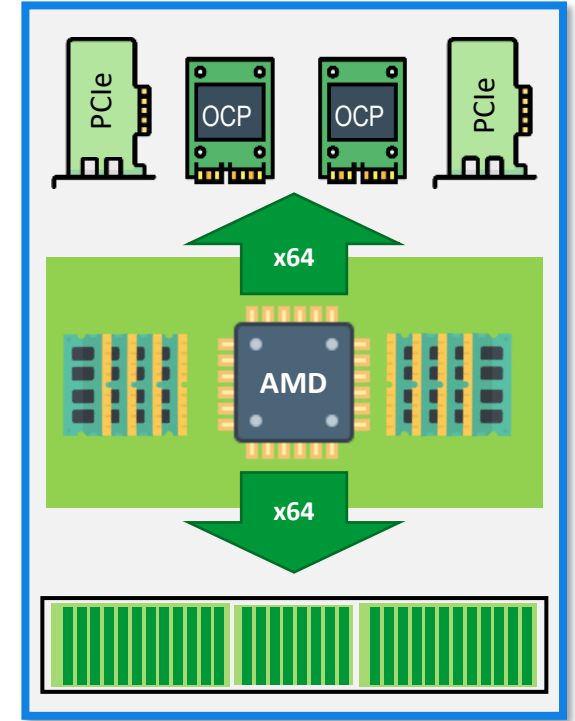
1U 8x E3.S SSD (x4) & 4x E3.S CXL (x8)

High Performance and Density Storage



2U 24x E3.S SSD (x4)

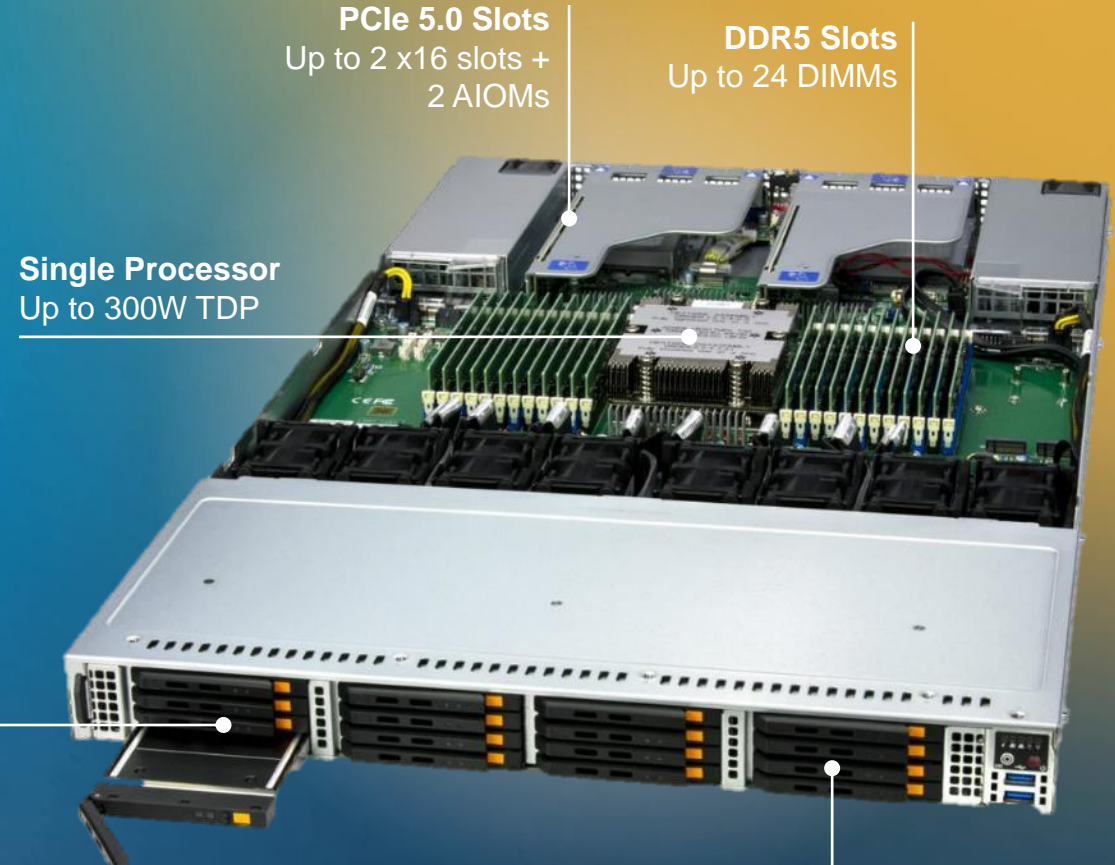
Petabyte Scale Massive Storage



2U 32x E3.S SSD (x2)



H13 1U Petascale All-Flash



PCIe 5.0 Slots
Up to 2 x16 slots +
2 AIOMs

DDR5 Slots
Up to 24 DIMMs

Single Processor
Up to 300W TDP

E1.S/E3.S EDSFF
Next-gen form factor

Optional E3.S 2T x8
CXL Support



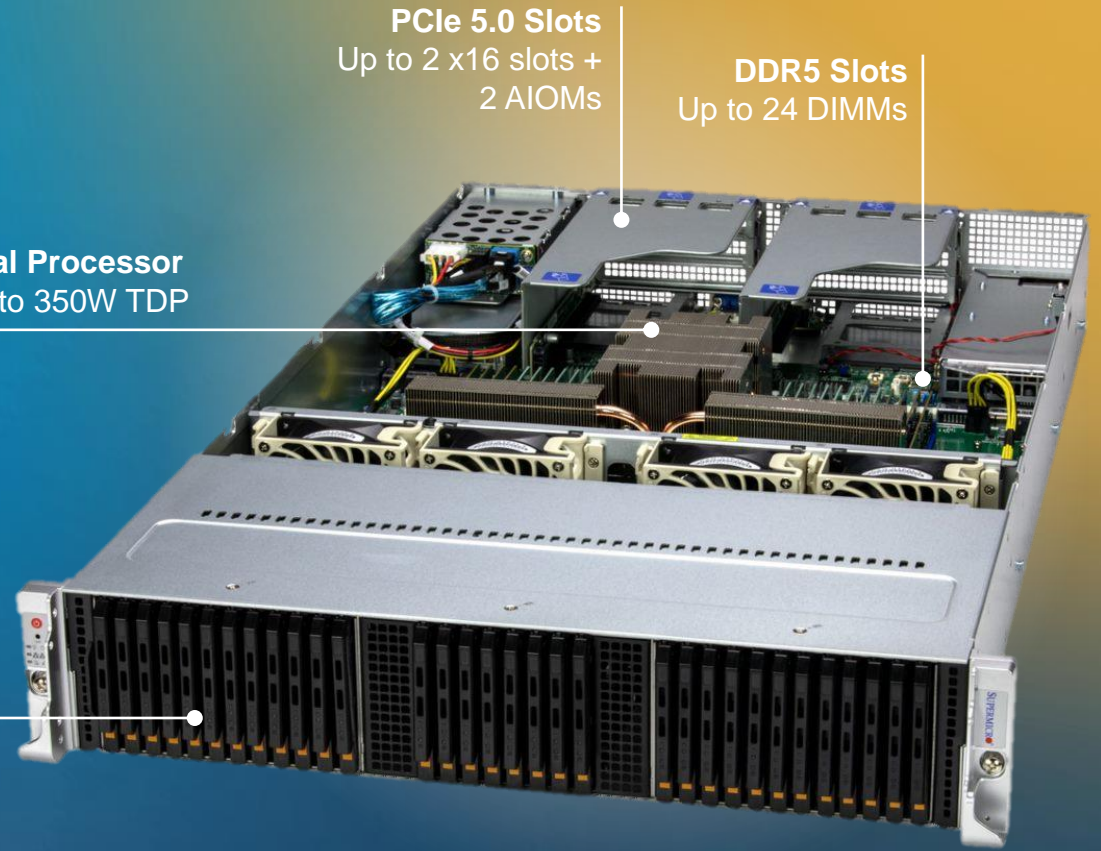
Redundant Power Supply
1600W (Titanium level,)

PCIe 5.0 Slots
x16 AIOMs

PCIe 5.0 Slots
x16 slots



H13 2U Petascale All-Flash



PCIe 5.0 Slots
Up to 2 x16 slots +
2 AIOMs

DDR5 Slots
Up to 24 DIMMs

Dual Processor
Up to 350W TDP

E3.S EDSFF
Up to 32 E3 1T slots

Redundant Power Supply
1600W (Titanium level)



Hot swap U.2

PCIe 5.0 Slots
x16 AIOMs

PCIe 5.0 Slots
x8 or x16 slots

H13 Petascale All-Flash Specification Highlights

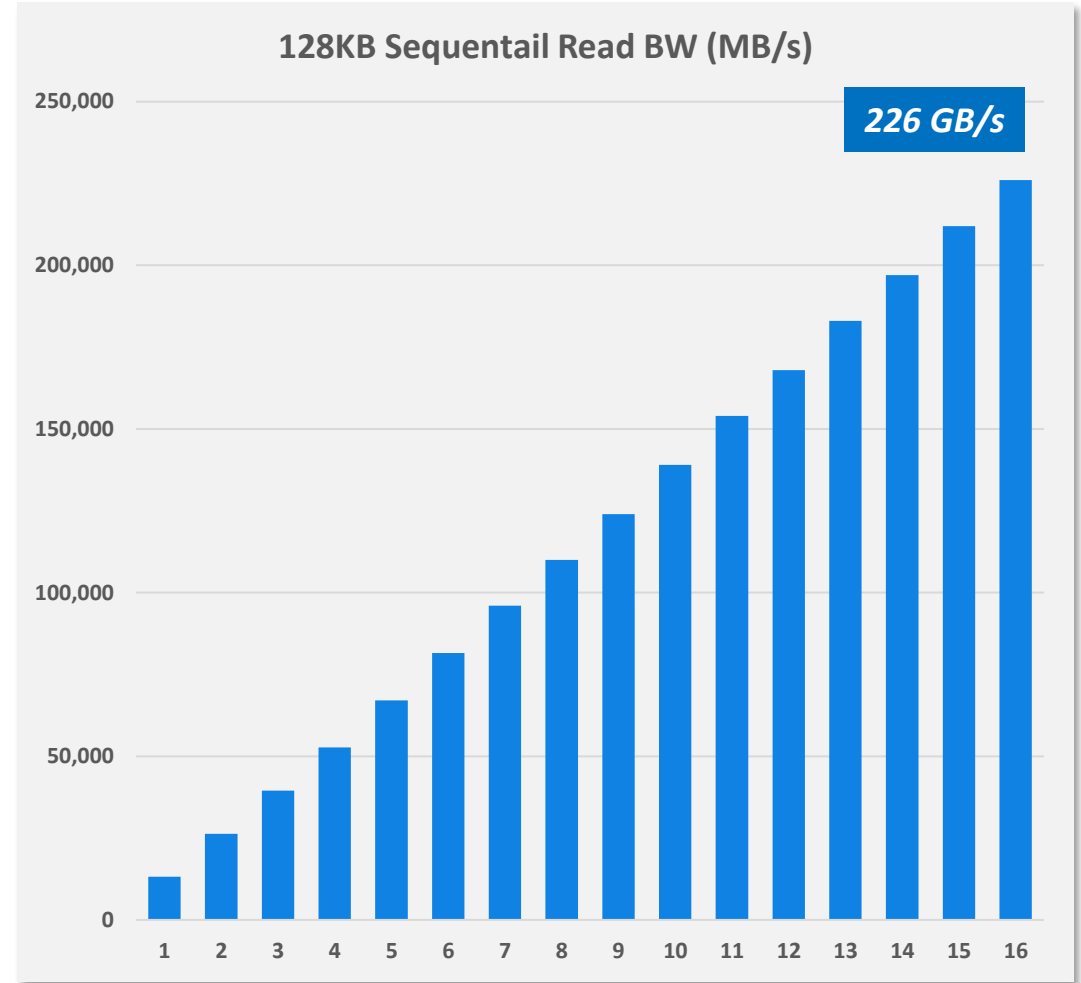
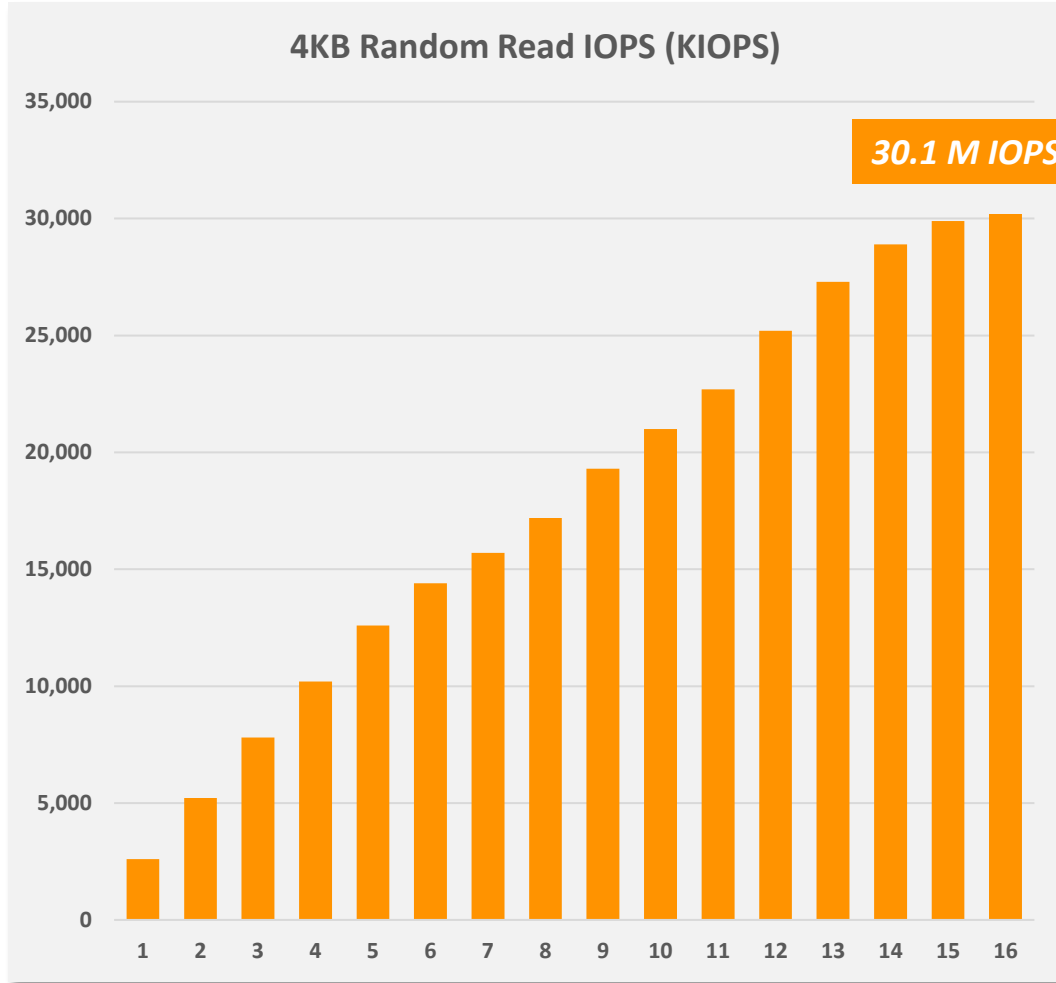


	1U E3.S All-Flash	1U E3.S Hybrid All-Flash	2U E3.S All-Flash
Model Number	ASG-1115S-NE316R	ASG-1115S-NE316R	ASG-2115S-NE332R
CPU	Single Socket SP5 4th Generation AMD EPYC 9004 Scalable processors. Up to 350W TDP.		
Memory	24 DIMM slots with 2DPC; Up to 6TB DDR5		
Expansion		2 PCIe 5.0 x16 FH slots 2 PCIe 5.0 x16 AIOM slots	2 PCIe 5.0 x16 FH slots or 4 PCIe 5.0 x8 FH slots 2 PCIe 5.0 x16 AIOM slots
Storage	16 hot-swap 7.5mm E3.S drive bays	8 hot-swap 7.5mm E3.S drive bays and 4 E3.S 2T x8 CXL drive bays	32 hot-swap 7.5mm E3.S drive bays
Networking	via AIOM		
Power Supplies	Redundant 1600W Titanium level	Redundant 1600W Titanium level	Redundant 2000W Titanium level
Workloads	Software-defined Storage, In-Memory Computing, Data Intensive HPC, Private & Hybrid Cloud, NVMe Over Fabrics Solution		

H13 Petascale Storage Extreme Performance



H13 (Single GNR) System with 16x E3.S Gen5 SSD (16TB) Performance





H13/X13 2U24 Simply Double Storage



New Simply Double System Architecture Upgrade

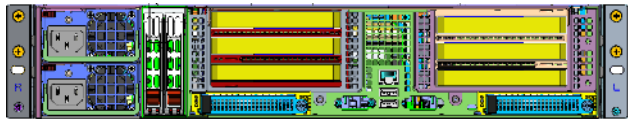
Continuous Features Improvement and Innovation

1. Leverage SMC CloudDC MB line to support both X13 (Intel) and H13 (AMD) building block solutions.
2. Support 2U heatsink to improve the system thermal condition.
3. Support up to 4x 2.5" NVMe SSDs for caching or metadata.
4. Improve system component serviceability (CPU, MEM, etc..)

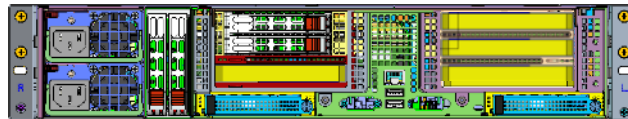


A+ H13 2U24 Simply Double Storage

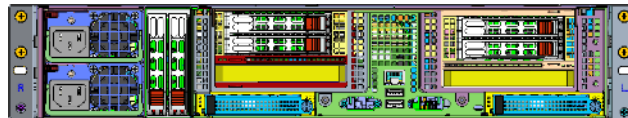
ASG-2015S-E1CR24H/L - MBD-H13SSW



4x PCIe 5.0 x16 slots
2x PCIe 5.0 x8 slot
2x PCIe 5.0 x16 AIOMs



2x PCIe 5.0 NVMe
3x PCIe 5.0 x16 slots
1x PCIe 5.0 x8 slots
2x PCIe 5.0 x16 AIOMs



4x PCIe 5.0 NVMe
2x PCIe 5.0 x16 slots
2x PCIe 5.0 x16 AIOMs

Specifications

Processor Support

- Single AMD EPYC™ Zen4 processor up to 96 cores

Memory Capacity

- 12x DIMMs up to 3TB DDR5-4800MHz

Expansion

- Up to 4x PCI-E 5.0 x16 slots + 2 PCI-E 5.0 x8 slots
- 2x PCI-E 5.0 x16 AIOM slots

Networking & I/O

- 1x RJ45 Dedicated IPMI LAN port
- 2x USB 3.0 ports, 1x VGA ports and 1x Serial port

Drive Bays

- 24x Hot-swap 3.5" (SAS3/SATA3) drive bays
- 2x Rear Hot-swap 2.5" SATA3 drive bays
- 4x Optional Rear Hot-swap NVMe drive bays
- 2x Onboard M.2 NVME slots PCIe 3.0 (22x110mm)

Storage Controller

- Broadcom SAS 3908 AOC (HW RAID)
- Broadcom SAS 3808 AOC (IT Mode)

System Cooling

- 5x 80mm high-performance PWM fans

Power Supply

- 1600W (Titanium level, 96%) redundant supply

System Management

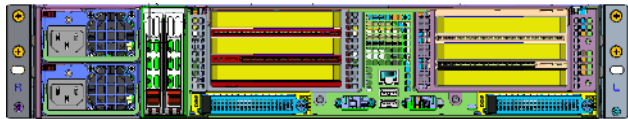
- Built-in Server management tool (IPMI 2.0, KVM/media over LAN) with dedicated LAN port

Dimension

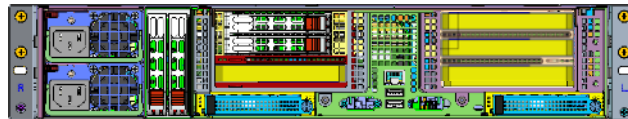
- 17.2" (437 mm) x 3.5" (89 mm) x 34" (836 mm)

X13 2U24 Simply Double Storage

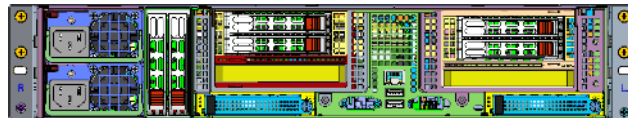
SSG-521E-E1CR24H/L – MBD-X13SEDW-F



4x PCIe 5.0 x8 slots
2x PCIe 5.0 x16 slots
1x PCIe 5.0 x16 AIOM



2x PCIe 5.0 NVMe
2x PCIe 5.0 x8 slots
2x PCIe 5.0 x16 slots
1x PCIe 5.0 x16 AIOM



4x PCIe 5.0 NVMe
2x PCIe 5.0 x16 slots
1x PCIe 5.0 x16 AIOM

Specifications

Processor Support

- Single Intel Xeon Sapphire Rapids-SP CPU up to 60 Cores

Memory Capacity

- 16x DIMMs up to 4TB DDR5-4800MHz

Expansion

- Up to 2x PCI-E 5.0 x16 slots + 4x PCI-E 5.0 x8 slots
- 1x PCI-E 5.0 x16 AIOM slots

Networking & I/O

- 1x RJ45 Dedicated IPMI LAN port
- 2x USB 3.0 ports, 1x VGA ports and 1x Serial port

Drive Bays

- 24x Hot-swap 3.5" (SAS3/SATA3) drive bays
- 2x Rear Hot-swap 2.5" SATA3 drive bays
- 4x Optional Rear Hot-swap NVMe drive bays
- 2x Onboard M.2 NVME slots PCIe 3.0 (22x110mm)

Storage Controller

- Broadcom SAS 3908 AOC (HW RAID)
- Broadcom SAS 3808 AOC (IT Mode)

System Cooling

- 5x 80mm high-performance PWM fans

Power Supply

- 1600W (Titanium level, 80%) redundant supply

System Management

- Built-in Server management tool (IPMI 2.0, KVM/media over LAN) with dedicated LAN port

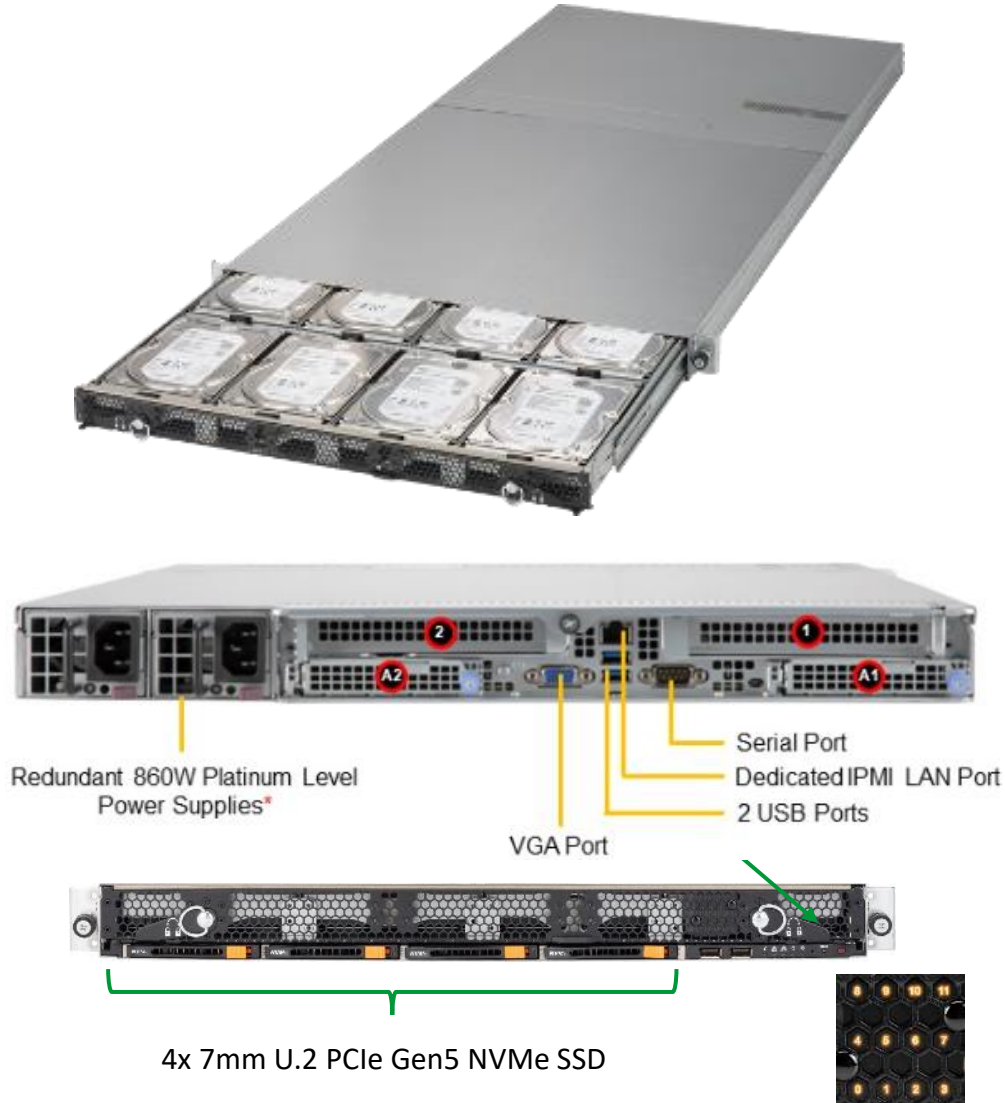
Dimension

- 17.2" (W) x 3.5" (H) x 34" (D)

Subject to change without notice

A+ H13 1U12 Drawer Storage

Planning – MBD-H13SSW



Specifications

Processor Support

- Single AMD EPYC™ Zen4 processor up to 96 cores

Memory Capacity

- 12x DIMMs up to 3TB DDR5-4800MHz

Expansion

- 2x PCI-E 5.0 x16
- 2x PCI-E 5.0 x16 AIOM slots

Networking & I/O

- 1x RJ45 Dedicated IPMI LAN port
- 2x USB 3.0 ports, 1x VGA ports and 1x Serial port

Drive Bays

- 12x Hot-swap 3.5" SAS3/SATA3 Drive Bays
- 4x 7mm U.2 Gen5 NVMe Drive Bays
- 2x Onboard M.2 NVME slots PCIe 3.0 (22x110mm)

Storage Controller

- -H Broadcom SAS 3916+ (HW RAID)
- -L Broadcom SAS 3224/3816+ (IT Mode)

System Cooling

- 6x 40mm counter-rotate redundant PWM cooling fans

Power Supply

- 860W (titanium level, 96%) redundant power supply

System Management

- Built-in Server management tool (IPMI 2.0, KVM/media over LAN) with dedicated LAN port

Dimension

- 17.6" (W) x 1.7" (H) x 37.4" (D)

Subject to change without notice



2U, 3U & 4U Enterprise Optimized Storage



X13 Enterprise Optimized 3.5" Family Highlights



Optimized Storage Building Blocks for Both Scale-Up and Scale-Out SDS

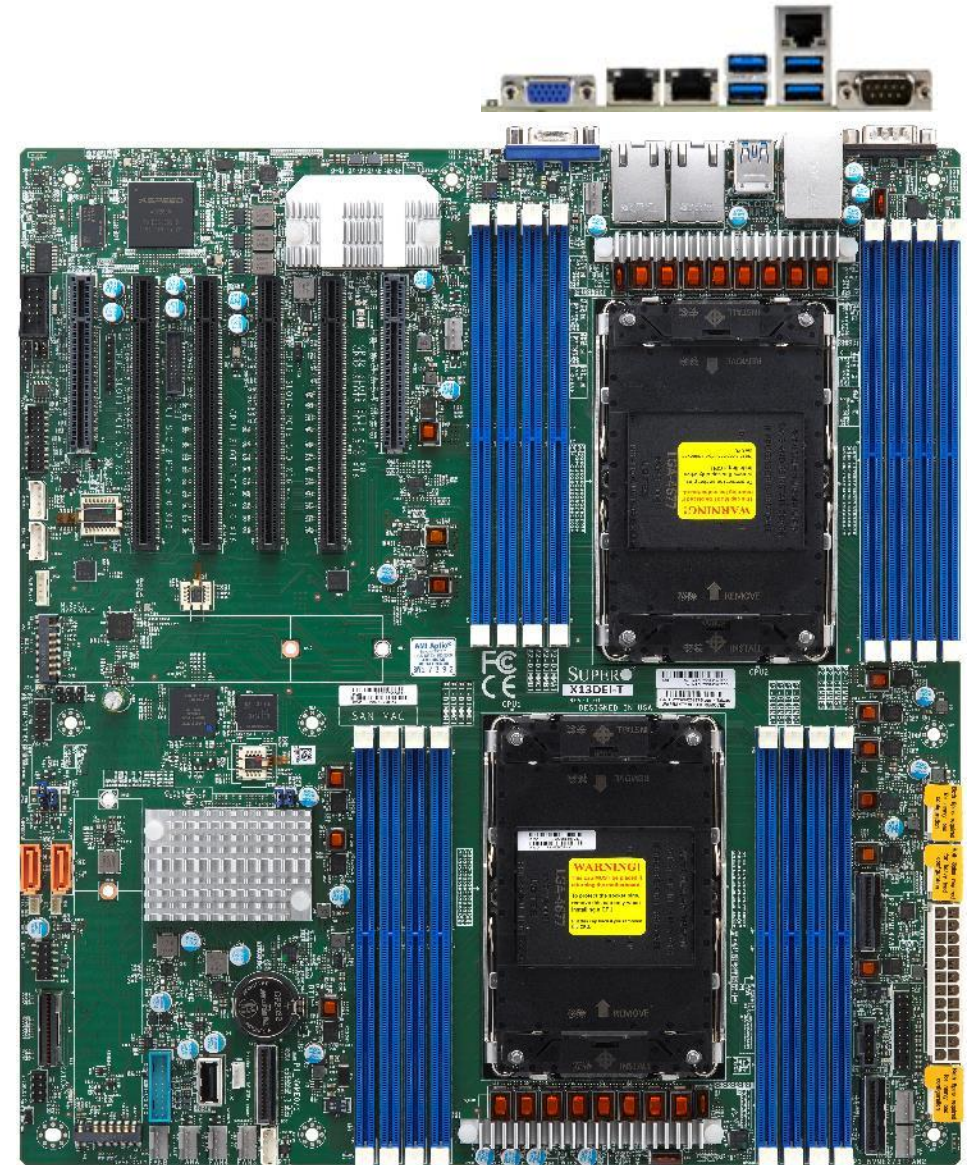
- Standard chassis design and fit-in the conventional DC rack (less than 28" deep)
- PCIe Gen5 architecture
 - Dual 4th Gen Intel Sapphire Rapids processors w/ 16x DDR5 DIMMs
- PCIe Gen4 SAS3 12G HBA and RAID controller
 - Broadcom3908/3916 SAS3 RAID controller
 - Broadcom3808/3816 SAS3 HBA
- Target use cases
 - Storage building blocks for Software-Defined Storage
 - Enterprise scale-up solution with external JBOD extension

X13DEI-T - Enterprise Optimized Storage MB

Building Block Motherboard

• Key Features

- Dual CPU Socket-E up to 350W TDP(Non HBM)
 - 4 UPIs designed for up to 16 GT/s
- 16 DIMMs ECC DDR5 for up to 4800MTS (1DPC)
- 4 PCI-E 5.0 x16 slots
- 2 PCI-E 5.0 x8 slots
- 2 PCI-E 4.0 NVMe x2 M.2 22110/2280
- 6 PCI-E 5.0 NVMe x4 ports via 3x MCIO x8 connectors
- 6 USB 3.2 Gen1 (4 rear + 2 Header)
- 3 USB2.0 (2 Header+ 1 Type A)
- 10 SATA3 ports(8 from Slim SAS x8+2 SATADOM)
- 2 LAN ports 10Gb (BCM57416)
- BMC AST2600 with dedicated LAN and VGA
- Add one I2C connector for BPN CPLD OOB update
- Rear UID button with BMC reset function.



X13 2U LFF 12 Bay Storage

SSG-621E-ACR12H/L



Specifications



6 optional NVMe



Processor Support

- Dual Intel Xeon Scalable Processors (SPR-SP), up to 270W TDP

Memory Capacity

- 16x DIMM slots, 1DPC ECC DDR5 designed for up to 4800MT/s

Expansion

- 4x PCI-E 5.0 x16 and 2x PCI-E 5.0 x8 slots (slot 1 is occupied by SAS controller)

Networking & I/O

- 2x 10GBase-T LAN ports from Broadcom BCM 57416
- 1x RJ45 Dedicated IPMI LAN port
- 4x USB 3.2 ports, 1x VGA ports and 1x Serial port

Drive Bays

- 12x Hot-swap 3.5" SAS3/SATA3 drive bays (6 Optional NVMe Hybrid bays)
- 2x Hot-swap 2.5" SATA3 drive bays (rear)
- 2x NVMe PCI-E 4.0 x2 M.2 2280/22110 (internal)

Storage Controller

- Broadcom SAS 3916 AOC (HW RAID)
- Broadcom SAS 3816 AOC (IT Mode)

System Cooling

- 3x 80mm high-performance PWM fans

Power Supply

- 1200W (Titanium level, 96%) redundant power supply

System Management

- Built-in Server management tool (IPMI 2.0, KVM/media over LAN) with dedicated LAN port

Dimension

- 17.2" (W) x 3.5" (H) x 25.5" (D)

X13 2U LFF 16 Bay Storage

SSG-621E-ACR16H/L



6 optional NVMe



Specifications

Processor Support

- Dual Intel Xeon Scalable Processors (SPR-SP), up to 270W TDP

Memory Capacity

- 16x DIMM slots, 1DPC ECC DDR5 designed for up to 4800MT/s

Expansion

- 4x PCI-E 5.0 x16 and 2x PCI-E 5.0 x8 slots (slot 1 is occupied by SAS controller)

Networking & I/O

- 2x 10GBase-T LAN ports from Broadcom BCM 57416
- 1x RJ45 Dedicated IPMI LAN port
- 4x USB 3.2 ports, 1x VGA ports and 1x Serial port

Drive Bays

- 16x Hot-swap 3.5" SAS3/SATA3 drive bays (6 Optional NVMe Hybrid bays)
- 2x Hot-swap 2.5" SATA3 drive bays (rear)
- 2x NVMe PCI-E 4.0 x2 M.2 2280/22110 (internal)

Storage Controller

- Broadcom SAS 3916 AOC (HW RAID)
- Broadcom SAS 3816 AOC (IT Mode)

System Cooling

- 4x 80mm high-performance PWM fans

Power Supply

- 1200W (Titanium level, 96%) redundant power supply

System Management

- Built-in Server management tool (IPMI 2.0, KVM/media over LAN) with dedicated LAN port

Dimension

- 17.2" (W) x 3.5" (H) x 25.5" (D)

X13 3U LFF 16 Bay Storage



SSG-631E-E1CR16H/L



Optional DVD Drive Optional Front
USB & Serial Ports



Specifications

Processor Support

- Dual Intel Xeon Scalable Processors (SPR-SP), up to 270W TDP

Memory Capacity

- 16x DIMM slots, 1DPC ECC DDR5 designed for up to 4800MT/s

Expansion

- 4x PCI-E 5.0 x16 and 2x PCI-E 5.0 x8 slots (slot 1 & 2 are occupied by SAS controller & JBOD expansion module)

Networking & I/O

- 2x 10GBase-T LAN ports from Broadcom BCM 57416
- 1x RJ45 Dedicated IPMI LAN port
- 4x USB 3.2 ports, 1x VGA ports and 1x Serial port

Drive Bays

- 16x Hot-swap 3.5" SAS3/SATA3 drive bays
- 2x Hot-swap 2.5" SATA3 drive bays (rear)
- 2x NVMe PCI-E 4.0 x2 M.2 2280/22110 (internal)

Storage Controller

- Broadcom SAS 3908 AOC (HW RAID)
- Broadcom SAS 3808 AOC (IT Mode)

System Cooling

- 3 Hot-swap 80mm redundant PWM cooling fans, 2 hot-swap 80mm rear exhaust PWM fans

Power Supply

- 1200W (Titanium level, 96%) redundant power supply

System Management

- Built-in Server management tool (IPMI 2.0, KVM/media over LAN) with dedicated LAN port

Dimension

- 17.2" (W) x 5.2" (H) x 25.5" (D)

X13 4U LFF 24 Bay Storage



SSG-641E-E1CR24H/L



6 optional NVMe



Specifications

Processor Support

- Dual Intel Xeon Scalable Processors (SPR-SP), up to 270W TDP

Memory Capacity

- 16x DIMM slots, 1DPC ECC DDR5 designed for up to 4800MT/s

Expansion

- 4x PCI-E 5.0 x16 and 2x PCI-E 5.0 x8 slots (slot 1 & 2 are occupied by SAS controller & JBOD expansion module)

Networking & I/O

- 2x 10GBase-T LAN ports from Broadcom BCM 57416
- 1x RJ45 Dedicated IPMI LAN port
- 4x USB 3.2 ports, 1x VGA ports and 1x Serial port

Drive Bays

- 24x Hot-swap 3.5" SAS3/SATA3 drive bays (6 Optional NVMe Hybrid bays)
- 2x Hot-swap 2.5" SATA3 drive bays (rear)
- 2x NVMe PCI-E 4.0 x2 M.2 2280/22110 (internal)

Storage Controller

- Broadcom SAS 3908 AOC (HW RAID)
- Broadcom SAS 3808 AOC (IT Mode)

System Cooling

- 3 Hot-swap 80mm redundant PWM cooling fans, 2 hot-swap 80mm rear exhaust PWM fans

Power Supply

- 1200W (Titanium level, 96%) redundant power supply

System Management

- Built-in Server management tool (IPMI 2.0, KVM/media over LAN) with dedicated LAN port

Dimension

- 17.2" (W) x 7" (H) x 26" (D)

X13 4U LFF 36 Bay Storage



SSG-641E-E1CR36H/L



6 optional NVMe



Specifications

Processor Support

- Dual Intel Xeon Scalable Processors (SPR-SP), up to 270W TDP

Memory Capacity

- 16x DIMM slots, 1DPC ECC DDR5 designed for up to 4800MT/s

Expansion

- 4x PCI-E 5.0 x16 and 2x PCI-E 5.0 x8 slots (slot 1 & 2 are occupied by SAS controller & JBOD expansion module)

Networking & I/O

- 2x 10GBase-T LAN ports from Broadcom BCM 57416
- 1x RJ45 Dedicated IPMI LAN port
- 4x USB 3.2 ports, 1x VGA ports and 1x Serial port

Drive Bays

- 36x Hot-swap 3.5" SAS3/SATA3 drive bays (6 Optional NVMe Hybrid bays)
- 2x Hot-swap 2.5" SATA3 drive bays (rear)
- 2x NVMe PCI-E 4.0 x2 M.2 2280/22110 (internal)

Storage Controller

- Broadcom SAS 3908 AOC (HW RAID)
- Broadcom SAS 3808 AOC (IT Mode)

System Cooling

- 7x 80mm high-performance PWM fans

Power Supply

- 1600W (Titanium level, 96%) redundant power supply

System Management

- Built-in Server management tool (IPMI 2.0, KVM/media over LAN) with dedicated LAN port

Dimension

- 17.2" (W) x 7" (H) x 27.5" (D)

Thank You



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