



ABC SYSTEMS AG

APPLIED BRAINWARE & COMPUTER SYSTEMS

Storage Systems

Scalable and Flexible NVMe and
Hybrid Storage Architectures



Transform Your Data Center TCO
with Supermicro servers based on
2nd Generation Intel® Xeon® Scalable processors



Industry-leading Petascale Capacity and Density for All-Flash NVMe in 1U

Supermicro 1U Petascale solid-state platforms provide industry-leading density in a 1U profile across a wide choice of NVMe form factors. By offering 32+ hot-pluggable drives, Petabyte-scale capacity can be achieved to enable an unprecedented combination of storage performance, density, efficiency, and enterprise serviceability. This combination optimizes IOPS per watt and data center footprint, which is ideal for transitioning capacity tiers of storage based on legacy HDDs to all-flash NVMe SSDs.

Accelerate Workloads with Ultra-High-Throughput Compute-Optimized Storage

Optimize CPU-to-drive ratios to unlock maximum, balanced bandwidth on the latest U.2 and E1.S NVMe drives with Supermicro Ultra and BigTwin™ systems. All-flash NVMe-based configurations deliver extremely high-performance storage with the highest IOPS per system and per Gigabyte to enable a rich set of data services across your IT infrastructure.

Unparalleled Flexibility, Density, and Adaptable Architecture for the Cloud

The new Supermicro top-loading storage family combines best-in-class cost per Terabyte and a new adaptable dual-node modular design to enable unparalleled system flexibility, serviceability, and cost-optimization for better data center agility, scalability, and storage density in multi-cloud environments.

Application-Optimized Solutions without Compromising Affordability or Performance

Gain freedom by leveraging Supermicro's unmatched portfolio of resource-saving and enterprise-grade server and storage building blocks to design and build your custom solutions without compromising affordability and performance.



Optimize Your Cloud, AI, and 5G Infrastructure with
the Industry's Broadest Portfolio of All-Flash NVMe,
Top-Loading, and High-Density Storage Systems



Petascale Solid-State Storage

All-NVMe at Petascale in 1U



Ultra High Capacity All-NVMe Storage Systems and JBOFs

- Dual Socket SP3, up to 205W TDP
- 24 DIMM slots DDR4-2933MHz, up to 6TB
- 32 hot-plug U.2/E1.S/E1.L all-NVMe drive bays
- Architecture optimized for high bandwidth storage I/O
- Up to 1000W/1600W redundant Titanium Level PSUs

Hyper-Converged Storage

Scalable and Ready to Deploy HCI Platforms



Highest Performance Single- and Multi-Node Systems

- Dual Socket SP3, up to 205W TDP
- 24 DIMM slots DDR4-2933MHz, up to 6TB
- Flexible onboard networking options
- Up to 10 E1.S drives or 24 U.2 drive bays per node
- Up to 1000W/1600W redundant Titanium Level PSUs

Cloud Density Storage

Adaptable Dense Storage Architectures for Cloud



Enterprise-Optimized Storage

Application-optimized Solutions for Best TCO



Optimized Cost per Terabyte for Multi-Cloud Environments

- Dual Socket SP3, up to 205W TDP
- 16 DIMM slots DDR4-2933MHz, up to 4TB
- Flexible networking with dedicated IPMI
- 1U 12x 3.5", 2U 24x 3.5", or 4U 60/90x 3.5" drive bays
- Up to 2000W/2600W redundant Titanium Level PSUs

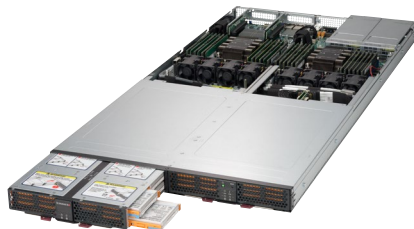
Industry Leading Server Building Block Solutions®

- Barebone systems
- Chassis
- Motherboards
- Storage RAID/HBA cards
- Network switches and NICs
- Power supplies
- Cables



Petascake Solid-State Storage

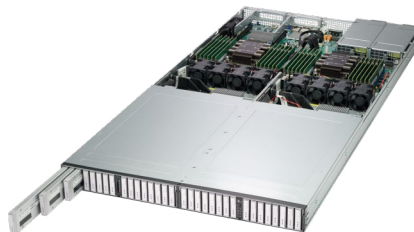
1U 32x NVMe U.2



SYS-1029P-N32R

2 CPUs (up to 140W CPU TDP)
24 DIMMs DDR4-2933
Onboard Dual 10GBase-T
2 PCI-E x16 Slots
1600W Redundant

1U 32x NVMe E1.L



SSG-1029P-NEL32R

2 CPUs (up to 165W CPU TDP)
24 DIMMs DDR4-2933
Onboard Dual 10GBase-T
2 PCI-E x16 Slots
1600W Redundant

1U 32x NVMe E1.S



SYS-1029P-NES32R

2 CPUs (up to 205W CPU TDP)
24 DIMMs DDR4-2933
Onboard Dual 10GBase-T
3 PCI-E x16 Slots
1600W Redundant

Industry-leading Petascale Capacity and Density for All-Flash NVMe in 1U

Supermicro 1U Petascale SuperStorage platforms provide industry-leading density in a 1U profile across a wide choice of NVMe form factors. By offering 32+ hot-pluggable drives, Petabyte-scale capacity can be achieved in a minimal rack footprint. This next generation storage offers unprecedented storage performance, flash density, and energy efficiency through advancements in thermal design. The EDSFF short solution delivers the best IOPS per Watt performance while the EDSFF long form factor is well positioned to provide the best cost per TB by utilizing QLC and other cost-efficient flash technologies.

The latest Petascale systems offer choice in SSD form-factor with one system supporting 32 E1.L drives with the largest capacity options in front loading storage. The E1.S system offers 32 drives with the thermal efficiency to support the highest TDP Intel® Xeon® Scalable processors. The U.2 based system uniquely enables 32 industry-standard hot-pluggable NVMe drives made accessible through front-mounted dual-drive trays.



TECHNICAL SPECIFICATIONS



Form Factor

- 1U rackmount all-NVMe SuperServer and SuperStorage [Systems]
- 1U rackmount all-NVMe storage enclosures [JBOFs]



Processors

- Dual Socket P (LGA 3647) supporting 2nd Gen Intel® Xeon® Scalable processors (Cascade Lake/Skylake)[†]
- Up to 205W TDP
- 3 UPIs, 28 cores / 56 threads per socket



Memory

- 24 DIMM slots
- Up to 6TB 3DS ECC DDR4-2933MHz[‡] RDIMM
- Supports Intel® Optane™ Persistent Memory^{††}



Drives

- 32 hot-pluggable 2.5" NVMe drive bays on two trays [N32R/N32JBF]
- 32 hot-pluggable EDSFF Long 9.5mm drive slots [NEL32R/NEL32JBF]
- 32 hot-pluggable PCI-E E1.S or M.2 drive bays [NES32R]
(M.2 support: 22x42/60/80/110 form factors; non-hotplug; E1.S to M.2 conversion tray is required for each M.2 SSD)



Networking

- Onboard dual 10GBase-T LAN ports via Intel® X550 [Systems]
- 1 RJ45 dedicated IPMI LAN ports [Systems]
- 2 RJ45 dedicated IPMI LAN ports [JBOFs]



Input/Output

- 2 PCI-E 3.0 x16 (LP) slots [N32R/NEL32R]
- 2 PCI-E 3.0 x16 (FHHL) slots and 1 PCI-E 3.0 x4 (LP) slot [NES32R]
- 2 PCI-E 3.0 x16 for NVMe-oF Add-in Cards, or up to 4 hosts with direct attachment with native PCI-E 3.0 x16 [JBOFs]



Power

- 1600W redundant Titanium Level power supplies [Systems]
- 1000W redundant Titanium Level power supplies [JBOFs]

1U 32x NVMe U.2 (JBOF)



SSG-136R-N32JBF

- 4 External PCI-E 3.0 Ports
- 2 PCI-E x16 Slots
- 1000W Redundant

1U 32x NVMe E1.S (JBOF)



SSG-136R-NEL32JBF

- 4 External PCI-E 3.0 Ports
- 2 PCI-E x16 Slots
- 1000W Redundant

Optimized for Data Center SSDs



E1.L NVMe (EDSFF Long)

Highest Capacity and Hot-Pluggable



E1.S NVMe (EDSFF Short)

Density-Optimized and Hot-Pluggable



U.2 NVMe

Best Flexibility and Hot-Pluggable



M.2 NVMe

Better Versatility and Non-Hotplug

[†] BIOS version 3.2 or above is required to support 2nd Gen Intel® Xeon® Scalable processors (codenamed Cascade Lake-R)

[‡] 2933MHz in two DIMMs per channel can be achieved by using memory purchased from Supermicro

^{††} Cascade Lake only. Contact your Supermicro sales rep for more info.



Hyper-Converged Storage

2U Ultra 24 NVMe
(12x U.2 / CPU)



SYS-2029U-TN24R4T

2 CPUs (up to 205W CPU TDP)
24 DIMMs DDR4-2933
Quad 10GBase-T
2 PCI-E Slots
1600W Redundant

1U Ultra 12 NVMe
(6x U.2 / CPU)



SYS-1029U-TN12RV

2 CPUs (up to 205W CPU TDP)
24 DIMMs DDR4-2933
Ultra Riser Flexible Networking
2 PCI-E Slots
1200W Redundant

2U BigTwin 4-Node 40 NVMe
(5x E1.S / CPU)



SYS-2029BT-HER

4 Hot-pluggable Nodes
2 CPUs and 24x DIMMs per Node
SIOM Flexible Networking
2 PCI-E Slots
2600W Redundant

2U BigTwin 2-Node 24 NVMe
(3x U.2 / CPU)



SYS-2029BT-HNR

4 Hot-pluggable Nodes
2 CPUs and 24 DIMMs per Node
SIOM Flexible Networking
2 PCI-E Slots
2200W Redundant

Accelerate Workloads with Ultra-High-Throughput HCI Platforms

Supermicro Storage Servers share one thing in common: they offer the most powerful compute platforms available in the storage industry. Whether serving high-performance scale-out storage environments or high density VM populations, Supermicro systems offer the capability for flexible software-defined deployment and flexible re-assignment to meet changing business requirements.

Lower CPU-to-drive ratios are favorable where mission-critical workloads demand high-performance NVMe SSDs to perform at the lowest latencies possible. Engineered to host the most computationally-demanding storage applications, Supermicro's flagship Ultra SuperServers and BigTwin™ multi-node systems enable a wide range of CPU-to-drive ratios to achieve the most optimized balance between performance, storage capacity, bandwidth, and cost-effectiveness.

Supermicro **Ultra** SuperServers are designed to deliver the highest performance, flexibility, scalability and serviceability to demanding IT environments, and to power mission-critical Enterprise workloads.



Ultra is the perfect fit for diverse workloads and applications and can be easily reconfigured for multiple Enterprise and Data Center applications in Virtualization, Big Data, Analytics, and Cloud Computing.

The Supermicro **BigTwin™** represents an innovative, no-compromise multi-node system with up to 4 nodes in a 2U form factor which is ideal for HCI architectures. BigTwin provides the ultimate in multi-node performance with the highest TDP processors and balanced bandwidth to NVMe drives. NVMe-based configurations optimize the highest IOPS per node in a multi-node system, providing maximum IOPS per Gigabyte.



TECHNICAL SPECIFICATIONS



Form Factor

- 1U rackmount **Ultra** SuperServer 1029U-TN12RV
- 2U rackmount **Ultra** SuperServer 2029U-TN24R4T
- 2U rackmount **BigTwin** SuperServer 4-Node 2029BT-HER/HNR



Processors

- Dual Socket P (LGA 3647) supporting 2nd Gen Intel® Xeon® Scalable processors (Cascade Lake/Skylake)[†]
- Up to 205W TDP [Ultra]; up to 165W TDP [BigTwin]
- Up to 3 UPIs, 28 cores / 56 threads per socket



Memory

- 24 DIMM slots (per node)
- Up to 6TB 3DS ECC DDR4-2933MHz[‡] RDIMM
- Supports Intel® Optane™ Persistent Memory^{††}



Drives

- 12 hot-pluggable 2.5" NVMe/SATA3 drive bays [1029U-TN12RV]
- 24 hot-pluggable 2.5" NVMe drive bays [2029U-TN24R4T]
- 10 hot-plug E1.S NVMe and 2 M.2 SATA drive bays per node [2029BT-HER]
- 6 hot-pluggable 2.5" NVMe drive bays per node [2029BT-HNR]



Networking

- Flexible networking via Ultra Riser, up to dual 25GbE [1029U-TN12RV]
- Onboard 4x 10GbBase-T ports via Intel® X550 [2029U-TN24R4T]
- Flexible networking options with SIOM [2029BT-HER/HNR]
- 1 RJ45 dedicated IPMI LAN port per node



Input/Output

- 1 PCI-E 3.0 x16 (FH, 10.5" L), 1 PCI-E 3.0 x8 (LP), and 1 Internal PCI-E 3.0 slot for storage AOC [1029U-TN12RV]
- 2 PCI-E 3.0 x16 (FH, 10.5" L) and 1 PCI-E 3.0 x8 (LP) [2029U-TN24R4T]
- 2 PCI-E 3.0 x16 (LP) slots per node [2029BT-HNR/HER]



Power

- 1600W/1200W redundant Titanium Level (96%) power supplies [Ultra]
- 2600W/2200W redundant Titanium Level (96%) power supplies [BigTwin]

[†] BIOS version 3.2 or above is required to support 2nd Gen Intel® Xeon® Scalable processors (codenamed Cascade Lake-R)

[‡] 2933MHz in two DIMMs per channel can be achieved by using memory purchased from Supermicro

^{††} Cascade Lake only. Contact your Supermicro sales rep for more info.



Cloud Density Storage

New Generation 4U 60-Bay



SSG-6049SP-E1CR60 (*single-node*)
SSG-6049SP-DE1CR60 (*dual-node*)
SSG-6049SP-DE2CR60 (*HA*)

2 CPUs (up to 205W TDP)
16 DIMMs DDR4-2933
Flexible networking w/ dedicated IPMI
Choice of IT Mode / HW RAID
2000W/2600W Redundant

New Generation 4U 90-Bay



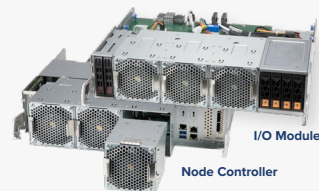
SSG-6049SP-E1CR90 (*single-node*)
SSG-6049SP-DE1CR90 (*dual-node*)
SSG-6049SP-DE2CR90 (*HA*)

2 CPUs (up to 205W TDP)
16 DIMMs DDR4-2933
Flexible networking w/ dedicated IPMI
Choice of IT Mode / HW RAID
2000W/2600W Redundant

BEST CAPACITY: Single-Node

Each node controls 60 or 90 drives

Rear 4x **NVMe** (optional)
optimized for caching
Rear 2x 2.5" SATA3
RAID 0/1 for OS or logs



TWIN STORAGE: Dual-Node

Two independent compute nodes:
each controls 30 or 45 drives

HIGH AVAILABILITY: Storage Bridge Bay (SBB)

Each dual-port drive is accessed by two independent nodes simultaneously*



SBB Module Front View



SBB Module Rear View

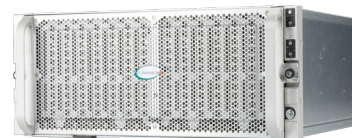
*Compatible software solution required to enable HA features

Unparalleled Flexibility, Capacity, and Density for the Cloud

The next generation Supermicro Top-loading Storage family combines best-in-class TCO featuring a new modular design to enable unprecedented levels of flexibility, serviceability, and cost-optimization for improving data center agility, scalability, and storage density in use cases like Backup and Recovery, Deep Archive and Active Archive, Big Data & Analytics, Data Lake, HPC and AI/ML workloads, and Content Repositories.

JBOD Enclosures

60 or 90x 3.5" drive bays with
single- or dual-expander options



1U 12-Bay
12x 3.5" SATA and 4x NVMe



SSG-6019P-ACR12L+

2 CPU (up to 205W TDP)
12 DIMMs DDR4-2933
Onboard Dual 10GBase-T
Choice of IT Mode / HW RAID
800W Redundant

2U 24-Bay (SimplyDouble)
24x 3.5" SAS/SATA



SSG-6029P-E1CR24H/L

2 CPUs (up to 165W TDP)
24 DIMMs DDR4-2933
SIOM Flexible Networking
Choice of IT Mode / HW RAID
1600W Redundant



The 1U dual-processor high-density storage server has a top-loading storage drawer design that can support 12x 3.5" HDDs with additional 4 front hot-pluggable 2.5" U.2 drive bays for a variety of SDS applications.



The additional drive bays located in the center of the 2U Simply Double SuperStorage offer up to twice the storage capacity and IOPS in the same amount of rackmount space with our patented Riser Bay that is easy to access and service.

TECHNICAL SPECIFICATIONS



Form Factor

- 1U rackmount **12-Bay** SuperStorage: 17.6 x 1.7 x 37.4"
- 2U rackmount **24-Bay** SimplyDouble: 17.2 x 3.5 x 34"
- 4U rackmount **60-Bay** Top-Loading SuperStorage: 17.6 x 6.9 x 34.1"
- 4U rackmount **90-Bay** Top-Loading SuperStorage: 17.6 x 6.9 x 42.9"



Processors

- Dual Socket P (LGA 3647) supporting 2nd Gen Intel® Xeon® Scalable processors (Cascade Lake/Skylake)[†]
- Up to 3 UPIs, up to 205W TDP



Memory

- 12 DIMM slots, up to 3TB ECC DDR4-2933MHz [12-Bay]
- 16 DIMM slots per node, up to 4TB ECC DDR4-2933MHz [60/90-Bay]
- 24 DIMM slots per node, up to 6TB ECC DDR4-2933MHz [24-Bay]
- Support Intel® Optane™ Persistent Memory^{††}



Drives

- 12x 3.5" SATA3 and 4x 2.5" (7mm) U.2 NVMe hot-plug drive bays [12-Bay]
- 24x 3.5" SAS3/SATA3 and 2x 2.5" SATA3 hot-plug drive bays [24-Bay]
- 60/90x 3.5" SAS3/SATA3 drive bays [60/90-Bay]
 - 2 onboard M.2 PCI-E 3.0 x2 slots, up to 22x110mm NVMe SSDs
 - SAS3008 / SAS3616 (IT Mode, L-series) or SAS3916 (HW RAID, H-series)
 - 4 hot-plug 2.5" NVMe (rear) drive bays for caching (optional)
 - 2 hot-plug 2.5" SATA3 (rear) drive bays for OS, RAID 0/1



Networking

- Onboard dual 10GBase-T LAN ports via Intel® X550 [12/60/90-Bay]
- Flexible networking options with SIOM [24-Bay]
- 1 RJ45 dedicated IPMI LAN port (per node)



Input/Output

- 3 PCI-E 3.0 x16 slots [12-Bay]
- 2 PCI-E 3.0 x16 and 1 PCI-E 3.0 x8 slots [24-Bay]
- 2 PCI-E 3.0 x16 and 1 PCI-E 3.0 x8 slots [60/90-Bay]



Power

- 800W redundant Platinum Level power supplies [12-Bay]
- 1600W redundant Titanium Level (96%) power supplies [24-Bay]
- 2000W redundant for single-node, 2600W redundant for dual-node; Titanium Level power supplies [60/90-Bay]

[†] BIOS version 3.2 or above is required to support 2nd Gen Intel® Xeon® Scalable processors (codenamed Cascade Lake-R)

^{††} 2933MHz in two DIMMs per channel can be achieved by using memory purchased from Supermicro

IT Cascade Lake only. Contact your Supermicro sales rep for more info.



Enterprise-Optimized Storage

24x 2.5" SAS3/SATA



SSG-2029P-ACR24H/L

2 CPUs (up to 205W TDP)
16 DIMMs DDR4-2933
Onboard Dual 10GBase-T
7 PCI-E Slots (3 occupied)
3 SAS3108 (HW RAID)
Redundant 1200W (Titanium Level)

12x 3.5" SAS3/SATA3



SSG-6029P-E1CR12H/L

2 CPUs (up to 205W TDP)
16 DIMMs DDR4-2933
Onboard Dual 10GBase-T
7 PCI-E Slots (2 occupied)
SAS3108 (HW RAID) + JBOD Port
Redundant 1200W (Titanium Level)

Double-sided 36x 3.5" SAS3/SATA3



(Rear View)

SSG-6049P-E1CR36H/L

2 CPUs (up to 205W TDP)
16 DIMMs DDR4-2933
Onboard Dual 10GBase-T
7 PCI-E Slots (2 occupied)
SAS3108 (HW RAID) + JBOD Port
Redundant 1200W (Titanium Level)

Application-optimized Solutions with Uncompromising Affordability and Performance

Leverage the industry's broadest Server Building Block Solutions* to design and build your application-optimized configurations, for both scale-up and scale-out deployment strategies without compromising affordability or performance.

Enterprise Storage Systems are our most popular configurations that serve as a solid foundation to meet diverse application requirements with 2U, 3U and 4U form factors with 2.5" or 3.5" drive bays.

Total Solution

Chassis
Motherboards
Power Supplies
Fans and Heatsinks

Drive Trays/Conversion Kits
Storage HBA/RAID Cards
Cables and Adapters
Riser Cards

Rack Solutions
Liquid Cooling
Network Switches
Network Controllers



Design Yours with Supermicro Building Block Solutions®

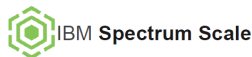
Design your own customized storage server or a complete rack infrastructure with our award-winning Server Building Block Solutions® to achieve the most application-optimized ROI.

Supermicro helps customers design tailored storage solutions from component design, to configuration validation, to deployments at a data center scale.





SuperStorage Software Partners and Solutions



Supermicro Software-Defined Storage Solutions

The storage landscape is evolving from premium priced proprietary hardware and software solutions to open industry standard hardware and the benefits are significant: reduced vendor lock-in, significantly open innovation with new technologies like all NVMe solutions. Supermicro storage systems are the platform of choice for leading storage vendors and major hyperscale datacenters.

Supermicro delivers significant benefits to Software-Defined Storage Solutions:

- Maximum Efficiency – High capacity 1U-4U form factors. Leading the industry with up 95% efficient Platinum level power supplies
- Maximum Performance and expandability – All NVMe support with hybrid expander and delivering up to 20 GB/s throughput
- Mission Critical Reliability – Capable of fully redundant and fault-tolerant operation with redundant power supplies, fans, and serverboards with remote management
- Proven Compatibility – Deploy validated reference architectures for optimal application performance

Scale-out Storage Optimized

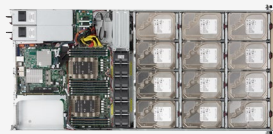


Front-loading Bays

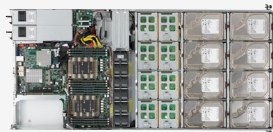
Multi-purpose front hot-plug
NVMe drive bays

Top-loading Bays

An internal drawer supports
12 large capacity drives



All HDD



Mixed HDD/SSD

1U 12-Bay

SSG-6019P-ACR12L+

Build your scale-out data infrastructure with the compact 1U 12-bay SuperStorage system. Each one can support up to 12x 3.5" or 24x 2.5" hot-pluggable drives.

The additional four front-loading 2.5" U.2 drive bays may serve as a dedicated facility for caching or OS hosting.

Composable Infrastructure with JBOF Enclosures

GPU Systems



NVMe-oF™



JBOFs



(RDMA Optimized)

Direct-Attached



Supermicro's 1U Petascale JBOF architectures are ideal for building state-of-the-art, disaggregated, and composable data centers with all-NVMe SSDs.

1U 32-bay JBOF enclosures support either PCI-E directly-attached for lowest latency and simplified deployment, or network fabric-attached (NVMe-oF) for the best agility on popular network fabrics, and advanced virtualized workloads.



SSG-136R-N32JBFF

1U 32x U.2 JBOF

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