X13 SuperBlade®

Ultra High-Density Multi-Node Systems for Enterprise, Cloud, HPC, and AI Applications

Optimized for Performance, Density and Advanced Networking

- **Up to 20 nodes in 8U or 10 nodes in 6U with integrated switches**
- **Single or dual 4th Gen Intel® Xeon® Scalable processors with air-cooled support for up to 350W TDP CPUs**
- **Up to 32 DIMM slots per node supporting DDR5-4800MHz**
- **High-performance networking with 400G/200G InfiniBand and 100G/25G Ethernet support**
- **Up to 4 GPUs per node in a high-density, balanced architecture**
- **High-performance NVMe support in E1.S, U.2 and M.2 form factors**

Resource-Saving Architecture

Supermicro's high-performance, density-optimized, and energy-efficient X13 SuperBlade can significantly reduce initial capital and operational expenses for many organizations. SuperBlade utilizes shared, redundant components, including cooling, networking, power and chassis management, to deliver the compute performance of an entire server rack in a much smaller physical footprint. These systems support GPU-enabled blades and are optimized for AI, Data Analytics, HPC, Cloud, and Enterprise workloads. A cable reduction of up to 95% compared to industry standard servers reduces costs and can lower power usage.

Built for High-Density, High-Performance Computing

SuperBlade is one of the most versatile HPC solutions available, with a range of CPU, storage and networking configurations which can be customized for specific workloads. For accelerated computing requirements, PCIe GPU cards can also be installed, with up to 2 FHFL cards in double-width blades. SuperBlade powers some of the world's most complex and powerful HPC clusters and can be used for AI, machine learning, hybrid cloud, health sciences and financial applications.

Maximum Compute Density

With up to 20 nodes in an 8U chassis and both air and liquid cooling options available, SuperBlade® systems can be configured to maximize density and performance for a range of installation environments. In its maximum configuration of 20 single-width blades in an 8U enclosure, each node occupies just 0.4U of rack space, delivering unprecedented compute density. The 6U SuperBlade® features a disaggregated design between the motherboard and I/O module, where each resource can be refreshed independently, allowing data centers to reduce refresh cycle costs and reuse components to reduce Total Cost to the Environment (TCE).
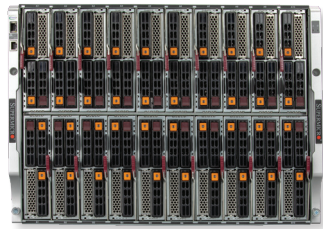
Optional Liquid Cooling for Enhanced Efficiency

SuperBlade's highly efficient shared cooling system supports free-air-cooling for CPUs up to 350W for single processor or double-width blade configurations. For even greater compute densities, dual-processor and single-width blade configurations can support the same 350W TDPs thanks to optional direct-to-chip liquid cooling. The use of liquid cooling in data centers not only allows components to run at higher performance levels, but also reduces the need for Computer Room Air Conditioning (CRAC) units and improves overall efficiency, lowering OPEX, TCO and TCE.

Powered by 4th Gen Intel® Xeon® Scalable Processors

SuperBlade's high density design can fit up to forty 4th Gen Intel Xeon Scalable processors and 2,400 cores into an 8U rackmount chassis, delivering unprecedented compute power in a minimal physical footprint. Efficiency and performance are further improved by built-in Intel QuickAssist Technology (Intel QAT), which offloads common cryptography, compression/decompression and hash/public key algorithms to free up CPU instances for more important compute workloads.

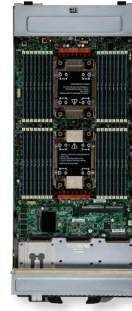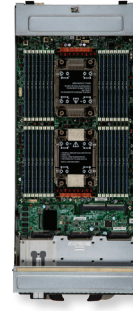| Enclosure	SBE-820 Series	SBE-610 Series
Blade Support	Up to 20 hot-swappable, half-height, single-width blade servers Up to 10 hot-swappable, half-height, double-width blade servers Up to 10 hot-swappable, full-height, single-width blade servers Mixed configuration supported	Up to 10 hot-swappable, single-width blade servers Up to 5 hot-swappable, double-width blade servers Mixed configuration supported
LED Indicator	Power LED, Fault LED	Power LED, Fault LED
Infiniband Switch	SBE-820H only: Single 200G HDR InfiniBand switch SBE-820C only: Single 100G EDR InfiniBand switch	N/A
Ethernet Switch/Pass-Through Module	SBE-820C/H only: Up to 2 hot-swappable 25G Ethernet switches SBE-820J/J2 only: Up to 4 hot-swappable 25G Ethernet switches or pass-through modules SBE-820L only: Up to 2 hot-swappable 10G Ethernet switches or pass-through modules	Up to 4 hot-swappable 25G Ethernet switches, 10G Ethernet switches or pass-through modules
Chassis Management Module (CMM)	Single/Redundant CMM for remote system management with software SBE-820J/J2 only: Up to 2 hot-swappable CMMs for remote system management with software	Up to 2 hot-swappable CMMs for remote system management with software
Models	SBE-820C/J/J2/L/H-822: Up to 8 hot-swappable 2200W Titanium (96% efficiency) power supplies SBE-820J2-830: Up to 8 hot-swappable 3000W Titanium (96% efficiency) power supplies SBE-820J2-830(D): Up to 8 hot-swappable 3000W DC power supplies	SBE-610J/610J2-822: Up to 8 hot-swappable 2200W Titanium (96% efficiency) power supplies SBE-610J2-830: Up to 8 hot-swappable 3000W Titanium (96% efficiency) SBE-610J2-830(D): Up to 8 hot-swappable 3000W DC power supplies
Rack Unit	8 RU	6 RU
Form Factor	356 x 447 x 813mm (14" x 17.6" x 32")	267 x 447 x 813mm (10.5" x 17.6" x 32")

†Certain CPUs with high TDP may be supported only under specific conditions. Please contact Supermicro Technical Support for additional information about specialized system optimization

SUPERMICRO

SuperBlade	SBI-421E-1T3N	SBI-421E-5T3N	SBI-611E-1T2N	SBI-611E-5T2N
Server Nodes/ Enclosure	20	10	10	5
Processor Support	Dual Socket E (LGA-4677) 4th Gen Intel® Xeon® Scalable processors[††]	Dual Socket E (LGA-4677) 4th Gen Intel® Xeon® Scalable processors[†]	Single Socket E (LGA-4677) 4th Gen Intel® Xeon® Scalable processor[†]	Single Socket E (LGA-4677) 4th Gen Intel® Xeon® Scalable processor[†]
Chipset	Intel® C741 chipset	Intel® C741 chipset	Intel® C741 chipset	Intel® C741 chipset
System Memory (Max.)	16 DDR5 DIMM slots, 1DPC with 4800MHz ECC RDIMM	16 DDR5 DIMM slots, 1DPC with 4800MHz ECC RDIMM	16 DDR5 DIMM slots, 1DPC with 4800MHz ECC RDIMM	16 DDR5 DIMM slots, 2DPC with 4800MHz ECC RDIMM
PCIe Expansion	OCP 3.0 (PCIe 5.0 x16)	OCP 3.0 (PCIe 5.0 x16)	1 PCIe Gen5 x16 slot, 1 PCIe Gen5 x8 slot, support 1 FHFL DW GPU or 2 SW PCIe cards	1 PCIe Gen5 x16 slot, 1 PCIe Gen5 x8 slot, support 1 FHFL DW GPU or 2 SW PCIe cards
Storage & RAID	4 M.2 NVMe with optional Mezzanine Card 1 M.2 NVMe drive 2 Hot-swappable U.2 NVMe/ SATA3 and 1 SATA3 Intel® PCH 3.0 SATA Controller	4 M.2 NVMe with optional Mezzanine Card 1 M.2 NVMe drive 2 Hot-plug U.2 NVMe/SATA3 drive bays & 1 Hot-plug SATA3 drive bay; RAID 0, 1 (VROC) Intel® PCH 3.0 SATA Controller	2 Hot-swappable U.2 NVMe/ SATA3 drive bays 3 M.2 NVMe drives 2 E1.S drives Intel® PCH 3.0 SATA Controller	2 Hot-swappable U.2 NVMe/ SATA3 drive bays 3 M.2 NVMe drives 2 E1.S drives Intel® PCH 3.0 SATA Controller
Networking	OCP 3.0 network card with 400G NDR IB and other options Mezzanine options for 200G HDR / 100G EDR IB or Dual 25GbE Dual 25GbE LOM	OCP 3.0 network card with 400G NDR IB and other options Mezzanine options for 200G HDR / 100G EDR IB or Dual 25GbE Dual 25GbE LOM	Standard IB or GbE PCIe cards Mezzanine option for Dual 25GbE Dual 25GbE LOM	Standard IB or GbE PCIe cards Mezzanine option for Dual 25GbE Dual 25GbE LOM
LED Indicators	Fault LED, Network Activity LED, Power LED, UID	Fault LED, Network Activity LED, Power LED, UID	Fault LED, Network Activity LED, Power LED, UID	Fault LED, Network Activity LED, Power LED, UID
Form Factor	165 x 44.4 x 597mm (6.5" x 1.75" x 23.5")	165 x 44.4 x 597mm (6.5" x 1.75" x 23.5")	248 x 44.4 597mm (9.75" x 1.75" x 23.5")	248 x 44.4 597mm (9.75" x 1.75" x 23.5")
Enclosure	SBE-820C/J/L-422 SBE-820H/C/J/L-622/822 SBE-820J2-630/830	SBE-820J2-630/830	SBE-610J-422/622/822 SBE-610J2-430/630/830	SBE-610J2-430/630/830

[†] Supports up to 350W TDP CPUs (Aircooled). CPUs with high TDP supported under specific conditions. Contact Technical Support for details.
[††] Supports up to 250W TDP CPUs (Aircooled). CPUs with high TDP supported under specific conditions. Contact Technical Support for details.

SuperBlade	SBI-611E-1C2N	SBI-621E-1T3N	SBI-621E-5T3N	SBI-621E-1C3N
Server Nodes/Enclosure	10	10	5	10
Processor Support	Single Socket E (LGA-4677) 4th Gen Intel® Xeon® Scalable processor†	Dual Socket E (LGA-4677) 4th Gen Intel® Xeon® Scalable processors††	Dual Socket E (LGA-4677) 4th Gen Intel® Xeon® Scalable processors†	Dual Socket E (LGA-4677) 4th Gen Intel® Xeon® Scalable processors††
Chipset	Intel® C741 chipset	Intel® C741 chipset	Intel® C741 chipset	Intel® C741 chipset
System Memory (Max.)	Up to 4TB; 16 DDR5 DIMM slots, 1DPC speeds up to 4800 MT/s	Up to 8TB; 32 DDR5 DIMM slots 2DPC speeds up to 4800 MT/s	Up to 8TB; 32 DDR5 DIMM slots 2DPC speeds up to 4800 MT/s	Up to 8TB; 32 DDR5 DIMM slots 2DPC speeds up to 4800 MT/s
PCIe Expansion	1 PCIe 5.0 x16 slot 1 PCIe 5.0 x8 slot	N/A	N/A	N/A
Storage & RAID	2 Hot-swappable U.2 NVMe/SAS/SATA3 1 M.2 NVMe drive Broadcom 3108 HW RAID	3 Hot-plug U.2 NVMe/SATA drive bays Intel® PCH 3.0 SATA Controller	3 Hot-plug U.2 NVMe/SATA drive bays Intel® PCH 3.0 SATA Controller	2 Hot-plug U.2 NVMe/SAS/SATA drive bays & 1 Hot-Plug SAS drive bay; HW RAID w/ 3108
Networking	Standard IB or GbE PCIe cards Mezzanine option for Dual 25GbE Dual 25GbE LOM	Mezzanine option for Dual 25GbE Dual 25GbE LOM	Mezzanine option for Dual 25GbE Dual 25GbE LOM	Mezzanine option for Dual 25GbE Dual 25GbE LOM
LED Indicators	Fault LED, Network Activity LED, Power LED, UID	Fault LED, Network Activity LED, Power LED, UID	Fault LED, Network Activity LED, Power LED, UID	Fault LED, Network Activity LED, Power LED, UID
Form Factor	248 x 44.4 x 597mm (9.75" x 1.75" x 23.5")	248 x 44.4 x 597mm (9.75" x 1.75" x 23.5")	248 x 88.9 x 596.9mm (9.75" x 3.5" x 23.5")	248 x 44.4 x 597mm (9.75" x 1.75" x 23.5")
Enclosure	SBE-610J-422/622/822 SBE-610J2-430/630/830	SBE-610J-422/622/822 SBE-610J2-430/630/830	SBE-610J2-430/630/830	SBE-610J-422/622/822 SBE-610J2-430/630/830

† Supports up to 350W TDP CPUs (Aircooled). CPUs with high TDP supported under specific conditions. Contact Technical Support for details.
†† Supports up to 250W TDP CPUs (Aircooled). CPUs with high TDP supported under specific conditions. Contact Technical Support for details.