



DRIVING REVOLUTIONARY 5G TELCO APPLICATIONS WITH HIGH-DENSITY GPU COMPUTING

Disruptive, first and only: Unrivaled Supermicro NEBS Level 3 certified GPU solutions

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SUPERMICRO

As a global leader in high performance, high efficiency server technology and innovation, we develop and provide end-to-end green computing solutions to the data center, cloud computing, enterprise IT, big data, HPC, and embedded markets. Our Building Block Solutions® approach allows us to provide a broad range of SKUs, and enables us to build and deliver application-optimized solutions based upon your requirements.

Executive Summary

The expansion of 5G has sparked a significant shift in the telecommunications market as companies and users race to build and utilize applications in exciting new ways. Telcos are retooling and leveraging their infrastructures for increasingly sophisticated applications such as artificial intelligence (AI), augmented reality (AR), and virtual reality (VR). As a result, they face escalating pressure to build a technology delivery system that is capable of the extreme bandwidth, low latency, and high availability required to effectively support the seemingly endless streams of information from these new applications and services.

Supermicro is working with NVIDIA to enable innovation with powerful, market-leading solutions that provide robust Edge to Core to Cloud performance in the 5G network. Supermicro brings proven expertise in optimized server hardware to enhance these evolving deployments, delivering a broad portfolio of offerings to accelerate the most complex 5G workloads and applications.

The New Age of Innovation

5G applications change the way we travel, work, play, manage our health, and engage the world. Advancements in computing technologies continue to facilitate diverse workloads, enabling revolutionary performance, efficiency, and breakthrough acceleration to unlock the promise of the 5G environment.

These developments have given rise to a host of data-centric applications to yield real-time insights and life-changing capabilities. Autonomous vehicles, robotics, factory automation, cloud gaming, telemedicine, AI, and AR/VR are just some of the applications that are transforming the world today.

The increasing demand for computing power and processing speed poses a significant hurdle for existing telecommunications environments. Legacy infrastructures lack the compute density, especially at the Edge, to execute complex data workloads as effectively as hardened solutions, which can support rigorous service level agreements (SLAs) in harsh operating conditions. Many companies are slow to innovate due to limited expertise in this new generation of technology. To succeed, telcos must invest in the right partner with a new class of solutions to harness the full force of 5G.

Accelerating Data-Driven Performance

Telcos will require new and cutting-edge innovations to modernize their technology, enhance network performance with high availability, and realize next-generation architectures. Supermicro is working with NVIDIA to incorporate [the ideal technologies for 5G](#) to deliver peak computing agility, capacity, and resilience to power revolutionary services and applications.

Supermicro is the only provider with NEBS Level 3 compliance in a small form factor, GPU dense platform. [Our first-to-market platforms](#) set the standard for 5G network architecture, helping telcos innovate with ease. Initially, with the inclusion of [NVIDIA V100 or V100S Tensor Core GPUs](#), these solutions achieve maximum acceleration in a compact form factor for groundbreaking performance and durability with optimal cost-efficiency; the roadmap will soon include support for NVIDIA® A100 Tensor Core GPU, NVIDIA® A40 GPU for Visual Computing, and other NVIDIA Ampere GPU solutions. Now, Supermicro and NVIDIA customers can transform their operations to handle diverse workloads and adapt to evolving 5G demands.

Success Built on Industry-Leading Computing

Supermicro has extended its leadership in the GPU server market, offering the broadest portfolio of high-performing and customizable solutions to equip telcos for success. Supermicro is dedicated to building 5G solutions that enable telcos to solve their complex and evolving challenges. Supermicro pursues ongoing research and development to drive technology advancement in vital areas of innovation:

NEBS Certification

- Telcos worldwide require their technology deployments to have proven quality and reliability to support their SLAs.
- Supermicro has NEBS Level 3 certification on the broadest suite of telco products, with more on the way, leading the industry to ensure that our customers have sustainable and highly available performance.
- NEBS Level 3 demands robust performance/survival with thermal (55°C), shock, vibration (including simulated earthquake), fire, and emissions requirements. It is the gold standard for telcos in the USA.

Form Factor and Flexibility

- Supermicro's telco-optimized solutions are powerful and scalable enough to manage various workloads while conforming to multiple form factors for central office, micro data center, and outdoor environments.

Power

- Supermicro solutions provide either redundant AC or DC power supplies (1+1 configuration) to keep platforms running continuously. This approach offers simpler, more resilient, and highly efficient power to support an extended temperature range. The inclusion of Titanium Level power supplies delivers the highest efficiency rate on the market of 96%, so companies can operate with the utmost confidence.

A New Breed of 5G Solutions

Supermicro has significantly expanded its 5G product suite with [a full portfolio of solutions](#) powered by NVIDIA accelerators and networking, and software solution stacks such as [Areal for 5G vRAN acceleration](#). Enhanced by the processing capacity of NVIDIA GPUs, Supermicro solutions are unlike anything available on the market. These innovations are tightly configured in different chassis sizes, including a 1U rackmount with four NVIDIA V100 or V100S GPUs only offered by Supermicro with NEBS Level 3 certification. Our short-depth servers are designed with customer challenges in mind to satisfy space constraints. Combined with Supermicro's newly-released front IO platform and our hardened IP-65 server enclosures, customers can take advantage of massive scalability backed by unparalleled GPU acceleration in nearly any environment, from the network Edge to the Core.

With strategic performance optimization to facilitate high-level applications, our GPU solution architectures guarantee quality and effectiveness to rapidly execute the most complex, data-centric workloads. Mellanox networking components provide superior agility, elasticity, and automation to bolster dense GPU compute so that applications can run at the greatest possible performance and efficiency. This powerhouse combination of acceleration technologies makes Supermicro servers the foundation for smarter, more adaptable architectures.

The latest 5G solution announced from Supermicro enables GPU workloads in a NEBS Level 3 hardened chassis, the only one of its kind on the market. The [SuperServer 1029GQ-TRT-NEBS](#) is a first step of a long-term strategy that will be expanded with NEBS Level 3-certified systems by Supermicro with support for NVIDIA Ampere technology in months to come. The server also features Mellanox storage interconnects to deliver [10X better performance](#) than comparable offerings while freeing up 100% of CPU cores.

SUPERSERVER 1029GQ-TRT-NEBS			
DESIGN FEATURES			
<ul style="list-style-type: none">• Only NEBS Level 3, 1U, 4 x NVIDIA V100 server on the market,• Hardened to 55C operating, shock/vibration, and all GR1089 and GR63 tests,• DC and AC Power for telco customers,• Enablement of AI/AR and other 5G applications			
PRODUCT FEATURES			
System	Processor	GPU	Drives
5G/AI Advanced Workloads	2x Intel® Xeon® Gold 6240 (18 cores, 2.60GHz, 150W TDP)	4x NVIDIA V100 Or 4x NVIDIA V100S	2x 2.5' 480GB SATA Hot Swappable
Ethernet	Memory	Cooling Fans	Power Supplies
2x integrated 10G BaseT 1x 1G IPMI LAN 2x Intel X710 4 ports 10G NICs	96GB DDR4-2933 RDIMM (12x 8GB)	9 x heavy duty 4cm fans, 2 over each GPU	2x 2000W AC or 2x 1300W DC Redundant PSUs

The 1029GQ is the only 1U 4x V100 GPU-enabled server available with NEBS Level 3 certification, having met stringent qualifications of the GR-1089 and GR-63 suite of tests for full Level 3 compliance. This robust solution is purpose-built to handle a variety of operating conditions and data complexity and [extends the operating temperature to 55°C](#) — achieving a 30°C improvement over the closest competitor, and it is 100% made in the U.S.

Conclusion

Supermicro leads the market in high-performance, high-efficiency computing. We offer the broadest portfolio of customizable solutions and expert support from around the globe to help customers create their ideal infrastructure. We are continually developing comprehensive technologies and capabilities to handle today's workloads and prepare for tomorrow's challenges.

Groundbreaking computing solutions from Supermicro are empowering telcos to lead the next wave of 5G innovation. Our latest server platforms are NEBS Level 3 certified and application-optimized, enabling our customers to transform their operations confidently and efficiently. Backed by the unmatched acceleration of NVIDIA GPUs, NVIDIA networking, and software SDKs, these solutions provide immense power, agility, and flexibility to bolster diverse workloads.

A new age of intelligence is waiting. [Visit Supermicro today](#) to learn how you can harness the power of advanced computing for 5G.