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CASE STUDY

SUPERMICRO AND PHOENIXNAP PARTNER TO DELIVER IT EQUIPMENT FOR EVOLVING BUSINESS OPPORTUNITIES

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PHOENIXNAP OVERVIEW

Founded in 2009, phoenixNAP is a global organization that offers a wide portfolio of cloud, bare metal dedicated servers, colocation and Infrastructure-as-a-Service solutions. With data centers in six strategic global locations, phoenixNAP operates under a follow-the-sun service model, providing its customers with maximum flexibility and responsiveness to meet their business demands. From high-density colocation, flexible storage, physical servers and hardware-as-a-service (HaaS) solutions to advanced cloud and hybrid solutions, as well as backup and disaster recovery options, phoenixNAP's customers can leverage different resources to successfully meet their infrastructure needs.

As a VMware® Premier Service Provider and Veeam® Platinum Partner, phoenixNAP maintains a reputation of a trusted information technology provider and makes it possible for companies operating in different industry verticals to access cutting-edge technology. Providing global OpEx deployments and connectivity, phoenixNAP supports its clients' rapid growth and international expansions with secure, resilient and high performance infrastructure and essential scalability.

PhoenixNAP Locations

- Amsterdam, Netherlands
- Phoenix, AZ
- Atlanta, GA
- Ashburn, VA
- Belgrade, Serbia
- Singapore

Industries

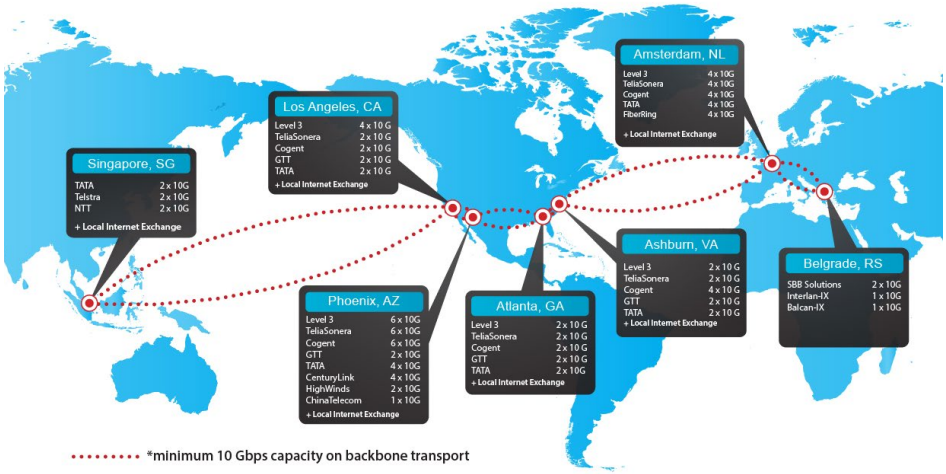
- Data center
- Cloud services
- Infrastructure-as-a-service
- Disaster recovery solutions

CHALLENGES FOR PHOENIXNAP

- **Meet strong SLA's and high-performance requirements and ensure maximum levels of security and reliability for every customer**
- **Continuously improve global operation efficiency**
- **Provide cutting edge and fully scalable compute and storage architecture on a global scale**
- **Solution vendor must have a global distribution network and strong customer service**

"Delivering IT services across the globe requires resilient, scalable and affordable solutions in order to support a wide range of services that our customers demand. PhoenixNAP's strong SLA's and high-performance requirements depend on the high quality of Supermicro's enterprise grade hardware" says Ian McClarty, President at phoenixNAP. "Understanding our customers changing demands and shifts in the markets they operate in, we strive to support their ability to compete and innovate through our partnership. Providing access to improved and reliable technology while forgoing any upfront investments has proven to bring a lot of value to our clients and allows them to focus on things they do best and achieve new growth potential. Supermicro has been an amazing partner and helps us enable our customers ability to leverage cutting edge technology across the globe."

To support the rapid growth of their global presence and client businesses, phoenixNAP was in search of a solution that could significantly improve the overall operation efficiency across multiple geographical regions, while ensuring maximum levels of security, scalability and flexibility.



With the growing demand for colocation and Hardware-as-a-Service (HaaS) offerings that phoenixNAP offers to their global client base, it is challenging to maintain a high-performance architecture across global facilities, while keeping the operational costs and energy-efficiency at optimal levels. Another challenge for phoenixNAP is to find a hardware provider that has a global distribution network, which would ensure that the equipment is expediently delivered to any of their data centers with strong service teams and replacement parts available for the unexpected.

SUPERMICRO SOLUTIONS

- Supermicro's broad product line and feature sets meet all phoenixNAP's requirements
- By participating in Intel's Early Ship Program through Supermicro helped phoenixNAP to adopt bleeding edge technologies earlier and with more confidence
- Supermicro has a strong global distribution network and onsite services

"By leveraging the new X11 generation of Supermicro's Building Block Solutions and SuperServers optimized for Intel Xeon Scalable platform, we can keep offering innovative and cutting-edge technology solutions at phoenixNAP, while continuously supporting the evolving needs of our customers for cloud computing, web hosting, big data and high-performance applications." said William Bell VP of Products at PhoenixNAP. "High costs should never be an inhibitor for innovation, performance or services and at phoenixNAP we work relentlessly to deliver on that promise. Supermicro's technical improvements brought by the X11 generation hardware show solid increase in performance and reliability over previous generations, and is a direct response to demands of the market."

With a set of requirements in mind, phoenixNAP evaluated multiple proposals, and Supermicro's X11 generation Building Block Solutions® and SuperServer® systems emerged as their right choice. PhoenixNAP found the advanced features offered by Supermicro including SuperDOM/SATA DOM (Disk on Module) support, flexible options for onboard Gigabit and 10G (RJ45 and SFP+) Ethernet LAN ports, integrated IPMI 2.0 and M.2 slots for PCI-E SSDs. In combination with redundant Titanium Level high-efficiency digital power supplies with and options for BBP® (Battery Backup Power), and more can help phoenixNAP to achieve their goals of performance improvements, while enhancing the energy-efficiency in their facilities.

Figure 1. *Supermicro 2U 4-node BigTwin™ SuperServer®*

PhoenixNAP participated in Intel's Early Deployment program to validate performance and new platform feature with Intel® Xeon® Scalable Processor Family through Supermicro, and will be one of the few service providers in the world to have the latest hardware and technologies accessible to their customers. One example of the new X11 generation

Supermicro systems deployed at phoenixNAP is the BigTwin™, the industry the highest performing and efficient Twin multi-node system in a 2U 4-node dual-processor platform, and the Simply Double SuperStorage system that supports twice the number of 2.5" drive bays than industry standard 2U systems.

BigTwin – A No-Compromise Design

The key benefit of Supermicro BigTwin is the no-compromise modular design. Historically multi-node systems traded-off features and capacity for density. They were deployed for workloads that did not require the highest performance or the highest memory density on a single node. The 2U BigTwin has a breakthrough density and system efficiency that each of the 4 nodes supports the highest performing CPUs, full 24 DIMMs of memory for up to 6 memory channels, up to 6 NVMe SSDs, and flexible onboard SIOM slot for up to 25G/10G Ethernet or 56G FDR InfiniBand.

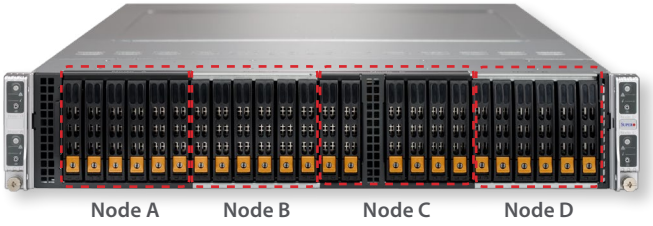


Figure 2. *Front View of 2U BigTwin Server System (All-Flash NVMe Model)*

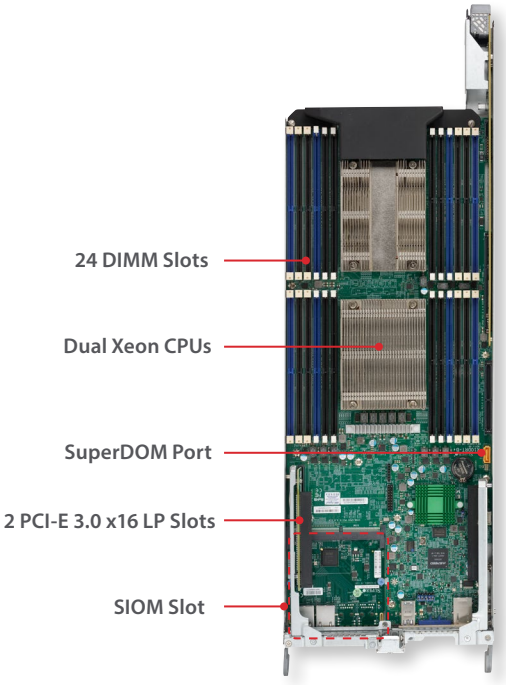


Figure 4. *BigTwin's Ultra-Dense Node Design*

Simply Double – Performance and Capacity Optimized All-Flash NVMe Storage

The dual-processor Simply Double 2U SuperStorage systems include twice the number of hot-swap drive bays as 2U industry standard systems, thus offering up to twice the storage capacity and IOPS in the same amount of space. The additional drive bays are arrayed in a patented Riser Bay that is located on the top of the Simply Double systems for easy access and servicing. With twice the storage density, customers can greatly improve the price/performance of their storage deployments to maximize ROI. The Supermicro 2U Simply Double SuperStorage systems are available in server or JBOD models and offer either 2.5" or 3.5" drive bays, support all-flash NVMe, SAS 3.0 and SATA3 SSD/HDDs, and onboard SIOM networking options.

Figure 3. *Supermicro Simply Double All-Flash NVMe Storage System*

RESULTS WITH SUPERMICRO

- **1.5 to 1.6X increase in performance and about a 40% gain in VM density with X11 generation Supermicro server and storage solutions**
- **Improved manageability and flexibility with Supermicro Rack Scale Design for data center operation and client applications**
- **Server cost and floor space savings from industry's best high-performance, high-density designs including the Supermicro® BigTwin™ and Simply Double**

"Supermicro is providing industry leading support for RAM and NVMe density on the BigTwin model that we are deploying for the new Intel® Xeon® processor Scalable family. These systems allow us to support up for 6 NVMe drives per node for a total of 24 NVMe drives in 2U. This is very helpful in addressing the consistently increasing performance demands that our clients put on our platform," adds Bell.

The new X11 generation Supermicro solutions supporting Intel Xeon processor Scalable family bring new levels of performance and security improvements in the microarchitecture, platform and systems. To phoenixNAP, performance per watt per dollar is critical for an optimized and efficient global operation. The new processor family introduces more cores, higher clock frequency, more memory channels and advanced security features when compared to the previous generation at similar price points, and when it meets a highly dense system design such as the Supermicro BigTwin, the overall data center cost savings and performance increase is significantly amplified.

The superior performance of Supermicro solutions enabled phoenixNAP to improve their capability and capacity to meet clients' demands for faster, more reliable and secure services. PhoenixNAP also leverages Supermicro Rack Scale Design and Supermicro Server Manager (SSM) utilities, which allow customized client solutions and provide their operation team a comprehensive solution to manage and maintain Supermicro servers and services across all geo-locations. In addition, Supermicro X11 generation motherboards and other Building Block Solutions allow phoenixNAP to minimize failure rates and improve the overall reliability and resiliency of their architecture.

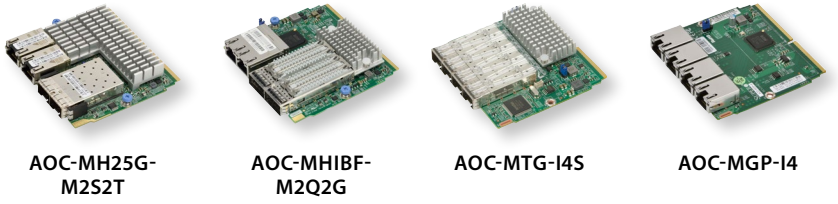
With a globally distributed operation model, making the most of scarce and valuable rack and floor space while ensuring dedicated hardware is a tricky balancing act, Supermicro pioneered the Twin architecture and Simply Double storage in the industry and is one of the few vendors that provide the right solutions to this service provider dilemma with the BigTwin and Simply Double SuperStorage systems.

In addition, phoenixNAP considered the following benefits:

- Industry's leading performance and compute density with Supermicro BigTwin in a 2U 4-node form-factor with 24 DIMM slots per node
- Optimized density and IOPS with dual-processor Simply Double SuperStorage systems for expandable storage capacity up to 48x 2.5" SATA3 or NVMe drive bays in an incredible 2U space
- Best density and integrated support for hot-swappable NVMe, SAS3 and SATA3 drives with highest performance DDR4-2666MHz memory support

- The flexible and upgradable onboard SIOM (Supermicro Super I/O Module) networking for up to dual 25G/10G RJ45/SFP+/SFP28 Ethernet and dual 56G QSFP FDR InfiniBand.

SIOM Modules	Networking Features
AOC-MH25G-m2S2T	Dual-port 25 Gigabit Ethernet SFP28 and Dual-port 10 Gigabit Ethernet RJ45
AOC-MHIBF-m2Q2G	Dual-port FDR InfiniBand QSFP+ and Dual-port Gigabit Ethernet RJ45
AOC-MTG-i4S	Quad-port 10 Gigabit Ethernet SFP+
AOC-MGP-i4	Quad-port Gigabit Ethernet RJ45



AOC-MH25G-M2S2T | AOC-MHIBF-M2Q2G | AOC-MTG-I4S | AOC-MGP-I4

Figure 5. *Example SIOM options. For a complete list, please visit* www.supermicro.com/support/resources/AOC/AOC_Compatibility_SIOM.cfm

About Super Micro Computer, Inc.

Supermicro® (NASDAQ: SMCI), the leading innovator in high-performance, high-efficiency server technology is a premier provider of advanced server Building Block Solutions® for Data Center, Cloud Computing, Enterprise IT, Hadoop/Big Data, HPC and Embedded Systems worldwide. Supermicro is committed to protecting the environment through its "We Keep IT Green®" initiative and provides customers with the most energy-efficient, environmentally-friendly solutions available on the market.

www.supermicro.com

About phoenixNAP®

PhoenixNAP® is a Global IT services organization offering cloud services, dedicated server hosting, colocation, and Infrastructure-as-a-Service (IaaS) technology solutions. Working with multinational corporations for almost a decade, phoenixNAP has maintained a reputation of reliable provider through a highly-personalized approach that ensures all customer requirements are met. Whether it's flexible storage, disaster recovery, or enterprise-grade facilities, certified personnel supply IT solutions to fit every need. PhoenixNAP is a VMware® Premier Service Provider and Veeam® Platinum Partner.

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