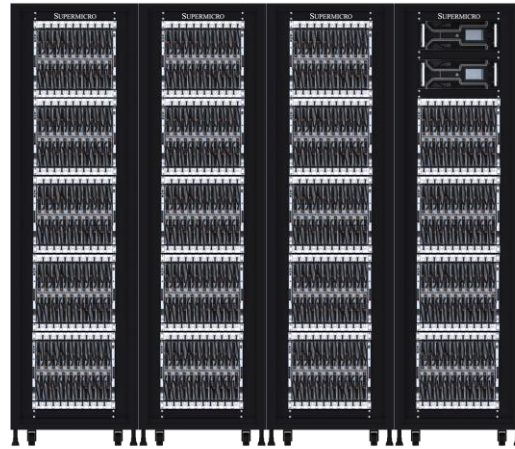




# MEMX SELECTS SUPERMICRO SUPERBLADE® TO GROW BUSINESS WITH NEW SERVICES

*Enabling MEMX to Deliver the Most Deterministic System for Stock and Option Trading*



## INDUSTRY

Financial Services

## Introduction

MEMX was founded in 2019 by a diverse group of leading global financial firms, including banks, retail brokers, and market makers. Initially tasked with building and launching an equities exchange, MEMX's goal was to make it easier for its customers to trade stocks with increased determinism, lower fees, and more transparency. MEMX also worked to bring new and competitive trading opportunities to brokers and individuals and provide a voice for market participants on critical equity market structure issues.

As a growing market operator, MEMX constantly seeks to improve the user experience by using optimizations at the software and infrastructure layers through the latest technology and innovations brought to bear by partners. With the latest offering of its next-generation Options Exchange (MEMX OPTIONS) platform (launched in Sept. 2023), MEMX adopted Supermicro's SuperBlade® system. This new system combines 4th Gen Intel® Xeon® Scalable processors and Direct Liquid Cooling (DLC) technology to provide a high-density, high-performance solution (up to 100 nodes per rack) with more deterministic services for its members and customers.

## CHALLENGES

- Compute Infrastructure Designed for High Performance
- Reductions in Latencies and Jitter
- Lower Power Use Required

## Challenges

MEMX needed to build an extremely fast, ultra-low latency exchange platform that could scale as the trading volume increased without making wholesale changes to the selected infrastructure. The evaluated system would need to demonstrate both an ultra-low level of latency and very low jitter for customers performing trades.

Power efficiency was a critical requirement to ensure MEMX could maximize the rack density while reducing costs and maintaining required SLAs based on the rack power limits defined by the data center infrastructure. To allow the CPUs to run as fast as possible for maximum performance, DLC was determined to be the best option for cooling the processors. So, the racks and systems had to

accommodate DLC. Building upon MEMX's previous-generation platform, additional system architectures were identified to complete the platform.

## SOLUTION

### SuperBlade® Enclosure

- SBE-820J2-830
- 8U 20 SuperBlade Servers
- 2x 25Gb Ethernet Pass-Thru Modules
- 8x 3kW Power Supplies
- 2x CMMs

### SuperBlade® Server

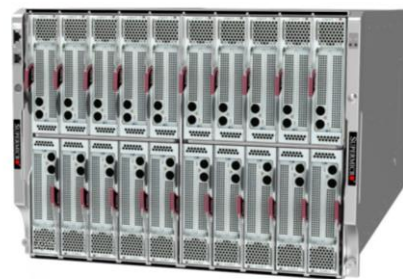
- SBI-411E-1G
- 4th Gen Intel Xeon Scalable Processor (Xeon Platinum 8462Y+)
- 1 TB DDR5-4800 Memory
- 3.8TB NVMe SSD

## Solution

MEMX selected Supermicro SuperBlade systems to power its next-generation trading platform. The Supermicro SuperBlade is an extremely dense solution with 20 nodes in an 8U enclosure. Each node comprises a 4<sup>th</sup> Gen Intel® Xeon® Platinum 8462Y+ processor, 1TB DDR5-4800 memory, and a 3.8TB NVMe SSD.

Each 8U SuperBlade enclosure includes two integrated 25GbE pass-thru modules (to connect to the top of the rack switch), delivers 96 percent efficiency, and includes N+N redundant power supplies, cooling fans, and two Chassis Management Modules (CMMs) for remote system management. In addition to maximized performance, the new servers allow MEMX to secure all transactions, whether at rest, during network traffic, or if the data is being acted upon.

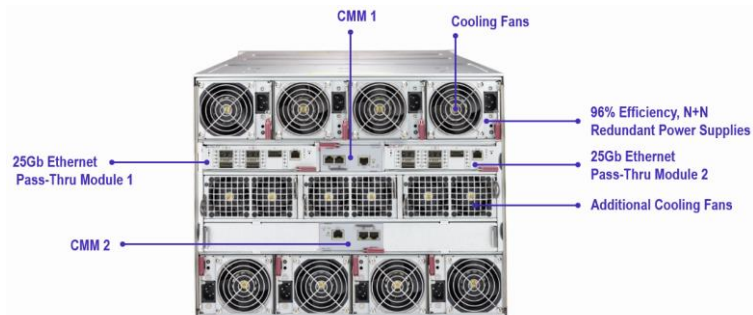
The chosen CPU enables the platform to overcome the jitter associated with NUMA. Compared to previous generation processors, the 4th Gen Intel Xeon Scalable processors provide more cores, better performance, and reduced latencies, allowing MEMX to reduce the overall server footprint needed. Each node is liquid-cooled, allowing the CPUs to run at maximum speed with the lowest latency for deterministic performance while reducing PUE and the data center heat load.



*SuperBlade Enclosure*



*SuperBlade SBI-411E-1G*



*Figure 1 - Rear View of Supermicro SuperBlade*

A cold plate is installed on the top of each CPU for liquid cooling. The cold liquid is drawn over the CPU and returned to a cooling distribution unit (CDU). From the CDU, the hot liquid is cooled externally to the data center, and the cold liquid is then returned to the CPUs to close the liquid cooling loop.

## Benefits

MEMX has deployed hundreds of SuperBlade servers in multiple racks. MEMX immediately saw benefits from implementing the servers' high density and reliability. The performance of the 4th Gen Intel Xeon Scalable processors and the high-speed networking integrated into the SuperBlade enclosure allows for deterministic trading (minimal jitter) with very low latency. Customers can trade stocks and options with the confidence of getting the best price with the utmost availability and reliability without delay.

Since the 4th Gen Intel Xeon Scalable processors are highly configurable, MEMX was able to standardize on the Intel 8462Y+ with 32 cores. This Intel CPU allows for modifications on infrastructure to disable cores and run applications where a higher core frequency is needed (e.g., matching engines). The high core count CPU also allowed MEMX to reduce the number of processor SKUs to one, simplifying and making their environment easier to manage. In addition, the Supermicro server platform provided a seamless path to upgrading to future generations of Intel Xeon processors.

*"MEMX can offer the world's most performant and low latency trading exchange today, using Supermicro SuperBlade liquid-cooled servers. The powerful and energy efficient SuperBlade systems allow MEMX to offer low latency services to our customers, allowing them to participate in equity and options trading worldwide. Working with Supermicro and Intel have allowed us to expand our services and customer base without sacrificing performance or lowering customer expectations."*

- Dominick Paniscotti, CTO, at MEMX

## For More Information:

Supermicro SuperBlade – <https://www.supermicro.com/en/products/superblade>

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### SUPERMICRO

Supermicro is a global leader in high performance, green computing server technology and innovation. We provide our global customers with application-optimized servers and workstations customized with blade, storage, and GPU solutions. Our products offer proven reliability, superior design, and one of the industry's broadest array of product configurations, to fit all computational need.

Visit <https://www.supermicro.com>

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### INTEL

Intel (Nasdaq: INTC) is an industry leader, creating world-changing technology that enables global progress and enriches lives. Inspired by Moore's Law, we continuously work to advance the design and manufacturing of semiconductors to help address our customers' greatest challenges. By embedding intelligence in the cloud, network, edge and every kind of computing device, we unleash the potential of data to transform business and society for the better. To learn more about Intel's innovations, go to [www.intel.com](http://www.intel.com)

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### MEMX

MEMX is a technology-driven exchange operator providing its members and the global investment community with a simpler, less costly, and more transparent way to access liquidity. The firm currently owns and operates two exchanges trading U.S. equities and U.S. options. MEMX also provides exchange technology and services to clients. Founded in 2019 by a diverse group of financial firms, MEMX's mission is to create healthy competition and advocate for market structure reform that results in more efficient and sensible trading experiences for all investors.

Visit [www.memx.com](http://www.memx.com)

## BENEFITS

- Higher Performance
- Lower Latency
- Increased Workloads
- Deterministic Results
- Lower Power Consumption
- Lower TCO