Disruptive
Server / Storage / Networking Solutions
for
High-Performance-Computing
How can an organically grown, USA based, Multi-National Company, (that many people outside the server/storage industry have never heard of), Drive Disruptive Technology Solutions?
Supermicro Growth

5x Growth
2009 -- Present

36% Growth
2015

26% Growth
2014

Privatized

Lenovo Split

Asia CM’s

WHY IS SUPERMICRO OUTPACING THE INDUSTRY?
Supermicro Global Reach

- Multi-National, Public Company – NASDAQ: SMCI
- USA Headquarters (Corporate Offices, R&D Center, Logistics SuperHub)
- Three SuperHubs: Americas (San Jose), Asia (Taipei), EMEA (Holland)
Industry Leading Server/Storage Product Lines

- Simply Double – NVMe / SAS Solutions
- The Ultra 1U and 2U Haswell/Broadwell/SkyLake Product Lines
  - 3 to 15% less power consumption than competition
- The 1U/2U TwinPro and 4U FatTwin
  - Best performance/watt and price/performance ratio
- 847, 846, 836, 826, 226 Storage, JBOD & All-Flash Storage Array
  - Highest storage density and performance
- 947, 947S(R), 927S(R)
  - Big Data and Software Defined Storage Solutions
- GPU/Xeon Phi Product lines
  - Highest computing density and power efficiency
- SuperBlade, MicroBlade and MicroCloud
  - Densest computing nodes, 0.05U/0.1U/0.2U per node
- Management Software and Virtualization Solutions

NEW!
East Coast Hub – Jersey City

525 Washington Blvd
Jersey City, NJ

- Local Sales & Service
- Demo / POC Center
- Reflects Supermicro Investment in 3x Capacity Growth over next three years
Disruptive Technology Examples

Deployed by Supermicro
Non Volatile Memory Express

Simply Double
NVMe SSD Benefits

- **Scalable**
  - PCIe for scalable performance
  - Flexible form factors and industry stability

- **Increase Bandwidth**
  - 4GB/s per device (PCIe Gen3 x4)
  - 6x bandwidth improvement over SATA3 SSD

- **Lower Latency**
  - 7x improvement over SAS3 SSD
  - increase efficiency
  - lower CPU utilization, power, TCO

- **Lower Power**
  - Lower wattage per IOPS

---

**Bandwidth**

<table>
<thead>
<tr>
<th>Device</th>
<th>MB/s</th>
</tr>
</thead>
<tbody>
<tr>
<td>NVMe SSD</td>
<td>2788.77</td>
</tr>
<tr>
<td>SAS3 SSD</td>
<td>980.34</td>
</tr>
<tr>
<td>SATA3 SSD</td>
<td>470.6</td>
</tr>
</tbody>
</table>

**Latency**

<table>
<thead>
<tr>
<th>Device</th>
<th>µs</th>
</tr>
</thead>
<tbody>
<tr>
<td>NVMe SSD</td>
<td>15.9</td>
</tr>
<tr>
<td>SAS3 SSD</td>
<td>114.1</td>
</tr>
<tr>
<td>SATA3 SSD</td>
<td>47.3</td>
</tr>
</tbody>
</table>

6x bandwidth improvement over SATA3 SSD

7x latency improvement over SAS3 SSD

http://www.supermicro.com/white_paper/white_paper_NVMe.pdf
NVMe Form Factors

M.2
42, 80, and 110mm lengths, Smallest footprint of PCIe®, use for boot or for max storage density.

U.2 2.5in (SFF-8639)
2.5in makes up the majority of SSDs sold today because of ease of deployment, hotplug, serviceability, and small form factor.

Add-in-card
Add-in-card (AIC) has maximum system compatibility with existing servers and most reliable compliance program. High power envelope, and options for height and length.
Supermicro leads the market in category and density options for NVMe technology

- Competitors playing catch-up.

**2.5” Benefits**

- Existing Mechanical Ecosystem
- Frees up expansion slots
- Higher drive density (up to 48 NVMe support)
- Hot-Swap Features
- Easier Serviceability
- Drive tray locking mechanism
  - Helps security and accidental eject
Deployment Considerations

- **General Rule:**
  - IOPS Reads are dependent on # of PCIe lanes/drive
  - IOPS Writes are dependent on drive count
- **1028U-TN10RT+:** Highest read potential
- **2028U-TN24R4T+:** High read/ High write storage performance
- **2028U-TN24R4N:** High read/ Higher write density storage performance
### NVMe All Flash Examples

<table>
<thead>
<tr>
<th>Model</th>
<th>Scalable Performance</th>
<th>High Performance Storage</th>
<th>High Performance Storage</th>
</tr>
</thead>
<tbody>
<tr>
<td>SYS-1028U-TN10RT+</td>
<td>10 hot-swap 2.5” NVMe drives</td>
<td>24 hot-swap 2.5” NVMe drives</td>
<td>48 hot-swap 2.5” NVMe drives</td>
</tr>
<tr>
<td></td>
<td>40 PCIe lanes to 10 NVMe drives</td>
<td>32 PCIe lanes to 24 NVMe drives</td>
<td>32 PCIe lanes to 48 NVMe drives</td>
</tr>
<tr>
<td></td>
<td><strong>Performance</strong></td>
<td><strong>Performance</strong></td>
<td><strong>Performance</strong></td>
</tr>
<tr>
<td></td>
<td>● IOPS (4K Random Read): up to 7M</td>
<td>● IOPS (4K Random Read): up to 5M</td>
<td>● IOPS (4K Random Read): up to 5.6M</td>
</tr>
<tr>
<td></td>
<td>● IOPS (4K Random Write): up to 3.6M</td>
<td>● IOPS (4K Random Write): up to 6.2M</td>
<td>● IOPS (4K Random Write): up to 6.4M</td>
</tr>
<tr>
<td></td>
<td>1000W Titanium level high efficiency digital power supply</td>
<td>1600W Titanium level high efficiency digital power supply</td>
<td>1620W Titanium level high efficiency digital power supply</td>
</tr>
<tr>
<td></td>
<td><strong>Dual Port 10G Base-T</strong></td>
<td><strong>Quad Port 10G Base-T</strong></td>
<td><strong>SIOM</strong></td>
</tr>
<tr>
<td></td>
<td></td>
<td><strong>2 Rear hot-swap 2.5” SATA drives</strong></td>
<td><strong>2 Rear hot-swap 2.5” SATA drives</strong></td>
</tr>
</tbody>
</table>
SMC NVMe Whitepaper

**All Flash NVMe Systems Set New Performance/Capacity Records**

Supermicro has developed families of SuperServer® systems optimized for high-performance and capacity using all-flash NVMe SSD storage technology. NVMe-based write-intensive memory footprints provide scalable, high-performance direct connection from CPU PCIe express ports to NVMe SSD data storage devices. NVMe SSDs installed in Supermicro systems have demonstrated up to 7 times latency improvement over SAS 12Gb/s SSDs and up to 6 times the throughput of SATA 6Gb/s SSDs.

**Test Results**

The No. 1, 2, 3 results for random read IOPS and random write IOPS at peak performance for these systems were measured. Supermicro is unrivaled in the industry, offering the highest performance, highest density server, and storage networking solutions on the market. Innovation is at

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**Table 1: Performance Results**

<table>
<thead>
<tr>
<th>Model</th>
<th>SYS-2022U-1T8R+</th>
<th>SYS-2022U-1T4R-</th>
<th>SYS-2022U-1T2R-</th>
</tr>
</thead>
<tbody>
<tr>
<td>IOPS</td>
<td>1,677,500</td>
<td>3,078,640</td>
<td>5,633,100</td>
</tr>
</tbody>
</table>

These Supermicro all-flash SuperServer® solutions are targeted at low latency/high capacity applications such as media entertain and streaming, the image data, and high throughput environments such as Engineering & Science, HPC, and Energie Exploration.

**Test Configurations**

Three Supermicro all-flash server/storage models with varying form factors and sizes capabilities were tested with the following configurations:

- **SYS-2022U-1T8R+**
  - 24x NVMe drives
  - 1U rack system

- **SYS-2022U-1T4R-**
  - 12x NVMe drives
  - 1U rack system

- **SYS-2022U-1T2R-**
  - 6x NVMe drives
  - 1U rack system

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**Contact Supermicro sales representatives for more information or visit our Supermicro.com/NVMe**

http://www.supermicro.com/white_paper/white_paper_NVMe.pdf
Industry's Leading Hot-Swap NVMe Solutions
Increasing your Data Center Productivity and Throughput

New All FLASH Solutions!

Multi Node Solutions!

- SYS-1028U-TN10RT+ (1U 10 NVMe)
- SYS-2028U-TN24RT+ (2U 24 NVMe)
- SYS-2028R-NR48N (2U 48 NVMe)
- SYS-2028TP-DNCR (2U 2 Node NVMe/node)
- SYS-F628R3-RTBN+ (4U 4 Node 2 NVMe/node)
- SYS-F618R2-RTN+ (4U 8 Node 2 NVMe/node)
- SBI-7428R-C3N (3 NVMe per blade)

- Supermicro has the complete NVMe (PCI-e SSD) product offering
- Over 40 NVMe ready SKUs (All Flash/Hybrid) solutions in 9 different server categories
- Breakthrough performance and lower latency
- Ideal for caching, burst buffering, memory swap, faster storage and much more

Contact your Supermicro sales representative for more information, or visit our website www.supermicro.com/NVMe
HYPER-SPEED

Leveraging Supermicro Ultra Architecture

Simply Double
X10 Hyper-Speed

1U DP

SYS-1028UX-CR-LL1 1U/SC119UAC2-R750
X10DRU-XLL
W/8x 8GB DDR4 2133
2/1/16x(FHFL)x8(LP) Slots
SAS3 W/LSI3108
4 G-bit LAN BMC, IPMI
10 HSWP 2.5"drive
750W RPwr

SYS-1028UX-CR-LL2 1U/SC119UAC2-R750
X10DRU-XLL
W/Dual (165W)EP-2687V3 Soc R3
W/8x 8GB DDR4 2133
2/1/16x(FHFL)x8(LP) Slots
SAS3 W/LSI3108
4 G-bit LAN BMC, IPMI
10 HSWP 2.5"drive
750W RPwr

2U DP

SYS-6028UX-TR4 2U/SC820UACN4-R1K02B
X10DRU-X
16 DDR4 2133
3/1/2/16x(FHFL)x8(LP) Slots
SATA
4 G-bit LAN BMC, IPMI
10 HSWP 3.5"drive
1KW RPwr
Ultra Low Latency: 1U SYS-1028UX-CR-LL2

- Motherboard: X10DRU-XLL
- 1U Chassis: CSE-119UAC2-R750

8 hot swap 2.5" SI 3108 SAS3 port + 2x SATA3 2.5" Drive
Up to 3 PCI-E 3.0 Add-on cards (1 double width GPU)
Optimized for Low Latency Applications
NVMe support (Optional)
Platinum level high efficiency digital power supply
2 SATA ports with built-in SATA DOM power Support

KEY FEATURES

- Processor Support
  W/Dual Haswell EP 2687W V3 (160W)
- Memory Capacity
  16 DIMM, with 8GBx8 Reg. ECC DDR4 up to 2133MHz
- Expansion Slots
  2 PCI-E Gen 3.0 x16 (2 full height 10.5" length)
  1 PCI-E Gen 3.0 x8 (1 low profile)
  1 internal low profile with LSI 3108
- I/O ports
  Four Gigabit Ethernet ports
  1 Built-in video
  1 COM/Serial port (rear)
  5 USB 3.0 ports (2 rear, 2 front, 1 Type A)
- System management
  Built-in Server management tool (IPMI 2.0, KVM/media over LAN) with dedicated LAN port
- Drive Bays
  10 hot-swap 2.5" drives bays (8x SAS3 2x SATA3 ports)
  Optional 2 NVMe ports support via AOC-URN2-i2XT
- System Cooling
  8 heavy duty fans w/ Optimal Fan Speed Control; 1 Air Shroud
- Power Supply
  750W High-efficiency (Platinum level) digital redundant power supply

KEY APPLICATIONS

- Low Latency Applications
- Financial markets
SIMPLY DOUBLE
Breakthrough in Drives per Rack Unit

Patented Supermicro Architecture
SC226S 2U/48 Simply Double Server Chassis - Overview

KEY FEATURES

1. 2U 48x Hot-Swap 2.5” drive bays
2. Chassis depth: 30.2”
3. HDD backplane option:
   (a) 48x 2.5” NVMe
   (b) 48x 2.5” SAS3 12Gb/s / SATA3
   *(up to 4 hybrid slots)*
4. 2x Rear Hot-Swap 2.5” HDD (Optional)
5. S1OM for flexible networking option
6. Redundant 1600W Titanium Power Supply
7. 3 low-profile PCIe expansion slots
8. Cable management arm for hot-swap access of second row

Available: Now
SC826S 2U/24 Simply Double Server Chassis - Overview

**KEY FEATURES**

1. 2U 24x Hot-Swap 3.5” drive bays
2. Chassis depth: 33.8”
3. HDD backplane: 3.5” SAS3 12Gb/s / SATA3*
4. *(up to 4 NVMe/SAS3 hybrid slots)*
5. 2x Rear Hot-Swap 2.5” HDD (Optional)
6. SIOM for flexible networking option
7. Redundant 1600W Titanium Power Supply
8. 3 low-profile PCIe expansion slots
9. Cable management arm for hot-swap access of second row drive bays
SC946S 4U/60 Top-Load Server Chassis - Overview

KEY FEATURES

1. 4U 60x Hot-Swap, 3.5” SAS3 12Gb/s /SATA3 bays
2. Chassis depth: 30.2”
3. Front 3.5” LCD panel
4. 2x Rear Hot-Swap 2.5” HDD (Optional)
5. 6x top-load 2.5” NVMe (Optional)
6. SIOM for flexible networking option
7. Redundant 2000W Titanium/Platinum Power Supply
8. 3 low-profile PCIe expansion slots
9. Cable management arm for hot-swap access
SC946ED 4U 90-bay Top-Load Server Chassis - Overview

KEY FEATURES

1. 4U 90x Hot-Swap 3.5” 12Gb/s SAS3/SATA3 bays
   - Chassis depth: 38.2”
2. 2x Rear Hot-Swap 2.5” HDD
3. 4x 1000W (N+1) Titanium Redundant Power Supplies
4. 5x 8080 Hot-swap cooling fan modules
5. On-board 4x 10Gbps SFP+
6. Slide Rails
7. Cable management arm for hot-swap access
8. 1 x SIOM module (4 x 10Gbps Base-T or SFP+)

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GPU / Xeon-Phi Solutions

Leveraging Supermicro Architecture
X10 Xeon-Phi / GPU Server Portfolio

Ratio: GPU:CPU

TOWER
- 7048GR 4:2 (4U)
- 4028GR 8:2 (4U)
- 2028GR 6:2 (2U)
- 1018GR/5018GR 2:1 (1U)

RACK
- 1028GQ 4:2 (1U)
- 1028GR 3:2 (1U)
- 1028GR 3:2 (1U)

MULTI-NODE
- F628G3/F628G2 3:2 (4U / 4Node)
- F648G2 6:2 (4U / 2Node)
- 7128RG 2:2 (7U / 10Node)

Maximum Xeon-Phi / GPU per Node
Maximum Xeon-Phi / GPU per Rack Unit
GPU: 1U DP SYS-1028GQ-TR(T)

Processor Support
- Dual Xeon E5-2600 v4/v3 CPUs (Socket R3)

Memory Capacity
- 16 DIMMs, up to 2TB ECC LRDIMM, 512GB ECC RDIMM, DDR4, up to 2400MHz

Expansion Slots
- 4 PCI-e x16 Gen 3 for double-width GPU cards
- 2 x8 (in x16 slot) LP card

I/O ports
- 1x VGA, 2x GbE or 2x 10GbaseT LAN, 2x USB 3.0, and 1x IPMI dedicated LAN port

Drive Bays
- 2 hot-swap 2.5” drives bays; 4 total 2.5” HDD bays

System Cooling
- 9 counter rotating fans with optimal fan speed control

Power Supply
- 2000W Platinum Level efficiency redundant power supply

Key Features:
- Supports up to 4 double width GPU cards (including GTX)
- Redundant Platinum Level 2000W power supplies
- No GPU-Preheat
- Cost Optimized System

Key Applications:
- Oil & Gas
- Research & Scientifics
- VDI technology
- Computational Finance
GPU: 4U DP SYS-4028GR-TR(T)

Key Features:
- Supports 8 double width GPU cards
- Support up to 160W CPU
- 24x 2.5” SSD/HDD bays
- 24 DIMMs, up to 3TB memory

Processor Support
Dual Xeon E5-2600 v4/v3 CPUs (Socket R3)

Memory Capacity
24 DIMMs, 3TB ECC LRDIMM/RDIMM DDR4 2400MHz

Expansion Slots
8 PCI-e 3.0 x16 for double width GPU cards
2 PCI-e 3.0 x8 (2 in x16 slots)
1 PCI-e 2.0 x4 (in x16)

I/O ports
1x VGA, 2x Gbit LAN, 4x USB 2.0, and 1x IPMI dedicated LAN port

System management
On board BMC (Baseboard Management Controllers) supports IPMI2.0, media/KVM over LAN with dedicated LAN for system management

Drive Bays
24 hot-swap 2.5” drives bay

System Cooling
8 heavy duty fans optimize to support 8 GPU cards
2 air shroud

Power Supply
4 x 1600W (2+2) Platinum Level efficiency redundant power supply

Dimensions
H 17.2” (452mm) x W 7” (178mm) x D 29” (673mm)

Motherboard: X10DRG-O(T)+-CPU
Chassis: CSE-418GTS-R3200B
The STAC-A2 Benchmark suite is the industry standard for testing technology stacks used for compute-intensive analytic workloads involved in pricing and risk management. In all, the STAC-A2 specifications deliver nearly 200 test results related to performance, scaling, efficiency, and quality, which are detailed in this report.

**Test System:** Supermicro SYS-1028GR-TR server

**World Record Results**
Fastest warm time to date in the baseline end-to-end Greeks benchmark: GREEKS.TIME.WARM;
This was 1.27x the speed of the next fastest system, a 4-way Haswell-EX system (SUT ID: INTC150811).
Xeon Phi 2U Twin² : SYS-5028TK-HT(T)R

- Motherboard: K1SPI-P/PT
- Chassis: CSE-827HQ+-R2K04BP2

**Key features**

- **Density**: Uses popular Twin architecture to achieve 4 hot-pluggable nodes in 2U
- **Processor support**: Full range of Xeon Phi x200 Processor SKUs supported
- **Flexible I/O support**: Integrated dual-port Omni-Path or two low profile PCIe 3.0 x16 slots

<table>
<thead>
<tr>
<th>Feature</th>
<th>Specification</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Processor Support</strong></td>
<td>Xeon Phi x200 Processor (with option of integrated fabric) And Intel C612 chipset</td>
</tr>
<tr>
<td><strong>Memory Capacity</strong></td>
<td>6 DIMM, up to 384GB DDR4 2400 MHz</td>
</tr>
<tr>
<td><strong>Expansion Slots</strong></td>
<td>1 x16 Gen 3.0 LP (unavailable with Fabric SKUs)</td>
</tr>
<tr>
<td><strong>I/O ports</strong></td>
<td>2x Gbit or 2x 10GbaseT LAN</td>
</tr>
<tr>
<td><strong>Drive Bays</strong></td>
<td>3x hot-swap 3.5&quot; drives bays per node</td>
</tr>
<tr>
<td><strong>Power Supply</strong></td>
<td>2000W Titanium-level efficiency redundant power supply</td>
</tr>
</tbody>
</table>

*NDA Required for full product specs and schedule*
400+ SKUs released 3/31/16
Leveraging Supermicro Architecture
Best–in-class dual processor Broadwell technology delivers the ultimate experience in performance, flexibility, and scalability

1. Better Performance Processor
   I. Up to 22 cores/socket)
   II. Up to 44 threads)
   III. Up to 55 MB LLC (Last-level Cache)

2. Faster Memory Speed
   I. Up to 2400MHz

<table>
<thead>
<tr>
<th>Feature</th>
<th>Xeon E5-2600 v3 (Haswell-EP)</th>
<th>Xeon E5-2600 v4 (Broadwell-EP)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cores Per Socket</td>
<td>Up to 18</td>
<td>Up to 22</td>
</tr>
<tr>
<td>Threads Per Socket</td>
<td>Up to 36 threads</td>
<td>Up to 44 threads</td>
</tr>
<tr>
<td>Last-level Cache (LLC)</td>
<td>Up to 45 MB</td>
<td>Up to 55 MB</td>
</tr>
<tr>
<td>QPI Speed (GT/s)</td>
<td>2x QPI 1.1 channels 6.4, 8.0, 9.6 GT/s</td>
<td></td>
</tr>
<tr>
<td>PCIe* Lanes/Controllers/Speed(GT/s)</td>
<td>40 / 10 / PCIe* 3.0 (2.5, 5, 8 GT/s)</td>
<td></td>
</tr>
<tr>
<td>Memory Population</td>
<td>4 channels of up to 3 RDIMMs or 3 LRDIMMs</td>
<td>+ 3DS LRDIMM*</td>
</tr>
<tr>
<td>Max Memory Speed</td>
<td>Up to 2133</td>
<td>Up to 2400</td>
</tr>
<tr>
<td>TDP (W)</td>
<td>160 (Workstation only), 145, 135, 120, 105, 90, 85, 65, 55</td>
<td></td>
</tr>
</tbody>
</table>
Broadwell

- Improved performance at a comparable price

**Performance**
(Broadwell vs. Haswell)

<table>
<thead>
<tr>
<th>High Core Count CPUs</th>
<th>SKU</th>
<th>Frequency/Cores/TDP</th>
<th>Linpack (GFLOPS)</th>
<th>Price</th>
</tr>
</thead>
<tbody>
<tr>
<td>Broadwell</td>
<td>E5-2697A v4</td>
<td>2.6GHz / 16C / 145W</td>
<td>1138</td>
<td>Comparable</td>
</tr>
<tr>
<td>Haswell</td>
<td>E5-2697 v3</td>
<td>2.6GHz / 14C / 145W</td>
<td>911</td>
<td>Comparable</td>
</tr>
<tr>
<td>Broadwell</td>
<td>E5-2690 v4</td>
<td>2.6GHz / 14C / 135W</td>
<td>1004</td>
<td>Comparable</td>
</tr>
<tr>
<td>Haswell</td>
<td>E5-2690 v3</td>
<td>2.6GHz / 12C / 135W</td>
<td>829</td>
<td>Comparable</td>
</tr>
<tr>
<td>Broadwell</td>
<td>E5-2630 v4</td>
<td>2.2GHz / 10C / 85W</td>
<td>694</td>
<td>Comparable</td>
</tr>
<tr>
<td>Haswell</td>
<td>E5-2630 v3</td>
<td>2.4GHz / 8C / 85W</td>
<td>527</td>
<td></td>
</tr>
</tbody>
</table>

Configurations: 8 x Samsung 16GB (PC4-2133 & PC4-2400), 1 x Samsung 845DC Evo 480GB SATA SSD
Settings: BIOS (Load Optimal Defaults) / Benchmark: Linpack HPL v11.3.0.006
**Fully Validated at Broadwell Introduction**

<table>
<thead>
<tr>
<th>Product Family</th>
</tr>
</thead>
</table>
| **Twin Architecture**  
The original Twin architecture innovator. FatTwin, TwinPro & Twin |
| **Ultra Rack Mount Systems**  
1U & 2U Ultra systems |
| **WIO**  
Resource optimized systems |
| **Datacenter Optimized Solutions (DCO)**  
DCO & Short-Depth solutions |
| **Maximum IO**  
Up to 11 PCIe Slots |
| **GPU/Xeon Phi Optimized Solutions**  
Full line of GPU and Intel Xeon® Phi® optimized solutions |
| **Ultra Low Latency & Workstation**  
Optimized for Hyper Speed Ultra Low Latency & Workstation |
| **UP Systems**  
UP Mainstream, WIO, Storage systems |
Next Steps

Simply Double
Supermicro Advantages

- **Enhanced Product Development** – Continuously developing the highest quality products with industry leading technology
  - Widest range of optimized server/storage products in the industry
  - First to market with Disruptive Technology total solutions

- **Enhanced Technical Service**
  - Enhanced global services
  - FAE / Local Support: Worldwide

- **Enhanced Logistics and Worldwide Operations** – Providing Countless TTM advantages
  - Streamlined fulfillment and support services
  - Measurable Time-to-Market advantages
Call to Action

- *Disruptive technology wins market share*

- Leverage Supermicro East Coast Office Resources – Open to ALL
  - Local Sales & Support
  - Demo Room / POC Labs
  - Spare Parts Depot

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Q & A

Thanks

Simply Double