Resource Saving: Latest Innovation in Optimized Cloud Infrastructure

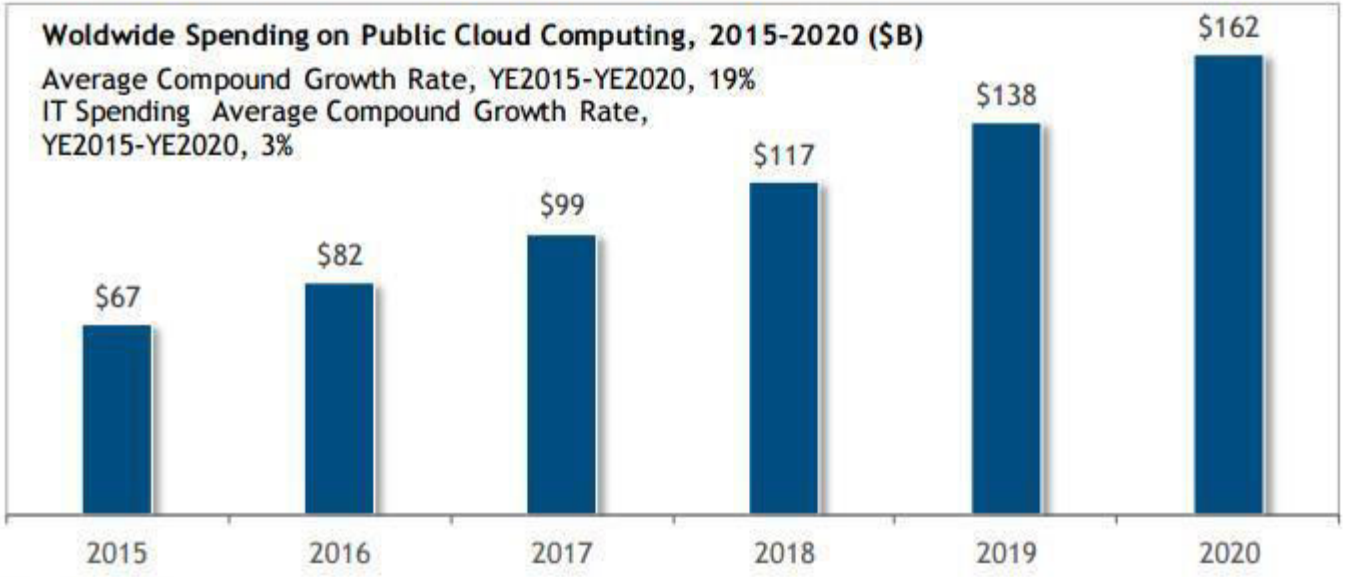
CloudFest 2018

Presented by Martin Galle, Director FAE

We Keep IT Green™

Cloud Computing Development

The Rapid Growth of Cloud Computing, 2015-2020



Source: IDC, 2016

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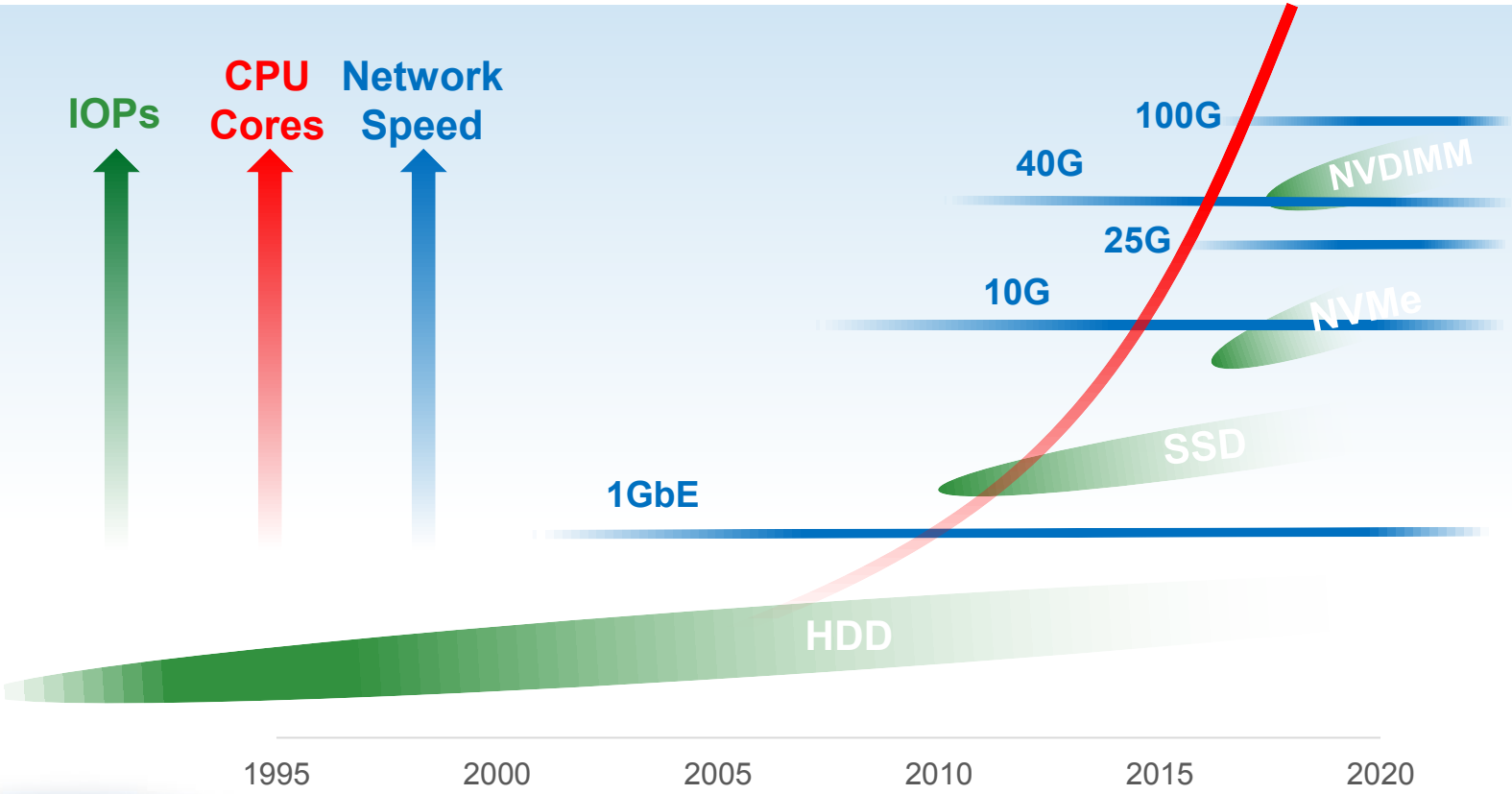
Technology Evolution History



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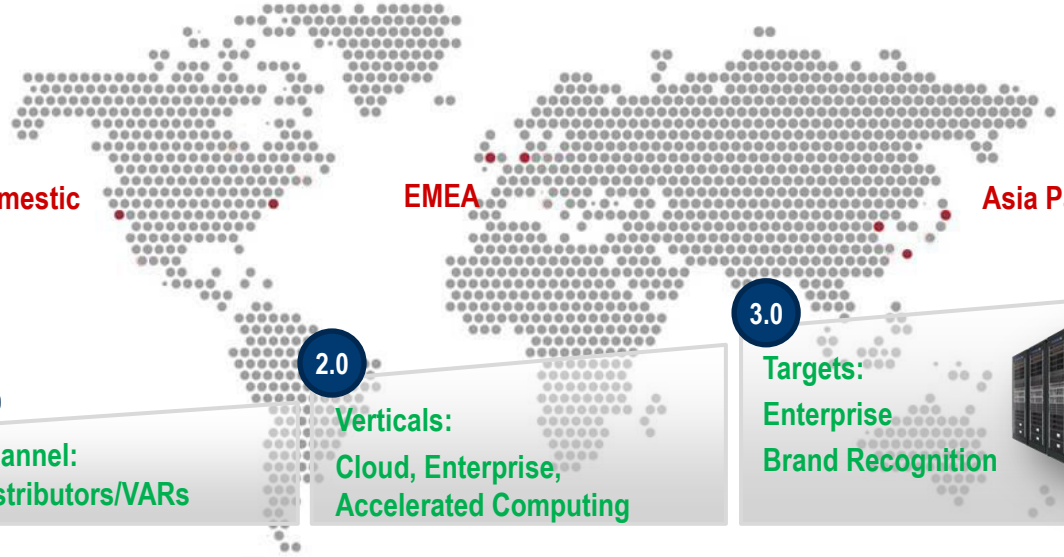
Our Progression

Presence



Market

1.0
Channel:
Distributors/VARs

2.0
Verticals:
Cloud, Enterprise,
Accelerated Computing

3.0
Targets:
Enterprise
Brand Recognition

Innovation

Subsystems

Motherboards

Chassis and server building blocks

Server Systems

BigTwin, NVMe / Simply Double, SuperBlade, BBP, GPU / co-processor solutions

Total Solutions

Management software, Global service optimized offerings for every refresh cycle

World class quality

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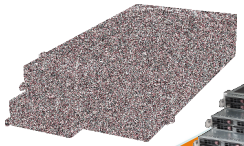
Generations of Twin Servers

Invent - Lead - Innovate - Evolve

- First to Innovate Twin Architecture in 2007

2007 – 1U Twin
DP Twin Architecture
Pioneer

2010 – 2U Twin & 2U Twin²



2012 – FatTwin™

2014 – TwinPro™

2015 – 1U TwinPro
with PowerStick™

2016 – New Gen FatTwin™ -
RSD & BigTwin™

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The BigTwin™

- **2U high density system with 4 high performance hot-swappable DP nodes**
- Each node (0.5/1U) supports dual processors up to 165/205W and **3TB memory in 24 DIMMs**
- Up to **6 hot-swap, all-flash NVMe per node** or NVMe/SAS3/SATA3 drive bays for application flexibility.
- **3 PCI-E 3.0** x16 I/O
- Unique redundant 2600W Titanium **power stick** design improves thermal efficiency – Free air cooling up to **42ºC**

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X11 Intel® Xeon ® Scalable Processor-based Servers

BigTwin²

TwinPro²

FatTwin

Ultra

WIO

DCO

GPU

Storage

Blade

Workstation

UP

MP (4/8way)

100+ optimized X11 Server and Storage Solutions using our building block approach

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Flash Storage – A New Dimension

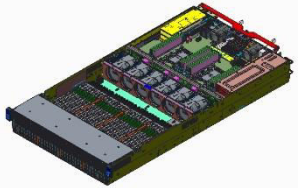
NVMe Storage

1 Peta Byte in 1U 32 U.2

32 Ruler RSSD

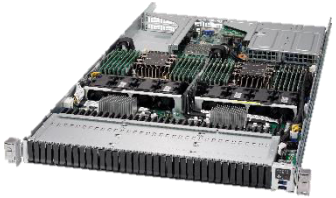
1U DP 32x Ruler

32 Ruler RSSD



2U Dual DP 32x Ruler

NGSFF Server



1U DP 36x16TB

M.2

U.2

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Supermicro Value Proposition

Resource Saving for Cloud Service Providers

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SuperBlade®

Mixed Blades in 8U Enclosure

- Highest Performance 205W Intel® Xeon® Skylake-SP processors
- 10x 4-socket or 20x 2-socket blades in 8U
- 14x 2-socket in 6U
- 14x 2-socket in 4U
- 100G EDR IB*, 100G Intel Omni-Path*, 25G/10G Ethernet switches
- Redundant Platinum (96% efficiency) AC or DC power supplies
- Battery Backup Power (BBP) modules
- Free Air Cooling
- Supermicro Disaggregated Design

* In 8U enclosure only

6U Enclosure

4U Enclosure

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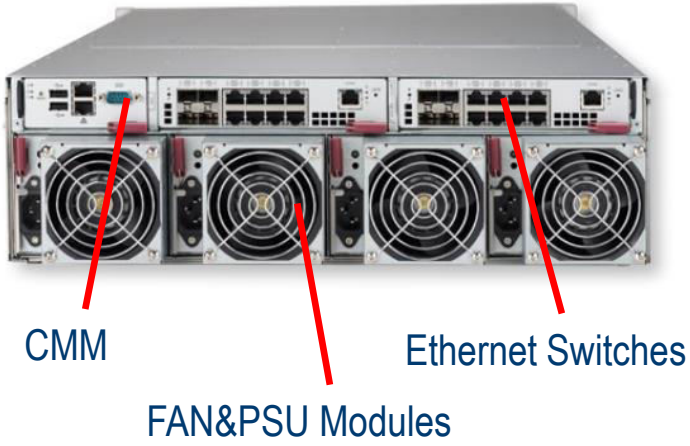
MicroBlade®



- 14x Xeon DP Nodes in 3U
- 14/28x Xeon UP Nodes in 3U
- 56x Atom Nodes in 3U
- Redundant (N+1 or N+N) Titanium Level (96%+ efficiency) PSUs
- Redundant 10/2.5/1Gbps SDN switches
- Free Air Cooling, 40°C ambient temperature
- High-efficiency Supermicro® system design (~10W per node)
- Supermicro Disaggregated Design

3U Enclosure

6U Enclosure

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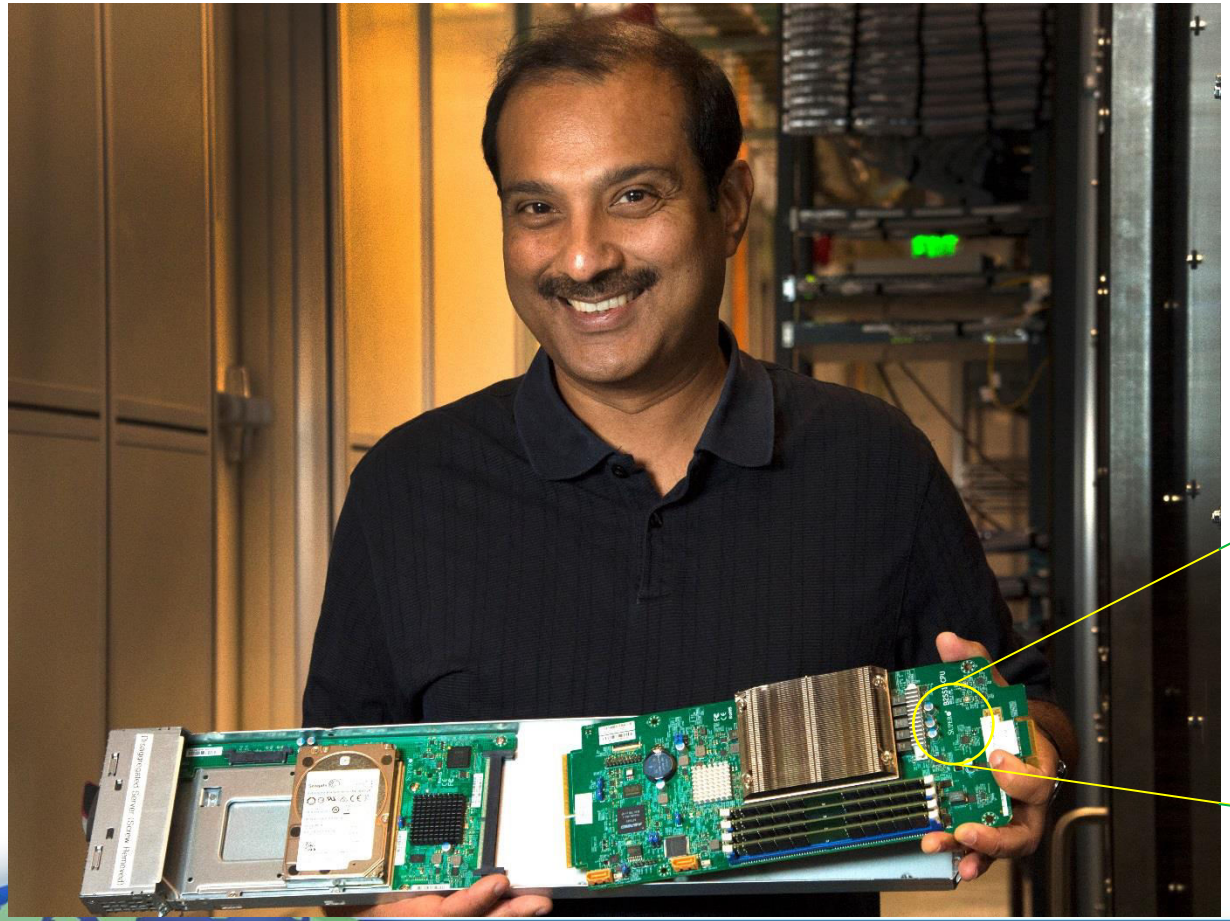
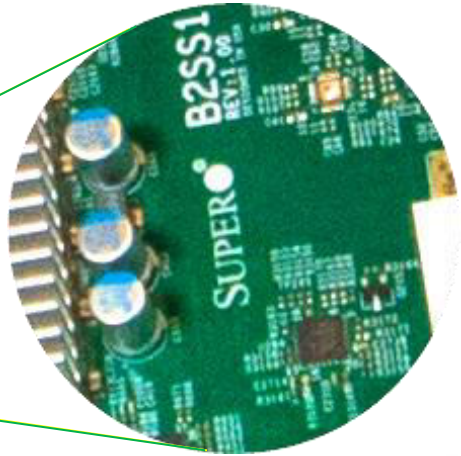
Disaggregated Design



Shesha Krishnapury, Intel© Fellow and IT chief technical officer, found a novel way to save money and reduce waste by creating a modular server design that allows critical components to be upgraded easily (Credit: Kirsch/Intel© Corporation)



https://newsroom.intel.com/news/making-server-easy-upgrade-light-bulb/

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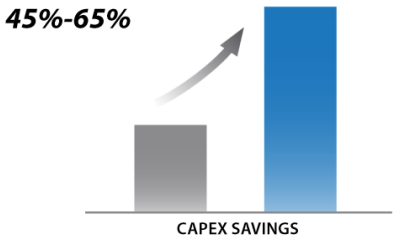
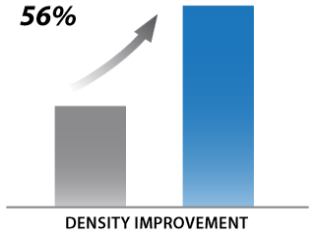
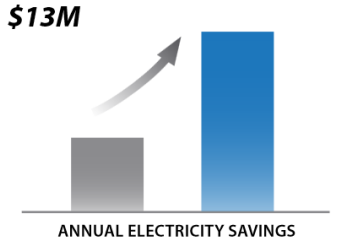
Resource Savings Example

- **Investment:**
  - Supermicro Disaggregated Design allows for individual replacement and upgrade of central components like CPU+memory complex, which reduces the refreshment cycle costs. CAPEX savings over three years around 50%
- **Density:**
  - Traditional solution: 180 nodes per 60U rack
  - Microblade solution: 280 nodes per 60U rack (14 nodes in 3U)
- **Operation:**
  - Reduced **power consumption per node of 140W** (CPU with 80W TDP) due to optimized fan layout and high efficiency board design.
  - High ambient temperature tolerance allows data center free air cooling, which leads to a **PUE of 1.06**
  - Compared with traditional Server with power consumption of ~200W in a modern DC with AC cooling and a PUE of 1.5, the savings are more than 50%







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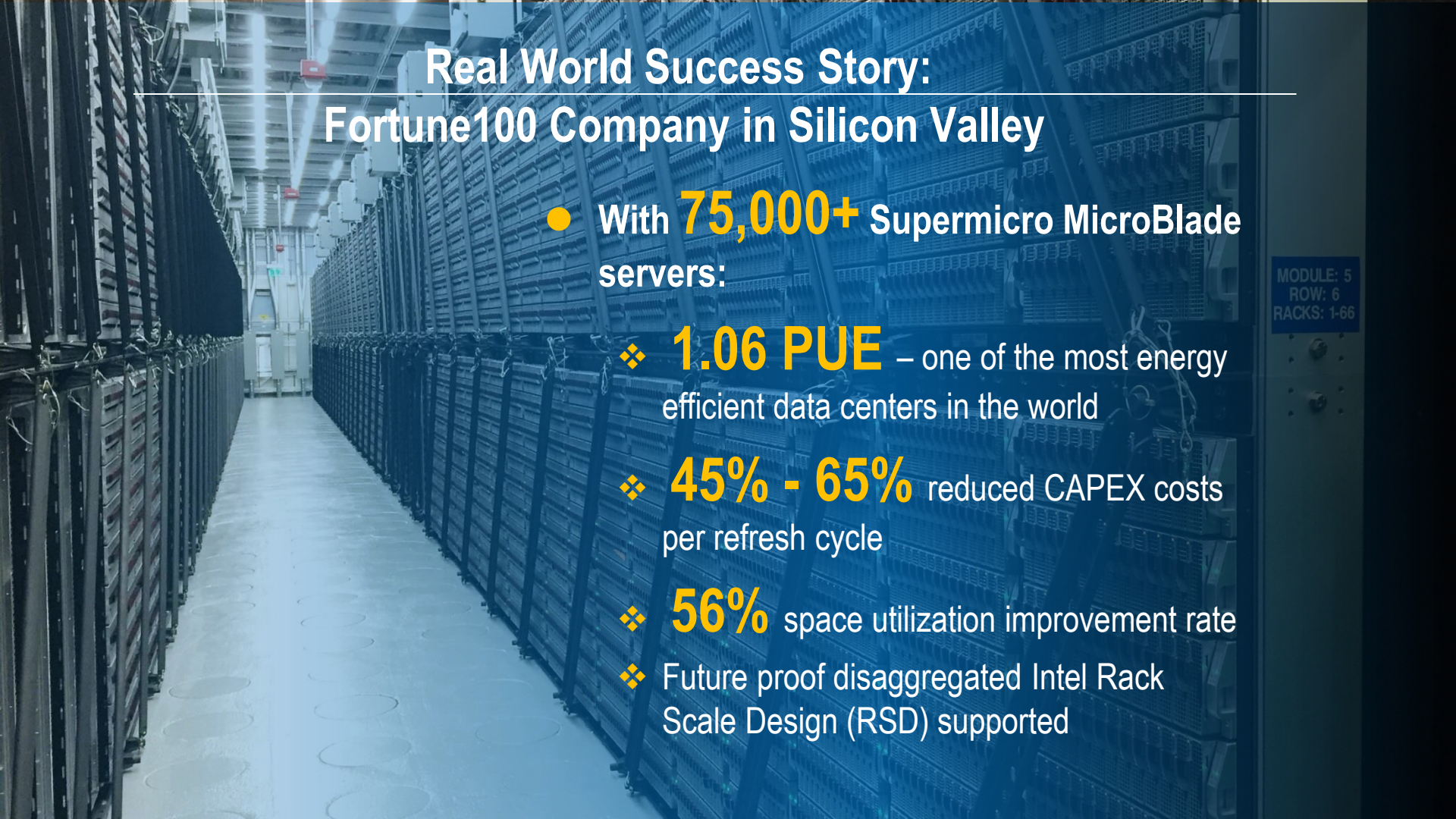


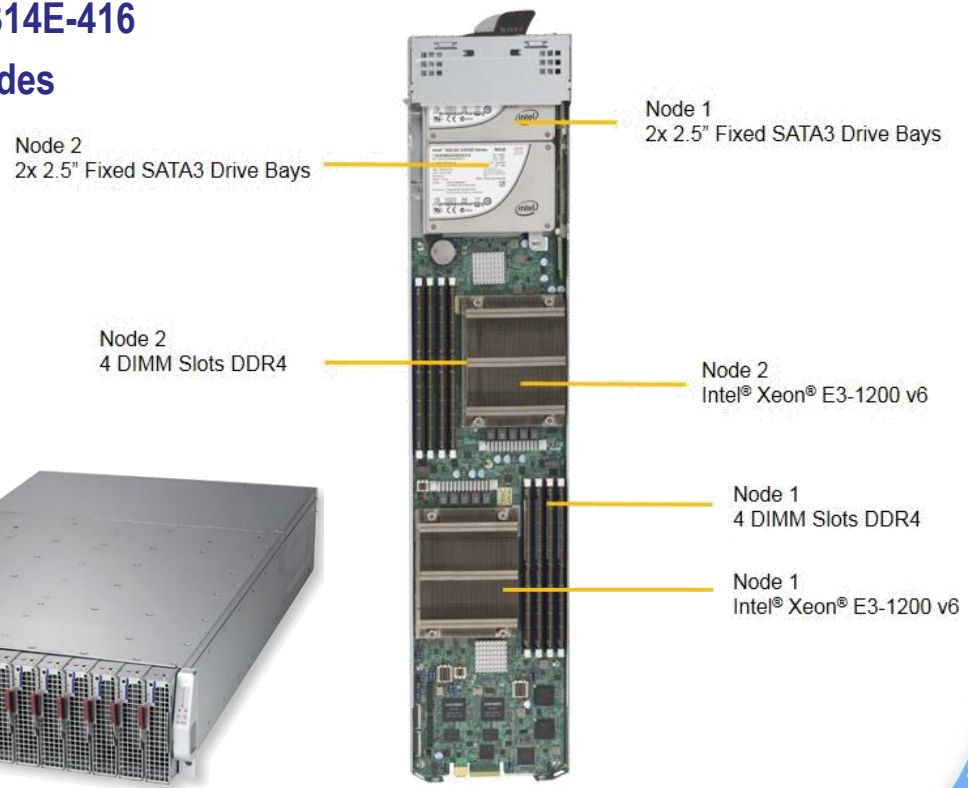
Real World Success Story:
Fortune100 Company in Silicon Valley

- With **75,000+** Supermicro MicroBlade servers:
  - **1.06 PUE** – one of the most energy efficient data centers in the world
  - **45% - 65%** reduced CAPEX costs per refresh cycle
  - **56%** space utilization improvement rate
  - Future proof disaggregated Intel Rack Scale Design (RSD) supported

Configuration Example

- Supermicro 3U Microblade Enclosure MBE-314E-416
- 14x Supermicro MBI-6219G-T Dual Node Blades
  Each of the 28 nodes with
  - 1x Intel E3-1280 v6
  - 4x 16GB 2400MHz ECC DDR4 UDIMM
  - 1x 2.5“ SATA HDD
- 4x 1600W Titanium (96%) PSU
- 1x GbE Ethernet Switch
- 1x CMM Management Module

⇨ 3569 Watts: 127W per node
(Max Theoretical Value)



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Rack Scale Strategy

- **Future-Proof Composable Computing Investment**
  - Leverage Supermicro System Building Blocks
  - Supports Current and Future Generation Technologies
- **Maximize Resource Utilization**
  - Resource Pooling and Just-in-Time Allocation
- **Factors Hardware Design Dependencies**
  - Power and Thermal Zones
  - Node Location Schema
- **Abstracts the Management to Rack Level**
  - Unifies Management Experience
  - Industry Standard Redfish RESTful APIs

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Things to Remember

World's Broadest Portfolio

Maximum Performance, First To Market Innovation

Visit Our Booth #F09

- Hands on Disaggregated Design
- Check out Supermicro BigTwin
- AMD based Server Solution
- much more…

Resource Saving on DC Level

Optimized Server Power Consumption
Free Air Cooling Enablement
Disaggregated Design
Rack/DC Level Resource Management

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Thank You

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