VENDOR PROFILE

Supermicro — Engineering Leadership Drives Long-Term Success

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IDC OPINION

The infrastructure market, and specifically the server (computing platforms) market, can be considered a mature market. IDC forecasts the worldwide server market to increase over the forecast horizon achieving customer revenue of $81.3 billion by 2021, which represents a five-year compound annual growth rate (CAGR) of 5.5%. IDC believes that the decision-making process for purchasing server hardware will continue to be driven by form factors (density), energy specifications (power and cooling), consolidation (mixed workloads), and the ability to run emerging virtualization technologies such as containers and functions as a service alongside traditional virtual machines and bare metal instances. Improvements or inhibitors in operating system environments, virtualization, multicore performance, and memory bandwidth are enabling customers to examine heterogeneous and accelerated computing architectures, though for the foreseeable future, x86-based computing will still command a dominant share of the market. Infrastructure vendors like Supermicro are focusing their engineering might on delivering not just high-quality hardware platforms but also end-to-end software-defined solutions in which a software-defined stack runs on industry-standard hardware. Such solutions are designed to:

- Provide a reliable and secure computing environment, with hardware security features that prevent or guard against low-level attacks
- Increase the return on investment at a low cost of ownership. (This includes reduction in power and cooling costs, increase in system density, and a simplified provisioning and ongoing management.)
- Simplify the coexistence of traditional and next-gen (cloud-native) applications. (This includes a single pane of glass for provisioning and managing bare metal, virtualized, and containerized workloads.)
- Provide the ability to integrate the hardware portion of the infrastructure with private cloud operating environments from vendors like Microsoft, VMware, OpenStack, OpenShift, Kubernetes, and Cloud Foundry, thereby increasing developer-centric automation in the environment

IN THIS VENDOR PROFILE

This IDC Vendor Profile provides an overview of Supermicro – a large, growing, and influential supplier in the infrastructure market. This document examines Supermicro's business strategy and key market differentiators.

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SITUATION OVERVIEW

Company Overview

Supermicro is a major OEM supplier of servers, storage, networking, rack solutions, and management software for the cloud, enterprise, and embedded markets. Since its founding in 1993, Supermicro has become a strategic partner for other OEM solution vendors, cloud service providers, and other large datacenter operators. Smaller white-box vendors, local vendors, and systems integrators around the world depend on equipment from Supermicro to efficiently fulfill their order books and to effectively compete with larger regional and global OEMs.

Supermicro's product portfolio is vast, with over 5,000 systems, chassis, subsystems, and component options. Supermicro prides itself on its engineering expertise bar none and maintains unprecedented flexibility in configuration options across the various form factors in its portfolio. This enables Supermicro to turn new component options into fully integrated system solutions as soon as they are announced. To further its flexibility, Supermicro also engages in custom system configurations for customers that wish to scale their own designs.

Supermicro's solutions are mostly server based. In addition to selling server hardware, Supermicro also sells software-defined storage solutions that are server based and can be deployed with any file block or object storage controller software. Supermicro also offers storage expansion (aka JBOD, JBOF, or external DAS) options, either populated with NVMe, SSDs, or hard disk drives or just the chassis and rack infrastructure. Supermicro has a systems management software platform and offers two types of support services: standard warranty services and onsite support options for OEM and strategic direct customers.

Supermicro has grown its business considerably over the past several years. Its net sales over the past three calendar years are $1.991 billion in FY15, $2.216 billion in FY16, and $2.530 billion in FY18. IDC reported Supermicro's branded and custom direct server business for the past two calendar years in the Worldwide Quarterly Server Tracker as $1.3 billion in vendor revenue in 2016 (2.2% market share) and $1.8 billion in 2017 (2.7% market share). Supermicro vendor revenue grew 39% year over year in 2017 and took the 8th overall company rank by vendor revenue in 2017, up from 10th in 2016.

Supermicro has a broad customer base, as well as a deep distribution channel, mostly made up of systems integrators and value-add resellers. In each quarter, 40–45% of the company's business goes into its channel. This does not include its OEM business, which accounts for an estimated 10–15% of the business. Supermicro's direct business includes cloud service providers and large datacenter owners such as Alibaba, Amazon, Apple, Baidu, CERN, Flipkart, IBM SoftLayer, Intel, NASA, OVH, Rackspace, Tencent, Twitter, and Yahoo Japan. Smaller service providers, enterprise customers, government agencies, and research institutions make up the remainder of Supermicro's direct business. Supermicro had more than 1000 direct customers as of the end of FY17.

Key growth areas identified by Supermicro include cloud, hyperconverged infrastructure (HCI) and other software-defined storage (SDS) solutions, big data and analytics, machine learning (ML) and artificial intelligence (AI), high-performance computing (HPC), and Internet of Things (IoT). Supermicro has embraced accelerated computing technologies (e.g., GPU, NVMe, and FPGA) to support many of these segments. It is also exploring strategic partnerships with other silicon suppliers to further the diversity of its portfolio in terms of heterogeneous computing (x86, ARM, and Power) options.

Portfolio Snapshot

Supermicro offers a wide array of server solutions, form factors, and configuration options for fully assembled systems or configurable subsystems to build one's own servers. Supermicro's server systems are designed with interchangeability as a key component of the portfolio where possible, drastically increasing the total possible base system configurations, before standard options categories like CPU and memory are selected. In mid-2016, Supermicro reported having over 1,200 different models available for purchase. A summary of its server products are as follows:

- **SuperServer** is the core of Supermicro's rack-optimized offerings and industry-standard rackmounted servers, with many options, sizes, density, and efficiency configurations available.
- **SuperBlades and MicroBlades** are dense blade server solutions targeting dedicated hosting, web front end, cloud computing services, content delivery, and social networking. As with many blade platforms, space and power efficiency are key components of the offering.
- **Twin architecture** are 1U, 2U, and 4U variants of multinode designs for dense and flexible rackmounted operation, targeted at storage, HPC, and cloud computing.
- **MicroCloud systems** are high density, multinode single-socket servers with up to 24 hot-pluggable nodes in a dense 3U form factor, targeted at cloud hosting applications.
- **SuperStorage** is a set of dense storage servers from 2U to 4U rack height, including energy efficiency, all-flash, and double-density options (call "simply double") for large enterprise datacenters, big data, and other high-performance applications.
- **Accelerator-optimized systems** come in multiple RU heights for rack-optimized systems and are available in some of the blades. Currently, GPUs and Xeon Phi are the main accelerator components available, although FPGAs have also been integrated into some solutions.
- **Edge-optimized systems** are IoT and/or embedded products in compact form, with various networking options and protocol translation where applicable.
- **Data Center Optimized (DCO) systems** are high-performance, efficient thermal design, power-efficient components, and offset processors to reduce CPU preheating. Supermicro also offers WIO for customers requiring more I/O flexibility.
- **Tower form factors** are also available for server and workstation configurations.

In addition to these server-based products, Supermicro offers switching products up to 100G, system management software solutions, such as Supermicro Server Management (SSM) suite, server subsystems and accessories, motherboards, chassis, power supplies, and third-party system accessories such as microprocessors, memory, and disk drives.

Supermicro Global Services offers industry-standard warranty support services as well as a suite of onsite support service plans available to strategic direct customers and OEM partners.

Company Strategy

At its very core, Supermicro is and remains an engineering-led organization. It has a team of more than 1,300 employees and engineering consultants dedicated to research and development (R&D). Total R&D expenditures for FY17, FY16, and FY15 were $129 million, $114 million, and $92 million, respectively. Supermicro's R&D expenditures as a percentage of total revenue are higher than most of its large competitors. The company leverages its interactions with distributors and end customers to monitor changing customer requirements and develop new products to better meet end-customer needs.

Accordingly, its core product strategy — which is borne out of its desire to maintain this engineering-led differentiation — is to expand its product portfolio and expand the number of products available to customers. As a part of its strategy to offer industry-leading flexibility to its customers (i.e., the flexibility with which component options can be converted into standard products), Supermicro aims to be first to market with new technologies and technology enhancements. These include enabling new features or capabilities and updating the hardware in line with architectural updates from the component side (e.g., Intel architectural updates).

In addition, the company is seeking to improve on the energy efficiency of its products through enhanced power and thermal management capabilities as well as increased component densities. To further differentiate its hardware portfolio, Supermicro has developed and continues to enhance its management software solutions. Where applicable, Supermicro partners with third-party software suppliers to integrate their solutions with Supermicro hardware (e.g., its recent partnership with Red Hat for software-defined storage solutions). Supermicro intends to continue to expand its customer service and support offerings.

Sales and Go-to-Market Approaches

Supermicro targets general purpose computing and server-based storage infrastructure environments worldwide. It sells and ships its products directly or through its channel partner network. It maintains manufacturing capacity in Europe, Asia, and the United States.

Key solution market segments include cloud infrastructure, high-performance computing, machine learning and artificial intelligence, and hyperconverged infrastructure as well as edge computing and Internet of Things and embedded solutions. It relies on direct relationships with large customers and partners, many of which are privately funded start-ups. Supermicro's channel is very active in local markets and tends to be a passive relationship in which the product offerings "speak for themselves." Supermicro plans to continue to expand its global operating structure by increasing oversees presence, both in engineering manufacturing and logistics operations and by further scaling its regional headquarters in the Netherlands and Taiwan.

In 2016, Supermicro products were purchased by over 800 customers, mostly distributors, in 100 countries. IBM SoftLayer and other cloud SPs are counted among the satisfied customers over the past several years. More large customers are being added to Supermicro's customer base regularly. Supermicro depends largely on its partner network to generate sales. Supermicro maintains its own salesforce of about 350 representatives in 18 locations worldwide. In addition, Supermicro depends on its partner network to generate sales.

Supermicro works closely with its channel and OEMs to market and sell customized solutions to end customers by providing sales and marketing assistance as well as training. Supermicro often works with partners to help determine optimal system configurations for end customers. Product fulfillment and first-level support for its international customers are provided by Supermicro's partners and Supermicro Global Services. The United States represents the largest territory of Supermicro's business and has been a consistent share of Supermicro's business over the past several years. Supermicro's marketing programs use advertising, public relations, web, social media, and participation in industry trade shows and conferences. Supermicro also provides funds for cooperative marketing to its distributors and participates in market development funds made available by distributors and suppliers.

Supermicro maintains relationships with a broad component supply chain. Much of the manufacturing and warehousing are handled through key partner Ablecom in Asia. This partnership is one of many that enables increasingly fast product delivery and increasingly larger manufacturing capacity. Supermicro depends on its long list of channel partners, including local white-box vendors, solution OEMs, systems integrators, and value-added resellers. One of Supermicro's strategic goals is to deepen its relationships with its supply chain.

Key Differentiators

Supermicro participates in a mature infrastructure market, one in which the differentiation has shifted to the software stack. Infrastructure vendors like Supermicro must therefore play a thankless but nevertheless crucial role in providing the foundational layer on which the software can run in a reliable manner. Supermicro is well positioned in the market to take on this role because of its engineering-led culture, which includes the following:

- Investment in research and development and engineering expertise, which enables quick turnaround times for integration of new technologies, functionality, or upgrades into the product portfolio
- A building block approach of interchangeable parts that are designed to work together in a multitude of different system builds and configurations that lead to efficient manufacturing (This has led to one of the broadest and richest server portfolios in the industry.)
- Rapid time from design to production, which in turn enables its customers to bring their solutions to market faster (Supermicro targets a maximum turnaround time of 14 days from purchase order to fulfillment.)
- Industry-leading designs in terms of power and thermal efficiency and density optimization that are well suited at large-scale datacenter operations (Accordingly, Supermicro has amassed quite a customer base, many of which are in the at-scale services business.)
- Supermicro's Resource Saving Architecture is taking its modular disaggregated architecture to the next level. The CPU and memory traditionally fixed on the motherboard is further modularized so that resources in the server system can be refreshed independently. This puts the IT organizations in control of what, when, and how to upgrade in their infrastructure, and in granular increments delivering tremendous savings (reduced total cost of ownership) while contributing to reduced carbon footprint and yet meeting the most stringent business outcomes.

FUTURE OUTLOOK

IDC forecasts the worldwide server market to increase over the forecast horizon achieving customer revenue of $81.3 billion by 2021, which represents a five-year CAGR of 5.5%. Much of this growth will be driven by accelerated cloud infrastructure expansion with existing footprints filling out and new cloud datacenter buildouts across the globe.

IDC believes customers will continue to deploy highly dense servers, including blades, based on space constraints within the datacenter and the flexibility inherent in modular solutions. Growth of multinode servers, combined with rising energy costs, will result in power and cooling system requirements remaining just as important as performance and price in terms of purchasing criteria. Improvements in virtualization, multicore performance, and memory bandwidth have enabled customers to migrate selected higher-end enterprise workloads from Unix and mainframes to x86-based server platforms.

Though new workloads, applications, and installations will be deployed and standardized for the x86 platform, IDC is seeing an increase in polyglot (heterogeneous) architectures that include servers built with ARM, Power, and AMD x86-based silicon deployed for specific artificial intelligence and machine learning workloads. The same is true for accelerators and servers that rely on discrete accelerators like GPUs, FPGAs, and ASICs from vendors like NVIDIA, AMD, Xilinx, and Intel. Such servers find themselves in environments where CPU computing falls short — environments that are only going to increase in volume as the business undergoes digital transformation and seek to accelerate time to value from large and diverse data sets.

ESSENTIAL GUIDANCE

There are many areas of opportunity for vendors within specific, targeted segments of the market. Traditional, 2nd Platform workloads are driving the need for richly configured integrated systems. These 2nd Platform workloads continue to represent a healthy profit pool for server vendors targeting virtual environments in enterprise and with cloud service providers.

The movement toward next-generation (3rd Platform) deployments in day-to-day business operations will help buyers transform their traditional businesses into innovative enterprises. Server vendors are advised to keep their product road map flexible to help end users transform businesses effectively. Vendors also need to educate their customers that are reluctant to move to a cloud infrastructure about the benefits of doing so, such as having additional off-premises workload capacity on demand that only requires a payment when used. This can improve a company's financials without making a capital investment in onsite computer hardware that has a limited life span and requires constant software and hardware upgrades.

Newer polyglot (heterogeneous) computer architectures that include ARM, Power, and AMD x86-based silicon and accelerators (GPUs), which were once limited to the HPC space, are beginning to move downstream at a more attractive price point (see IDC forecast documents in the Learn More section).

IT buyers should keep an open mind as to which compute-based infrastructure offers the best return on investment and should seek to partner with vendors that offer best-of-breed solutions.

Advice for Supermicro

To differentiate from larger competitors, Supermicro must continue to lead the way in terms of flexibility and agility in the development and management of its product portfolio. It means a hyperfocused execution on corporatewide strategic objectives, which are to:

- Maintain the ability to innovate and execute through rapid R&D and a large engineering organization
- Maintain better price performance and architectural advantages over its competitors as well as its own prior generations
- Focus on time to market for all new technologies, innovations, and components
- Work closely with key architectural partners such as Intel, AMD, and NVIDIA to get the most out of these partners' advancements in their respective technologies

Like many of its competitors, Supermicro is not immune from the headwinds affecting the industry at large. Areas in which Supermicro may face challenges or risks to its business include:

- **Lack of software solutions:** While Supermicro has its own systems management software that the company offers in support of its hardware, it currently relies exclusively on partners for software solutions (e.g., software-defined storage). Here, Supermicro can make a conscious decision to use its cash to make strategic acquisitions, starting with smaller "technology tuck-ins" and working its way to adjacent markets. Staying a pure-play OEM/ODM infrastructure vendor may be tougher for Supermicro in the long run.
- **Limited services offerings:** Supermicro does not offer integration, migration, or consulting services. Many other large server vendors leverage these types of practices to expand the total value of their sales and therefore achieve higher margins. IDC recommends that Supermicro either acquire a smaller systems integrator or pursue deep partnerships with a larger well-established one. A services practice is a must for Supermicro to add value to its solutions.
- **Reliance on transactional channel partnerships:** Supermicro has a long list of channel partners for whom it builds systems based on custom specifications. There is not much strategic or long-term collaboration between these partners and Supermicro, leaving the latter vulnerable should the partners choose to go elsewhere. In addition to investing in its own IP, Supermicro must also figure out a way to retain an interest in the solution that results from its partnership. For example, with hyperconverged infrastructure, Supermicro could ensure that the design is unique and compelling.

LEARN MORE

Related Research

- *Key Highlights of Open Compute Project Summit 2018* (IDC #US43772918, May 2018)
- *Worldwide Operating Systems and Subsystems Market Shares, 2017: A Market Rebounds and Is Poised for Strong Gains* (IDC #US43753318, May 2018)
- *Inspur Innovations Announced at Open Compute Summit 2018* (IDC #US43763518, April 2018)
- *GPUs and GTC 2018: NVIDIA's Love Letter to Graphics, AI, and Deep Learning* (IDC #US43744418, April 2018)
- *IDC's Worldwide Service Provider Taxonomy, 2018* (IDC #US43635618, March 2018)
- *Businesses Expect Broad Use of Various Accelerator Technologies in 24 Months* (IDC #US43640518, March 2018)
- *IDC TechBrief: Modular Server Systems* (IDC #US43404818, March 2018)
- *Best Practices for Planning an Edge Computing Infrastructure* (IDC #US43615818, March 2018)
- *Worldwide Server Update Presentation, 4Q17* (IDC #US43612418, March 2018)
- *IDC's Worldwide Computing Platforms Taxonomy, 2018* (IDC #US42981318, March 2018)
- *Making the Case for Accelerating Computing (Core Starvation)* (IDC #US43610218, March 2018)
- *Worldwide Accelerated Server Infrastructure Forecast, 2018-2022* (IDC #US43591618, March 2018)

- *Worldwide Cloud IT Infrastructure Hardware Spending Forecast, 2017-2021* (IDC #US43565317, February 2018)
- *Worldwide and U.S. High-Availability Server Forecast, 2018-2021: 2016 Market Stabilizes After a Strong Product Refresh in 2015* (IDC #US43503817, January 2018)
- *Worldwide Server Forecast Update, 2017-2021* (IDC #US43167617, November 2017)
- *IDC FutureScape: Worldwide Enterprise Infrastructure 2018 Predictions* (IDC #US43137417, October 2017)
- *IDC TechScape: Software-Defined Infrastructure Technologies, 2017* (IDC #US43152817, October 2017)
- *Cloud-Native Apps Have a Natural Affinity for Accelerated Computing* (IDC #US43148517, October 2017)
- *Second-Quarter 2017 Worldwide Server Market Update Presentation* (IDC #US43115417, October 2017)
- *Worldwide ARM Computing Platforms Forecast, 2017-2021* (IDC #US42027717, September 2017)
- *Reenvisioning Operating Systems for the Digital Economy: Cloud, Connected Devices, and IT/OT/CT Convergence* (IDC #US43100417, September 2017)
- *IDC PeerScape: Practices for Deploying Blade Servers* (IDC #US43076817, September 2017)
- *Worldwide Server Forecast Assumptions, 2Q17* (IDC #US43095117, September 2017)
- *Management Software Provides the Key to Unlocking the Benefits of Composable Infrastructure* (IDC #US43038617, September 2017)
- *2017 Midyear Hyperconverged Market Update* (IDC #US43038817, September 2017)
- *Core to Edge: How the Internet of Things Is Shaping the Future of Infrastructure* (IDC #US43033917, September 2017)
- *IDC's Worldwide Computing Platforms and Storage ODM Direct QView Taxonomy, 2017: Market Overview* (IDC #US43029117, September 2017)
- *GPUs, FPGAs, ASICs, or Many-Core Processors: Which Acceleration Technology Do Datacenters Need?* (IDC #US43002517, September 2017)
- *IDC's Worldwide Software Taxonomy, 2017* (IDC #US42961816, August 2017)
- *Worldwide Accelerated Server Infrastructure Forecast, 2017-2021* (IDC #US42998817, August 2017)
- *Market Analysis Perspective: Worldwide Enterprise Servers and Computing Platforms, 2017* (IDC #US42917217, July 2017)
- *Which Hyperconverged System Features Are the Most Important Selection Factors?* (IDC #US42905017, July 2017)

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