RACK INTEGRATION AND DEPLOYMENT SERVICES

World Class Total IT Solution Specifically Tailored For Customer's Workload Requirements

Production/Testing/ Warehouse and Shipping Capacity of 3000 Racked/ Integrated Hardware Solutions per month , including up to 1000 Liquid Cooled Racks/month.

Flexible AC Power (120/208/230/480VAC, single/3-phase)

10/25/40/100/200/400 Gb/s Network Testing Environments

CLEAN Energy (BLOOM Energy Servers) significantly reduce carbon footprint

Autonomous Guided Vehicles deployed for highest manufacturing efficiency and safety

Supermicro Rack Integration Services

The rapid pace of cloud technology innovation introduces unprecedented complexities and engineering challenges for datacenter hardware integration services.

Datacenter customer demand for trusted and experienced organizations to provide racked hardware integration services has never been greater. Innovative integration service support for unique datacenter engineering solutions, while meeting ambitious deployment schedules with reduced operating expenses, is a great value-add to all those seeking to grow their hybrid and private cloud services portfolio and revenues.

Rack Integration Services are offered by a dedicated team specialized in leveraging Supermicro's broad product portfolio and cutting-edge technologies.

The mission of Supermicro Rack Integration Services is to provide a "one-stop shop" for cloud and enterprise customer hardware needs from the early design phase to onsite integration of racked systems through engineering and delivery of application-optimized solutions.
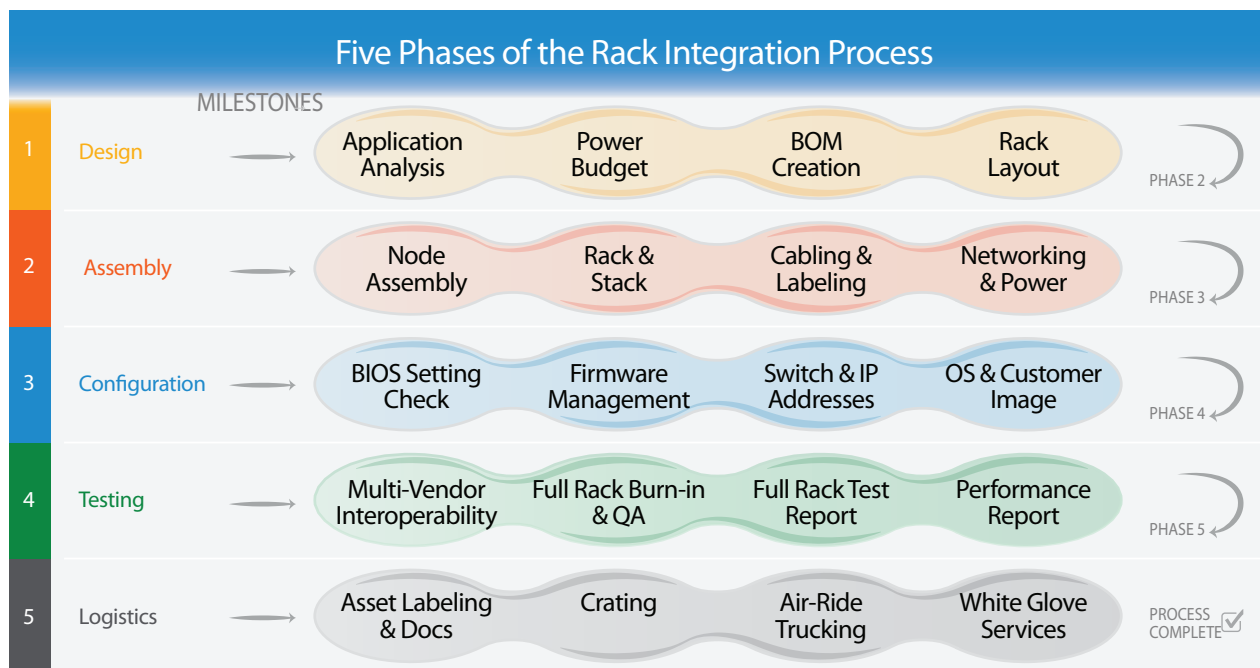
As your trusted partner, Supermicro can design, assemble, configure, test and deliver high-quality, cost-effective, customized solutions using proven 'industry-best' practices. Supermicro Rack Integration Services are recognized keys to cloud and enterprise customer success!

Working with Supermicro Experts

Validate your Solution
Proof of Concept

→

Optimize for Success
Design Workshop

→

Understand and Learn
Technical Deep Dive

→

Confidence in the Solution
Cloud/Testing Expertise

Five Phases of the Rack Integration Process

MILESTONES

#	Phase					
1	Design	→	Application Analysis	Power Budget	BOM Creation	Rack Layout	PHASE 2
2	Assembly	→	Node Assembly	Rack & Stack	Cabling & Labeling	Networking & Power	PHASE 3
3	Configuration	→	BIOS Setting Check	Firmware Management	Switch & IP Addresses	OS & Customer Image	PHASE 4
4	Testing	→	Multi-Vendor Interoperability	Full Rack Burn-in & QA	Full Rack Test Report	Performance Report	PHASE 5
5	Logistics	→	Asset Labeling & Docs	Crating	Air-Ride Trucking	White Glove Services	PROCESS COMPLETE

Supermicro has developed its own completely unique quality assurance testing processes that will thoroughly validate the operational effectiveness of the entire integrated rack solution (pre-shipment).

World-class manufacturing facilities based in Silicon Valley complement Supermicro's unwavering commitment to quality and constant reduction of customer lead and delivery times.

1 Design

A series of progressive steps to ensure technologies and products meet customer requirements

Rack Integration Services leverage Supermicro's application-optimized motherboards, chassis, cooling sub-systems, networking components, cluster management tools, energy-efficient power supply technologies and SuperRack enclosures to design and develop cloud and enterprise solutions. Supermicro will thoroughly understand a business problem and customer requirements in order to maximize quality and value throughout rack integration services customer engagements.

- Node sizing and solution architectures based on applications
- Full rack power budgets to meet datacenter requirements
- Networking topologies optimize performance and scalability
- Customer site surveys to help determine the right cabinet and PDU
- Intelligent cable management optimizes cooling effectiveness
- Fully perforated front and rear doors enhance ventilation
- Blanking panels to prevent in-rack air mixing and recirculation
- Optimization of system layout and load distribution to remove performance hotspots
- Application of liquid cooling technologies to achieve high compute density

Design phase encompasses the following steps:

Application Analysis

Supermicro's Rack Integration Services team maintains a world-class staff of software engineering talent that supports our rack integration efforts. One of their responsibilities is to analyze customer application workloads to select the most suitable hardware configuration. Collaboration with Supermicro integration engineers can help customers arrive at an optimal solution to best fit their needs with the highest ROI.

Power Budgets

Supermicro works directly and closely with customers to ensure their datacenter solutions are designed within the power parameters imposed by space, connectivity and/or region. Supermicro selects servers and networking devices with utmost care to fit platform and customer power budgets for both 120V and 240V AC inputs. Power utilization is estimate at system and rack levels. Supermicro delivers power analyses to optimize rack density, minimize the solution footprint and lower TCO. Based on calculated power budgets, customers may choose the appropriate Power Distribution Unit (PDU) from a certified list or Supermicro can recommend suitable selections to supply sufficient power.

Server Power

Server/cluster power estimation is a very important first step. It determines rack layout, PDU choice and full cluster architecture. Customers often evaluate designs based on density and power efficiency.

Rack Power

A good design should optimize respective trade-offs of space/power without the risk of exceeding power and cooling limitations. The ultimate goal is to achieve the best power utilization effectiveness (PUE) and the lowest TCO.

Bill of Materials (BOM) Creation

Together with selected PDUs, servers and networking devices, a customer BOM is created for cost analysis and pricing. Supermicro BOMs can be flexibly constructed to meet customer schedules, quality requirements and budgets. Supermicro will create a BOM defining an end-to-end solution based on the customer specified requirements, leading to an easy-to-understand price quotation.

Elevation and Cabling

An entire rack-level engineering layout diagram will be created and provided to the customer. This diagram will include the details of power socket and data port positions on each server and networking device. Highly experienced layout engineers will share design drafts and final layouts for iterative customer review/approval for final integration. Each networking cable and power cord will be optimized by lengths for best cooling performance while allowing easy access for post-implementation services. A detailed plan will be provided with each server laid out in a rack, along with all cables and their positions for customer consideration and final approval.

2 Assembly

Supermicro's experienced technicians can integrate your cloud hardware — either on-site at your datacenter or pre-shipment at our manufacturing facility, ensuring the highest levels of consistency and quality. Supermicro server, storage or networking product specialists ensure optimal integrations of Supermicro products and technologies into cost-effective, high-quality rack configurations while also optimizing cabling and cooling among clustered components. One of Supermicro's greatest strengths is to optimally rack hardware to customer specifications (PUE, density, cooling and performance).

Nodes

Supermicro will assemble nodes according to customer specified server BOMs. Networking devices will be integrated and third party products will be procured simultaneously. Supermicro will ensure that each node meets strict quality criteria and is configured to meet the customer's requirements. Node information will be well documented.

Racks

Supermicro will securely mount servers, switches, power distribution units and accessories into designated racks. Thorough L11 hardware testing will help guarantee the best possible customer experience upon delivery.

Cabling & Labeling

After the server systems are stacked inside their respective racks, technicians will wire the data and power cords according to the engineering layout diagrams and wiring maps. Each cable will also be labeled clearly with a unique identifier and/or color coding. Error checking will be run while all types/quantities/lengths of cables will be adjusted to design requirements. With professional labeling, specified either by the customer or by Supermicro, rack servicing will be made easier for post-delivery deployment and maintenance.
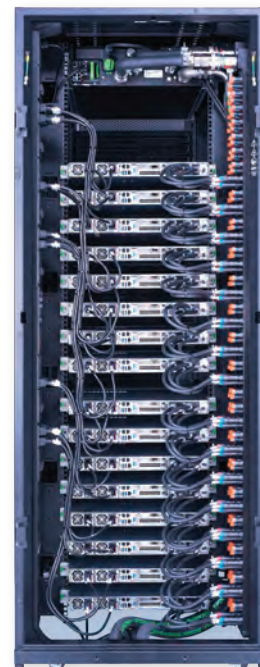
Third-Party Equipment

Third-party equipment can be procured and then stacked inside rack cabinets, or drop-shipped according to the customer's preference and engineering layout diagrams. Supermicro equipment is designed for compatibility with industry standard hardware. Supermicro's Rack Integration Services team has the experience to successfully integrate other brands of IT hardware into a final customer solution.

3 Configuration

BIOS

After physical rack integration is completed, each server node's BIOS settings will be updated, optimized and then tested. Node BIOS will be checked throughout a rack for uniformity according to the customer's preferences.

Firmware

System firmware is updated at our facility for consistency across an integrated cluster of nodes via automated tools. This greatly adds to quality and optimizes the reliability of running customized applications on Supermicro's hardware.

IPMI

Supermicro Rack Scale Design (RSD) is actively being deployed across many datacenters. Supermicro RSD manages racks of disaggregated servers, storage and networking with industry standard, modern Redfish RESTful APIs that remain consistent across different vendors and multiple server generations. Supermicro RSD supports high performance, high density, and disaggregated storage for dramatically improved datacenter efficiency, increased hardware utilization and lower costs.

OS & Customer Imaging

Operating systems or custom images can be pre-installed or deployed to specific nodes at Supermicro's rack integration facility, so customers can focus their time and effort on their core applications.

Performance analysis is based upon an effective set of indicators for the raw capabilities of a cluster (e.g. throughput, power, bandwidth, latency). Such insights help customers estimate the performance potential of an integrated platform and also provide a valuable baseline for troubleshooting cluster level bottlenecks.

Supermicro's benchmarking process also delivers a proprietary layer of cluster testing beyond component level verification. Customers gain insights into the value of their integrated solution simulations of various types of workloads that the systems will execute once delivered to the customer. Supermicro looks forward to troubleshooting any problems prior to customer shipment, reinforcing our commitment to complete customer satisfaction.

Multi-Vendor Equipment Compatibility

Multi-vendor equipment will be tested rigorously for compatibility with all integrated nodes, networking devices and other components. This further reduces the customer's investments risks and operating expenses.

Full Rack Burn-In & Quality Assurance

Upon integration completion, full rack burn-in testing will be performed for a standard 8 hours or according to a testing regimen specifically required by the customer. Automated L11 cluster testing validates integration quality and hardware reliability.

Performance Benchmarks

Supermicro Rack Integration Services include the compilation and presentation of application workload performance analyses on customer hardware platforms.

Such analyses can be provided for customer evaluation. Supermicro proves its consistent dedication to high-quality hardware integration through end-to-end validation and cluster performance testing.

Logistics 5

Supermicro provides 'white glove' logistics including onsite implementation services to customer locations worldwide for fully populated and validated racks to ensure maximum security, reliability and customer satisfaction. Supermicro maintains a number of global rack integration sites to better serve our customers anywhere in the world, with facilities in San Jose, CA; Taipei, Taiwan; and Amsterdam, The Netherlands.
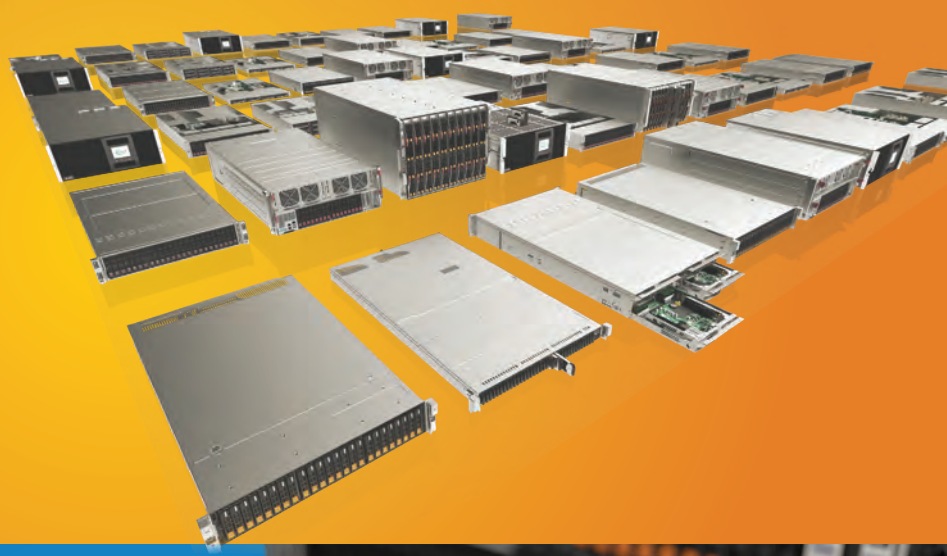
Shipping

All integrated hardware is professionally packed in shock resistant and reusable crates. Racks are safely and rapidly shipped worldwide via state-of-the-art 'air-ride' equipped trucks. Fully populated racks that are cabled, labeled, fully tested and ready for operation will arrive at your datacenter.

Better
Better Performance
Per Watt and Per Dollar

Faster
First-to-Market Innovation with the Highest
Performance Server Designs

Greener
Reduced Environmental
Impact and Lower TCO