



White Paper

# Supermicro Multi Processor (MP) Validated Solutions for SAP HANA

*SAP HANA Overview, Hardware Sizing & Design Guide, Reference Architectures*



**2U 4/2-Socket**  
SYS-2049U-TR4



**4U 4/2-Socket**  
SYS-8049U-TR4T



**7U 8/4-Socket**  
SYS-7089P-TR4T

Super Micro Computer, Inc.  
980 Rock Avenue  
San Jose, CA 95131 USA  
[www.supermicro.com](http://www.supermicro.com)



## Table of Contents

### 3 Introduction to SAP S/4 HANA

Introduction to SAP S/4 HANA and In-Memory Computing  
Quick Brief: SAP S/4 HANA Applications

### 5 Getting Started - How to Select SAP HANA Hardware

Understanding SAP HANA Certifications – Which Certifications Will my Servers Need?  
Supermicro SAP HANA Certified Appliances

### 8 Getting Started – How to Size your SAP HANA System

Sizing SAP HANA for Greenfield Deployments  
Sizing SAP HANA for Brownfield Deployments  
Sizing for Specific SAP HANA Use Cases

### 11 Overview: SAP HANA Core Servers Powered by the Supermicro MP Product Family

Supermicro 4 Socket SAP HANA Rack Solution: SYS-2049U-TR4  
Supermicro 8 Socket SAP HANA Rack Solution: SYS-7089P-TR4T

### 14 Overview: NetWeaver Certified SAP Application Servers

Supermicro Ultra Server Family  
Supermicro Twin Server Family  
Supermicro GPU Server Family  
Supermicro SuperBlade Server Family  
Supermicro Mainstream Server Family

### 19 Supermicro SAP HANA Service

Service for Hardware  
Service for SAP S/4 HANA, NetWeaver, and SAP Applications  
Service for SUSE, RedHat, NetApp, Veritas, Nutanix or any Operating System/Storage Software

## How to Use This Guide

The “Supermicro Multi Processor (MP) Validated Solutions for SAP HANA” guide is a living document that is updated continuously. For the latest version of the guide, please check [https://www.supermicro.com/solutions/sap/index.cfm?pg=SAP\\_HANA](https://www.supermicro.com/solutions/sap/index.cfm?pg=SAP_HANA).

### Intended Audience:

- Enterprises targeting S/4 HANA either as green field installation or as migration from old stack like NetWeaver or HANA Cloud Scale vendors looking to add or refresh their SAP Stack with the lowest TCO
- Small, Medium, Businesses looking for a low cost starting point for their SAP deployment

### What this Guide is:

- An introduction to in-memory database technology and SAP HANA
- A starting point for understanding the Supermicro Solutions Ecosystem for SAP HANA
- A guide on how to select & size Supermicro Hardware for SAP HANA
- A reference for SAP HANA Support & Services

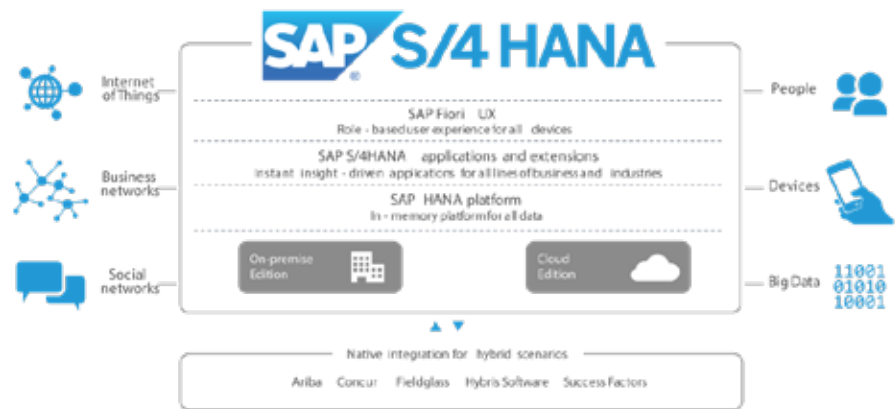
### What this Guide is not:

- A business guide on how to select ERP, CRM, and other enterprise software.
- A deployment guide or instructions on how to install, configure, and use SUSE Linux or SAP S/4 HANA

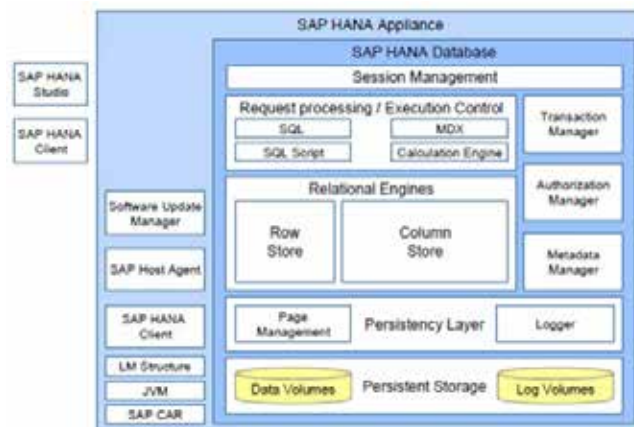
## Introduction to SAP S/4 HANA

### Introduction to SAP S/4 HANA and In-Memory Computing

SAP HANA is a relational database management system (RDBMS). It combines OLAP and OLTP processing into a single in-memory database while considered as foundation of SAP's current and next generation of enterprise applications and services. This latest generation of SAP software represents a major revolution in how businesses generate, collect, interact, and use their exponentially growing store of mission critical data. The S/4 HANA suite is among others a prerequisite and the core of all SAP's current and future on premise, cloud, or hybrid, CRM, ERP, IoT, and BI applications.



The revolutionary technology introduced in SAP S/4 HANA is called In-Memory Computing. In-memory computing technology is developed for demanding enterprise applications relying on important developments in computer technology such as multi-core CPUs and greatly increased memory capacity. It allows massive parallel processing of database operations with data that is permanently kept in-memory and provide extremely fast results from analysis and transactions. Accessing the memory layer is one hundred thousand times faster than accessing spinning disk, where RAM access times are measured in nanoseconds while disk access is measured in milliseconds. When compared to flash SSD or NVMe access, RAM is still over a thousand times faster. By moving your data volume from disk to RAM, you can exponentially accelerate the speed of your business insights from “delayed reaction analytics” into the world of “real-time analytics”.



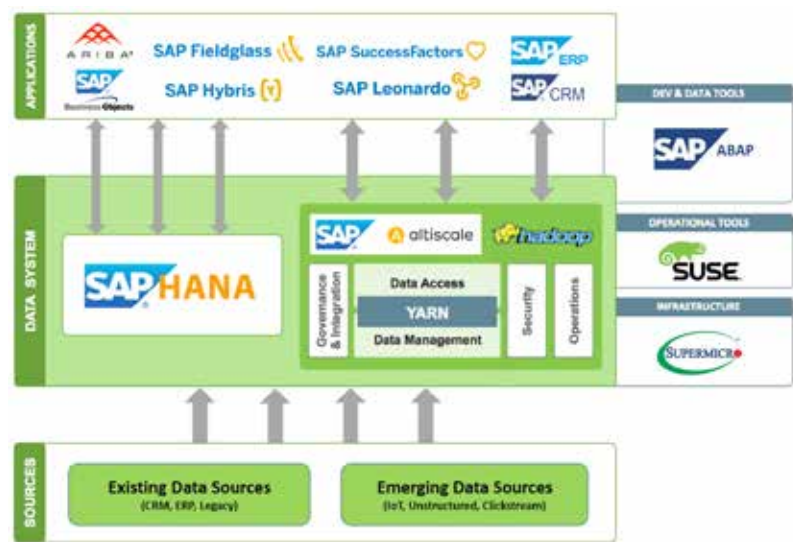
SAP HANA in-memory technology also combines Online Analytical Processing (OLAP) and Online Transactional Processing (OLTP) into a single engine. By doing so, business now have real-time analytics capabilities against their live transactional environment without needing to pull and transport large data sets from separate OLTP environment to OLAP. And by storing data sets in both Row Stores and pre-aggregated Column Stores, there are much fewer steps required to generate insight. Large reporting jobs & end-of-month calculations that used to run over-night to aggregate data can now produce real-time, usable insights in seconds instead of hours.

### Quick Brief: SAP S/4 HANA Applications

As described in the previous section, SAP S/4 HANA serves not only as the Database Engine, but also the foundational infrastructure for the latest generation of SAP Enterprise Applications & Services:

- SAP Ariba (SCM) – Supply Chain Management, Supplier Relationship Management, Procurement & Marketplace
- SAP Lumira & Business Objects (BI) – Front end Business Intelligence Platform
- SAP Fieldglass (VMS) – Vendor Management System. External workforce procurement & tracking.
- SAP Hybris (B2B/B2C) – Enterprise B2B / B2C ecommerce platform.
- SAP SuccessFactors (HCM) – Human Capital Management platform. Payroll, benefits, attendance, performance, training, & recruiting.
- SAP Leonardo (IoT, AI) – Digital Transformation Platform. Foundation & services for Internet of Things, Artificial Intelligence, Machine Learning, Big Data, 3D Printing, and Blockchain
- CORE SAP Modules – FICO, PP, MM, SD, HR, CRM, ABAP, XI, BIW, etc.
- Custom ABAP Applications – Your custom enterprise applications written on ABAP.

For detailed information on each SAP Application and Use Case, please see <https://www.sap.com/products.html>.



## Getting Started - How to Select SAP HANA Hardware

### Understanding SAP HANA Certifications – Which Certifications Will my Servers Need?

Whether if you are a large enterprise looking to migrate your SAP NetWeaver Stack to S/4 HANA, or if you are a SMB looking to deploy your first SAP S/HANA system, understanding the possible implementation scenarios is essential:

**SAP NetWeaver Certification** – is a pre-requisite to implement SAP application instances connected either to SAP NetWeaver or S/4HANA stack. SAP NetWeaver certification involves key performance indicator (KPI) validation for all SAP Applications deployed on SAP S/4 HANA, SAP R/3, and SAP ECC 6.0. This is a certification for the application tier, and does not certify hardware running SAP HANA database. All Supermicro servers using Intel Skylake technology are currently certified for SAP NetWeaver.

**SAP HANA Appliance Certification (Scale Up)** – The SAP HANA Appliance Scale Up certification guarantees that the S/4 HANA database software performs as intended on the certified system. SAP HANA Appliances are offered in various sizes with predefined BOMs as listed on SAP's HANA certified hardware directory. Scale up appliances are specifically designed to run as a single autonomous compute node with the option of internal or external storage. To increase the size and performance of a scale up system, you simply upgrade the CPU, RAM, or Disk in the node. All SAP HANA Appliances are designed to be turn-key solutions. As such, Supermicro must install and configure the HW Components, Operating System, and SAP HANA before delivering the appliance.

**SAP HANA Appliance Certification (Scale Out)** – The SAP HANA Appliance Scale Out certification guarantees that the S/4 HANA database software performs as intended on a cluster of certified compute nodes with external enterprise storage. SAP HANA Scale Out architecture combines multiple nodes in a cluster to split a single HANA instance workload over two more servers. The HANA Scale Out architecture allows much more flexibility in growth, deployment, and variation in network storage technologies. To increase the size and performance of a scale out system, you can add more server nodes to the cluster. As with the Scale-Up Appliance, Supermicro must install and configure the HW Components, Operating System, and SAP S/4 HANA before delivering the appliance to customer.

**SAP HANA TDI – Tailored Datacenter Integration** – All SAP Certified Appliances are eligible for TDI deployment, which allows the customer to build a HANA server with their own choice of CPU, RAM, Disk, and Add on Cards specifically for their own preferred architecture. Again, to emphasize, SAP HANA Appliances are designed as fixed BOM turnkey solutions, whereas SAP HANA TDI deployments allow the customer to mix & match certified components. TDI open architecture allows the customer to cluster their HANA servers in their own preferred method for High Availability and network storage. The TDI deployment model will require the customer to install and configure the operating system and all SAP software themselves or request Supermicro for service

**SAP HANA Enterprise Storage** – Since SAP HANA uses in-memory technology, it is critical to have certified, reliable, enterprise-class storage to store your persistent data when it's at rest. And since entire data volumes are read from memory, the storage node must be able to perform large data uploads very quickly. Thus, all sap HANA storage nodes must

be specifically SAP HANA certified. Once certified, the storage nodes listed here <https://www.sap.com/dmc/exp/2014-09-02-hana-hardware/enEN/enterprise-storage.html> are guaranteed to work and perform with any SAP HANA Appliance.

SAP Certification	Software	Architecture	External Storage	Max Nodes	Use Case
NetWeaver	SAP Applications	Scale Out	Yes	N/A	Prerequisite for SAP Applications
HANA Appliance (Scale Up)	S/4 HANA	Scale Up	No	1	Small SAP HANA Deployments w/ Internal Storage
HANA Appliance (Scale Out)	S/4 HANA	Scale Out	Yes	16	Large SAP HANA Deployments w/ External Storage
Tailored Datacenter Integration	S/4 HANA	Scale Out	Yes	16	SAP HANA Deployments w/ Custom Components & Configuration
Certified Enterprise Storage for HANA	S/4 HANA	Scale Out	Yes	16	HANA Certified Storage works with any HANA Appliance

### Supermicro SAP HANA Certified Appliances

In the summer of 2017, Supermicro joined the SAP Software family and became an SAP Global Technology Partner. Shortly after, by the start of 2018, Supermicro was proud to introduce our first SAP HANA Certified Appliance solution.

#### SAP HANA Certified Appliance – 4 Socket Solutions

##### SYS-2049U-TR4: 2 or 4 Socket Skylake

The extremely versatile SYS-2049U-TR4 is the “Core” of your SAP HANA deployment

- Can be deployed in 2 Socket or 4 Socket configurations. Perfect for reducing cost of acquisition while maintaining a clear and simple upgrade path for your SAP HANA Stack.
- Certified for SAP HANA Scale-Up Appliance in 384GB, 768GB, 1.5TB, 3TB, and 6TB sizes. (Certified Dec, 2017)
- Certification for SAP HANA Scale Out Appliance (Coming, Q4 2018)

##### SYS-8049U-TR4T: 2 or 4 Socket Skylake – 3.5”

This system takes the SYS-2049U-TR4 and expands the chassis from 2U to 4U, with 3.5” disks for increased storage and enough space for 6 x double-width passive GPUs.

- Can be deployed in 2 Socket or 4 Socket configurations.
- Certification for SAP HANA Scale Out Appliance (Coming, Q4 2018)

#### SAP HANA Certified Appliance – 8 Socket Solutions

##### SYS-7089P-TR4T: 4 or 8 Socket Skylake

Eliminate the slow latency speeds of a multi node architecture and maximize your SAP HANA Database performance and size with up to 8 Intel Xeon Skylake Processors and 12 terabytes of memory all in a single node.

- Versatile system can be deployed in 4 or 8 socket configurations. Perfect for reducing cost of acquisition while maintaining a clear and simple upgrade path.
- Certification for SAP HANA Scale Out Appliance (Coming, Q4, 2018)

## Getting Started – How to Size your SAP HANA System

Sizing for SAP HANA involves specifically selecting the amount of CPU, Memory, and Storage available to your HANA Appliance. Correctly sizing your SAP HANA Deployment is critical to your SAP Total Cost of Ownership because it reduces your initial hardware acquisition cost, your initial SAP HANA License cost, and most importantly, your annual software maintenance cost from SAP.

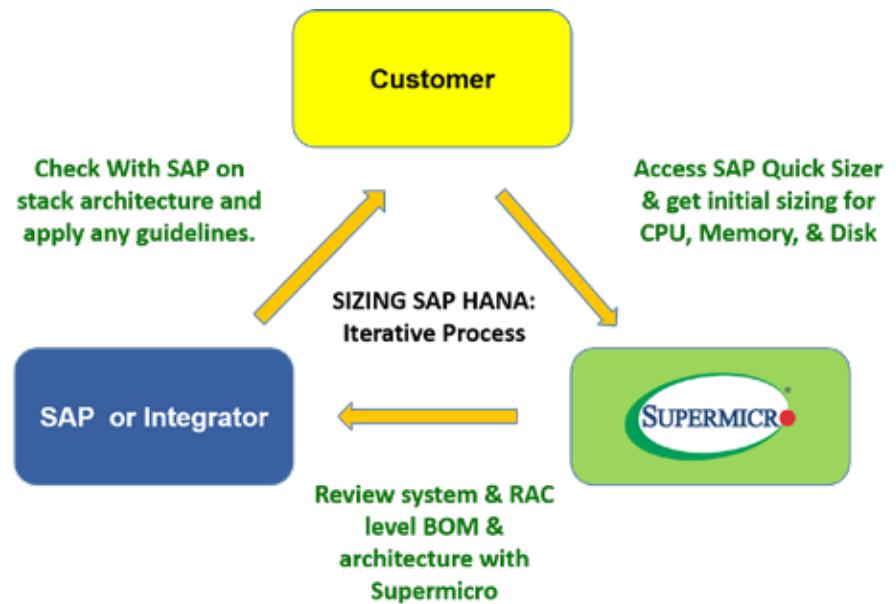
### Sizing SAP HANA for Greenfield Deployments

In the world of software & hardware IT deployments, the term “greenfield” usually refers to brand new stack installations with no existing software or hardware migrations needed. If this applies to your situation, then the QuickSizer tool provided by SAP is the best place to start.

#### The SAP HANA Quick Sizer Tool

[https://apps.support.sap.com/sap/bc/bsp/sap/qs\\_oberflaeche/hana.do?sap-language=en&bsp-language=en](https://apps.support.sap.com/sap/bc/bsp/sap/qs_oberflaeche/hana.do?sap-language=en&bsp-language=en)

SAP has developed the HANA Quick Sizer as a web-based tool to simplify and walk you through your new SAP deployment and sizing process. The SAP Quick Sizer has an intuitive user interface and questionnaire based inputs to ensure that you capture all data points from your existing legacy database. You can also input business & process variables such as expected growth rates, power users, and desired performance. The HANA Quick Sizer tool is not only a great starting point for your HANA sizing, it is also designed as an iterative tool to help you to continuously refine your SAP stack until you have exactly what you need, and eliminate excess as you gather more information and usage data from your workload.





## Sizing SAP HANA for Brownfield Deployments

Brownfield deployments means that the customer already has an existing legacy application & data source that they will need to size & migrate to SAP HANA. The legacy software may be from SAP, Oracle, Microsoft, Salesforce, Workday, IBM, or any major CRM or ERP vendor.

### Current SAP Customers Migrating to SAP HANA

- General SAP HANA Sizing, use-case agnostic: Please use the SAP HANA Quick Sizer tool as described in the previous section.
- SAP HANA Business Warehouse: Please see the section below: "Sizing for specific SAP HANA Use Cases."
- SAP HANA Business Suite (S/4 HANA): Please see the section below: "Sizing for specific SAP HANA Use Cases."

### 3rd Party Database Customer Migrating to SAP HANA

- General SAP HANA Sizing, 3rd party database agnostic: Since 2014, SAP has integrated 3rd party database migration calculators into their SAP HANA Quick Sizer tool. This is still the best and simplest tool to use as a starting point for your migration.
- SAP provides database vendor specific scripts to calculate & advice on sizing for each deployment. However, the scope and scale of that process will extend beyond this document. For 3rd party database migrations to SAP HANA, Supermicro highly recommends the customer partner with an SAP Software consultant. If you are having difficulty finding a qualified consultant for your SAP HANA journey, Supermicro can help with the process.

## Sizing for Specific SAP HANA Use Cases

There are some specific SAP HANA use cases where SAP provides some "rule of thumb" sizing guidelines as well as very specific scripted reports which provide detailed usage data. Customers are encouraged to use the rule of thumb calculations as a starting point, then refine their specific HW requirements over time using their custom usage queries & reports.

### Sizing SAP Business Warehouse on HANA

- Rule of Thumb Formula:  $HANA\ DB\ Size = Uncompressed\ Source\ DB\ Size * 0.25$
- SAP HANA BW Sizing Script: /SDF/HANA\_BW\_SIZING is a standard report in ST-PI\_2008\_1\_7xx SP8, and NetWeaver BW 7.0 SP1 or higher.
- For detailed information on how to use this report, please see SAP Note 1736976 here:  
<https://service.sap.com/sap/support/notes/1736976>  
<https://anibalg.files.wordpress.com/2013/03/note-1736976-sizing-report-for-bw-on-hana.pdf>



### Sizing Business Suite on HANA (S/4 HANA)








- Rule of Thumb Formula:  $HANA\ DB\ Size = Uncompressed\ Legacy\ DB\ Size * 0.6$
- SAP HANA S/4 ABAP Sizing Report: for detailed information on how to use the SAP provided sizing tools for S/4 HANA, please see the links below.  
<https://service.sap.com/sap/support/notes/1872170>

## Overview: SAP HANA Core Servers Powered by the Supermicro MP Product Family

Supermicro's Multi Processor (MP) product line is a family of servers designed for the most intensive computing and In-Memory workloads for today's demanding real-time databases, data warehouses, CRM and ERP Applications, and "Big Data feed into AI" workflows. The MP product family are rack mounted solutions powered by 4 or 8 Intel Xeon Scalable Processors in a single node architecture, with no latency-reducing cabling.

### Supermicro 4 Socket SAP HANA Rack Solution: SYS-2049U-TR4

The Supermicro SYS-2049U-TR4 is the "Core" of your SAP HANA deployment and the industry's most versatile 4 socket solution. The system's versatility comes from its ability to be provisioned both as a 2 socket (DP) solution or a 4 socket solution. Customers now have the option to start of with a smaller 2 socket SAP HANA deployment, correctly sized for their current business, and later expand the same system to a 4 socket solution to grow as their business grows. This "scale as you grow" deployment approach to SAP HANA will enable cost savings not only for initial HW acquisition, but more importantly, this approach will deliver massive savings in SAP HANA licensing fees as well as their annual maintenance fees.

	 <b>Processor</b>	4 x Intel® Skylake Gold or Platinum processors Socket P up to 205W Intel® Lewisburg C612
	 <b>Memory</b>	48 DDR4 DIMM Slots RDIMM /LRDIMM up to 2666MHz, 6TB max
	 <b>PCIe</b>	11 x PCI-E 3.0 slots 5 Slots x 8 lanes 6 Slots x 16 lanes
	 <b>Networking</b>	4 x 1Gbe RJ45 LAN 1 x Dedicated LAN for IPMI Remote Management
	 <b>Drives</b>	24 x 2.5" SAS3/SATA3 drives including 4 x U.2 NVMe
	 <b>Power</b>	1 + 1 Redundant 2 x Titanium Level or 2 x Platinum Level with Extension Kit

### Key Advantages of SYS-2049U-TR4

- 4 Socket SAP HANA Server, capable of being deployed in a 2 socket configuration with a clear and simple upgrade path to scale your system as your workload grows.
- Largest memory capacity for a 4 socket Skylake solution (6 TB max per node).
- Industry leading density and expandability can host up to 11 PCIe 3.0 devices in a 2U form factor.
- Supports up to 2x double wide, active GPU cards.
- Supports up to 4 x SAS3 NVMe drives for high speed caching, dynamic tiering, or frequent onload/offload DevOps environments.

- Networking flexibility allows choice of 1Gb, 10Gb, 25Gb, 40Gb, 100Gb, RJ45, SFP+, and Fibre Channel standards.
- SAP HANA Scale Up Certified  
(<https://www.sap.com/dmc/exp/2014-09-02-hana-hardware/enEN/appliances.html#categories=Super%20Micro%20Computer%20Inc>)
- SAP HANA Scale Out Certification coming in Q4, 2018.  
(please see <https://www.supermicro.com/solutions/sap/index.cfm> for certification status)

### Supermicro 8 Socket SAP HANA Rack Solution: SYS-7089P-TR4T

	<b>Processor</b>	Intel® Xeon® Platinum 8100 processor (10.4GT/s UPI) Socket P up to 205W TDP Intel® Lewisburg Chipset
	<b>Memory</b>	96 DDR4 DIMM Slots 12TB Capacity 128GB DDR4 3DS LRDIMM, Up to 2666 MHz
	<b>PCIe</b>	23 x PCIe 3.0 Slots 2 Slots x8 Lanes 21 Slots x16 Lanes
	<b>Networking</b>	4 10Gb RJ45 LAN (SIOM) 1 Dedicated LAN for IPMI Remote Management
	<b>Drives</b>	39 SAS3/SATA3 HDDs Includes up to 32 NVMe
	<b>Power</b>	N+1 Redundancy 5 x 1600W Titanium Level

For your most demanding SAP S/4 HANA workloads, Supermicro will be certifying SYS-7089P-TR4T, our largest capacity and most flexible compute node available. The SYS-7089P-TR4T is powered by 8 Intel Xeon Platinum processors and can host a massive 12 Terabytes of memory capacity, all in a single node with no cabling in between CPUs. With a single node, backplane connected architecture, the Supermicro SYS-7089P-TR4T has lower CPU and memory access latency than other “4 + 4” socket offerings connected through cabling. And like the SYS-2049U-TR4 server, Supermicro’s 8 socket SYS-7089P-TR4T also offers great versatility in its ability to be configured as a 4 socket or 8 socket deployment.

#### Key Advantages of SYS-7089P-TR4T

- 8 Socket SAP HANA Server, capable of being deployed in a 2 socket, 4 socket, or 8 socket configuration with a clear and simple upgrade path to scale your system as your workload grows.
- Largest memory capacity for an 8 socket Skylake server (12 TB max per node).
- Supports up to 32 NVMe drives for the fastest disk caching or HANA Dynamic Tiering possible. Intel Virtual RAID on CPU (VROC) has been validated on this server and is available for RAID 0/1/5/10.
- Supports up to 23 PCIE 3.0 devices with 21 slots x 16 lanes and 2 slots x 8 lanes.
- Supports up to 8 x double wide, full length, full height, active GPUs for real-time

inferencing use cases.

- Networking flexibility allows choice of 1Gb, 10Gb, 25Gb, 40Gb, 100Gb, RJ45, SFP+, and Fibre Channel standards.
- SAP HANA Appliance and Scale Out Certification coming in Q4, 2018.  
(please see <https://www.supermicro.com/solutions/sap/index.cfm> for certification status)

## Overview: NetWeaver Certified SAP Application Servers

### Supermicro Ultra Server Family

The Supermicro Ultra family of servers are designed for the most demanding, low-latency, SAP Applications that require the highest level of performance, flexibility, and scalability. Available in 1U and 2U form factors, Ultra SuperServers support up to: 3TB DDR4 2666MHz in 24 DIMMs; SATA3 with optional SAS3 and NVMe support for increased storage bandwidth; a variety of Ultra Riser options, including built-in 1G, 10GBASE-T, 10G SFP+, and 25G Ethernet options; support for add-on SAS 3 HW/SW RAID controllers and additional PCI-E 3.0 slots. This platform is ideal for your most intensive & mission-critical SAP NetWeaver, R/3, or S/4 workloads.



SUPERMICRO SERVER (Form Factor)	SYS-1029UZ-TN20R25M (1U, 2 Socket)	SYS-2029U-TN24R4T (2U, 2 Socket)
Processor	Dual socket P (LGA 3647) Intel® Xeon® Scalable Processors 3 UPI up to 10.4GT/s	Dual socket P (LGA 3647) Intel® Xeon® Scalable Processors 3 UPI up to 10.4GT/s
Memory	24 DIMM Slots Up to 3TB ECC LRDIMM or RDIMM, DDR4-2666MHz	24 DIMM Slots Up to 3TB ECC LRDIMM or RDIMM, DDR4-2666MHz
PCIe	2 PCI-E 3.0 x8 slots (FH, FL)	2 PCI-E 3.0 x16 slots (FH, 10.5" L) 1 PCI-E 3.0 x8 slot (LP)
Networking	2x 25G SFP28 Ethernet ports	4x 10GBase-T LAN ports with Intel X550
Drives	20 Hot-swap 2.5" 7mm drive bays Supports up to 20 NVMe	24 Hot-swap standard 2.5" drive bays Supports up to 24 NVMe
Power	1600W Redundant Power Supplies	1600W Redundant Power Supplies

### Supermicro Twin Server Family

The Twin and FatTwin family of servers from Supermicro are designed for a balanced approach to address density, modularity, and serviceability. These servers are composed of four or eight dual-socket nodes which are independently hot pluggable for service. These servers are designed to reduce your Data Center TCO while finding the perfect balance for your rack density and rack power use. The Twin family of servers is ideal for SAP customers looking for high density NetWeaver application servers while maintaining architectural flexibility and vendor flexibility. For more information on our Twin family of servers, please see <https://www.supermicro.com/en/products/x11/systems/twin> and <https://www.supermicro.com/en/products/x11/systems/fattwin>.









SUPERMICRO SERVER (Form Factor)	SYS-2029BT-HNR (2U, 4 x 2 Socket Nodes)	SYS-2029TP-HTR (2U, 4 x 2 Socket Nodes)	SYS-2029TP-HTR (4U, 4 x 2 Socket Nodes)	SYS-2029TP-HTR (4U, 8 x 2 Socket Nodes)
Processor	Dual socket P (LGA 3647) per Node Intel® Xeon® Scalable Processors 3 UPI up to 10.4GT/s	Dual socket P (LGA 3647) per Node Intel® Xeon® Scalable Processors 3 UPI up to 10.4GT/s	Dual socket P (LGA 3647) per Node Intel® Xeon® Scalable Processors 3 UPI up to 10.4GT/s	Dual socket P (LGA 3647) per Node Intel® Xeon® Scalable Processors 3 UPI up to 10.4GT/s
Memory	24 DIMM Slots per Node Up to 3TB ECC LRDIMM per Node DDR4-2666MHz	16 DIMM Slots per Node Up to 2TB ECC LRDIMM per Node DDR4-2666MHz	12 DIMM Slots per Node Up to 1.5TB ECC LRDIMM per Node DDR4-2666MHz	12 DIMM Slots per Node Up to 1.5TB ECC LRDIMM per Node DDR4-2666MHz
PCIe	2x PCI-E 3.0 (x16) Low-profile per Node	2x PCI-E 3.0 (x16) Low-profile per Node	1x PCI-E 3.0 (x16) Low-profile per Node	1x PCI-E 3.0 (x16) Low-profile per Node
Networking	1x SIOM (1/10/25/40/100 Gb) card per Node 1x RJ45 Dedicated IPMI LAN port per Node	1x SIOM (1/10/25/40/100 Gb) card per Node 1x RJ45 Dedicated IPMI LAN port per Node	1x SIOM (1/10/25/40/100 Gb) card per Node 1x RJ45 Dedicated IPMI LAN port per Node	1x SIOM (1/10/25/40/100 Gb) card per Node 1x RJ45 Dedicated IPMI LAN port per Node
Drives	6x Hot-swap 2.5" NVMe bays per Node	6x Hot-swap 2.5" SATA3 bays per Node	8x Hot-swap 3.5" SATA3 bays per Node	6x Hot-swap 2.5" SATA3 bays per Node
Power	2200W Redundant Power Supplies	2200W Redundant Power Supplies	1200W Redundant Power Supplies	2200W Redundant Power Supplies

## Supermicro GPU Server Family

The Supermicro GPU Family of servers is developed to maximize the latest and greatest technologies available for NVIDIA Tesla, NVIDIA Grid, and AMD FirePro GPUs. These servers will be the workhorses of your Machine Learning, AI Training, AI Inference, Big Data Acceleration, and IoT Edge Processing use cases. For example, SAP Altiscale (Hadoop engine) and SAP Leonardo (machine learning & IoT platform) are applications with unique demands that will require intensive GPU processing & acceleration that cannot be delivered by CPUs alone. Supermicro GPU servers do not require a separate SAP certification and are currently SAP HANA qualified through our NetWeaver certification. For more information on our GPU family of servers, please see <https://www.supermicro.com/en/products/x11/systems/gpu>.









SUPERMICRO SERVER (Form Factor)	SYS-1029GQ-TXRT (1U, 2 Socket, 4x On Board GPU)	SYS-4028GR-TXRT (4U, 2 Socket, 4x On Board GPU)
 Processors	Dual socket P (LGA 3647) Intel® Xeon® Scalable Processors 3 UPI up to 10.4GT/s 4x NVIDIA Tesla P100 GPUs 80 GB/s NVLINK Connect	Dual socket R3 (LGA 2011) Intel® Xeon® processor E5-2600 v4 QPI up to 9.6GT/s 8x NVIDIA Tesla P100 GPUs 80 GB/s NVLINK Connect
 Memory	12 DIMM slots Up to 1.5TB ECC LRDIMM DDR4-2666MHz	24 DIMM Slots Up to 3TB ECC LRDIMM or RDIMM, DDR4-2400MHz
 PCIe	4x PCI-E 3.0 x16 slots	4x PCI-E 3.0 x16 (low-profile) slots 2x PCI-E 3.0 x8 slots
 Networking	2x 10GBase-T LAN ports	2x 10GBase-T LAN ports
 Drives	2x Hot-swap 2.5" SAS3/SATA3 bays 2x Internal 2.5" drive bays	16 Hot-swap 2.5" SATA/SAS drives Supports up to 8 NVMe drives
 Power	2000W Redundant Power Supplies	2200W Redundant (2+2) Power Supplies



### Supermicro SuperBlade Server Family

The Supermicro SuperBlade family of servers is designed for the most extreme density possible by housing multiple blade servers in a single chassis. SuperBlade modules deliver true server functionality and boast simplified access and maintenance with front-loading nodes. Each node includes up to four 28-Core Intel® Xeon® Scalable Processors with 3TB DDR4 2666MHz in 48 DIMM slots, 205W per socket, NVMe/SAS3 HDD support, and 100-240VAC redundant Titanium Level high-efficiency (96%), N+1 power supplies. Each blade server fits into existing Supermicro blade enclosures, thus protecting initial investments and offering smooth product upgrades with minimal lock in. The blades connect through onboard 2x 10 Gb switches, conveniently built into each system. Please note that the below matrix does not cover all blade module configurations. For more information and complete model details on our GPU family of servers, please see <https://www.supermicro.com/en/products/x11/superblade>.



<b>SUPERMICRO SERVER (Form Factor)</b>	<b>4U SuperBlade (14x 2 socket blades)</b>	<b>6U SuperBlade (14x 2 socket blades)</b>	<b>8U SuperBlade (20x 2 socket blades)</b>
 <b>Processor</b>	Dual socket P (LGA 3647) per Node Intel® Xeon® Scalable Processors 3 UPI up to 10.4GT/s	Dual socket P (LGA 3647) per Node Intel® Xeon® Scalable Processors 3 UPI up to 10.4GT/s	Dual socket P (LGA 3647) per Node Intel® Xeon® Scalable Processors 3 UPI up to 10.4GT/s
 <b>Memory</b>	16 DIMM slots per node Up to 512GB VLP ECC DDR4 2666/2400MHz DIMM per Node	24 DIMM Slots per Node Up to 768GB VLP ECC DDR4 2666/2400MHz DIMM per Node	16 DIMM slots per node Up to 2TB ECC DDR4 2666/2400MHz DIMM per Node
 <b>PCIe</b>	Not Available	Not Available	Not Available
 <b>Networking</b>	2 x 10Gb Onboard per Node 2 x 10Gb Onboard Switches per Chassis	2 x 10Gb Onboard per Node 2 x 10Gb Onboard Switches per Chassis	2 x 10Gb Onboard per Node 2 x 10Gb Onboard Switches per Chassis
 <b>Drives</b>	2x hot-plug SATA3 or NVMe bays	3x hot-plug SAS3/SATA3 drive bays	2x hot-plug SAS3/SATA3/NVMe drive bays
 <b>Power</b>	2200W Redundant Power Supplies	2200W Redundant Power Supplies	1200W Redundant Power Supplies

## Supermicro Mainstream Server Family

The Mainstream Value Optimized SuperServer product family from Supermicro is a series of servers designed for entry level or volume selections. Enterprise IT Managers can choose the exact model for their SAP applications built with only the components that are absolutely necessary, with no wasted excess.

The new generation of X11 Mainstream SuperServers supports up to: 2TB LRDIMM or RDIMM DDR4-2666MHz memory in 16 DIMM slots, 6 PCI-E 3.0 slots, 10 SATA 3.0 (6Gbps) ports with Intel® C620 controller, LAN supports 2x 10GBase-T or 2x 1GbE ports, redundant Platinum Level (94%+) or Titanium Level (96%) power supplies, integrated IPMI 2.0 with KVM over dedicated LAN, and dual or single Socket P (LGA 3647) Intel® Xeon® Scalable processors; UPI up to 10.4GT/s, Support CPU TDP 45-205W with IVR. This range enables customers to save significant amounts on CAPEX/OPEX thanks to Supermicro energy-efficient server design.

### Supports up to:

- 2TB DDR4 2666MHz ECC R/LR DIMM memory in 16 DIMM slots
- 205W per socket
- 16x 2.5" drives (8 SAS3 + 8 SATA3) or 8x 3.5" SATA3 drives
- 6 PCI-E 3.0 slots
- Redundant 1280W high efficiency power supplies

As there are too many sub-product categories in the Mainstream server line to display here, please go to <https://www.supermicro.com/en/products/x11/systems/mainstream> for detailed information.

## Supermicro SAP HANA Service

### Service for Hardware

As an SAP Global Partner, the Supermicro Global Services team works directly with SAP's support teams to provide enterprise hardware support and services:

**For all customers who have purchased Supermicro's required '4-Hour Onsite Response' or 'Next Business Day Response':** after a customer opens a support case with the SAP support team through the SAP Portal (<https://support.sap.com>), and if the case is determined to be a hardware related issue, SAP support will transfer the incident case to Supermicro Global Service team via the SAP Resolve system. Supermicro Global Services will contact the customer to resolve the issue. A customer may also directly open a support case with Supermicro by contacting our 24 Hour x 7 Days a week toll free number at 866-599-3226, visiting the Supermicro VIP Service Portal (<https://vip.supermicro.com>), or contacting us directly at: [onsiteservice@supermicro.com](mailto:onsiteservice@supermicro.com).

**For any customers who have purchased SAP HANA systems through a reseller or Systems Integrator, please make sure you purchase Supermicro's '4-Hour Onsite Response' or 'Next Business Day Response':** Those who have not purchased the Supermicro specific support plans for SAP HANA will not receive any hardware service or RMA support. Please contact your Supermicro sales representative to purchase these required SAP service packages.

### Supermicro Hardware Maintenance Service Level Options

- **4-Hour Onsite Response**  
A Supermicro authorized representative will arrive at the customer's site to begin hardware maintenance service within 4 hours after the service request has been received and spare parts have been received onsite.
- **Next Business Day Response**  
Service is available 8 hours per day within standard business hours, Monday to Friday, excluding local holidays. A Supermicro authorized representative will arrive at the customer's site to begin hardware maintenance service the next business day after the service request has been received and defective parts have been determined and shipped.

### Service for SAP S/4 HANA, NetWeaver, and SAP Applications

Please open a customer incident case via the SAP Portal (<https://support.sap.com>) and an SAP Service Representative will contact you immediately to resolve the incident.

### Service for SUSE, RedHat, NetApp, Veritas, Nutanix or any Operating System/ Storage Software

For any issues with your Operating Systems or Storage Management Software, please follow the standard SAP incident ticket process via the SAP Portal (<https://support.sap.com>). Once a ticket is opened, SAP will determine which 3rd party software is required for the support process and will re-route the case to the appropriate software vendor support team.

## About Super Micro Computer, Inc.

Supermicro® (NASDAQ: SMCI), the leading innovator in high-performance, high-efficiency server technology is a premier provider of advanced server Building Block Solutions® for Data Center, Cloud Computing, Enterprise IT, Hadoop/Big Data, HPC and Embedded Systems worldwide. Supermicro is committed to protecting the environment through its “We Keep IT Green™” initiative and provides customers with the most energy-efficient, environmentally-friendly solutions available on the market.

Learn more on [www.supermicro.com](http://www.supermicro.com)

No part of this document covered by copyright may be reproduced in any form or by any means — graphic, electronic, or mechanical, including photocopying, recording, taping, or storage in an electronic retrieval system — without prior written permission of the copyright owner.

Supermicro, the Supermicro logo, Building Block Solutions, We Keep IT Green, SuperServer, Twin, BigTwin, TwinPro, TwinPro<sup>2</sup>, SuperDoctor are trademarks and/or registered trademarks of Super Micro Computer, Inc.

Ultrabook, Celeron, Celeron Inside, Core Inside, Intel, Intel Logo, Intel Atom, Intel Atom Inside, Intel Core, Intel Inside, Intel Inside Logo, Intel vPro, Itanium, Itanium Inside, Pentium, Pentium Inside, vPro Inside, Xeon, Xeon Phi, and Xeon Inside are trademarks of Intel Corporation or its subsidiaries in the U.S. and/or other countries.

All other brands names and trademarks are the property of their respective owners.

© Copyright 2019 Super Micro Computer, Inc. All rights reserved.

