SUPERMICRO SOLUTIONS FOR SAP HANA®

Supermicro X14 Scale-Up Servers Now Certified for SAP HANA

Supermicro 4 CPU Scale Up Server - SYS-442B-NR

Executive Summary

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Digital transformation is a top priority for any enterprise or business seeking a competitive advantage in the rapidly evolving information economy. Real-time, actionable business insights and continuous operational improvements, once just wishful thinking, have become standard requirements for today's information-driven CEOs. SAP customers now require a robust, scalable platform for running all SAP HANA database-related applications, such as SAP S/4HANA and BW/4HANA, among others. Customers need the ability to manipulate, extract, and analyze large volumes of live transactional data in real-time, without interrupting business operations.

SAP HANA enables your digital transformation by providing a real-time, in-memory computing platform that is a thousand times faster than traditional databases, all while allowing real-time Online Transaction Processing (OLTP) and Online Analytical Processing (OLAP) on the same system or environment. Supermicro has partnered with SAP to pre-certify, validate, and architect SAP HANA systems to power your digital transformation infrastructure.

Introduction

SAP HANA In-memory database helps enable real-time analysis and accelerate transactional workloads by using an entire solution designed and sized accordingly based on certified SAP HANA systems.

To support SAP customers throughout their SAP S/4HANA installation or migration journey, Supermicro has made a considerable number of systems available that are SAP HANA certified, predefined, and tested to fully meet workload requirements and achieve short time-to-value for practically any type of critical S/4HANA system.

SAP HANA Implementation Options

SAP HANA appliance

SAP began delivering SAP HANA in the form of standardized and highly optimized appliances, offering companies the option to choose among several SAP HANA hardware partners. Those SAP HANA appliances are built based on a well-defined hardware specification designed to meet the performance requirements of solutions that leverage in-memory technology. If you prefer a preconfigured hardware setup with preinstalled software packages that your preferred SAP HANA hardware partner can quickly implement, then an appliance is the right delivery model for you. Both the hardware partner and SAP fully support it.

SAP HANA TDI

While appliance delivery is easy and comfortable, it may introduce some hardware flexibility limitations and require changes to your established IT operations processes. Therefore, SAP offers an additional delivery approach for SAP HANA - SAP HANA tailored data center integration. Compared to the appliance delivery, to optimally integrate SAP HANA in your data center, SAP HANA tailored data center integration provides you with more flexibility regarding the hardware. With TDI, you can reduce hardware and operational costs by reusing existing hardware components and operating processes. Mitigate risks and optimize time-to-value by enabling existing IT management processes for SAP HANA implementation.

SAP HANA TDI helps you stay within your IT budget, shortens implementation cycles, and enables better utilization of hardware innovations to drive the adoption of SAP HANA.

Certified Supermicro Solutions for SAP HANA, S/4HANA, BW/4HANA

Supermicro has certified best-of-breed systems underneath SAP HANA for many Intel CPU generations. While this paper focuses on the 6th generation Intel, you can find information about previous versions of Supermicro systems and CPUs under https://www.supermicro.com/en/solutions/sap/hana-appliance-tdi

This solution brief focuses on the new Supermicro generation X14-based 6th Gen Intel Xeon Scalable processors. Compared to the last generation of servers, the new systems feature CPUs with an increase from 60 to 86 cores and offer 2.8 times more memory bandwidth

4-socket systems:

Supermicro designed and manufactured three different 4-socket systems available to our SAP HANA customers, who can choose one based on their needs and workload. So, they can select the SYS-242B-NR with Quad Intel® Xeon® 6700-Series Processors

with P-cores up to 270W with air cooling, up to 64 DIMMs supporting up to 16TB DDR5 in 2DPC, up to 24 front hot-swap 2.5" NVMe/SATA/SAS drive bays, and 4 Redundant 2700W Titanium Level power supplies.

Figure 1 - Supermicro 4 Socket Server - SYS-242B-NR

A reference to two bills of material from 48C and 86C could look as follows:

Requirements:
- CPUs: 4 x Intel(R) Xeon(R) – from 8 cores to 86 cores each
- Memory: from 32 x 64GB to 64 x 256 GB
- Storage for HANA: RAID5 out of 3+ NVMe/SAS SSD drives, depending on database size
- Storage for OS: RAID1 out of 2 small drives for OS
- Redundancy   VROC premium or SAS RAID controller
- Network   Minimum 10Gb dual port

SYS-242H-NR (4P-Compute): 2U Rackmount, 4 CPUs, 64 DIMMs, 8 front hot-swap 2.5" NVMe drive bays; 2 x M.2 PCIe 4.0 x4 NVMe slots (RAID through VROC)
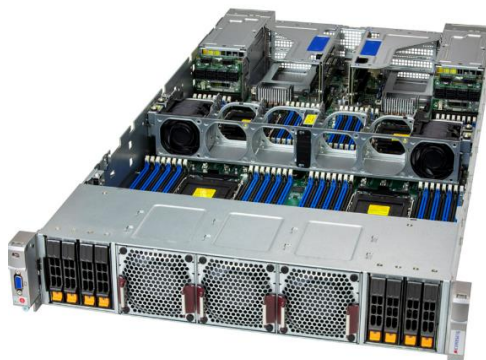

Figure 3 - Supermicro 4 Socket Server - SYS-242H-NR

July 2025

SYS-242B-NR (4P-Storage): 2U Rackmount, 4 CPUs, 64 DIMMs, 24 front hot-swap 2.5" NVMe*/SAS*/SATA* drive bays; 2 x M.2 PCIe 4.0 x4 NVMe slots (RAID through VROC)

SYS-442B-NR (4P-Max I/O): 4U Rackmount, 4 CPUs, 64 DIMMs, 24 front hot-swap 2.5" PCIe 5.0 NVMe*/SAS*/SATA* drive bays; 2 x M.2 PCIe 4.0 x4 NVMe slots (RAID through VROC)

2-socket systems:

Because of diversity and business cases the dual processor systems can be used for, regarding number and type of drives, system height (1U or 2 U), and even memory size (up to 4 or 8 TB), among others, we certified two different systems for SAP HANA: SYS-22HA-TN (appliance) and SYS-122H-TN (TDI). Our experience is that these two systems will be widely adopted in customers' data centers because they can be used as development, quality, and/or production servers, or even as SAP application servers, to mention a few possibilities.

SYS-222HA-TN: 2U, Dual Intel® Xeon® 6900-Series Processors with P-cores up to 500W, 24 DIMMs supporting up to 6TB DDR5, 8x 2.5" hot-swap NVMe/SATA/SAS drive bays with optional configurations for 16x/24x 2.5" hot-swap NVMe/SAS/SATA drive bays; 2x internal M.2 NVMe drive slots; Optional RAID support via storage add-on card

Figure 4 - Supermicro 2 Socket Server - SYS-222HA-TN

SYS-122H-TN: 1U, Dual Intel® Xeon® 6700/6500 series processors with P-cores or 6700 series processors with E-cores, 32 DIMM slots supporting up to 8TB of memory, 8x 2.5" hot-swap NVMe/SATA/SAS drive bays; Optional 4x 2.5" hot-swap NVMe/SAS/SATA drive bays; 2x internal M.2 NVMe drive slots; Optional RAID support via storage add-on card

Figure 5 - Supermicro 2 Socket Server - SYS-122H-TN

A reference to two bills of material from 48C and 86C could look as follows:

Requirements:
- CPUs: 2 x Intel® Xeon® 6 series processors

  SYS-222HA-TN: from 72 cores to 128 cores each

  SYS-122H-TN: from 8 cores to 144 cores each
- Memory: SYS-222HA-TN from 12 x 32 GB to 24 x 256 GB

  SYS-122H-TN from 16 x 32 GB to 32 x 256 GB
- Storage for HANA: RAID5 out of 3+ NVMe/SAS SSD drives, depending on database size
- Storage for OS: RAID1 out of 2 small drives for OS
- Redundancy   VROC premium or SAS RAID controller
- Network   Minimum 10Gb dual port

SAP HANA on Hyperconverged Infrastructure (HCI) Solutions Powered by VMware vSAN

Supermicro certified three Hyper SuperServers: SYS-221H-TN24R, SYS-221H-TNR, and SYS-121H-TNR based on 4th Gen Intel® Xeon® Scalable Processors (Sapphire Rapids) as an HCI Solution powered by VMware vSphere & vSAN underneath SAP HANA. These systems are designed for large in-memory computing and mission-critical enterprise applications in density-optimized 2U and 1U chassis. The servers support enterprises that require the highest operational efficiency and maximum performance.

WHY SAP HANA ON HCI

With HCI, storage components share compute and memory with the server infrastructure. This eliminates the need for separate storage arrays, controllers, memory, SANs, and more. All storage technologies are fully integrated into the virtualization cluster. It's like creating a SAN storage out of the internal storage of vSAN cluster members. SAP HANA customers can leverage HCI, which is extremely simple, flexible, and offers a significantly higher degree of scalability, helping to reduce costs compared to the traditional SAP infrastructure. With SAP support, customers are now ready to migrate or

install their virtualized mission-critical SAP HANA systems on top of a Hyperconverged Infrastructure powered by VMware vSAN.

SUPERMICRO SOLUTIONS INTEGRATED WITH VMWARE VSAN

Supermicro has a long-standing experience with VMware products such as vSphere and vSAN, which has been constantly shown in the ReadyNode™ certification of many different systems. It focuses on deploying VMware vSAN, a hyper-converged solution, as quickly as possible. Working with VMware, Supermicro delivers an alternative to traditional Fibre Channel SAN-based storage infrastructures, which are known for their complexity and interoperability challenges. vSAN provides you with the ability to provision and manage compute, network, and storage resources from a single pane of management:

vSAN integrated management panel with vSphere offers simplicity, a consistent user interface, ease of management, and flexibility to spin up HANA instances quickly as required across the vSAN cluster.

vSAN enables software-defined storage with flexible, customer-defined, policy-based management that can be tailored to meet the needs of test, development, and QA instances, providing high availability as required. Especially with all-flash deployments, Supermicro vSAN ReadyNode introduces a new high-performance storage tier optimized for enterprise-class virtual environments that is simple, resilient, and efficient, reducing the total cost of ownership. It is a perfect solution for enterprises to grow and manage virtualized infrastructure for maximum ROI efficiently.

SUPERMICRO HCI SOLUTION FOR SAP HANA

The Supermicro HCI for SAP HANA-certified systems is based on Supermicro vSAN ReadyNode systems, which offer proven reliability and stability in high-end environments. Because the SAP HANA certification has more demanding and different KPIs to meet, Supermicro assembled the most appropriate components to meet all certification requirements and pass the certification easily. Both certified systems are Hyper SuperServers, designed to deliver the highest performance, flexibility, scalability, and serviceability to demanding IT environments, powering mission-critical Enterprise workloads.

Benefits of the solution include standardized and highly optimized SAP HANA database workload systems, combined with VMware vSAN for better TCO. Through the SAP support portal, Supermicro serves as the single point of contact for the HCI joint solution, providing triage whenever needed.

Supermicro Hyper SuperServer for VMware vSAN: certified Solution	
HCI Models included	SYS-221H-TN24R, SYS-221H-TNR, SYS-121H-TNR
CPUs (total/HANA)	2/2
CPU Range	4th Gen Intel Xeon Scalable processors Silver, Gold, Platinum
RAM per CPU socket	up to 2TB
Range of HCI nodes	3-64
Range Hypervisor	vSphere 8.0U2c
Range SDS Version	vSAN 8.0U2c

The Hyper SuperServer SYS-221H-TN24R, SYS-221H-TNR, and SYS-121H-TNR are designed for large in-memory computing and mission-critical enterprise applications in density-optimized 2U and 1U chassis. These servers support enterprises that require the highest operational efficiency and maximum performance. The systems support two 4th Gen Intel® Xeon® Scalable

Processors (Sapphire Rapids) with up to 60 cores each, support TDP support 350W (Air and Liquid cooled) CPUs, up to 4 UPI and 16 GT/s, 32 DDR5-5600 DIMM slots, up to 24x 2.5" hot-swap NVMe/SATA/SAS drive bays; 2x internal M.2 NVMe/SATA drive slots; Optional RAID support via storage add-on card PCI-E 3.0 slots for diverse expansion options.

For more information, visit:
Hyper SuperServer SYS-221H-TN24R: https://www.supermicro.com/en/products/system/hyper/2u/sys-221h-tn24r
Hyper SuperServer SYS-221H-TNR: https://www.supermicro.com/en/products/system/hyper/2u/sys-221h-tnr
Hyper SuperServer SYS-121H-TNR: https://www.supermicro.com/en/products/system/hyper/1u/sys-121h-tnr

Key Features

• Certified to run all kinds of workloads: scale-up or scale-out.

• Factory-integrated, pre-configured, ready-to-go appliances built on proven and reliable Supermicro services that provide compute power for SAP HANA workloads.

• Support of workload demands with performance-optimized all-flash storage configurations.

• All certified SAP HANA systems can be connected to external storage (NFS or SAN) using appropriate networking cards.

• Easy deployment to support SAP HANA database high availability (HA) and disaster recovery (DR)

Conclusions

Supermicro and SAP continually collaborate on new solutions to help customers meet their needs and accelerate their digital transformation. These solutions will always keep pace with the latest and most effective technology, including the latest processor and memory advancements, among others. Supermicro systems are pre-defined and tested to fully meet workload requirements and short-time-to-value of practically any kind of critical S/4HANA systems.

SUPERMICRO

As a global leader in high performance, high efficiency server technology and innovation, we develop and provide end-to-end green computing solutions to the data center, cloud computing, enterprise IT, big data, HPC, and embedded markets. Our Building Block Solutions® approach allows us to provide a broad range of SKUs and enables us to build and deliver application-optimized solutions based upon your requirements.

For more information: www.supermicro.com