

SUSE KVM Virtualization for SAP HANA on Lenovo ThinkSystem

Solution Brief

Virtualized SAP HANA systems are now supported for production with SUSE Enterprise Linux Server (SLES).

The KVM virtualization included with SUSE Linux Enterprise Server Unlimited Virtualization is available for SAP HANA databases in production.

Support now extends to Lenovo ThinkSystem V3 servers with 4th Gen (Sapphire Rapids) and 5th Gen (Emerald Rapids) processors.

- KVM Virtualization for SAP HANA is available on current server systems for the first time
- Further flexibility for Lenovo when designing on premises SAP landscapes
- Open-source alternative to proprietary virtualized solutions
- Base component of SLES Enterprise Linux Server with Unlimited Virtual Machines
- No additional licensing or subscriptions required
- No equivalent offering available from other Linux distributions

What has SUSE announced?

- Intel 4th Gen (Sapphire Rapids) 2-socket and 4-socket servers are SAP HANA supported with KVM SLES for SAP 15 SP5
- Intel 5th Gen (Emerald Rapids) 2-socket servers are SAP HANA supported with KVM SLES for SAP 15 SP5
- Minimum SLES KVM VM is 1 CPU, 128 GiB, 8 physical cores
- Maximum SLES KVM VM on 4th Gen (Sapphire Rapids) is 4 CPUs, 8 TiB of memory, 240 physical cores (480 vCPUs)
- Maximum SLES KVM VM on 5th Gen (Emerald Rapids) is 2 CPUs, 4 TiB of memory, 128 physical cores (256 vCPUs)
- OLAP VMs maximum on 2- and 4-socket servers:
 - 2-socket: 3 TiB (Class L workload), 4 TiB (Class M workload)
 - 4-socket: 8 TiB (Class L workload)
- Supported with any type of storage: internal disk, external NFS or Fibre Channel SAN storage based on either SAS or NVMe flash technology. Lenovo SAP Solutions development has carried out benchmarking to provide you with the optimal storage strategy for your SAP landscape. Consult with your Lenovo sales representative or Lenovo LETS team for custom sizings.
- Multi-VM is supported so up to 2 VMs can be deployed in parallel on 2-socket servers
Up to 4 VMs can be deployed in parallel on 4-socket servers
- Full socket VMs are supported
- 8-socket servers and future CPU generation certifications are on the SUSE roadmap
- HANA VMs may span over 1, 2, 3, or 4 sockets.

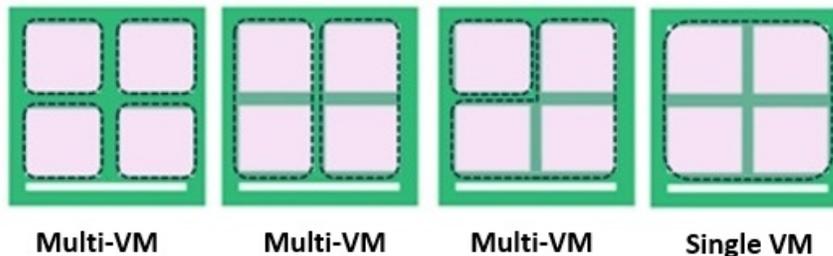


Figure 1. SAP HANA VMs may span over 1, 2, 3, or 4 sockets

Virtualization comparison

Positioning table for SUSE virtualization when compared to alternative strategies

Table 1. Available virtualization technologies

	SUSE KVM	VMware vSphere	VMware vSAN	Nutanix
SAP HANA 4th Gen (Sapphire Rapids) support	2, 4-socket 8 socket planned	2, 4, 8-socket	2, 4-socket	2-socket
SAP HANA 5th Gen (Emerald Rapids) support	2-socket	2-socket	2-socket	2-socket
Max VM size for SAP HANA	2S 4TB, 4S 8TB	2S 6TB, 4S 12TB	2S 4TB, 4S 8TB	1S 2TB
Half socket VMs	No	Yes	4th Gen: No 5th Gen: Yes	Yes
Max PROD VMs per server	2S: 2 VMs 4S: 4 VMs	2S: 4 VMs 4S: 8 VMs	2S: 4 VMs 4S: 4 VMs	2S: 3 VMs
Licensing cost	None. Base component of SLES Unlimited Virtualization	Additional VVF subscription	Additional VVF + vSAN subscription	Additional NTX subscription

Technical considerations

Similar to other technologies, SUSE virtualization requires that a degree of overhead be taken into account:

- The hypervisor will consume CPU capacity, approximately 5% to 10%, depending on the workload characteristics:
- 5% of the CPU capacity for mainly analytical workloads.
- 10% of the CPU capacity for mainly transactional workloads.

Technical guide on migrating workloads

Lenovo SAP Solutions development has also written a technical guide to help with migrating SAP workloads based on vSphere VMs into KVM based virtual images.

If you are interesting in receiving a copy please contact Lenovo's SAP Center of Competency sapsolutions@lenovo.com.

Why Lenovo

Lenovo ThinkSystem servers are particularly well suited to demanding SAP workloads due to the excellent performance, security features and industry-leading reliability.

Lenovo ThinkSystem holds many of the world record benchmarks for SAP HANA Business Warehouse.

Lenovo has been collaborating with SAP for over 20 years and has shipped over 50,000 SAP HANA systems worldwide in this period.

There are a broad range of wrap-around Lenovo services available for SAP environments including professional deployment services, ongoing managed services and health checks.

Lenovo TruScale IaaS offers an opex-based cloud consumption model for on-premises infrastructure.

Related publications and links

- [SUSE Best Practices - for SAP HANA on KVM](#)
- [Introduction to SUSE KVM virtualization](#)
- [S-Note 3538596 - SAP HANA on SUSE KVM Virtualization with SLES 15 SP5](#)
- [SAP HANA TDI Storage Requirements](#)
- [Lenovo LETS support - SAP HANA configuration templates](#)

More information

Consult with Lenovo's SAP Center of Competency sapsolutions@lenovo.com for more details of the SUSE virtualization solution. The team can provide sizing, custom briefings and architectural guidance for virtualizing SAP landscapes including SAP S/4HANA, SAP Business Warehouse on HANA and assistance with many other SAP related topics.

Related product families

Product families related to this document are the following:

- [ThinkSystem SR630 V3 Server](#)
- [ThinkSystem SR650 V3 Server](#)
- [ThinkSystem SR850 V3 Server](#)
- [ThinkSystem SR860 V3 Server](#)

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