One Move, Three Upgrades for your SAP HANA workloads

Reference Information

One move, three upgrades

Conventional wisdom says to change one thing at a time when the workload is your SAP HANA database: new server this year, new storage next year, a hypervisor decision whenever the budget allows. Each step means its own project, maintenance window and risk.

Migrating mission-critical SAP HANA to a new server, hypervisor and storage

We wanted to test that theory of “one upgrade at a time”. So we took a HANA VM running on VMware vSphere, with its disks stored as VMDKs on an older storage array, and migrated it to SLES for SAP 16.0 on KVM, on a new Lenovo ThinkSystem SR630 V4 server. The VM reached a new, higher performance on Lenovo ThinkSystem DM7100F storage array directly. Coriolis by Cloudbase Solutions handled the move. One effort replaced the server, hypervisor and storage under a mission-critical database, and the HANA database started noticeably quicker on the new platform.

What made the storage step practical was PCI pass-through of fibre channel HBAs, which we hadn't initially planned to test. The VM has direct access to the new array, with no virtual storage layer between HANA and its data. Coriolis copied the data across the network from the old virtual disks in the same workflow, so there was no separate storage migration project.

Why teams are reconsidering the platform under HANA

Three business reasons come up again and again, and each can justify a refresh on its own.

Lower TCO. Virtualization licensing and subscription models have changed, and running every workload on one premium platform may no longer match what the business needs. The potential savings depend on your contracts and estate, so model it with your own numbers rather than anyone's headline figure, ours included.

Storage optimization. HANA is demanding on storage, and its array often ages faster than the rest of the stack. A platform change is the natural moment to move to faster storage and remove layers between the database and its data. In our case, the database moved from virtual disks on an older array to direct FC access to a new one, in the same effort as the server and hypervisor change.

Hypervisor diversification. Relying on a single virtualization vendor concentrates risk, because pricing, bundling and roadmap decisions sit with one vendor. A second platform, whether a full exit or a dual-vendor strategy, gives you leverage and options. Handled separately, these are three projects with three rounds of risk to a system the business can't afford to lose. Handled together, you take on the risk of moving HANA once rather than three times.

Why HANA is the hard case

HANA runs in memory, so people might not fully realize the importance of the storage stack in the SAP HANA ecosystem. Every committed transaction must be written to persistent log storage, so log write latency shows up directly in application response times. After a restart the whole database is read back into memory, so storage throughput decides how long recovery takes.

Then there is uptime. HANA typically sits under processes a business can't pause, so maintenance windows are short and a migration needing a long outage is hard to approve.

Finally, there is support. SAP certifies the hardware and storage HANA runs on and publishes which virtualization platforms it supports. A platform that is fast but unsupported isn't a real option.

What we tested and how it went

The source was a HANA VM on vSphere with VMDK disks on an older array, a common situation of a system that has run well for years on a hypervisor and storage generation both due for a refresh.

Coriolis performed the migration without installing anything in the source VM. Most of the effort went into preparing Coriolis to work in both environments, not into the migration itself. We also ran the data transfer several times early on, which let us tune configuration options well before the real migration.

For the real migration, Coriolis could have run the data transfer and VM deployment as separate steps. However, we decided to run them together in a single workflow. We kept the source VM running in production until we had validated the state of the database on the new platform, so the original HANA instance remained available until we were ready to cut over. During our testing, we observed that the HANA database started noticeably quicker on the new platform, and our test queries seemed to come back quicker too.

What pass-through means for availability

A VM with a passed-through HBA is tied to the host that holds the adapter, so hypervisor-level live migration isn't available for it. For SAP HANA that matters less than elsewhere, because HANA brings its own answer.

SAP HANA System Replication keeps a second system in step with the primary at the database layer, independent of the hypervisor, so availability and maintenance are handled by failing over between HANA systems rather than moving a VM between hosts.

Results and next steps

A mission-critical HANA database can move to a new server, a new hypervisor and faster storage in one controlled effort. If you try it, budget your time for preparing the environment and rehearsing transfers rather than for the cutover itself, and keep the source running until you've validated the database. To start planning, ask SUSE about a Migration Readiness Assessment for your landscape.

Watch for our next post, which covers moving the rest of your non-SAP workloads to SUSE Virtualization with Cloudbase Coriolis.

Authors

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Seller Training Courses

The following sales training courses are offered for employees and partners (login required). Courses are listed in date order.

1. **VTT: Navigating SAP's ERP Transformation - Positioning Lenovo Infrastructure for Growth**
   2026-10-07 | 49 minutes | Employees and Partners

   SAP customers are entering a critical phase of ERP modernization as they transition from legacy SAP ECC environments to SAP S/4HANA and increasingly adopt cloud and hybrid cloud operating models. Join Graeme Trevayne, Lenovo ISG SAP Alliance Director, and Catherine Maina, Lenovo Sr. Product Manager for understanding why the technical and business implications of this shift is essential for designing the right infrastructure solutions and helping customers make informed decisions throughout their transformation journey.
   This webinar provides an overview of SAP's ERP and cloud strategy, the current state of customer migration to SAP S/4HANA, and the expected impact on traditional SAP infrastructure investments. Attendees will gain insight into the market outlook for Lenovo's SAP business and learn how Lenovo is adapting its portfolio and go-to-market approach to maximize revenue and profitability during this transition period.
   The session will cover Lenovo's SAP-certified infrastructure solutions for both traditional SAP ECC and modern SAP S/4HANA deployments, including sizing, performance, scalability, and modernization considerations. You will also learn how to position ThinkSystem servers as the foundation for mission-critical SAP workloads while incorporating ThinkAgile VX as a strategic platform for virtualization, infrastructure consolidation, operational simplification, and hybrid cloud readiness.
   In addition, the webinar will explore emerging growth opportunities across the SAP ecosystem, including SAP migration projects, infrastructure refreshes, private cloud initiatives, data and analytics platforms, AI-enabled business processes, and managed services opportunities. Attendees will leave with practical technical positioning guidance, solution-selling strategies, and customer conversation frameworks that align Lenovo solutions with evolving SAP customer requirements.
   Webinar Objectives
   • Explain SAP's ERP modernization strategy and cloud transformation roadmap.
   • Describe the current progress and adoption trends of SAP S/4HANA migrations.
   • Understand the outlook for traditional Lenovo SAP infrastructure opportunities.
   • Articulate Lenovo's strategy for maintaining growth and profitability during the SAP transition.
   • Differentiate Lenovo solutions supporting SAP ECC and SAP S/4HANA environments.
   • Position ThinkSystem servers for performance, reliability, scalability, and SAP-certified deployments.
   • Position ThinkAgile VX alongside ThinkSystem to support virtualization, infrastructure modernization, and hybrid cloud architectures.
   • Identify new business opportunities within the evolving SAP ecosystem.

   Tags: SAP, SAP EcoSystem, Cloud, Large Memory, Database

   Published: 2026-10-07
   Length: 49 minutes

   Start the training:
   Employee link: Grow@Lenovo
   Partner link: Lenovo 360 Learning Center

   Course code: DVCLD237

2. **SAP Solutions by Lenovo: Trends and Opportunities**
   2025-02-13 | 25 minutes | Employees Only

   Join Irene Hopf from the Lenovo Center of Competence for SAP, as she discusses the top trends and opportunities for SAP solutions by Lenovo. Topics covered include the relationship between SAP and Lenovo, opportunity identification, description around what a “typical” SAP IT landscape looks like, what a “Cloud on Premise” solution by Lenovo means, where to get help and how to access resources

   Course Objectives:
   • Identify an SAP opportunity
   • Understand trends in the SAP ecosystem
   • List available resources for getting help

   Tags: SAP

   Published: 2025-02-13
   Length: 25 minutes

   Start the training:
   Employee link: Grow@Lenovo

   Course code: DSAPB102

3. **SAP Webinar: Best of Both Worlds - Lenovo Hybrid Cloud Solutions for SAP July 2024**
   2024-09-26 | 60 minutes | Employees and Partners

   Over the last two decades SAP customers have invested millions of dollars optimizing their SAP on-premise systems. These customers are now faced with the challenge of cloud adoption for their business-critical SAP applications. The Lenovo hybrid cloud solution with Microsoft Azure for SAP workloads is ideal for safeguarding mission critical SAP Systems while embracing the cloud. This solution brings together the best of both worlds by providing flexibility to leverage SAP cloud services while maintaining on-prem environments.

   Tags: SAP

   Published: 2024-09-26
   Length: 60 minutes

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   Course code: DSAPF102

4. **SAP Webinar: Lenovo Portfolio Update for SAP Landscapes**
   2024-09-06 | 60 minutes | Partners Only

   Join Mark Kelly, Advisory IT Architect with the Lenovo Global SAP Center of Competence as he discusses:

   •Challenges in the SAP environment
   •Lenovo On-premise for SAP Solutions and
   •Lenovo support resources for SAP solutions

   Tags: Business solutions, SAP

   Published: 2024-09-06
   Length: 60 minutes

   Start the training:
   Partner link: Lenovo 360 Learning Center

   Course code: DSAPF101P
5. **SAP Webinar for Lenovo Sellers: Lenovo Portfolio Update for SAP Landscapes**
   2024-06-04 | 60 minutes | Employees Only

   Join Mark Kelly, Advisory IT Architect with the Lenovo Global SAP Center of Competence as he discusses:
   •Challenges in the SAP environment
   •Lenovo On-premise Solutions for SAP
   •Lenovo support resources for SAP solutions

   Tags: SAP, ThinkAgile, ThinkEdge, ThinkSystem

   Published: 2024-06-04
   Length: 60 minutes

   Start the training:
   Employee link: Grow@Lenovo

   Course code: DSAPF101

6. **Business Problems Addressed with Lenovo Data & Analytics Solutions**
   2024-01-31 | 20 minutes | Employees and Partners

   Data is the quantities, characters, or symbols on which operations are performed by a computer, which is then stored and transmitted in the form of electrical signals and recorded on magnetic, optical, solid state, or mechanical recording media. All different types of organizations rely more and more on their data to gain valuable insights and improve their business. As expected, they will have challenges with gaining this insight. In this course we will discuss those challenges and problems our customers face and describe how Lenovo Data and Analytics Solutions can help customers solve each problem.

   After completing this training, you will be able to define the following common problems for databases and big data and describe how Lenovo can help customers solve each problem: scalability, management, performance, protection, security, knowledge/skill, and technology evolution.

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   Tags: Data & Analytics, SAP, ThinkAgile, ThinkSystem

   Published: 2024-01-31
   Length: 20 minutes

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   Employee link: Grow@Lenovo
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   Course code: DSOLP200

Related product families

Product families related to this document are the following:

- SAP Alliance
- SAP Business Suite
- SAP HANA

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This document, LP2565, was created or updated on November 4, 2026.

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