

SAP HANA on Cisco UCS and SUSE Linux Enterprise Server for SAP Applications

Take the guesswork out of creating a reliable, available and secure SAP HANA platform that fits in your data center. Get a configured and validated solution from Cisco and SUSE.

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Flexibility without Compromise

The business benefits of SAP HANA are many, but implementing the solution properly is key to reaping those benefits. How do you fit HANA smoothly into your existing environment? Cisco Unified Computing System (UCS) and SUSE® Linux Enterprise Server for SAP Applications offer you an advanced platform that supports SAP HANA while still offering you the flexibility you need. See why together, Cisco UCS and SUSE offer a better option for many organizations.

Target Audience

This white paper is meant for CIOs, solution architects and technical architects planning to deploy SAP HANA in their data center. For those looking for complete and detailed guides to system construction and configuration, refer to the Cisco Validated Designs referenced in this paper.

Implementing SAP HANA without Losing the Benefit

Vendors often sell SAP HANA as a self-contained appliance—all the pieces you need are included, but only the vendor has complete visibility into what those pieces are. Such solutions can offer stability, but the downsides are obvious. When it comes time to upgrade or scale your SAP HANA implementation, the lack of visibility and the solution's disconnect with the rest of your data center create serious obstacles.

With Tailored Datacenter Integration (TDI), SAP offered organizations a way to build a HANA implementation to fit their own data centers. Doing so required piecing together items from a number of vendors, often with the services of a systems integrator.

What would be ideal is if a vendor used the freedom of TDI to create a solution that offered recommendations on tested, integrated components. You could see what went into the solution and get the flexibility to fit it into your data center without laboring to customize every piece. That's exactly what Cisco and SUSE have done with Cisco UCS and SUSE Linux Enterprise Server for SAP Applications.

A Partnership Suited to Supporting SAP HANA

The SUSE and Cisco partnership strives to provide you with the best platform for your mission-critical workloads like SAP HANA. SUSE is Cisco's preferred SAP partner, which is one reason 95 percent of Cisco SAP implementations run on SUSE Linux Enterprise Server for SAP Applications.

SUSE Linux Enterprise Server for SAP Applications is the number-one platform for SAP HANA. It's the favorite of many organizations because unlike other Linux offerings, it features built-in high-availability clustering and automated failover, plus an SAP installation wizard to automate HANA installations.

Cisco UCS is a state-of-the-art data center platform that unites computing, network, storage access and virtualization into a single cohesive system.

SUSE Linux Enterprise Server for SAP Applications is certified on Cisco UCS servers and integrated with Cisco's UCS Manager to help create a single, streamlined system. Cisco UCS also leverages the years of experience that SUSE and SAP have together put into the hardening of the Linux kernel for the security of SAP HANA.

The end result? You get an end-to-end implementation of SAP HANA using a unified infrastructure that's tested for performance and easy to install and configure, so you get the most from SAP HANA.

A Transparent Solution That Gives You Choice

SAP HANA can be built in a scale-up or scale-out configuration. Cisco UCS and SUSE support both models. In addition, both Cisco UCS and SUSE are agnostic when it comes to data storage options. That means you can use the storage solution you already have or are familiar with, or consider a software-defined storage solution from Cisco and SUSE. Cisco has created Cisco Validated Designs that apply to multiple storage options and configurations.

Cisco Validated Designs

Cisco Validated Designs (CVDs) are detailed plans for Cisco solutions. Each includes a solution architecture, a list of hardware and software, and step-by-step instructions on implementation. Few vendors offer the level of detail provided in CVDs. These valuable documents can help reduce errors and speed deployment of complex systems such as SAP HANA.

Your SAP HANA solution on Cisco UCS and the SUSE operating system can also work with Cisco Application Centric Infrastructure (ACI) and Cisco Application Policy Infrastructure Controller (APIC). This flexible combination blends the hardware and software of your SAP HANA solution into a software-defined network infrastructure, as detailed in some of the CVDs below. Here are the CVD documents that describe the various options for SAP HANA on Cisco UCS and SUSE Linux Enterprise Server.

- **Cisco UCS Integrated Infrastructure for SAP Applications:** *Design and Deployment of Cisco UCS, Cisco Nexus 9000 Series Switches and EMC VNX Storage*
- **Cisco UCS Integrated Infrastructure for SAP HANA with SLES:** *Design and Deployment of Cisco UCS Server*

and MapR Converged Data Platform with SUSE Linux Enterprise Server

- **FlexPod Datacenter for SAP Solution with Cisco Application Centric Infrastructure (ACI):** *Design and Deployment of SAP HANA and SAP Application on Cisco UCS, Cisco Nexus 9000 Series Switches, and NetApp FAS Storage*
- **FlexPod Datacenter for SAP Solution with Nexus 9000 Switches:** *Design and Deployment of SAP HANA and SAP Application on Cisco UCS, Cisco Nexus 9000 Series Switches and NetApp FAS Storage*

A Robust Solution to Support Mission-Critical SAP HANA

Ease of implementation isn't enough. The resulting system also needs to be robust enough to support SAP HANA—day in and day out—with the speed and security necessary for a mission-critical system.

Reliability

SUSE Linux Enterprise Server was the first supported operating system for SAP HANA. This came about in part because of SUSE and SAP's longstanding relationship. The companies share a history of joint solution development. In fact, SUSE Linux Enterprise Server is SAP's Linux development platform.

Cisco and SUSE share a common approach to data center architecture, with an emphasis on simplicity and extensibility. Their partnership helps to ensure the reliability of the systems supporting your SAP HANA implementation.

Availability

SUSE has collaborated with SAP and Cisco to tailor the proven high-availability (HA) functions of SUSE Linux Enterprise Server for SAP Applications to the needs of SAP HANA. When dealing

“By making joint developments available to our customers, the partnership with SUSE not only improves how we run SAP, but also reduces operating costs for many thousands of global enterprises.”

MARTIN HEISIG
Senior Vice President
SAP

with an in-memory database, mirroring does not provide HA and disaster recovery as well as a true clustered solution does. The operating system includes two resource agents (SAPHana and SAPHanaTopology) that automate takeovers of the database in clustered solutions, making it a more efficient and less manual HA system. SUSE was the first to introduce these resource agents to Linux.

The SAP-tailored Linux offering from SUSE comes with extended service pack support. This increases the time you have to upgrade to the next service pack from six to 18 months. The idea isn't to put off upgrades, but to allow you to perform upgrades on the best schedule for your organization. For instance, you can align your operating system update with your SAP HANA updates to minimize planned downtime.

The SUSE operating system includes a kernel-tuning option that allows the system administrator to limit the amount of page cache the kernel uses when there is competition between application memory and page cache. This page cache limit is crucial for sustaining high performance for memory-intensive applications such as SAP HANA.

For true high-availability environments, SUSE also offers SUSE Linux Enterprise Live Patching, which allows you to apply critical Linux kernel fixes outside of maintenance windows. That lets you reduce or eliminate downtime on your servers. You can order SUSE Linux Enterprise Live Patching through Cisco with the rest of your SAP HANA solution. Find more information at: www.suse.com/products/live-patching/

Security

SUSE and Cisco have worked to secure their systems so that your SAP HANA implementation does not fall prey to cyberthreats. In fact, SUSE offers a unique guide to help you secure SUSE Linux Enterprise Server for SAP Applications for running HANA: [Operating System Security Hardening Guide for SAP HANA](#).

The guide covers:

- *How to tune the operating system for maximum security specifically when running SAP HANA. It also describes possible impacts of each setting and the security priority of each.*

- *The local firewall for SAP HANA systems that SUSE developed. It keeps network ports closed unless necessary for SAP HANA.*
- *The minimum necessary packages needed to support HANA. The fewer operating system packages an SAP HANA system has installed, the fewer possible security holes there are.*
- *Which security update and patch strategies are best, and how to configure SUSE Linux Enterprise Server for SAP Applications to frequently receive all relevant security updates.*

SUSE also offers SUSE Manager, a separate solution that can help install, patch, update and manage your SUSE operating systems. You can find a guide for using SUSE Manager to update SAP HANA servers in a scale-out scenario here: [Setting up SUSE Manager for a SAP HANA Scale-out Scenario](#).

Support

SUSE maintenance and support is available directly through Cisco. You can initiate a support request via regular Cisco escalation channels but reach dedicated SUSE support staff.

A SAP HANA Implementation that Fits Your Organization

Bringing the benefits of SAP HANA to your organization is easier with a solution that addresses your technical challenges. SAP HANA on Cisco UCS and SUSE Linux Enterprise Server for SAP Applications can help you fit HANA into your data center without sacrificing the performance you need.



Both SUSE and Cisco are proud recipients of the SAP HANA Innovation Award



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