

Seamlessly Transition SAP Applications to the Cloud with SUSE®

Two factors are revolutionizing business today: data and the cloud. Rising volumes of data are empowering enterprises with deep insights they can use to streamline operations and personalize the customer experience like never before. The cloud is making it possible to improve operations and personalization faster, more efficiently and at lower cost and risk.

The value of the cloud is undeniable, with 96 percent of businesses already using cloud technology. In fact, Gartner says that by 2020, an enterprise doing business without the cloud will be as rare as an enterprise today not using the internet.¹

It is no wonder, then, that organizations are increasingly moving their SAP applications and SAP HANA platforms to the cloud. Intelligent enterprises are using their data assets more effectively to achieve their digital transformations and desired outcomes faster and with less risk. This enables them to not only compete, but also thrive in a constantly evolving market.

The cloud offers organizations a lot of choice, from public cloud platforms to private to multicloud and hybrid options. Thanks to our partnerships with the leading cloud providers and our integrated features for automation, efficiency and cost savings, SUSE® is uniquely positioned to support your move to the cloud and offer differentiated solutions for running SAP HANA and SAP applications, whichever direction you choose to go.

One of the most powerful reasons to choose SUSE when moving your SAP applications to the cloud is our strong partnership of more than 20 years with SAP. SAP has chosen SUSE as its mission-critical, open source, software-defined infrastructure (SDI) provider—both for its internal applications and external-facing customer platforms.

Get More from Your Data with Cloud Efficiency

As a large-scale, in-memory database solution, SAP HANA drives a wide range of business analytics activities. As a platform, SAP HANA provides the foundation to not only simplify data and database management, but also to transform and enable new and powerful analytics capabilities for big data, Internet of Things and line-of-business applications that deliver vital insight. With the ability to handle larger and more complex data sets, organizations can identify critical trends and make optimal business decisions quicker and more efficiently.

Running SAP HANA in the cloud makes the platform's features more impactful because it enables you to deploy faster and scale easily. Putting your SAP applications in the cloud also keeps up-front costs low, while giving you the flexibility to scale out or scale up as needed and spin additional instances up or down for development, testing or QA.

Powerful SUSE Support for Any Cloud Strategy

Whether you choose a private, public, hybrid or multicloud deployment, SUSE is uniquely positioned to give you the support you need.

As SAP's chosen open source SDI provider, SUSE is the leading choice in both on-premises and cloud deployments of SAP HANA and SAP applications to the cloud. In fact, SAP enables innovation through open source but entrusts that innovation to SUSE when they need enterprise-grade scalability. That is why it is no surprise SUSE was named an SAP HANA Innovation Award Winner in 2017.

Our relationship with SAP is a big part of what keeps our customers at the forefront of innovation and enterprise-grade capabilities. Reduce your risk and variability by using the same platform SAP uses internally.

SUSE has SAP-certified solutions that help you quickly enjoy the benefits of the cloud without the steep learning curve or day-to-day hassles. So now it is easier than ever to migrate new or existing SAP capabilities to SAP HANA or SAP S/4HANA; revise or develop your cloud strategy; or find new ways to deploy production, development or testing workloads.

Our SAP support spans our entire portfolio, but it starts with one powerful solution: SUSE Linux Enterprise Server for SAP Applications.

SUSE Linux Enterprise Server for SAP Applications

SUSE Linux Enterprise Server for SAP Applications is the leading Linux platform for SAP HANA, SAP NetWeaver and SAP S/4HANA solutions. It is also the internal Linux OS used by SAP itself and the reference development and testing platform for SAP's own applications. SUSE Linux Enterprise Server for SAP Applications provides optimized performance and reduced downtime, as well as faster SAP landscape deployments on-premises and in your choice of cloud options.

¹ "Gartner Says By 2020, a Corporate 'No-Cloud' Policy Will Be as Rare as a 'No-Internet' Policy Is Today," Gartner press release, June 22, 2016.

With SUSE Linux Enterprise Server for SAP Applications, you can get even more benefit from your SAP HANA platform. Leveraging cloud technology with the operating system trusted by SAP for its development platform enables enterprises to build modern SAP landscapes that are reliable, secure and highly scalable. Specific benefits include:

- One Linux solution for all of your SAP applications and ongoing collaboration with SAP to ensure the best performance
- Outstanding uptime and performance—even under full CPU loads and high memory stress
- High-availability clustering capabilities and resource agents that automate the takeover of SAP HANA replicated database instances
- A built-in SAP HANA firewall
- An installation wizard for SAP applications to accelerate the setup process
- Remote disk encryption and security hardening at the kernel level

Support for SAP’s Own Cloud Solutions

SUSE Linux Enterprise Server for SAP Applications is the crucial operating system component that powers your SAP cloud strategy. We support the following SAP products with features and capabilities that ease deployment and operations.

SAP HANA Enterprise Cloud

SAP HANA Enterprise Cloud is a fully scalable and secure service that accelerates your evolution on the path to cloud readiness and into an intelligent enterprise. It provides production availability that spans the entire application and infrastructure stack, a full menu of functional and technical services, and the control you would expect on-premises—all in one privately managed environment.

- Offers direct integration with SAP development and innovation
- Includes prebuilt tools for rapid deployment
- Comes with guaranteed service levels and IT stack stability
- Enables you to fast-track the ROI from modernizing your SAP software investments
- Provides options to personalize existing applications or choose from over 1,000 prebuilt applications from SAP partners

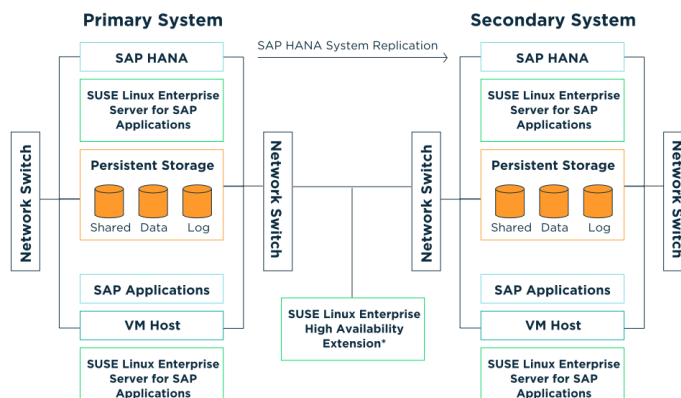


Figure 1. We offer multiple reference architectures and implementation guides to help you put our solutions into action once you decide on your cloud strategy.

“Using SUSE technologies helps SAP to offer extremely high availability on its [SAP HANA Enterprise Cloud] platform. SAP SE’s senior vice president, SAP HANA Enterprise Cloud, Martin Heisig said, ‘In part, due to the great stability of SUSE Linux Enterprise Server, our system availability is 99.999 percent.’”²

SAP Cloud Platform

Built on SUSE OpenStack, this open source platform as a service (PaaS) delivers in-memory capabilities, core platform services and unique microservices for building and extending intelligent, mobile-enabled cloud applications. When paired with SUSE products and services, the platform can accelerate your digital transformation by helping you quickly, easily and economically develop the exact application you need—without investing in on-premises infrastructure.

² “SAP SE relies on SUSE, also for the SAP HANA Enterprise Cloud,” SAP blog, October 9, 2015.

The fully managed cloud service gives you the freedom to run and deploy your SAP and other applications across a variety of cloud environments. With hybrid OLTP and OLAP processing and powerful analytics to process all your data types, you can maximize the full power of SAP HANA to create the smart applications and solutions you need, all on one data copy in the cloud.

SUSE is now collaborating with SAP to power SAP Cloud Platform in SAP data centers, primarily through our SUSE OpenStack Cloud and SUSE Enterprise Storage solutions. Together, the two companies provide robust, enterprise-grade infrastructure services for running applications that enable businesses to collect, manage, analyze and leverage information of all types, to extend and connect to business systems.

- Leverage a singular, open enterprise PaaS to meet every need. Explore ABAP, Kubernetes and Cloud Foundry environments.
- Accelerate digital transformation by rapidly deploying next-generation apps on SAP Cloud Platform, the foundation for SAP Leonardo.
- Leverage data management and analytical services to build an intelligent enterprise. Deliver real-time data insights and deliver data to support any app or analysis.
- Securely integrate and seamlessly orchestrate business processes, decisions and data between cloud and on-premises applications in real time.
- Exploit the intelligent enterprise by leveraging SAP Cloud Platform extensibility to unlock solution flexibility and innovation for your line-of-business applications.
- Create delightful user experiences across digital touchpoints and streamline user experience design and development, collaboration, mobility and user interaction.

“We are excited that SAP Cloud Platform in SAP data centers now leverages SUSE’s reliable and high-performing open source solutions for managing and deploying virtual machines, as well as storing and managing critical enterprise data.”

BJÖRN GOERKE

Chief Technology Officer and President
SAP Cloud Platform, SAP SE

SAP Cloud Platform, SAP HANA service

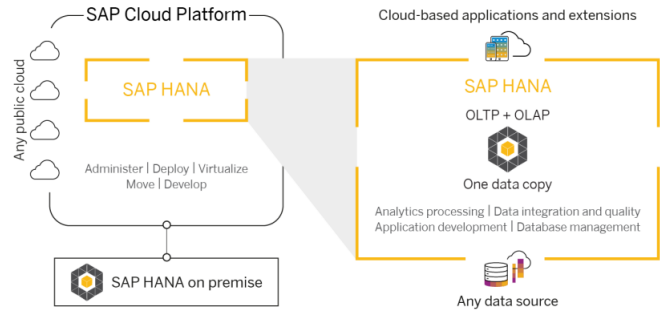


Figure 2. The SAP Cloud Platform helps you innovate faster with advanced data platform technology. Source: SAP

SAP Data Hub

This all-in-one data orchestration solution discovers, refines, enriches and governs any type, variety and volume of data across your entire distributed data landscape. It supports your intelligent enterprise by rapidly delivering trustworthy data to the right users, with the right context, at the right time.

- Deployable anywhere—on-premises, private and managed cloud services
- Automated, reusable data pipelines for scale and efficiency
- Unified metadata catalog for visibility across all data assets
- End-to-end data landscape management for effective use of all data
- Central graphical user interface to monitor and distribute data

SUSE can simplify your SAP Data Hub implementation. The hub runs on SAP HANA and the SAP Data Hub Distributed Runtime is containerized, needing a Kubernetes cluster to run on. SUSE Containers as a Service (CaaS) is the platform of choice to run Kubernetes, whether on-premises or in any cloud deployment.

Plus, you need to choose hardware, operating systems and a reliable Kubernetes distribution. SUSE makes all those choices easy, with integrated, end-to-end SAP Data Hub implementation solutions.

SUSE has also been instrumental in helping SAP create cloud-native solutions through the containerization of SAP Data Hub and SAP Vora, using SUSE CaaS. SAP Data Hub is powered by SUSE Linux technology, which eases provisioning, management and scaling of container-based applications and services, freeing up IT to focus on developing container applications.

Going Public: Deploy on Your Choice of Cloud Platforms

While the fundamental benefits of public cloud infrastructure make it an attractive option, a new generation of public cloud infrastructure designed from the outset to provide optimal support for SAP HANA workloads is available. Working with SAP and SUSE, leading public cloud providers such as Amazon Web Services and Microsoft Azure are providing new public cloud instances that are enterprise-grade and production-ready for mission-critical SAP HANA workloads.

By using the latest Intel technology to enable larger memory sizes and more compute power for each instance, these public cloud offerings—utilizing SUSE Linux Enterprise Server for SAP Applications—provide the performance, availability, security and agility that was previously unavailable. To support this type of workload, the public cloud providers also offer increased network throughput for these high-performance instances.

Amazon Web Services (AWS)

Since 2011, when AWS certified its platform for SAP applications, SUSE and AWS have worked together to improve the scalability, performance and high availability of SAP HANA and S/4HANA environments on the AWS Cloud platform. Today, SAP customers are running SUSE Linux Enterprise Server for SAP Applications on AWS for its mission-critical SAP environments.

SUSE Linux Enterprise Server for SAP Applications supports a number of SAP HANA scenarios in production on AWS, including SAP S/4HANA and Business One for SAP HANA. It also supports prebuilt images on AWS and offers built-in SUSE high availability (HA) across AWS zones and regions, as well as support for SAP HA and disaster recovery standards for SAP HANA. With this solution, customers can:

- *Rely on a streamlined, single point of contact support experience from AWS with Premium Support Engineers that*

are experienced with SUSE Linux Enterprise Server for SAP Applications.

- *Deploy SAP infrastructure in minutes using the SAP HANA Multi-AZ Quick Start for production-ready environments that are jointly engineered to include SUSE high availability solutions.*
- *Run and scale their SAP landscape in the same Virtual Private Cloud (VPC) as the rest of their applications for seamless integration with other AWS-native services, as well as reduced networking costs and complexity (unlike co-located cloud offerings available from other CSPs).*
- *Accelerate migrations with SAP's database migration option (DMO) tools, which are tailored for transitioning to SAP HANA on AWS with the FAST Program.*

“Running our SAP applications on SUSE in the AWS Cloud gives us the flexibility to rapidly adapt to changing market conditions and meet our IT operation excellence objectives.”

YORAM BORODATY

IT director
Pacific Drilling

Microsoft Azure

Azure is a flexible cloud offering for SAP HANA, with options for virtual machines or powerful, purpose-built infrastructure that supports the largest SAP HANA workloads. Both Microsoft and SUSE have more than 20 years of partnership with SAP. SUSE Linux Enterprise Server for SAP Applications and Microsoft Azure are both certified by SAP for SAP HANA.

Due to its tight integration with Microsoft and the SAP engineering team, SUSE has unique insight into the latest developments in SAP HANA on Azure (large instances). SUSE engineering collaboration has helped in delivering a validated offering for the most demanding environments.

³ <https://azure.microsoft.com/en-us/overview/trusted-cloud/compliance/>

- Microsoft Azure and connectivity to Office 365 and Microsoft Power BI enable you to combine SAP HANA with data sources and visualization tools to deliver powerful insights.
- Microsoft Azure and Azure Active Directory (AAD) single sign-on (SSO) enable SAP customers to implement web-based SSO capabilities across many SAP, Office 365 and other AAD-powered solutions.
- Azure Large Instances are an SAP TDI certified, purpose-built setup, supporting HANA scenarios that scale out to 60 TB and scale up to 20 TB.
- Azure offers one of the largest compliance portfolios, with more than 50 compliance certifications.³
- Microsoft Azure is generally available in 54 regions, with a high priority on geographic expansion to enable enhanced performance and choice.

“With optimized images of SUSE Linux Enterprise Server for SAP Applications available directly on Microsoft Azure, we can spin up a virtual SAP S/4HANA environment in as little as 30 minutes instead of several weeks, so we can start working with clients to solve their business challenges right away.”

HINRICH MIELKE

SAP director
Alegri International Group

Google Cloud Platform

SUSE open source solutions are also available on Google Cloud Platform (GCP). The platform offers the same suite of cloud computing services and infrastructure that Google uses internally, composed of modular services that include data storage, data analytics and machine learning. Infrastructure as a service, platform as a service and serverless computing environments are also available. Features and benefits of this solution include:

- GCP infrastructure’s simple provisioning, scalability and redundancy to run SAP HANA and other SAP applications.
- SAP HANA deployment to virtual machines (VMs) on GCP’s Compute Engine; these VMs provide persistent disks that Compute Engine manages to ensure optimized performance and data redundancy.
- The ability to “right-size” SAP workloads with custom machine types, enabling you to configure ideal CPU and

memory capacities. When paired with sustained use discounts, customizing your machine types can potentially save you more than 50 percent in infrastructure costs.⁴

- Dynamic tiering for SAP HANA, which provides a type of extended, disk-based storage for your most active SAP HANA data.
- A certified platform that enables you to back up SAP HANA to a third-party server.

IBM Cloud

IBM and SAP have been collaborating on hardware, software, cloud services and other areas for more than 46 years. Today, IBM Cloud is a leading provider of SAP Cloud Platform, and IBM bare metal servers have been SAP-certified for production SAP HANA and SAP NetWeaver workloads.

- IBM has been named one of SAP’s top strategic providers of cloud infrastructure services for its business-critical applications.
- IBM’s partnership with SAP enables customers to expand their SAP applications into large markets, thanks to IBM’s 60+ data centers around the globe.
- IBM and SAP have teamed up to develop a private edition of the SAP Cloud Platform that runs as a dedicated deployment on IBM Cloud. It provides SAP’s platform as a service, along with SAP HANA, on dedicated servers in IBM data centers.

Other Public Cloud Providers

SUSE and SAP also have integrated cloud solutions that run on today’s most in-demand public cloud platforms. In addition to the cloud providers mentioned above, SUSE supports SAP HANA and SAP applications on Alibaba Cloud and numerous Tier 2 cloud service providers.

Private Cloud Made Easy by SUSE

There are two distinct options for the private cloud: proprietary and open source. And open source cloud solutions are gaining increasing traction because of their greater flexibility and lower costs. OpenStack has emerged as the open source cloud platform of choice for organizations of all sizes, and SUSE was the first to release an enterprise-grade OpenStack cloud distribution.

⁴ <https://cloud.google.com/blog/topics/partners/google-cloud-platform-your-cloud-destination-for-mission-critical-sap-workloads>

SUSE OpenStack Cloud 8

Today, SUSE OpenStack Cloud provides a feature-rich private cloud with the widest interoperability and hardware certification on the market, as well as the most comprehensive workload support. The production-ready OpenStack platform is built for bare metal, virtualized or cloud-native SAP applications, as well as hosting or migrating traditional SAP workloads.

This open source cloud solution is powered by OpenStack. It provides a heterogeneous cloud infrastructure for provisioning your SAP workloads and applications in a way that is easy to deploy and manage and that is supportable, compliant and secure.

OpenStack software is the leading open source cloud solution, helping to prevent the risk of vendor lock-in and the high cost often associated with proprietary offerings. Backed by the most vibrant open source community support, OpenStack is a feature-rich private cloud that is ideal for developing new, innovative business workloads and DevOps environments, as well as for transforming traditional data centers. It also has the widest hardware certification, the most comprehensive workload support and the best interoperability on the market, paired with industry-leading support for the entire OpenStack cloud platform. As the first to release a truly enterprise-grade OpenStack cloud distribution, SUSE is focused on delivering the best open source private cloud solution for today's enterprise business. Our success in that goal is evidenced by the fact that SAP itself has chosen SUSE OpenStack to run its strategic SAP Cloud Platform.

The success of OpenStack Cloud is evidenced by the fact that SAP itself has chosen SUSE OpenStack to run its strategic SAP Cloud Platform.

Designed using more than 20 years of SUSE experience, SUSE OpenStack Cloud 8 has been proven to be the fastest to deploy, configure and manage, helping to accelerate the delivery of real business benefits. Delivered on SUSE Linux Enterprise Server, the leading open source operating system for mission-critical workloads, it provides dual lifecycle management tools to give you more flexibility in deploying, maintaining and managing your SUSE OpenStack Cloud environment.

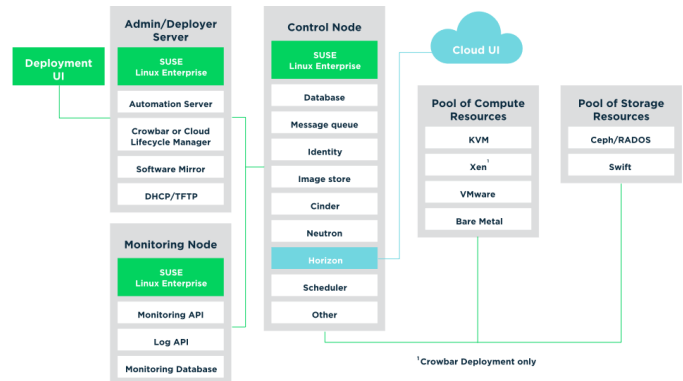


Figure 3. Once you decide on how you want to implement the cloud in your infrastructure, we have a variety of reference architectures and other helpful resources.

The solution offers the widest choice of hypervisor and architecture support, including KVM (on x86, z and ARM), XEN and VMware, so you can develop new applications using the most appropriate hypervisor and more easily migrate existing virtualized workloads.

It also includes a fully-scalable enterprise-grade monitoring solution that makes it simple to monitor and manage your OpenStack cloud environments and workloads, helping to ease Day 2 operations.

Look to SUSE to Power Your SAP Solutions in the Cloud

Intelligent enterprises today are relying on SUSE to support their mission-critical SAP applications and SAP HANA in the cloud. Our decades of expertise, seamless integration with SAP solutions and continuing cloud innovation make us your best choice for fast deployment and efficient time to value in today's marketplace.

Contact your local SUSE solutions provider,
or call SUSE at:

1-800-796-3700 U.S./Canada
1-801-861-4500 worldwide

SUSE
1800 S. Novell Place
Provo, UT 84606

SUSE
Maxfeldstrasse 5
90409 Nuremberg
Germany

www.suse.com