Deploy SAP Solutions Securely and Smartly in the Cloud with SUSE and Google Cloud

More than 183,000 companies spread across 130-plus countries use SAP solutions—including over 80 percent of the Fortune 500. Those figures clearly demonstrate how critical SAP applications and platforms are in today's intelligent, innovative organizations. By embracing the cloud, SAP has helped organizations put SAP applications to work even more efficiently to achieve outcomes faster and with less risk.

When considering moving your SAP solutions and platforms such as SAP HANA to the cloud, you have a lot of options. Which cloud should you choose? And what about the other components required to support a complete SAP landscape? Now SUSE and Google are making those answers easy. With SUSE® Linux Enterprise Server for SAP Applications and Google Cloud Platform, you can maintain the high performance and availability that SAP applications require and enjoy the flexibility and scalability of the cloud—all while intelligently controlling costs and risk.

The Benefits of SAP Applications on Public Cloud

Intelligent enterprises are finding innovative ways to put data assets to work more effectively for faster outcomes with less risk. By moving SAP data and applications to the cloud, for example, organizations can enhance those possibilities with the ability to control pools of compute, storage and networking resources in a more agile manner. By efficiently deploying new applications and greatly speeding up time to market—or time to value for new workload development—these enterprises are able to not only compete but also thrive in a constantly evolving market.

For those using SAP software, the in-memory database SAP HANA is becoming a real differentiator. It serves as a foundation that simplifies data and database management while also enabling exciting new possibilities for big data and the insights that data can deliver. Deploying SAP HANA on SAP-certified public cloud infrastructure enables you to develop reliable, secure and highly scalable SAP landscapes powered by SAP HANA. It shortens the time to solution and allows you to scale on demand to make SAP HANA as effective as possible. Other benefits of deploying SAP solutions in the public cloud include:

- **Faster deployment.** Public cloud infrastructure means you don't have to take time to provision, install or test hardware—so the deployment time of applications is greatly reduced.
- **Reduced up-front costs.** Eliminate the need to build out infrastructure or hire additional IT staff.
- **Simplified capacity planning.** You no longer have to forecast hardware carrying costs in advance. The elasticity of the public cloud allows you to scale up and down as needed.
- **Increased reliability and security.** Public cloud services focus closely on security and reliability, including compliance with data protection regulations

SUSE and Google Set You Up for SAP Success in the Cloud

The benefits of deploying SAP HANA and other SAP applications on public cloud infrastructure are significant. Choosing SUSE and Google as the foundation of that infrastructure can push your potential for success even higher. With SUSE Linux Enterprise Server for SAP Applications on Google Cloud Platform, you have the leading operating system for SAP applications running on one of the world's most robust hyperscale clouds.

SUSE Linux Enterprise Server for SAP Applications is easy to deploy with the Google Cloud Launcher, which offers a variety of ready-made development stacks, solutions and services that help DevOps develop faster and more efficiently. You can containerize your cloud deployments and build apps easily on Google Cloud Platform. The combined solution also delivers powerful performance for big data and analytics workloads.

The SUSE-Google solution is ideal for enterprises that want to migrate new or existing SAP capabilities to SAP HANA or SAP S/4HANA—including SAP Business Warehouse (BW), Business Suite, BW/4HANA, Hybris, Business One and Leonardo. Use it for your production workloads, including high-memory instances, or as disaster recovery for on-premises SAP HANA environments.

Increase Confidence in the Security of Business-Critical SAP Applications

Your SAP solutions contain critical data, which means you need security you can trust. Public cloud alone is considered by many to be more secure than on-premises data centers, thanks to automation features. In fact, Gartner experts estimate that through 2020, public cloud infrastructure-as-a-service (IaaS) workloads will suffer at least 60 percent fewer security incidents than those in traditional data centers.[1]

With SUSE and Google, you get the added peace of mind that comes from a legacy of security expertise and features that will protect your data in today's constantly evolving threat landscape.

SUSE Linux Enterprise Server for SAP Applications provides a built-in SAP HANA firewall, remote disk encryption and security hardening at the kernel level. A hardened system increases security by reducing the attack surface or the area that the system exposes to an attacker. A hardened system can also provide measures to reduce the impact of vulnerabilities in the parts of the systems that must remain exposed. Learn more and access detailed instructions in our **Security and Hardening Guide.**

Another security feature included with SUSE Linux Enterprise Server for SAP Applications is AppArmor, an application security tool designed to provide an easy-to-use security framework for your applications. AppArmor proactively protects the operating system and applications from external or internal threats, even zero-day attacks, by enforcing a specified behavior and preventing some unknown application flaws from being exploited.

Google Cloud Platform helps protect data and ensure user compliance with automatic data encryption and granular security controls that enforce scalable, policy-driven security. A Google Cloud Data Loss Prevention API can also automatically detect and redact sensitive data when your system has been compromised.

SUSE is the trusted and preferred open source platform for SAP customers who want to unlock data intelligence, drive innovation and run with the best

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1   *Kasey Panetta, "Is the Cloud Secure?" Gartner.com, March 27, 2018*

SCENARIOS

Development and testing
Quickly provision development and test environments with the ability to stop the environments

Production Environments
Get the scale and reliability you need for you production environment

Disaster Recovery
Keep environments for recovery purposes without additional cost

Archiving
Archive data and the corresponding SAP systems so they are always available and ready for audit (without running up

Figure 1. *SUSE and Google offer a combined solution that supports a number of use cases for SAP applications in the cloud.*

Get More from Your Data with Machine Learning and AI Tools

Simply collecting and storing enterprise data won't transform your business—you need ways to mine that data for deep insights that can power change and innovation. The SUSE-Google solution can help you extract these insights and make your SAP environments more intelligent by tapping into Google's machine learning and artificial intelligence (AI) tools.

Google's machine learning and AI tools include:

- **AI Hub,** a hosted repository of plug-and-play AI components including end-to-end AI pipelines and out-of-the-box algorithms. Easily share your AI content and discover new content published by Google. The hub also allows you to deploy unique Google Cloud AI and Google AI technologies for experimentation and ultimately production on Google Cloud and hybrid infrastructures..
- **AI building blocks,** which are tools that make it easy for developers to build advanced capabilities into their applications, such as image and video analysis; natural language processing and translation; speech recognition; text-to-speech and chatbot creation; development of machine learning models on structured data; foot traffic analysis; data anomaly detection; and content recommendations.
- **AI Platform,** a code-based integrated tool chain that helps you build and run your own machine learning applications. It includes Kubeflow, Google's open source platform that allows you to build portable machine learning pipelines that you can run on-premises or on Google Cloud without significant code changes.

Build High Availability into Your Infrastructure

Your organization's day-to-day operations are likely to rely heavily on the availability of your SAP landscapes, making the assurance of continuity a business imperative. The combined SUSE-Google solution offers multiple features and capabilities that will keep your applications running and your data available whenever you need it.

SUSE Linux Enterprise Server for SAP Applications includes high-availability clustering capabilities. Together with geo clustering, these capabilities help maintain business continuity, protect data integrity and maximize service uptime for mission-critical Linux workloads across local to unlimited geographic distances. Other features include resource agents that automate the takeover of SAP HANA replicated database instances. Learn more and access detailed instructions in our guide, **SUSE Linux Enterprise High Availability Extension.**

Google Cloud Platform is certified to allow you to back up SAP HANA to a third-party server, helping to ensure that your data is still available if disaster strikes. Google Compute Engine also offers live virtual machine migration to keep virtual machine instances running even when a host system event occurs, such as a software update.

A Closer Look at the Components
SUSE Linux Enterprise Server for SAP Applications

SUSE Linux Enterprise Server for SAP Applications is the leading operating system for SAP NetWeaver, SAP HANA and SAP S/4HANA solutions. It provides optimized performance and reduced downtime as well as faster SAP landscape deployments.
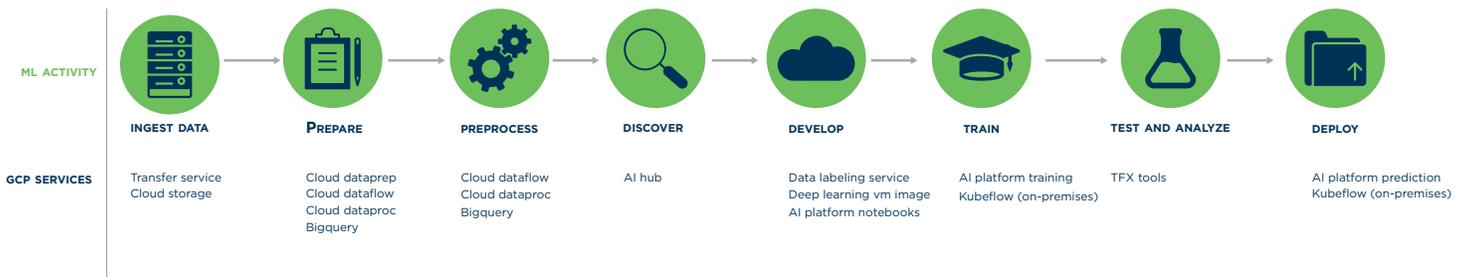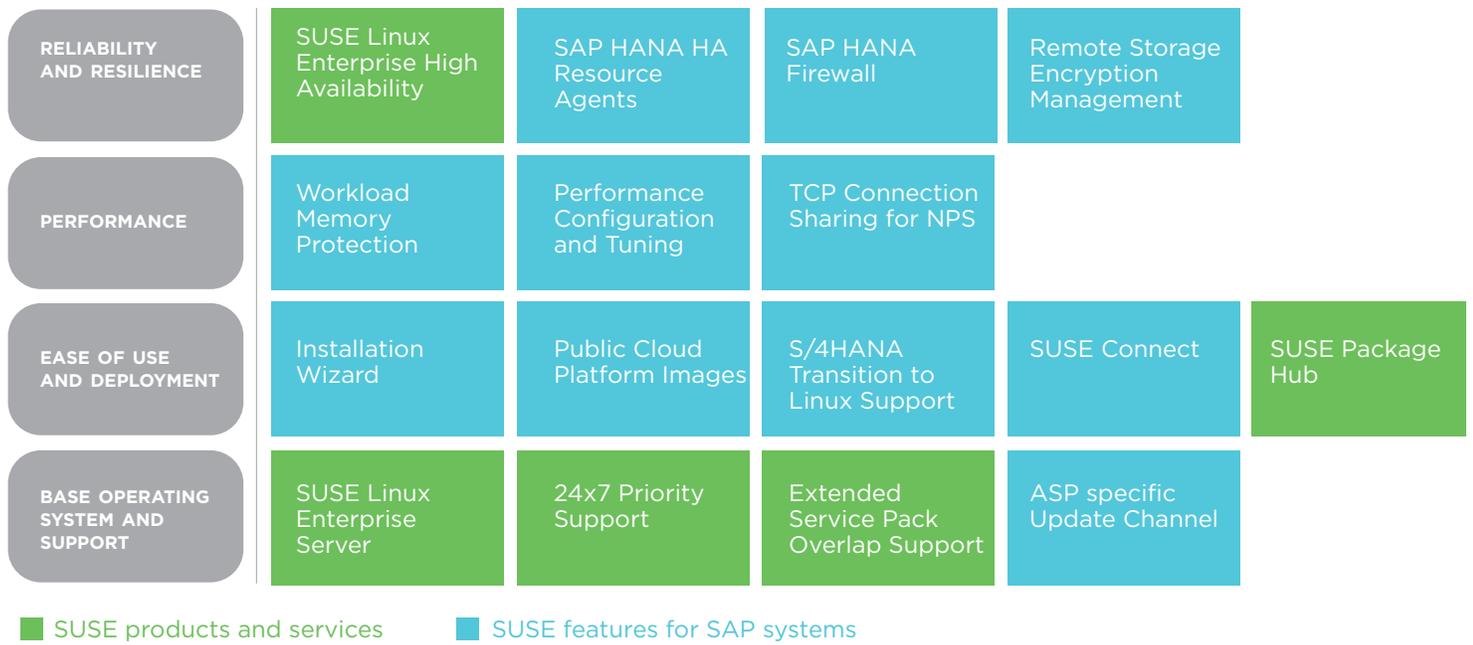

ML ACTIVITY	INGEST DATA	PREPARE	PREPROCESS	DISCOVER	DEVELOP	TRAIN	TEST AND ANALYZE	DEPLOY
GCP SERVICES	Transfer service Cloud storage	Cloud dataprep Cloud dataflow Cloud dataproc Bigquery	Cloud dataflow Cloud dataproc Bigquery	AI hub	Data labeling service Deep learning vm image AI platform notebooks	AI platform training Kubeflow (on-premises)	TFX tools	AI platform prediction Kubeflow (on-premises)

Figure 2. *Google Cloud Platform provides a wealth of machine learning and AI tools to enhance your applications. Source: Google Cloud*

RELIABILITY AND RESILIENCE	SUSE Linux Enterprise High Availability	SAP HANA HA Resource Agents	SAP HANA Firewall	Remote Storage Encryption Management
PERFORMANCE	Workload Memory Protection	Performance Configuration and Tuning	TCP Connection Sharing for NPS	
EASE OF USE AND DEPLOYMENT	Installation Wizard	Public Cloud Platform Images	S/4HANA Transition to Linux Support	SUSE Connect	SUSE Package Hub
BASE OPERATING SYSTEM AND SUPPORT	SUSE Linux Enterprise Server	24x7 Priority Support	Extended Service Pack Overlap Support	ASP specific Update Channel

■ SUSE products and services   ■ SUSE features for SAP systems

Figure 3. *SUSE Linux Server for SAP Applications delivers powerful features that can help ease your move to the cloud.*

With SUSE and Google, you can maintain the high performance and availability that SAP applications require; enjoy the flexibility and scalability of the cloud; and intelligently control costs and risk.

As a unified solution, it supports quick installation and simplified administration, and it offers superior support for all SAP systems.

SUSE Linux Enterprise Server for SAP Applications is the solution that SAP itself uses for its own internal applications as well as external-facing customer platforms. It's also the number-one platform for SAP HANA and the first supported operating system for SAP HANA.

The server consistently provides outstanding uptime and performance—even under full CPU loads and high memory stress. It also allows system administrators to balance memory demands and provide SAP NetWeaver and SAP HANA with the memory they need to perform through Workload Memory Protection.

A number of other features, such as an installation wizard for SAP applications, can speed setup, streamline operations and help you get the most from your SAP investment.

Google Cloud Platform
Google Cloud Platform is a collection of cloud computing services that operate on the same core infrastructure that Google uses for its end-user products, such as Google Search and YouTube. It is certified to run SAP solutions reliably and optimally, delivering maximum performance and dependability. The platform's simple provisioning, scalability and redundancy make it an ideal foundation for SAP HANA and your other SAP applications.

Figure 4. *Google Cloud Platform offers robust tools and capabilities that can enhance the performance and value of your SAP applications.*

Google Cloud Platform enables you to rightsize SAP workloads with custom machine types, which allows 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. Google offers 12 TB virtual machines and has announced that it will soon offer 20 TB virtual machine instances to support large SAP HANA and SAP S/4HANA deployments.

With dynamic tiering for SAP HANA, Google Cloud Platform provides extended, disk-based storage for your most active SAP HANA data.

Why Choose SUSE and Google?
Google and SUSE understand SAP and they understand open source. The two companies share a joint dedication to open source projects. SUSE is the world's largest independent open source provider, giving customers the control and flexibility over their infrastructure that they desire. Google's open source contributions have already redefined standards across the infrastructure market, simplifying hybrid integration and multicloud orchestration while enabling businesses to invest in future-proofed architectures that support workload portability and remove lock-in.

Both Google and SUSE have a strong relationship with SAP. Google is quickly growing its SAP partnership, combining the longtime business expertise of SAP with Google's industry-leading cloud infrastructure and machine learning capabilities to drive innovation.

SUSE's relationship with SAP is a big part of what keeps our customers at the forefront of innovation and enterprise-grade capabilities. SUSE is the trusted and preferred open source platform for SAP solutions. SUSE's 20-plus years of partnership with SAP is one reason SAP considers SUSE a co-innovation partner. In fact, SAP uses SUSE solutions as an in-house development and implementation platform. SUSE provides a single Linux solution for all SAP applications and is continually working with SAP to ensure the best performance. Our efforts garnered SUSE an SAP HANA Innovation Award in 2017, which highlights our close collaboration with SAP around our products and services.

Unlock Data Intelligence, Drive Innovation and Run with the Best
Using SUSE Linux Enterprise Server for SAP Applications on Google Cloud Platform will not only help ease the transition of your SAP applications to the cloud, it will help you get more value out of those applications. With the security, openness and intelligence of the combined SUSE-Google solution, you can reduce the cost and risk of taking your applications to the cloud.

Additional contact information and office locations:
www.suse.com

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