# Toward Zero Downtime for SAP HANA

**In the digital age downtime isn't an option. Whether planned downtime for SAP HANA, or the more unpredictable unplanned downtime from failures, your business is incurring business loss. You're under pressure to supply more up-time in the data center to stay competitive and meet customer demands. For SAP HANA there are two questions to answer: How can I minimize my downtime? What are the best high availability and disaster recovery scenarios for my SAP HANA infrastructure?**

■ **Products:**

SUSE Linux Enterprise Server for SAP Applications
SUSE Linux Enterprise Live Patching
SUSE Manager

**"In part due to the great stability of SUSE Linux Enterprise Server, our system availability is 99.999 percent."**

**MARTIN HEISIG**
*Senior Vice President SAP HANA Enterprise Cloud*
*SAP SE*

## Why Downtime Matters

Today, IT systems are the life blood of the business. As a result, your IT organization is under constant pressure to provide continual access and meet growing demand. All and any downtime is costing you. It shuts down the production line, aborts transactions or even brings your core business to a standstill, impacting your revenues and reputation. So every day the pressure to be available 24x7x365 increases.

SUSE has developed software solutions for SAP HANA customers to nearly eliminate planned and unplanned downtime.

### AUTOMATE SAP HANA SYSTEM REPLICATION

Modern SAP systems running critical workloads need to meet the highest standards for availability for their SAP services. Achieving the ideal goal of zero downtime may be a physical impossibility for some organizations. Business continuity architectures based on SAP HANA System Replication rely on the system administrator to determine that a failure has occurred and initiate the failover to the secondary system.

SUSE® Linux Enterprise Server for SAP Applications enhances this feature by providing resource agents for detecting a failure and automating the SAP HANA takeover. SUSE has implemented the automation with the help of two resource agents: the SAPHanaSR resource agent, which performs the actual check of the SAP HANA database instances, and the SAPHanaTopology resource agent, which runs information about the status and configuration of system replications.

While SAP is adding support for additional SAP HANA System Replication scenarios based on company requests, SUSE matches those by adding failover detection and automation for those scenarios as well. SUSE Linux Enterprise Server for SAP Applications currently supports following failover automation for the SAP HANA scenarios:

■ *Performance optimized*
■ *Cost optimized*
■ *Scale out*
■ *Multi-tenancy*

> **"The SUSE solutions provide an incredibly stable platform for our mission-critical systems. In the last decade, 99% of our clients have seen 100% availability."**
>
> **RAJESH KS**
> *Delivery Head-APAC*
> NIIT Technologies, Ltd.

Contact us at:
**www.suse.com**

Another way to reduce downtime of SAP HANA systems is by using non-volatile memory (NVDIMM). SAP has validated the use of NVDIMMs for SAP HANA databases to enable instant database recovery after system reboots. This eliminates the need to wait for data to load into traditional RAM from storage, which can take several hours for large SAP HANA databases.

More information can be found at: **www. suse.com/products/sles-for-sap**

### LIVE PATCHING

When critical Linux updates, for security or data integrity, are released for the operating system, a reboot is usually necessary for those changes to take effect—a reboot that in most cases affects the service availability. What if you are not allowed to interrupt service? SUSE Linux Enterprise Live Patching is the answer. It allows you to apply SUSE Linux Enterprise Server 12 kernel fixes on the fly—without interruption, without reboot, without downtime. And the best is, you can use it independently from the application that runs on top. This can be an SAP application server, an SAP database, or even SAP HANA.

### Benefits of Live Patching
- *Increase service availability*
- *Reduce planned or unplanned downtime*
- *Maintain security*

More information on the support status as well as setup instructions for SAP applications are available through SAP Note 1984787. So instead of waiting for the next maintenance window, just apply the patch when it is released to secure your system.

More information can be found at: **www. suse.com/products/live-patching**

### AUTOMATE SYSTEM MANAGEMENT

Numerous studies have shown that IT infrastructure that is stable and reliable in the long term determines a company's economic success. This applies particularly to a platform such as SAP HANA, which can boost performance significantly for both SAP and non-SAP applications. However, for interaction to work smoothly requires a system management solution that is not only easy-to-use but also offers refined and extensive functions.

In this respect, SUSE Manager is the tool of choice because it combines methods, processes and functions to manage, monitor and control complete SAP HANA scaleout scenarios. At the heart of the tool is automatic patch and update management, which integrates all relevant operating system components in an SAP HANA environment

SUSE Manager offers several immediate advantages for operating SAP HANA:

- *Minimizes the complexity of SAP HANA environments since system management and updates come from a central location.*
- *Allows IT to precisely control the environments needed for enterprise operations whether development, test or production systems.*
- *Simplifies the implementation of compliance requirements, for instance, in the security environment.*

Just as important, SUSE Manager results in cost savings because it reduces the manual and recurring tasks required for platform management. For more information, see: **www.suse.com/products/suse-manager**