

# Building a High Availability Cluster for SAP Applications on AWS

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See how the SUSE Linux Enterprise Server for SAP features can improve the Amazon Web Services (AWS) cloud experience for SAP users.

Infrastructure-as-a-service (IaaS) clouds such as Amazon Web Services (AWS) provide agility when deploying enterprise SAP applications, such as SAP HANA, in conjunction with SUSE Linux Enterprise Server for SAP Applications.

SUSE Linux Enterprise Server for SAP Applications on AWS is a solution for companies looking to simplify the management of high availability (HA) solutions for sometimes complex SAP landscapes. Detecting and responding to single-component failures within an SAP or SAP HANA environment and the underlying infrastructure is often a key requirement.

The HA Extension (HAE) built into SUSE Linux Enterprise Server for SAP Applications is able to detect failures, change the network topology, and make sure that another AWS instance hosting a secondary SAP HANA database is used to service SAP consumers. The SUSE Linux Enterprise Server for SAP Applications HA cluster leverages AWS by building redundant components to provide service for the SAP consumers of an SAP HANA database.

AWS offers the same type of Amazon Elastic Compute Cloud (Amazon EC2) compute instances, Elastic Block Storage (Amazon EBS), and Virtual Private Cloud (Amazon VPC) network

technology in all AWS regions. This uniform platform enables the HA extension of SUSE Linux Enterprise Server for SAP Applications to operate regardless of which AWS region a company may choose for its business-critical SAP HANA environments.

The SUSE Linux Enterprise Server HA cluster needs to not only be able to start and stop SAP systems, it also needs to be able to modify the network topology within AWS in order to route traffic from SAP consumers to the right SAP system, as well as to ensure proper fencing is in place to avoid split-brain scenarios.

The SUSE Linux Enterprise Server HA cluster uses the AWS Application Programming Interface (API) to control the required AWS resources the same way in all AWS regions around the world. Problems often introduced by heterogeneous switches or server technologies just aren't an issue with the SUSE Linux Enterprise Server HA cluster on the AWS cloud (see **Figure 1** on the next page).

AWS consumers can deploy production-grade SAP HANA instances of different sizes without any lead time. They are able to:

- Use SAP HANA production-ready instance types from 244 GB and soon to be up to 2 TB of main memory, on

## >> Key Concept

The high availability (HA) features of the SUSE Linux Enterprise Server for SAP allow you to exploit the independent Amazon Web Services (AWS) **Availability Zones** (AZ). A SUSE cluster enables SAP customers to automatically fail from an AWS Availability Zone to another one.

demand

- Use any of the 12 worldwide AWS regions to align with their geographic and legal requirements
- Use multiple Availability Zones (AZ) in an AWS region. This means they can rely on data centers that are far enough apart to be isolated from each other so that they have different flood plains and independent electricity and Internet hookups.
- Isolate their SAP systems in Amazon VPC that are isolated against other systems and provide access to corporate intranets only (if the customer so chooses).

SUSE Linux Enterprise Server for SAP Applications provides the remaining ingredients to build fully supported and automated, highly available SAP architectures that leverage the AWS regions and AZs.

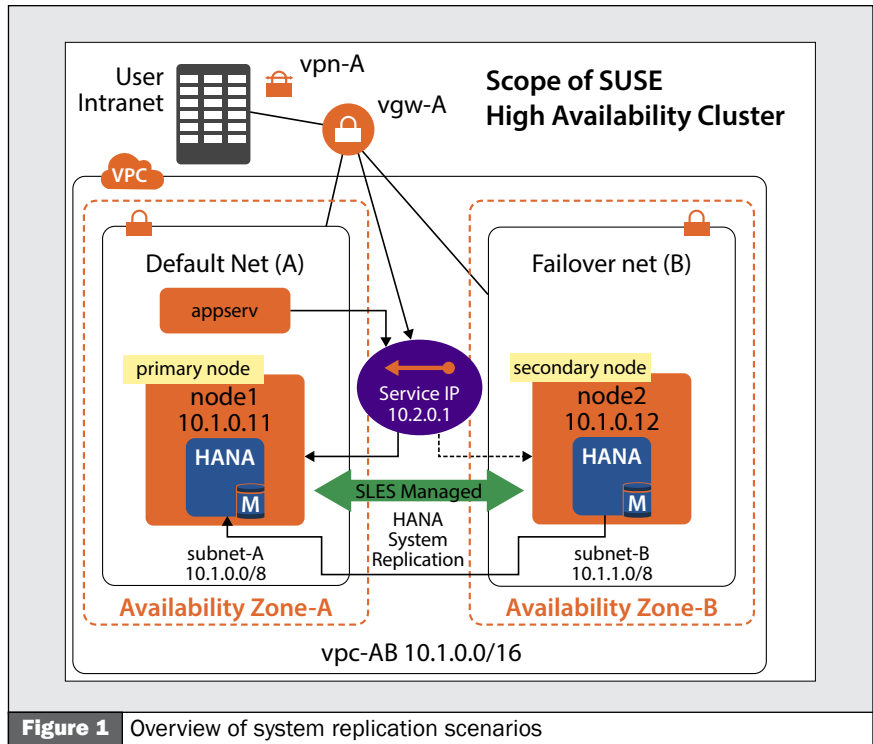
The SUSE Linux Enterprise Server for SAP Applications HAE cluster enables

SAP users to:

- Deploy SAP HANA databases in different availability zones so that they are independent of local outages
- Monitor the primary and the secondary cluster nodes for availability
- Switch automatically from a failed master node to a secondary node in a different AWS AZ
- Automatically reconfigure SAP HANA systems in such a way that the replication from a primary node to a secondary node is stopped. The secondary node is promoted to be the new primary node and then is able to serve SAP consumers.
- Automatically shut down failed components to avoid further damage to the database

- Automatically update the AWS network topology in such a way that consumers are directed to the previous secondary node, which automatically becomes the primary node

Projects implementing highly available SAP solutions tend to be complex. The option to use preconfigured SUSE Linux Enterprise Server for SAP Applications Amazon Machine Image (AMI), in conjunction with SAP-certified Amazon EC2 compute instances, allows companies to start their implementation projects



**Figure 1** Overview of system replication scenarios

and realize benefits much sooner.

They don't need to go through a hardware purchasing process, and no upgrades of data centers to meet certain availability requirements are needed. AWS regions already meet many important industry requirements. Projects can start when needed without any financial commitment up front.

The other important innovation comes from the ability to build SAP failover

architectures with SUSE Linux Enterprise on AWS within hours, with just a very small investment. IT operators can build test beds and perform the important processes in cases of failures. They don't need to invest permanently in a second set of hardware or an upgrade of the network infrastructure. They typically pay only for the time they use the test bed, so that using this technology in special situations becomes relatively affordable and simple. ■



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