

SAP S/4HANA on AWS

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Abstract

Companies of all sizes can take advantage of the many benefits provided by Amazon Web Services (AWS) to achieve business agility, cost savings, and high availability by running their SAP environments on the AWS Cloud.

This guide is intended for SAP customers and partners who want to learn about the benefits and options for running SAP Business Suite 4 SAP HANA (SAP S/4HANA), on-premise edition on AWS, and who want to know how to implement and operate their SAP S/4HANA, on-premise edition environment effectively on AWS.

AWS Overview

Amazon Web Services (AWS) provides on-demand computing resources and services in the cloud, with pay-as-you-go pricing. You can run a server on AWS and log in, configure, secure, and operate it just as you would operate a server in your own data center.

Using AWS resources for your compute needs is like purchasing electricity from a power company instead of running your own generator, and it provides many of the same benefits:

- The capacity you get exactly matches your needs.
- You pay only for what you use.
- Economies of scale result in lower costs.
- The service is provided by a vendor who is experienced in running large-scale compute and network systems.

AWS Global Infrastructure

The AWS Cloud infrastructure is built around Regions and Availability Zones. A Region is a physical location in the world where AWS has multiple Availability Zones. Availability Zones consist of one or more discrete data centers, each with redundant power, networking, and connectivity, and housed in separate facilities. These Availability Zones offer you the ability to operate production applications and databases that are more highly available, fault-tolerant, and scalable than would be possible from a single data center.

For additional information about AWS Regions and Availability Zones, see the [AWS Global Infrastructure](#) webpage.¹

AWS Security and Compliance

The AWS Cloud security infrastructure has been architected to be one of the most flexible and secure cloud computing environments available today. Security on AWS is very similar to security in your on-premises data center, but without the costs and complexities involved in protecting facilities and hardware. AWS provides a secure global infrastructure, plus a range of features that you can use

to help secure your systems and data in the cloud. To learn more about AWS security, visit the [AWS Security Center](#).²

AWS compliance enables customers to understand the robust controls in place at AWS to maintain security and data protection in the cloud. AWS engages with external certifying bodies and independent auditors to provide customers with extensive information regarding the policies, processes, and controls established and operated by AWS. To learn more about AWS compliance, visit the [AWS Compliance Center](#).³

AWS Products and Services

AWS provides an extensive set of computing resources and services. The following sections provide an overview of the AWS services that are most relevant for the implementation and operation of SAP S/4HANA, on-premise edition.

Compute

[Amazon Elastic Compute Cloud \(Amazon EC2\)](#) provides scalable computing capacity in the AWS Cloud.⁴ Amazon EC2 offers a wide selection of virtual machine configurations that support different CPU, memory, network, and I/O capabilities. For running SAP systems, Amazon EC2 provides virtual machine instances for the Microsoft Windows Server, SUSE Linux Enterprise Server (SLES), and Red Hat Enterprise Linux (RHEL) operating systems.

Storage

[Amazon Elastic Block Store \(Amazon EBS\)](#) provides persistent block-level storage volumes for use with Amazon EC2 instances.⁵ Amazon EBS volumes are highly available and reliable storage volumes that can be attached to any running instance. Amazon EBS volumes that are attached to an Amazon EC2 instance are exposed as storage volumes that persist independently from the lifetime of the instance. Amazon EBS volumes are designed for 99.999% availability.

[Amazon Simple Storage Service \(Amazon S3\)](#) provides access to reliable, fast, and inexpensive data storage infrastructure.⁶ Amazon S3 stores data objects redundantly on multiple devices across multiple facilities. This service provides highly available and highly durable backup storage for your SAP systems on AWS.

Networking

[Amazon Virtual Private Cloud \(Amazon VPC\)](#) enables you to define a virtual network in your own logically isolated area within the AWS Cloud.⁷ Your Amazon VPC closely resembles a traditional network that you might operate in your own data center, but it includes the benefits of using the AWS scalable infrastructure. You can connect your Amazon VPC to your own corporate data center to provide seamless integration between on-premises users and systems, and SAP systems in your Amazon VPC.

Deployment and Management

The [AWS Management Console](#) provides a simple and intuitive web-based interface for provisioning and managing AWS resources.⁸

[AWS CloudFormation](#) gives you an easy way to create and manage a collection of related AWS resources, and provision and update them in an orderly and predictable fashion.⁹

SAP on AWS

AWS and SAP Alliance

SAP has been an AWS customer since 2008 and uses the AWS infrastructure for a variety of use cases and scenarios. In early 2011, AWS became an SAP Global Technology Partner. Since then, AWS has worked closely with SAP to test and certify the AWS Cloud for SAP solutions.

SAP Support on AWS

Supported Solutions

AWS and SAP have worked together to test and certify the following SAP solutions to be fully supported for production deployment on AWS.

- ✓ SAP Business Suite
- ✓ SAP HANA
- ✓ SAP Business All-in-One
- ✓ SAP NetWeaver
- ✓ SAP ASE
- ✓ SAP S/4HANA
- ✓ SAP IQ
- ✓ SAP BusinessObjects
- ✓ SAP Afaria
- ✓ SAP Mobile Platform
- ✓ SAP Business One
- ✓ SAP Hybris
- ✓ SAP Replication Server
- ✓ SAP Rapid Deployment Solutions

For additional information about SAP solutions supported on AWS, see [SAP Note 1656099](#) (SAP Support Portal login required).¹⁰

SAP Support

SAP provides the same level of product support for SAP systems running on AWS that it does on any other infrastructure. Full support of SAP production systems running on AWS requires the AWS Business or Enterprise support plan.

For additional information about AWS Support, see <http://aws.amazon.com/premiumsupport/>.

For additional information about SAP support on AWS, see [SAP Note 1656250](#) (SAP Support Portal login required).¹¹

SAP S/4HANA on AWS

SAP S/4HANA is a real-time ERP suite for digital business. It is built on the advanced in-memory platform, SAP HANA, and offers a personalized, consumer-grade user experience with SAP Fiori User Experience (UX) design principles. For detailed information about SAP S/4HANA, see the [SAP S/4HANA, on-premise edition documentation](#) on the SAP Help Portal.¹²

Benefits of Running SAP S/4HANA on AWS

Lower TCO – Benefit from the economies of scale and efficiencies provided by AWS. Pay for only the compute, storage, and other resources you use. [Read about savings of up to 71% compared to running SAP systems on premises.](#)¹³

Replace CapEx with OpEx – Start an SAP S/4HANA, on-premise edition implementation on AWS without any upfront cost or commitment for compute, storage, or network infrastructure.

Agility and speed – Provision all the required infrastructure for an SAP S/4HANA, on-premises edition implementation in minutes compared to waiting weeks or months to procure and deploy traditional infrastructure.

Scalability – Provision only the amount of infrastructure and memory initially required for your SAP S/4HANA system, and then scale the infrastructure and memory as your requirements increase over time.

Licensing

SAP Licenses

SAP S/4HANA, on premise edition on AWS uses a bring-your-own-software and bring-your-own-license (BYOL) model for the SAP software components. You can use new or existing SAP licenses for systems running on Amazon EC2.

Operating System Licenses

Operating system licenses are included in the hourly fee of Amazon EC2 instances.

Managed Services for SAP on AWS

AWS provides you the flexibility to choose between infrastructure services only or a complete managed service. For the primary AWS services required for an SAP environment, AWS manages the underlying infrastructure up to the virtualization layer. Maintenance and administration of the operating system and any applications and databases running above the operating system are managed by the customer or by a partner.

If you require a managed service for your SAP S/4HANA environment on AWS, AWS has a network of partners that can provide a fully managed hosting service. To learn more about services for SAP on AWS and to find an SAP partner within the AWS Partner Network, see <http://aws.amazon.com/sap/find-partners/>.

Figure 1 depicts the two most common scenarios for managing SAP solutions on AWS:

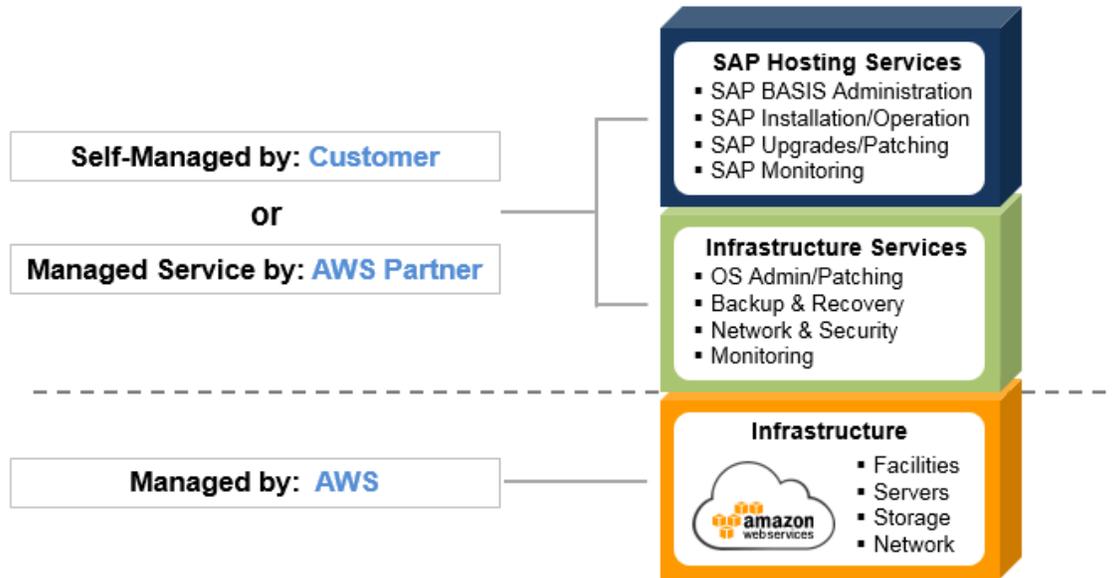


Figure 1: Options for Managing SAP Solutions on AWS

SAP S/4HANA Deployment on AWS

Standard Deployment

SAP S/4HANA, on-premise edition can be easily deployed on the AWS Cloud using the standard SAP S/4HANA installation process. AWS provides innovative deployment options for the HANA components of an SAP S/4HANA system that can greatly reduce the effort and time to deploy a new environment.

SAP HANA Database

To simplify and streamline the SAP HANA database installation, we have created the [SAP HANA Quick Start reference deployment for SAP HANA](#).¹⁴ This Quick Start provides an automated process to deploy the required AWS infrastructure and SAP HANA software components on Amazon EC2.

SAP S/4HANA NetWeaver Application Server

The NetWeaver Application Server (AS) component of SAP S/4HANA can be installed either on the same EC2 instance as the HANA database or on a separate

EC2 instance. To install the NetWeaver AS component on AWS, follow the standard SAP installation procedures and tools. For help in determining the best architecture for your requirements and installing the NetWeaver AS component, please refer to the [SAP S/4HANA, on-premise edition documentation](#) on the SAP Help Portal.

For additional guidance, also see the [SAP on AWS Implementation and Operations Guide](#).¹⁵

SAP S/4HANA, On-Premise Edition Trial

SAP offers a [free, 30-day software trial](#) of SAP S/4HANA, on-premise edition.¹⁶ You can sign up to explore the power, flexibility, and customization options available in SAP S/4HANA, on-premise edition.

Network Connectivity

With AWS, you have multiple options to provide connectivity between your SAP S/4HANA environment on AWS and your users, on-premises systems, and external systems. The basis for network security and connectivity on AWS is the [Amazon Virtual Private Cloud \(Amazon VPC\)](#). Amazon VPC enables you to provision a logically isolated section of the AWS Cloud where you can launch AWS resources in a virtual network that you define. You have complete control over your virtual networking environment, including selection of your own IP address range, creation of subnets, and configuration of route tables and network gateways.

External Connectivity Options

AWS hardware VPN – A site-to-site IPsec, hardware VPN connection between your VPC and your remote network, which provides seamless network connectivity for users and system integration. For more information, see [Amazon VPC Network Administrator Guide](#)¹⁷ and [Adding a Hardware Virtual Private Gateway to Your VPC](#) in the Amazon VPC User Guide.¹⁸

Dedicated network connection – [AWS Direct Connect](#) enables you to establish private connectivity between AWS and your data center, office, or colocation environment.¹⁹

Direct Internet – Amazon EC2 instances that are running within a public subnet can be accessed via a direct Internet connection. This option is recommended only for test, trial, and demo systems.

Backup and Recovery

AWS provides you with the infrastructure building blocks to create a highly durable and secure backup and recovery solution to protect your valuable data. Backup and recovery on AWS use many of the same concepts, methods, and tools used to back up SAP systems on traditional on-premises infrastructure. The primary difference with backup and recovery on AWS is the media and location used to store backups. On AWS, backups are stored in Amazon S3 and automatically stored “offsite,” outside the Availability Zone of the system, because data in Amazon S3 is replicated across multiple facilities within the AWS Region. If the primary Availability Zone fails, the backup can immediately be used to restore data to any of the other Availability Zones within the Region.

For additional information about the backup and recovery of SAP systems on AWS, see the [SAP on AWS Backup and Recovery Guide](#).²⁰

AWS Infrastructure Pricing

With AWS, you pay only for what you use with no minimum fee. Amazon EC2 offers [three ways](#) to pay for instances.²¹ The two options most relevant for SAP systems are:

- **On-Demand Instances** – Lets you pay for compute capacity by the hour with no long-term commitments or upfront payments.
- **Reserved Instances** – For applications that have steady state or predictable usage, this option can provide significant savings compared to using On-Demand Instances.

To learn more about estimating AWS infrastructure costs for running SAP solutions on the AWS Cloud, see the [SAP on AWS Pricing Guide](#).²²

Sample SAP S/4HANA, On-Premise Edition Pricing

The following sample configurations will help you plan for and estimate the cost of running your SAP S/4HANA, on-premise edition environment on AWS.

Each estimate includes AWS infrastructure for:

- SAP S/4HANA PRD, QAS, and DEV landscapes
- SAP Solution Manager system
- Primary and backup storage
- Virtual Private Cloud (VPC) with VPN connection
- AWS Business support plan

PRD SAP HANA system			PRD NetWeaver AS system			
Instance type	vCPU	Memory (GiB)	Instance type	vCPU	Memory (GiB)	Monthly estimate*
r3.8xlarge	32	244	r3.xlarge	4	30.5	\$4,900
x1.32xlarge	128	1,952	r3.2xlarge	8	61.0	\$18,109

* Estimate is based on the *Reserved Instance 1 Year No Upfront Payment* purchasing option.

For additional SAP S/4HANA on AWS pricing information, see the [SAP S/4HANA on AWS](#) webpage.²³

Partner with AWS

If you are an SAP partner, you can combine your services for SAP and the AWS platform to provide your customers with innovative solutions to reduce their cost and time to value. The AWS Partner Network (APN) is the global partner program for AWS. As an APN partner you will gain access to a range of resources and training that will enable you to better help your customers deploy, run, and manage applications in the AWS Cloud. If you would like to learn more about the AWS Partner Network, visit the [AWS Partner Network](#) website.²⁴

Additional Information

For the latest information about SAP on AWS and to learn more about running your SAP environment on AWS, see <http://aws.amazon.com/sap>.

If you have any questions about SAP on AWS, please contact us at <http://aws.amazon.com/sap/contact-us>.

Contributors

The following individuals and organizations contributed to this document:

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Notes

¹ <https://aws.amazon.com/about-aws/global-infrastructure/>

² <http://aws.amazon.com/security/>

³ <http://aws.amazon.com/compliance/>

⁴ <http://aws.amazon.com/ec2/>

⁵ <http://aws.amazon.com/ebs/>

⁶ <http://aws.amazon.com/s3/>

⁷ <http://aws.amazon.com/vpc/>

⁸ <http://aws.amazon.com/console/>

⁹ <http://aws.amazon.com/cloudformation/>

¹⁰ <http://service.sap.com/sap/support/notes/1656099>

¹¹ <http://service.sap.com/sap/support/notes/1656250>

¹² https://help.sap.com/s4hana_op_1511

¹³ <http://aws.amazon.com/whitepapers/vms-sap-tco/>

¹⁴ <http://docs.aws.amazon.com/quickstart/latest/sap-hana/>

¹⁵ http://do.awsstatic.com/enterprise-marketing/SAP/SAP_on_AWS_Implementation_Guide.pdf

¹⁶ <https://go.sap.com/cmp/oth/crm-s4hana/s4hana-on-premise.html>

¹⁷ <http://docs.aws.amazon.com/AmazonVPC/latest/NetworkAdminGuide/>

¹⁸ http://docs.aws.amazon.com/AmazonVPC/latest/UserGuide/VPC_VPN.html

¹⁹ <https://aws.amazon.com/directconnect/>

²⁰ <http://do.awsstatic.com/enterprise-marketing/SAP/sap-on-aws-backup-and-recovery-guide-v2-2.pdf>

²¹ <https://aws.amazon.com/ec2/purchasing-options/>

²² <http://do.awsstatic.com/enterprise-marketing/SAP/sap-on-aws-pricing-guide.pdf>

²³ <https://aws.amazon.com/sap/solutions/s4hana/>

²⁴ <https://aws.amazon.com/partners/>