

SAP S/4HANA on the AWS Cloud

Quick Start Reference Deployment

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Visit our [GitHub repository](#) for source files and to post feedback, report bugs, or submit feature ideas for this Quick Start.

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This Quick Start was created by Amazon Web Services (AWS).

[Quick Starts](#) are automated reference deployments that use AWS CloudFormation templates to deploy key technologies on AWS, following AWS best practices.

Overview

This Quick Start reference deployment guide provides best practices and step-by-step instructions for deploying [SAP S/4HANA](#) on the AWS Cloud.

This Quick Start is for SAP architects, system administrators, and IT technical professionals who are responsible for architecture design and the deployment of S/4HANA workloads on AWS.

SAP S/4HANA on AWS

This Quick Start offers two options:

- To provision a new AWS Cloud infrastructure and all its resources using [AWS CloudFormation](#), and a new S/4HANA system cluster that consists of a HANA database, an ABAP SAP Central Services (ASCS) server, a Primary Application Server (PAS), and optional Additional Application Server (AAS), with or without SAP software installed.

- To deploy a new S/4HANA cluster, with the same configuration as in the first option, in an existing AWS Cloud infrastructure.

Cost and licenses

You are responsible for the cost of the AWS services used while running this Quick Start reference deployment. There is no additional cost for using the Quick Start.

The AWS CloudFormation template for this Quick Start includes configuration parameters that you can customize. Some of these settings, such as instance type, will affect the cost of deployment. For cost estimates, see the pricing pages for each AWS service you will be using. Prices are subject to change.

Tip After you deploy the Quick Start, we recommend that you enable the [AWS Cost and Usage Report](#) to track costs associated with the Quick Start. This report delivers billing metrics to an Amazon Simple Storage Service (Amazon S3) bucket in your account. It provides cost estimates based on usage throughout each month, and finalizes the data at the end of the month. For more information about the report, see the [AWS documentation](#).

This deployment uses a Bring Your Own License (BYOL) model for SAP software. You must already own licenses for SAP, and you must be authorized to download software from the [SAP Software Download Center \(SWDC\)](#).

The Quick Start requires a subscription to the SUSE Linux Enterprise Server (SLES) Amazon Machine Image (AMI) for the S/4HANA instance. The Quick Start requires a subscription to the SLES for SAP or the Red Hat Enterprise Linux (RHEL) AMI for the HANA database. The AMIs are available from [AWS Marketplace](#). Additional pricing, terms, and conditions may apply. For instructions, see [step 2](#) in the deployment section.

For the SAP S/4HANA deployment, this Quick Start launches the AMI for the supported versions of the SLES or RHEL operating system you choose. The AMI includes the license for the SLES and RHEL operating systems.

For the SAP HANA database deployment, the Quick Start launches the AMI for the operating system you choose: SLES, SLES for SAP, or RHEL for SAP, RHEL for SAP with High Availability (HA) and Update Services (US). The license cost for the operating system is included in the Amazon Elastic Compute Cloud (Amazon EC2) hourly price. There is an additional software cost for SLES for SAP AMIs.

The following table summarizes the list of S/4HANA Quick Start–supported operating systems and versions.

Operating system	Supports Single-AZ deployment?	Supports Multi-AZ deployment?
<ul style="list-style-type: none"> SLES 11 SP4 SLES 12 SLES 12 SP1 SLES 12 SP3 SLES 12 SP4 SLES 15 	Yes	No
<ul style="list-style-type: none"> SLES 12 SP2 for SAP* SLES 12 SP3 for SAP* 	Yes	Yes
<ul style="list-style-type: none"> SLES 12 SP4 for SAP* SLES 15 for SAP* 	Yes	Yes
<ul style="list-style-type: none"> RHEL 7.5 for SAP HANA 	Yes	No
<ul style="list-style-type: none"> RHEL 7.4 for SAP with HA and US RHEL 7.5 for SAP with HA and US RHEL 7.6 for SAP with HA and US 	Yes	Yes

This Quick Start also uses the SAP HANA Quick Start to deploy an SAP HANA database. For cost and license information and a list of supported operating systems for SAP HANA and SAP HANA HA, see the [SAP HANA Quick Start deployment guide](#).

Architecture

This Quick Start uses AWS CloudFormation, AWS Command Line Interface (AWS CLI) for Linux, and custom scripts to deploy an SAP S/4HANA stack with an SAP HANA database on AWS. This Quick Start includes options for deploying the SAP S/4HANA stack with single-node or multi-node SAP HANA configurations.

Deploying this Quick Start for a new virtual private cloud (VPC) builds the following S/4HANA environment in the AWS Cloud.

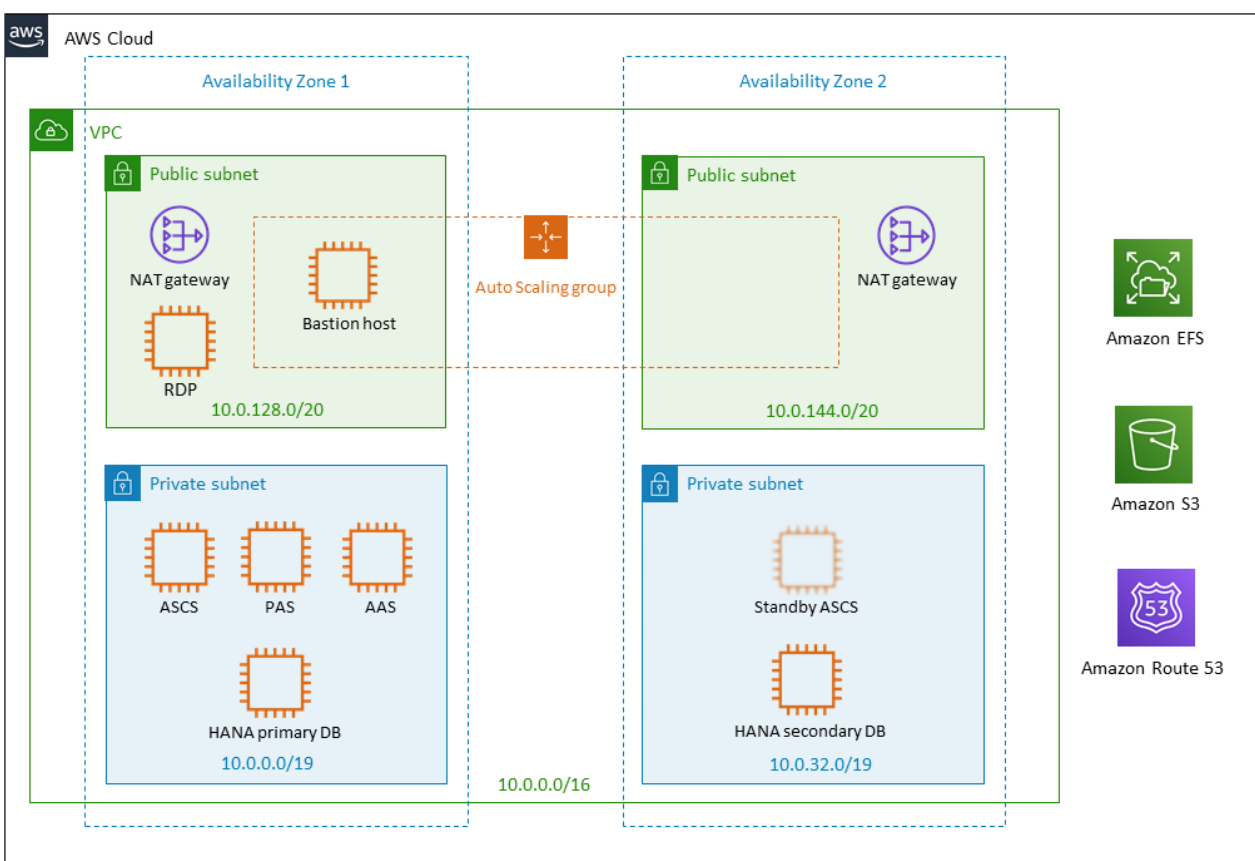


Figure 1: Quick Start architecture for S/4HANA on AWS

The Quick Start sets up the following:

- A highly available architecture that spans two Availability Zones.*
- A VPC configured with public and private subnets according to AWS best practices, to provide you with your own virtual network on AWS.*
- In the public subnets, managed network address translation (NAT) gateways to allow outbound internet access for the SAP instances in the private subnets.*
- Optional resources deployed in the public subnets:
 - An optional Linux bastion host in an Auto Scaling group to allow inbound Secure Shell (SSH) access to Amazon EC2 instances in the private subnets.*
 - An optional Remote Desktop Protocol (RDP) Windows Server to host SAP GUI and third-party front-end applications for managing SAP systems in the private subnets.
- Resources deployed in the private subnets:

- Multiple Amazon EC2 instances to host the HANA database and the S/4HANA ASCS, PAS, and an optional AAS. For standard and distributed installation options, see the [Planning the deployment](#) section.
- Directory `/sapmnt`, built on a Network File System (NFS) or on [Amazon Elastic File System](#) (Amazon EFS) for SAP file sharing among all S/4HANA instances.
- For multiple-node HANA database deployment, an NFS mounted on directory `/usr/sap` for file sharing among all HANA database server nodes.
- An optional automated installation of SAP S/4HANA and SAP HANA.
- An IAM role for access to necessary AWS services by the deployment processes.
- Three security groups for restricted inbound access from the optional bastion host, between the database instances, and for application access to the database.
- AWS CLI and an instance role for accessing installation software in the S3 bucket.
- A dedicated Amazon Route 53 private hosted zone to host the HANA database and S/4HANA server names.

* The template that deploys the Quick Start into an existing VPC skips the components marked by asterisks and prompts you for your existing VPC configuration.

Planning the deployment

Specialized knowledge

This Quick Start assumes familiarity with [SAP HANA database](#), [SAP S/4HANA](#) technology, and basic knowledge of networking and [SLES](#) or [RHEL](#) Linux operating systems.

This deployment guide also requires a moderate level of familiarity with AWS services. If you're new to AWS, visit the [Getting Started Resource Center](#) and the [AWS Training and Certification website](#) for materials and programs that can help you develop the skills to design, deploy, and operate your infrastructure and applications in the AWS Cloud.

AWS account

If you don't already have an AWS account, create one at <https://aws.amazon.com> by following the on-screen instructions. Part of the sign-up process involves receiving a phone call and entering a PIN using the phone keypad.

Your AWS account is automatically signed up for all AWS services. You are charged only for the services you use.

Technical requirements

Before you launch the Quick Start, your account must be configured as specified in the following table. Otherwise, deployment might fail.

[Resources](#)

If necessary, request [service limit increases](#) for the following resources. You might need to do this if you already have an existing deployment that uses these resources, and you think you might exceed the default limits with this deployment. For default limits, see the [AWS documentation](#).

[AWS Trusted Advisor](#) offers a service limits check that displays your usage and limits for some aspects of some services.

Resource	This deployment uses (up to)
VPCs	1
Elastic IP addresses	5
IAM security groups	6
IAM roles	4
Auto Scaling groups	1
HANA database instance	1
ASCS instance	1
Standby ASCS instance*	1
PAS instance	1
AAS instance*	1
RDP instance*	1
Bastion instance*	1

* Optional resource to be deployed.

[Regions](#)

This deployment includes Amazon EFS, which isn't currently supported in all AWS Regions. For a current list of supported regions, see [AWS Regions and Endpoints](#) in the AWS documentation.

[Key pair](#)

Make sure that at least one Amazon EC2 key pair exists in your AWS account in the region where you are planning to deploy the Quick Start. Make note of the key pair name. You'll be prompted for this information during deployment. To create a key pair, follow the [instructions in the AWS documentation](#).

If you're deploying the Quick Start for testing or proof-of-concept purposes, we recommend that you create a new key pair instead of specifying a key pair that's already being used by a production instance.

[IAM permissions](#)

To deploy the Quick Start, you must log in to the AWS Management Console with IAM permissions for the resources and actions the templates will deploy. The *AdministratorAccess* managed policy within IAM provides sufficient permissions, although your organization may choose to use a custom policy with more restrictions.

[S3 buckets](#)

Unique S3 bucket names are automatically generated based on the account number and region. If you delete a stack, **the logging buckets are not deleted** (to support security review). If you plan to re-deploy this Quick Start in the same region, you must first manually delete the S3 buckets that were created during the previous deployment; **otherwise, the re-deployment will fail.**

Deployment options

This Quick Start provides two deployment options, each with multiple scenarios:

- **Deploy S/4HANA system (including HANA database) into a new VPC (end-to-end deployment).** This option builds a new AWS environment consisting of the VPC, subnets, NAT gateways, security groups, optional bastion hosts, and other infrastructure components, and then deploys an S/4HANA system into this new VPC through one of the nine installation scenarios below.

You also have the option to deploy HANA database with high availability (HANA HA) without affecting S/4HANA deployment. See the [SAP SAP HANA on the AWS Cloud: Quick Start Reference Deployment](#) guide.

Scenario 1: Standard installation

- **HANA+ASCS+PAS:** This scenario deploys one EC2 instance to host HANA database, ASCS, and PAS, and you can neither deploy AAS nor use Amazon EFS for `/sapmnt`.

Scenario 2: Distributed installation (HANA, ASCS, and PAS on their own instances)

- **NoAAS-NoEFS:** Three EC2 instances to host HANA database, ASCS, and PAS separately with no AAS nor use of EFS for `/sapmnt`.
- **NoAAS-EFS:** Three EC2 instances to host HANA database, ASCS, and PAS separately, using EFS for `/sapmnt`, and with no AAS.
- **AAS-NoEFS:** Four EC2 instances to host HANA database, ASCS, PAS, and AAS separately without using EFS for `/sapmnt`.
- **AAS and EFS:** Four EC2 instances to host HANA database, ASCS, PAS, and AAS separately, and using EFS for `/sapmnt`.

Scenario 3: Distributed installation (HANA on one instance, ASCS and PAS on another)

- **NoAAS-NoEFS:** Two EC2 instances, one hosting HANA database and the other hosting ASCS and PAS, with no AAS nor use of EFS for `/sapmnt`.
 - **NoAAS-EFS:** Two EC2 instances, one hosting HANA database and the other hosting ASCS and PAS, using EFS for `/sapmnt`, with no AAS.
 - **AAS-NoEFS:** Three EC2 instances to host HANA database, ASCS and PAS, and AAS separately without using EFS for `/sapmnt`.
 - **AAS and EFS:** Three EC2 instances to host HANA database, ASCS and PAS, and AAS separately, using EFS for `/sapmnt`.
- **Deploy S/4HANA system (including HANA database) into an existing VPC.** This option provisions S/4HANA in your existing AWS infrastructure.

You also have the option to deploy HANA database with high availability (HANA HA) without affecting S/4HANA deployment. See the [SAP SAP HANA on the AWS Cloud: Quick Start Reference Deployment](#) guide.

Scenario 1: Standard installation:

- **HANA+ASCS+PAS:** This scenario deploys one EC2 instance to host HANA database, ASCS and PAS, and you can neither deploy AAS nor use EFS for `/sapmnt`.

Scenario 3: Distributed installation (HANA on one host, ASCS+PAS on another)

- **NoAAS-NoEFS:** Two EC2 instances, one hosting HANA database and the other hosting ASCS and PAS, with no AAS nor use of EFS for `/sapmnt`.
- **NoAAS-EFS:** Two EC2 instances, one hosting HANA database and the other hosting ASCS and PAS, using EFS for `/sapmnt`, with no AAS.
- **AAS-NoEFS:** Three EC2 instances to host HANA database, ASCS+PAS, and AAS separately without using EFS for `/sapmnt`.
- **AAS and EFS:** Three instances to host HANA database, ASCS+PAS and AAS separately, using EFS for `/sapmnt`.

The Quick Start provides separate templates for these options. It also lets you configure CIDR blocks, instance types, and HANA database and S/4HANA settings, as discussed later in this guide.

Deployment steps

Step 1. Sign in to your AWS account

1. Sign in to your AWS account at <https://aws.amazon.com> with an IAM user role that has the necessary permissions. For details, see [Planning the deployment](#) earlier in this guide.
2. Make sure that your AWS account is configured correctly, as discussed in the [Technical requirements](#) section.

Step 2. Download SAP S/4HANA software (Optional)

Before starting the S/4HANA Quick Start with the option to install SAP software (Skip if you choose not to install SAP software), you will need to download the following software and upload it to your S3 bucket that has the necessary permissions assigned. The Quick Start deployment uses the following SAP software versions:

- **Software Provisioning Manager (SWPM) 2.0 SP01-10:** Always use the latest version. You must extract the archives before uploading to the S3 bucket, in a **sapinst** folder that is different from the folder where the S/4HANA software is. An example list of SWPM2.0-SP01-10 extracted files is shown in Figure 2.

























 BW4HANA10SR1
 COMMON
 DA
 DMO10
 GENERIC
 GERRIT
 NOTES
 NW750
 PVIND
 S4HANA1809
 S4HANACLOUD
 SBC
 LABEL.ASC
 SIGNATURE.SMF
 SWPM20SP01_10-80003424
 SWPM20SP01_10-80003424.SAR
 catalog.dtd
 manifest.mf
 messages.dtd
 messages.xml
 product.catalog
 resourcepool.xml
 resources.dtd
 sapinst

Figure 2: Example SAP SWPM software file list

- **HANA20 SP03 Rev33:** Do not extract the software archives; the HANA installation program will do that for you. There is no restriction to the location of your HANA

database software, and you'll be asked to enter the full path in the Quick Start input screen.



Figure 3: Example SAP HANA database software file list

- **SAP Kernel 7.73:** Do not extract the software archives; the S/4HANA installation program will do that for you. These two Kernel .SAR files need to be placed in the same location as the S/4HANA software.

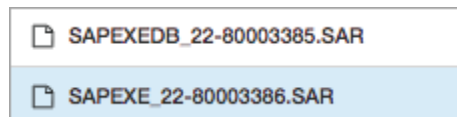


Figure 4: Example SAP Kernel 7.73 file list

- **SAP Hostagent 7.21:** Do not extract the software archives; the S/4HANA installation program will do that for you. The SAP HOSTAGENT .SAR file need to be placed in the same location as the S/4HANA software.

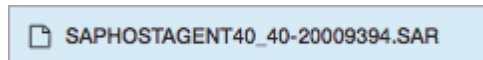


Figure 5: SAP Hostagent file

- **SAP Crypto Library 8523-20011697:** Do not extract the software archives; the S/4HANA installation program will do that for you. The SAP Crypto Library .SAR file need to be placed in the same location as the S/4HANA software.

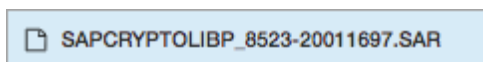


Figure 6: Example Crypto Library file

- **S/4HANA exports:** Do not extract the software archives; the S/4HANA installation program will do that for you. These are the S/4HANA exports.





















 S4CORE103_INST_EXPORT_1.zip
 S4CORE103_INST_EXPORT_10.zip
 S4CORE103_INST_EXPORT_11.zip
 S4CORE103_INST_EXPORT_12.zip
 S4CORE103_INST_EXPORT_13.zip
 S4CORE103_INST_EXPORT_14.zip
 S4CORE103_INST_EXPORT_15.zip
 S4CORE103_INST_EXPORT_16.zip
 S4CORE103_INST_EXPORT_17.zip
 S4CORE103_INST_EXPORT_18.zip
 S4CORE103_INST_EXPORT_19.zip
 S4CORE103_INST_EXPORT_2.zip
 S4CORE103_INST_EXPORT_20.zip
 S4CORE103_INST_EXPORT_3.zip
 S4CORE103_INST_EXPORT_4.zip
 S4CORE103_INST_EXPORT_5.zip
 S4CORE103_INST_EXPORT_6.zip
 S4CORE103_INST_EXPORT_7.zip
 S4CORE103_INST_EXPORT_8.zip
 S4CORE103_INST_EXPORT_9.zip

Figure 7: SAP S/4HANA export list

- **SAP HANA Client 2.0:** Do not extract the software archives; the HANA installation program will do that for you. The HANA Client .SAR files need to be placed in the same location as the S/4HANA software.



 IMDB_CLIENT20_003_130-80002082
 IMDB_CLIENT20_003_130-80002082.SAR

Figure 8: SAP HANA Client software file list

- **IGS 7:** Do not extract the software archives; the S/4HANA installation program will do that for you. The IGS .sar files are part of S/4HANA software that need to be placed in the same location.

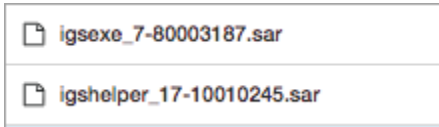


Figure 9: SAP IGS file list

Because the S/4HANA software exports, SAP Kernel, SAP hostagent, SAP Crypto Library, and SAP HANA Client must be placed in the same folder and apart from any other software, your S3 bucket must have a hard-coded directory **s4-1809** where all those S/4HANA-related exports and archives—and only S/4HANA related exports and archives—are stored.

```
<bucket name>/<Folder name>/s4-1809/<S/4HANA software (Compressed)>  
<bucket name>/<Folder name>/sapinst/<SWPM Software - (Un-Compressed)>
```

The **bucket name** is the name of your bucket that contains S/4HANA and SWPM software.

The **Folder name** is the path to the software. If the path includes multiple folders, separate the folders with /.

S/4HANA software includes S/4HANA software exports, SAP Kernel, SAP hostagent, SAP Crypto Library, and SAP HANA Client, in their original compressed format.

SWPM Software is the uncompressed SWPM software.

For example, if your bucket name is my-s4-bucket, the structure when deploying this Quick Start is the following:

```
my-s4-bucket/my-folder/s4-1809/<S/4HANA software (Compressed)>  
my-s4-bucket/my-folder/sapinst/<SWPM software (Un-compressed)>
```

Your S3 bucket structure should look like the following:

My-s4-bucket	
My-folder	
sapinst/<SWPM software> as shown in the list in Figure 2 .	s4-1809/<s4hana software> including the SAP Kernel, SAP Hostagent, SAP Crypto Library, S/4HANA exports, SAP HANA client, and IGS files, as shown in Figures 4-9 .

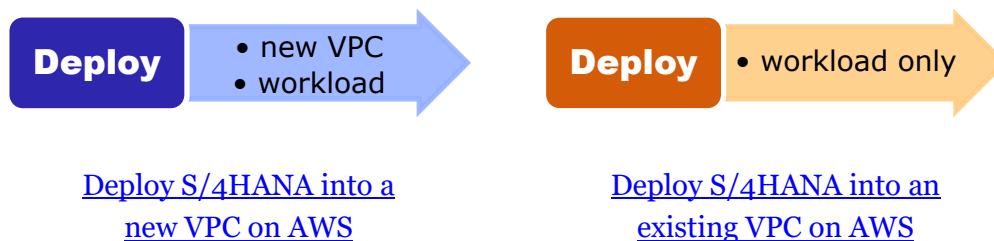
Note The s4-1809 and sapinst folder names are hardcoded and cannot be changed

Step 3. Launch the Quick Start

Notes The instructions in this section reflect the older version of the AWS CloudFormation console. If you're using the redesigned console, some of the user interface elements might be different.

You are responsible for the cost of the AWS services used while running this Quick Start reference deployment. There is no additional cost for using this Quick Start. For full details, see the pricing pages for each AWS service you will be using in this Quick Start. Prices are subject to change.

1. Sign in to your AWS account, and choose one of the following options to launch the AWS CloudFormation template. For help choosing an option, see [deployment options](#) earlier in this guide.



Important If you're deploying S/4HANA into an existing VPC, make sure that your VPC has two private subnets in different Availability Zones for the workload instances, and that the subnets aren't shared. This Quick Start doesn't support [shared subnets](#). These subnets require [NAT gateways](#) in their route tables, to allow the instances to download packages and software without exposing them to the internet. You will also need the domain name option configured in the DHCP options as explained in the [Amazon VPC documentation](#). You will be prompted for your VPC settings when you launch the Quick Start.

Each deployment takes 1.5-2.5 hours to complete.

2. Check the region that's displayed in the upper-right corner of the navigation bar, and change it if necessary. This is where the network infrastructure for S/4HANA will be built. The template is launched in the US East (Ohio) Region by default.

Note Some of the deployment options include Amazon EFS, which isn't currently supported in all AWS Regions. For a current list of supported regions, see the [AWS Regions and Endpoints webpage](#).

3. On the **Select Template** page, keep the default setting for the template URL, and then choose **Next**.
4. On the **Specify Details** page, change the stack name if needed. Review the parameters for the template. Provide values for the parameters that require input. For all other parameters, review the default settings and customize them as necessary.

In the following tables, parameters are listed by category and described separately for the two deployment options:

- [Parameters for deploying S/4HANA into a new VPC](#)
- [Parameters for deploying S/4HANA into an existing VPC](#)

Each option also includes parameters for the individual scenarios.

When you finish reviewing and customizing the parameters, choose **Next**.

OPTION 1: PARAMETERS FOR DEPLOYING S/4HANA INTO A NEW VPC

[View template](#)

VPC network configuration:

Parameter label (name)	Default	Description
Availability Zones (AvailabilityZones)	<i>Requires input</i>	The list of Availability Zones to use for the subnets in the VPC. The Quick Start uses two Availability Zones from your list and preserves the logical order you specify.
VPC CIDR (VPCCIDR)	10.0.0.0/16	The CIDR block for the VPC.
Private subnet 1 CIDR (PrivateSubnet1CIDR)	10.0.0.0/19	The CIDR block for the private subnet located in Availability Zone 1.
Private subnet 2 CIDR (PrivateSubnet2CIDR)	10.0.32.0/19	The CIDR block for the private subnet located in Availability Zone 2.
Public subnet 1 CIDR (PublicSubnet1CIDR)	10.0.128.0/20	The CIDR block for the public subnet located in Availability Zone 1.
Public subnet 2 CIDR (PublicSubnet2CIDR)	10.0.144.0/20	The CIDR block for the public subnet located in Availability Zone 2.
CIDR block for RDP and bastion access (RemoteAccessCIDR)	0.0.0.0/0	The CIDR block from where you want to access instances in your public subnets. We recommend that you set this value to a trusted IP range. For example, you might want to grant only your corporate network access to the software.

SAP HANA database server and storage configuration:

Parameter label (name)	Default	Description
Implement HANA for High Availability (hanaHA)	No	Choose Yes to deploy HANA HA. HANA HA deployment does not support scale-out topology and HANAHostCount will always be 1.
Operating system version for HANA (MyOSHANA)	SuSE-Linux-12-SP4-HVM	The version of SLES or RHEL for your HANA database servers.
SUSE BYOS code (SLESBYOSRegCode)	<i>Optional</i>	The registration code for SUSE BYOS code (if you are using the BYOS option).
SAP HANA server host name (SAPHANAHostname)	siddbmas	The host name to use for the SAP HANA database server (SAP App server must be able to access HANA server). You can use the default name or provide the name that you want.
SAP HANA server instance type (HANAInstanceType)	r4.4xlarge	The instance type for your HANA database server.
SAP HANA database host count (HANAHostCount)	1	The total number of HANA database nodes that you want to deploy in the SAP HANA database cluster. A scale-out HANA cluster (more than 1 node) consists of 1 master node and multiple worker nodes.

Parameter label (name)	Default	Description
HANA database system ID (SID)	HDB	The HANA database system ID for installation and setup.
SAP HANA DB & S/4HANA ABAP password (HANAMasterPass)	<i>Requires input</i>	The password to use during SAP HANA database and S/4HANA installations. All installation scenarios will use this password.
Encryption (Encryption)	No	Amazon Elastic Block Store (Amazon EBS) volume encryption. Selecting Yes might slow performance.
Storage volume type for SAP HANA data (VolumeTypeHanaData)	gp2	The Amazon EBS volume type for the HANA database file system /hana/data. Choose General Purpose SSD (gp2) or Provisioned IOPS SSD (io1).
Storage volume type for SAP HANA log (VolumeTypeHanaLog)	gp2	The Amazon EBS volume type for the HANA database file system /hana/log. Choose General Purpose SSD (gp2) or Provisioned IOPS SSD (io1).
S3 bucket for HANA database software (HANAInstallMedia)	s3:// /	The name your S3 bucket for your SAP HANA database software. The software will <i>not</i> download if the format is not correct (e.g., s3://mysapbucket/HANA-media/).
AWS CloudTrail and AWS Config logs (EnableLogging)	No	Selecting Yes might increase your costs.
S3 bucket for AWS CloudTrail and AWS Config logs (CloudTrailsS3Bucket)	<i>Optional</i>	The S3 bucket name where the AWS CloudTrail and AWS Config logs can be stored (e.g., mycloudtrail), if you selected Yes for the EnableLogging parameter.
SSH key pair (KeyName)	<i>Requires input</i>	The name of an existing Amazon EC2 key pair. All instances will launch with this key pair.

SAP S/4HANA ABAP cluster setup and configuration:

Note The values for the parameters below depend on whether you are deploying a standard installation or one of the distributed installation scenarios. For more information, see the [Deployment options](#) section.

Parameter label (name)	Default	Description
Route 53 private hosted zone (HostedZoneName)	<i>Requires input</i>	A Route 53 privately hosted zone created for all deployed servers. Use a fully-qualified domain name (e.g., mycompany.local).

Parameter label (name)	Default	Description
ASCS, PAS, and database in one host (StandardInstall)	No	Standard installation: Selecting Yes deploys a standard installation, with ASCS, PAS, and the HANA database on one EC2 instance. The system ID <SID> of the HANA database and S/4HANA must be different. This scenario does not include the Standby ASCS server.
Split ASCS and PAS (DistributedInstall)	No	Distributed installation: Selecting Yes deploys a Scenario 2 distributed installation, with ASCS and PAS on two different instances. Selecting No deploys a Scenario 3 installation, with ASCS and PAS on the same instance. The values of the other parameters will depend on the scenario that you are deploying.
Operating system version for S/4HANA Servers (MyOS)	SuSE-Linux-12-SP4-HVM	The version of SLES or RHEL for S/4HANA ASCS, PAS, and AAS.
EFS for /sapmnt (EFSSapmnt)	No	Selecting Yes uses Amazon EFS for /sapmnt in the following scenarios: Scenario 2 (HANA, ASCS, and PAS on their own instances): NoAAS-EFS AAS and EFS Scenario 3 (HANA on one instance, ASCS+PAS on the other): NoAAS-EFS AAS and EFS If the default value, No , is retained, NFS is used.
SAP ASCS server virtual name (SAPASCSHostname)	sidascoo	The virtual hostname for the SAP ASCS server.
SAP ASCS instance type (ASCSMyInstanceType)	r4.large	The instance type for the SAP ASCS server.
Standby ASCS server in a different Availability Zone (StbySAPASCS)	No	Selecting Yes deploys a Standby ASCS instance in a different Availability Zone (not necessary for dev, QA, and test environments). The failover mechanism is not automatically configured for the deployed Standby ASCS.
SAP PAS server host name (SAPPASHostname)	sidpasoo	The host name (DNS short name) of the SAP PAS (e.g., sidpasoo).
SAP PAS instance type (MyInstanceType)	r4.xlarge	The instance type for the S/4HANA PAS.

Parameter label (name)	Default	Description
PAS EC2 automatic recovery (AutoRecoveryPAS)	Yes	Selecting No to turns off the Amazon EC2 automatic recovery feature.
SAP software (InstallSAP)	Yes	When set to No , only the AWS infrastructure is provisioned.
S/4HANA version (InstallSAPVersion)	S/4HANA-1809	The version of SAP S/4HANA to install.
SAP database schema (SAPSchemaName)	SAPHANADB	The SAP ABAP schema name for the HANA database.
S/4HANA ABAP system ID (SAPSID)	S4H	The S/4HANA ABAP system ID for installation and setup. If you are doing a standard installation, the SAPSID value must be different from the HANA database system ID (SID).
SAP instance number (SAPInstanceNum)	00	The SAP instance number to use for HANA database and S/4HANA ABAP installation and setup, and to open ports for security groups. For a standard installation, the PAS instance number will automatically be incremented by 1 to avoid duplicate instance numbers on the same host.
SIDadm user ID (SIDadmUID)	1002	The user ID for the SIDadm user.
SAP server time zone (SAPTZ)	UC	The time zone of your SAP server (PT, CT, or ET for the United States; UC for all other locales).
S3 bucket for S/4HANA software (SAPInstallMediaBucket)	<i>Requires input</i>	The name of your Amazon S3 bucket for your SAP S/4HANA software. Do <i>not</i> include s3:// (enter only the bucket name; e.g., my-sw-bucket).
S3 key prefix for S/4HANA software (SAPInstallMediaKeyPrefix)	<i>Requires input</i>	The name of your S3 key prefix for your SAP S/4HANA software (e.g., my/sw/version). Leave this blank if you do not use a key prefix.

SAP S/4HANA Additional Application Server setup and configuration:

Note The values for the parameters below depend on whether you are deploying a standard installation or one of the distributed installation scenarios. For more information, see the [Deployment options](#) section.

Parameter label (name)	Default	Description
SAP AAS (InstallSAPAAS)	No	<p>Selecting Yes installs SAP Additional Application Server (AAS) in the following scenarios:</p> <p>Scenario 2 (HANA, ASCS, and PAS on their own instances):</p> <p>AAS-NoEFS</p> <p>AAS and EFS</p> <p>Scenario 3 (HANA on one instance, ASCS+PAS on the other):</p> <p>AAS-NoEFS</p> <p>AAS-EFS</p> <p>If the default value, No, is retained, only SAP ASCS, the HANA database, and PAS are installed.</p>
SAP AAS server host name (SAPAASHostname)	sidapp00	The hostname template to use for SAP AAS.
SAP AAS instance type (AASMyInstanceType)	r4.xlarge	The Amazon EC2 instance type for SAP AAS.
AAS EC2 automatic recovery (AutoRecoveryAAS)	Yes	Selecting No turns off the Amazon EC2 automatic recovery feature for AAS.

Optional configuration:

Parameter label (name)	Default	Description
RDP and bastion (InstallRDPAndBastionInstance)	Yes	Installs the optional RDP and bastion instances.
RDP instance type (RDPInstanceType)	m4.large	The Amazon EC2 instance type for the Windows RDP instance.
Bastion host (BASTIONInstanceType)	t2.small	The Amazon EC2 instance type for the bastion host.

AWS Quick Start configuration:

Note We recommend that you keep the default settings for the following two parameters, unless you are customizing the Quick Start templates for your own deployment projects. Changing the settings of these parameters will automatically update code references to point to a new Quick Start location. For additional details, see the [AWS Quick Start Contributor's Guide](#).

Parameter label (name)	Default	Description
Quick Start S3 bucket name (QSS3BucketName)	aws-quickstart	The S3 bucket you created for your copy of Quick Start assets, if you decide to customize or extend the Quick Start for your own use. The bucket name can include numbers, lowercase letters, uppercase letters, and hyphens, but should not start or end with a hyphen.
Quick Start S3 key prefix (QSS3KeyPrefix)	quickstart-sap-s4-hana/	The S3 key name prefix used to simulate a folder for your copy of Quick Start assets, if you decide to customize or extend the Quick Start for your own use. This prefix can include numbers, lowercase letters, uppercase letters, hyphens, and forward slashes.

OPTION 2: PARAMETERS FOR DEPLOYING S/4HANA INTO AN EXISTING VPC

[View template](#)

Note Deploying into an existing VPC does not offer the distributed installation (Scenario 2) that deploys ASCS and PAS on their own host separately.

Existing network configuration:

Parameter label (name)	Default	Description
VPC ID (VPCID)	<i>Requires input</i>	The ID of your existing VPC (e.g., vpc-0343606e).
Private subnet 1 CIDR (PrivateSubnet1CIDR)	10.0.0.0/19	The CIDR block for private subnet 1 in Availability Zone 1 in your existing VPC.
Private subnet 2 CIDR (PrivateSubnet2CIDR)	10.0.32.0/19	The CIDR block for private subnet 2 in Availability Zone 2 in your existing VPC.
Public subnet 1 CIDR (PublicSubnet1CIDR)	10.0.128.0/20	The CIDR block for the public (DMZ) subnet 1 in Availability Zone 1 in your existing VPC.
Public subnet 2 CIDR (PublicSubnet2CIDR)	10.0.144.0/20	The CIDR block for the public (DMZ) subnet 2 in Availability Zone 2 in your existing VPC.
Private subnet 1 ID (PrivateSubnet1AID)	<i>Requires input</i>	The ID of the existing private subnet in Availability Zone 1 where you want to deploy SAP App Server Cluster.
Private subnet 2 ID (ApplicationCIDR)	<i>Requires input</i>	The ID of the existing private subnet in Availability Zone 2 where you want to deploy SAP App Server Cluster.
Public subnet 1 ID (PublicSubnet1ID)	<i>Requires input</i>	The ID of the existing public subnet 1 where your Linux bastion host is deployed, and where RDP will be deployed.

HANA database server and storage configuration:

Parameter label (name)	Default	Description
Implement HANA for High Availability (hanaHA)	No	Choose Yes to deploy HANA HA. HANA HA deployment does not support scale-out topology and <code>HANAHostCount</code> will always be 1.
Operating system version for HANA (MyOSHANA)	SuSE-Linux-12-SP3-HVM	The version of SLES or RHEL for your HANA database.
SUSE BYOS code (SLESBYOSRegCode)	<i>Optional</i>	The registration code for SUSE BYOS code (if you are using the BYOS option).
SAP HANA server host name (SAPHANAHostname)	siddbmas	The host name to use for the SAP HANA database server (SAP App server must be able to access HANA server). You can use the default name or provide the name that you want.
SAP HANA server instance type (HANAInstanceType)	r4.4xlarge	The instance type for your HANA database server.
SAP HANA database host count (HANAHostCount)	1	The total number of HANA database nodes that you want to deploy in the SAP HANA database cluster. A scale-out HANA cluster (more than 1 node) consists of 1 master node and multiple worker nodes.
HANA database system ID (SID)	HDB	The HANA database system ID for installation and setup.
SAP HANA DB & S/4HANA ABAP password (HANAMasterPass)	<i>Requires input</i>	The password to use during SAP HANA database and S/4HANA installations. All installation scenarios will use this password.
Encryption (Encryption)	No	Amazon Elastic Block Store (Amazon EBS) volume encryption. Selecting Yes might slow performance.
Storage volume type for SAP HANA data (VolumeTypeHanaData)	gp2	The Amazon EBS volume type for the HANA database file system <code>/hana/data</code> . Choose General Purpose SSD (gp2) or Provisioned IOPS SSD (io1).
Storage volume type for SAP HANA log (VolumeTypeHanaLog)	gp2	The Amazon EBS volume type for the HANA database file system <code>/hana/log</code> . Choose General Purpose SSD (gp2) or Provisioned IOPS SSD (io1).
S3 bucket for HANA database software (HANAInstallMedia)	s3:// /	The name your S3 bucket for your SAP HANA database installation software. The software will <i>not</i> download if the format is not correct (e.g., <code>s3://mysapbucket/HANA-media/</code>).
AWS CloudTrail and AWS Config logs (EnableLogging)	No	Selecting Yes might increase your costs.

Parameter label (name)	Default	Description
S3 bucket for AWS CloudTrail and AWS Config logs (CloudTrailS3Bucket)	<i>Optional</i>	The S3 bucket name where the AWS CloudTrail and AWS Config logs can be stored (e.g., mycloudtrail), if you selected Yes for the <code>EnableLogging</code> parameter.
SSH key pair (KeyName)	<i>Requires input</i>	The name of an existing Amazon EC2 key pair. All instances will launch with this key pair.

SAP S/4HANA ABAP cluster setup and configuration:

Note The values for the parameters below depend on whether you are deploying a standard installation or one of the distributed installation scenarios. For more information, see the [Deployment options](#) section.

Parameter label (name)	Default	Description
Route 53 private hosted zone (HostedZoneName)	<i>Requires input</i>	A Route 53 privately hosted zone created for all deployed servers. Use a fully-qualified domain name (e.g., mycompany.local).
ASCS, PAS, and DB in one host (StandardInstall)	No	Standard installation: Selecting Yes deploys a standard installation, with ASCS, PAS, and the HANA database on one EC2 instance. The system ID of the HANA database and S/4HANA must be different. This scenario does not include the Standby ASCS server.
Operating system version for S/4HANA Servers (MyOS)	SuSE-Linux-12-SP3-HVM	The version of SLES or RHEL for S/4HANA ASCS, PAS, and AAS.
EFS for /sapmnt (EFSSapmnt)	No	Selecting Yes uses Amazon EFS for /sapmnt in the following scenarios: Scenario 3 (HANA on one instance, ASCS+PAS on the other): AAS and EFS NoAAS-EFS If the default value, No , is retained, NFS is used.
SAP PAS server host name (SAPPASHostname)	sidpasoo	The hostname (DNS short name) of the SAP PAS. Only the Standard installation is available for deploying into an existing VPC.
SAP PAS instance type (MyInstanceType)	r4.xlarge	The instance type for the S/4HANA PAS.

Parameter label (name)	Default	Description
PAS EC2 automatic recovery (AutoRecoveryPAS)	Yes	Selecting No turns off the Amazon EC2 automatic recovery feature.
SAP software (InstallSAP)	Yes	When set to No , only the AWS infrastructure is provisioned.
S/4HANA version (InstallSAPVersion)	S/4HANA-1809	The version of SAP S/4HANA to install.
S/4HANA database schema (SAPSchemaName)	SAPHANADB	The SAP ABAP schema name for the HANA database.
S/4HANA ABAP system ID (SAPSID)	S4H	The S/4HANA ABAP system ID for installation and setup. If you are doing a standard installation, the SAPSID value must be different from the HANA database system ID (SID).
SAP instance number (SAPInstanceNum)	00	The SAP instance number to use for HANA database and S/4HANA ABAP installation and setup, and to open ports for security groups. For a standard installation, the PAS instance number will automatically be incremented by 1 to avoid duplicate instance numbers on the same host.
SIDadm user ID (SIDadmUID)	1002	The user ID for the SIDadm user.
SAP server time zone (SAPTZ)	UC	The time zone of your SAP server (PT, CT, or ET for the United States; UC for all other locales).
S3 bucket for S/4HANA software (SAPInstallMediaBucket)	<i>Requires input</i>	The name of your Amazon S3 bucket for your SAP S/4HANA software. Do <i>not</i> include s3:// (enter only the bucket name; e.g., my-sw-bucket).
S3 key prefix for S/4HANA software (SAPInstallMediaKeyPrefix)	<i>Requires input</i>	The name of your S3 key prefix for your SAP S/4HANA software; for example my/sw/version. Leave this blank if you do not use a key prefix.

SAP S/4HANA Additional Application Server setup and configuration:

Note The values for the parameters below depend on whether you are deploying a standard installation or one of the distributed installation scenarios. For more information, see the [Deployment options](#) section.

Parameter label (name)	Default	Description
SAP AAS (InstallSAPAAS)	No	Selecting Yes installs SAP Additional Application Server (AAS) in the following scenarios: Scenario 3 (HANA on one instance, ASCS+PAS on the other): AAS-NoEFS AAS-EFS If the default value, No , is retained, only SAP ASCS, the HANA datagase, and PAS are installed.
SAP AAS server host name (SAPInstallMediaKeyPrefix)	sidappoo	The hostname template to use for SAP AAS.
SAP AAS instance type (AASMyInstanceType)	r4.xlarge	The Amazon EC2 instance type for AAS.
AAS Private Subnet ID (PrivateSubnetID)	<i>Requires input</i>	The ID of the existing private subnet 1 where you want to deploy SAP App Server Cluster. Provide the ID even if you are not going to deploy AAS. The stack will fail to launch if this parameter is left blank.
AAS EC2 automatic recovery (AutoRecoveryAAS)	Yes	Selecting No turns off the Amazon EC2 automatic recovery feature. for AAS.

Optional configuration:

Parameter label (name)	Default	Description
RDP (InstallRDPIInstance)	No	Choosing Yes installs the optional RDP.
RDP instance type (RDPIInstanceType)	c4.large	The Amazon EC2 instance type for the Windows RDP instance.

AWS Quick Start configuration:

Note We recommend that you keep the default settings for the following two parameters, unless you are customizing the Quick Start templates for your own deployment projects. Changing the settings of these parameters will automatically update code references to point to a new Quick Start location. For additional details, see the [AWS Quick Start Contributor's Guide](#).

Parameter label (name)	Default	Description
Quick Start S3 bucket name (QSS3BucketName)	aws-quickstart	The S3 bucket you have created for your copy of Quick Start assets, if you decide to customize or extend the Quick Start for your own use. The bucket name can include numbers, lowercase letters, uppercase letters, and hyphens, but should not start or end with a hyphen.
Quick Start S3 key prefix (QSS3KeyPrefix)	quickstart-sap-s4-hana/	The S3 key name prefix used to simulate a folder for your copy of Quick Start assets, if you decide to customize or extend the Quick Start for your own use. This prefix can include numbers, lowercase letters, uppercase letters, hyphens, and forward slashes.

Other parameters:

Parameter label (name)	Default	Description
(EFSFSName)	<i>Requires input</i>	The name of the existing EFS file system to use for /sapmnt.

- On the **Options** page, you can [specify tags](#) (key-value pairs) for resources in your stack and [set advanced options](#). When you're done, choose **Next**.
- On the **Review** page, review and confirm the template settings. Under **Capabilities**, select the two check boxes to acknowledge that the template will create IAM resources and that it might require the capability to auto-expand macros.
- Choose **Create** to deploy the stack.
- Monitor the status of the stack. When the status is **CREATE_COMPLETE**, the S/4HANA cluster is ready.
- Use the URLs displayed in the **Outputs** tab for the stack to view the resources that were created.

Step 4. Test the deployment

To verify the deployed SAP S/4HANA systems, access the SAP level by using SAP GUI from RDP or access the operating system level by using SSH from the bastion host. For direct access to the HANA database, use SAP HANA Studio or OS level access by using SSH to connect through the bastion host, see [SAP HANA Deployment Guide](#).

CHANGING THE SECURITY GROUP CONFIGURATION

The rules shown in Figure 12 for the PAS and AAS instances from a default network configuration allow you to access the SAP S/4HANA instances through SAP GUI and Remote Function Call (RFC) only from the private subnets.

Type ⓘ	Protocol ⓘ	Port Range ⓘ	Source ⓘ	Description ⓘ
Custom TCP ⓘ	TCP	3200 - 3300	Custom ⓘ 10.0.32.0/19	e.g. SSH for Admin Desktop
Custom TCP ⓘ	TCP	3200 - 3300	Custom ⓘ 10.0.0.0/19	e.g. SSH for Admin Desktop

Figure 12: Default security group configuration

You'll have to manually add inbound rules to open the ports to allow access from one or both public subnets, as shown in Figure 13.

Type ⓘ	Protocol ⓘ	Port Range ⓘ	Source ⓘ	Description ⓘ
Custom TCP ⓘ	TCP	3200 - 3300	Custom ⓘ 10.0.32.0/19	e.g. SSH for Admin Desktop
Custom TCP ⓘ	TCP	3200 - 3300	Custom ⓘ 10.0.0.0/19	e.g. SSH for Admin Desktop
Custom TCP ⓘ	TCP	3200 - 3300	Custom ⓘ 10.0.128.0/20	e.g. SSH for Admin Desktop
Custom TCP ⓘ	TCP	3200 - 3300	Custom ⓘ 10.0.144.0/20	e.g. SSH for Admin Desktop

Figure 13: Security group rules allow access from public subnets

Tip To connect directly to the SAP S/4HANA systems from a corporate network, you can provision an encrypted IPsec hardware VPN connection between your corporate data center and your VPC. For details, see the [Amazon VPC FAQ](#) on the AWS website. You can also set up AWS Direct Connect between your data center and AWS to gain direct access to your AWS resources. For details, see [AWS Direct Connect](#) on the AWS website.

SAP-LEVEL ACCESS USING SAP GUI

To install SAP GUI, establish a connection to the Windows Server instance.

1. Sign in to your AWS account, and open the Amazon EC2 console at <https://console.aws.amazon.com/ec2/>.
2. From the console dashboard, choose **Running Instances** to find the RDP instance.
3. Select your RDP instance and choose **Connect**.
4. Get the Windows administrator password from the Amazon EC2 console:

- a. In the Connect to Your Instance dialog box, choose Get Password.
 - b. Paste the contents of your private key in the space provided, or choose Browse and navigate to your private key file, select the file, and choose Open to copy the entire contents of the file into the contents box.
5. In the **Connect to Your Instance** dialog box, choose **Download Remote Desktop File**, or connect by using an RDP client of your choice.
6. Install SAP GUI. You can do this in two ways:
- Download the SAP GUI installation files from SAP Service Marketplace.
- or—
- Download and extract the SAP GUI software from your S3 bucket to install SAP GUI on your RDP server.
7. When the installation is complete, start SAP GUI, and add a system with the following parameters.
- **Description:** Your naming standard for your SAP systems
 - **Application Server:** The private IP address of your PAS
 - **Instance Number:** Your SAP system number (for PAS, this is usually **01**)
 - **System ID:** Your SAP system identifier
8. Log in with [user DDIC](#) and the master password that you specified in the Quick Start [parameters](#).

Note At this point, we recommend that you make a backup of your newly installed SAP S/4HANA and SAP HANA systems. You can use the Amazon EC2 console to make a complete system image (AMI) that can be used for recovery or for additional system builds. Keep in mind that this image is only a point-in-time snapshot.

OS-LEVEL ACCESS USING SSH

You can also connect to the bastion host to establish a remote SSH connection to any of the SAP HANA master or worker nodes.

1. On the Amazon EC2 console, choose **Running Instances**.
2. Select your bastion host, and note the public Elastic IP address displayed below your running instances.

3. Using an SSH client of your choice (for example, PuTTY), connect to the bastion host and use the key pair you specified during the deployment process.

Note If your connection times out, you might need to adjust the security group rules for the bastion host to allow access from your computer's IP address or proxy server. For more information, see [Security Group Rules](#) in the *Amazon EC2 User Guide*.

PuTTY example

1. Download PuTTY (putty.exe), PuTTY Key Generator (puttygen.exe), and Pageant (pageant.exe).
2. Load your private key into PuTTY Key Generator and save it as a .ppk file that PuTTY can use.
3. Run Pageant.exe, and add your new .ppk key. The Pageant process must be running in order for agent forwarding to work.
4. Configure PuTTY with the private key and select **Allow agent forwarding**.
5. Save the configuration.
6. Open up the connection to the bastion host by using SSH with the `ec2-user` user ID.
7. Connect to the SAP HANA server by using SSH.

Security

The AWS Cloud provides a scalable, highly reliable platform that helps enable customers to deploy applications and data quickly and securely.

When you build systems on the AWS infrastructure, security responsibilities are shared between you and AWS. This shared model can reduce your operational burden as AWS operates, manages, and controls the components from the host operating system and virtualization layer down to the physical security of the facilities in which the services operate. In turn, you assume responsibility and management of the guest operating system (including updates and security patches), other associated application software such as SAP HANA, as well as the configuration of the AWS-provided security group firewall. For more information about security on AWS, visit the [AWS Security Center](#).

Network Security

The default network security setup of this solution follows security best practices of AWS. The provisioned SAP S/4HANA instances are configured to allow access only to the private subnets in your VPC. Connecting to the SAP S/4HANA instance by using SSH is allowed from the public subnets by default. To allow access from traffic beyond your VPC, you have two options:

- Update the security group created during the provisioning process to include the public subnet CIDR block and ports that you want to allow access for.
- Restrict access to a known CIDR block (of your network) if there is a provisioned Direct Connect or VPN tunnel between your own data center and AWS.

For more information about allowing access from public subnets, see [Changing the Security Group Configuration](#) earlier in this guide.

Identity and Access Management (IAM)

This solution leverages an IAM role with least privileged access. It is not necessary or recommended to store SSH keys or secret keys, or access keys on the provisioned instances.

OS Security

The root user on Linux or the administrator on the Windows RDP instance can be accessed only by using the SSH key specified during the deployment process. AWS doesn't store these SSH keys, so if you lose your SSH key, you can lose access to these instances.

Operating system patches are your responsibility and should be performed on a periodic basis.

Security Groups

A *security group* acts as a firewall that controls the traffic for one or more instances. When you launch an instance, you associate one or more security groups with the instance. You add rules to each security group that allow traffic to or from its associated instances. You can modify the rules for a security group at any time. The new rules are automatically applied to all instances that are associated with the security group.

The security groups created and assigned to the individual instances as part of this solution are restricted as much as possible while allowing access to the various functions of SAP S/4HANA and SAP HANA.

FAQ

Q. I encountered a `CREATE_FAILED` error when I launched the Quick Start.

A. If AWS CloudFormation fails to create the stack, we recommend that you relaunch the template with **Rollback on failure** set to **No**. (This setting is under **Advanced** in the AWS CloudFormation console, **Options** page.) With this setting, the stack's state will be retained and the instance will be left running, so you can troubleshoot the issue. (For Windows, look at the log files in `%ProgramFiles%\Amazon\EC2ConfigService` and `C:\cfn\log`.)

Important When you set **Rollback on failure** to **No**, you will continue to incur AWS charges for this stack. Please make sure to delete the stack when you finish troubleshooting.

The following table lists specific `CREATE_FAILED` error messages you might encounter.

Error message	Possible cause	What to do
API: ec2: RunInstances Not authorized for images: ami- ID	The template is referencing an AMI that has expired.	We refresh AMIs on a regular basis, but our schedule isn't always synchronized with AWS AMI updates. If you get this error message, notify us, and we'll update the template with the new AMI ID. If you want to fix the template yourself, you can download it and update the Mappings section with the latest AMI ID for your region.
We currently do not have sufficient m1.small capacity in the AZ you requested	The NAT instance requires a larger instance type.	Switch to an instance type that supports higher capacity, or complete the request form in the AWS Support Center to increase the Amazon EC2 limit for the instance type or region. Limit increases are tied to the region they were requested for.
The instance configuration for this AWS Marketplace product is not supported. Please see link for more information about supported instance types, regions, and operating systems.	You are trying to launch a RHEL/SLES Marketplace AMI with an instance type that isn't supported.	Check your instance type and try to relaunch it with a supported instance type. If you want to extend the support for your desired instance type, contact the support team and open a support case.
Signal-failure function not implemented.	Deployment failed for an unknown reason.	Contact the support team and open a support case.
Not able to access SUSE (or Red Hat) update	The SAP HANA instance is unable to access the SUSE or RHEL update	See if it is possible to temporarily route the internet traffic by using a NAT instance or NAT gateway.

Error message	Possible cause	What to do
repository, package installation may fail.	repository to download OS packages. The possible cause could be that internet traffic for the SAP HANA instance is not routed through a NAT instance or NAT gateway.	If your internet traffic has to go through your internal proxy, contact your network team for access to the SUSE or RHEL update repository. For further assistance, open a support case in the AWS Support Center .
The HANA installation did not succeed. Please check installation media.	SAP HANA installation failed or SAP HANA services didn't start up successfully.	Verify that you have staged the SAP HANA software properly in the S3 bucket with correct permissions. (See step 2 for details.) Another reason could be that SAP HANA services did not start up after the installation. In either case, consider redeploying your instance with the Install SAP software parameter set to No . The Quick Start redeployment will skip the SAP HANA installation, and you can manually install the SAP HANA software to troubleshoot the issue.
We currently do not have sufficient <i>instance-type</i> capacity in the AZ you requested.	The Availability Zone where you are trying to deploy your Amazon EC2 resources didn't have enough capacity, or the instance type may not be available in that particular Availability Zone.	Retry the deployment with a different instance type, or choose a subnet in a different Availability Zone.
WaitCondition timed out. Received 0 conditions when expecting 1.	The SAP HANA template did not deploy. The CFN init did not initialize correctly on the PAS instance.	Double check the pre-requisites for the SAP HANA Quick Start. Create a ticket and attach the <code>/var/log/cfn-init.log</code> file.
Instance ID did not stabilize	You have exceeded your IOPS for the region	Request a limit increase by completing the request form in the AWS Support Center.
SAP master password requirements	Refer to the SAP documentation for password requirements	Change the master password (HANAMasterPass parameter in step 4), and then relaunch the Quick Start. According to SAP documentation, the master password must meet the following requirements: It must be 8 to 14 characters long. It must contain at least one letter (a-z, A-Z). It must contain at least one digit (0-9). It must not contain a backslash (\) or a double quote ("). Additional restrictions may apply, depending on the SAP HANA database: Use at least one number, one lowercase letter, and one uppercase letter.

Error message	Possible cause	What to do
		Use only the following characters: _, a-z, A-Z, 0-9, #, @, \$, ! and do not start the password with a number or an underscore (_).

For additional information, see [Troubleshooting AWS CloudFormation](#) on the AWS website.

Q. I encountered a size limitation error when I deployed the AWS CloudFormation templates.

A. We recommend that you launch the Quick Start templates from the links in this guide or from another S3 bucket. If you deploy the templates from a local copy on your computer or from a non-S3 location, you might encounter template size limitations when you create the stack. For more information about AWS CloudFormation limits, see the [AWS documentation](#).

Q. Where are the logs that monitor the Quick Start deployment progress?

A. The deployment logs are in the `/var/log` directory of the SAP S/4HANA instance. The name of the log file is `cfn-init.log`. You can log in to the SAP S/4HANA instance as soon as you see that it's in the running state and the instance passes the status checks in the Amazon EC2 console.

Q. I launched the SAP S/4HANA Quick Start template for a new VPC, and I see up to five additional templates being launched in the AWS CloudFormation console. Why?

A. When you launch the SAP S/4HANA Quick Start for a new VPC, it launches up to five templates: one template to set up your network infrastructure (VPC, subnets, managed NAT gateway, and so on), a second template to deploy your Linux bastion host, a third template to launch the SAP PAS instance (this template will then call the SAP HANA template), and lastly an optional SAP AAS template if you decide to install AAS. (For the default scenario, there will be more than five templates if you choose to split your ASCS and PAS instances.)

Q. Where is my S/4HANA software staged when it is downloaded from the S3 bucket?

A. The S/4HANA software is downloaded to the `/sapmnt/SWPM/s4-1809` directory and the SWPM software is downloaded to the `/sapmnt/SWPM/sapinst` directory on your PAS instance. NFS or Amazon EFS then shares the `/sapmnt` directory with your AAS instances. By default, the directory is shared with all servers whose hostnames begin with the same first three letters as the PAS instance's hostname. For example, if your PAS instance's

hostname is sidpas00, the `/sapmnt` directory is available to servers with the hostname sid*. You may change this default in your `/etc/exports` file on the PAS instance.

Q. My S/4HANA unattended installation failed. What should I do?

A. The root cause of the installation issue can often be determined from one of these files `/var/log/cfn-init.log`, `/var/log/cfn-init-cmd.log`, `/root/install/install.log`, or `sapinst_dev.log` or `sapinst.log` under default sapinst directory `/tmp`.

For additional information, see [Troubleshooting AWS CloudFormation](#).

Send us feedback

To post feedback, submit feature ideas, or report bugs, use the **Issues** section of the [GitHub repository](#) for this Quick Start. If you'd like to submit code, please review the [Quick Start Contributor's Guide](#).

Additional resources

AWS resources

- [Getting Started Resource Center](#)
- [AWS General Reference](#)
- [AWS Glossary](#)

AWS services

- [AWS CloudFormation](#)
- [Amazon EBS](#)
- [Amazon EFS](#)
- [Amazon EC2](#)
- [IAM](#)
- [Amazon VPC](#)
- [Amazon S3](#)
- [Security Group](#)
- [Auto Scaling Groups](#)
- [AWS Route 53](#)

- [AWS System Manager](#)

S/4HANA documentation

- SAP Help Portal – [SAP S/4HANA 1809](#)
- [SAP Product Availability Matrix](#)
- [SAP Knowledge Base](#)
- [SAP Provisioning Manager](#)
- [SAP S/4HANA 1809 Installation Guide](#)

Other Quick Start reference deployments

- [AWS Quick Start home page](#)

Document revisions

Date	Change	In sections
September 2019	Additional support for SLES12 SP4, SLES15, RHEL7.4, RHEL 7.5 and RHEL7.6	Cost and Licenses Deployment steps Option 1: Parameters for deploying S/4HANA into a new VPC Option 2: Parameters for deploying S/4HANA into an existing VPC
	Adding SWPM download directory on S/4HANA application instances	FAQ
May 2019	Initial publication	—

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