

Solution

Quick Deployment of Cloud Environment for SAP S4HANA

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Contents

1 Solution Overview.....	1
2 Resource Planning and Costs.....	4
3 Procedure.....	9
3.1 Preparations.....	9
3.2 Quick Deployment.....	12
3.3 Getting Started.....	33
3.4 Quick Uninstallation.....	34
4 Appendix.....	36
5 Change History.....	37

1 Solution Overview

Scenarios

This solution allows you to deploy a high availability (HA) environment on Huawei Cloud for **SAP S/4HANA** with just a few clicks, facilitating digital transformation and providing a highly-reliable and high-performance SAP S/4HANA service architecture on the cloud. It is suitable for the following scenarios:

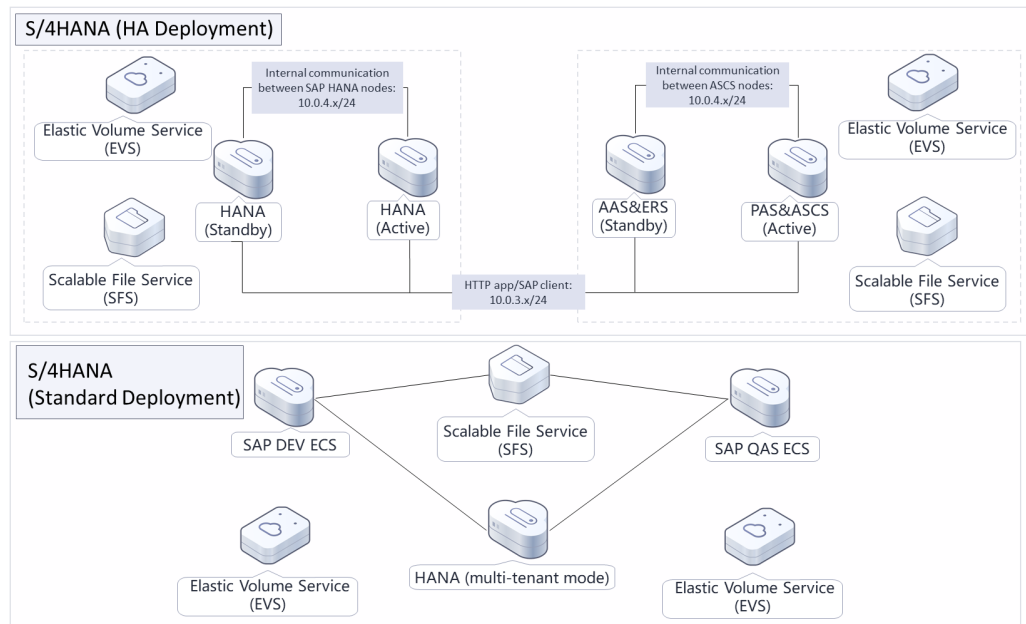
- Enterprises want to quickly deploy SAP S/4HANA at a low cost and demand a highly-reliable and high-performance service architecture.
- SAP S/4HANA cloud migration

Architecture

This solution uses Elastic Cloud Server (ECS), Elastic Volume Service (EVS), and Scalable File Service (SFS) to provide a secure and reliable compute, storage, and network environment for SAP S/4HANA, facilitating cloud migration for SAP S/4HANA.

The following figure shows how can you deploy this solution.

Figure 1-1 Solution architecture



This solution will:

- Create one Virtual Private Cloud (VPC) and four subnets. The subnets are used for service/client, internal heartbeat communication, and SFS Turbo file system.
- Create two security groups, associate them with ECSs and SFS Turbo file systems, and configure security group rules to protect ECSs.
- Create four ECSs and attach two NICs to each ECS. One NIC is used for service data communication, and the other is used for heartbeat communication. Configure the mapping between IP addresses and host names in the hosts file for installing SAP S/4HANA.
- Create two virtual IP addresses (VIPs). Bind one VIP to the active and standby SAP HANA database nodes, and the other to the active and standby SAP S/4HANA nodes for HA.
- Create 20 EVS disks and use scripts to automatically attach EVS disks to corresponding directories on each ECS based on the file system plan.
- Create two SFS Turbo file systems. They will be automatically mounted to the corresponding directories on the ECSs to provide shared file storage.

Advantages

- **SAP-certified**
Huawei Cloud has many SAP certifications for servers, virtualization, SAP HANA, SAP ASE, SAP NetWeaver Application Server, SAP Business One, and more.
- **Flexible Scaling**
Compute and storage resources are provisioned on demand and can be flexibly scaled so that you can have a well control over the costs on running the SAP system.

- Easy Deployment
Quick resource provisioning and environment configuration

Notes and Constraints

- Before deploying this solution, you have registered an account with access to the target region.
- Read the [SAP S/4HANA \(1809\) HA Deployment Best Practice](#), and this solution automatically performs operations in [Software Installation](#). You need to manually install the software.
- If you use the OS [SUSE Linux for SAP 15 SP3](#) provided by Huawei Cloud KooGallery, you need to pay for the according image. This image is used by default. You can also upload a SUSE Linux for SAP OS to [create a private image](#), and enter the image ID for according parameters to complete cloud resource creation.
- Currently, SFS Turbo cannot be purchased on a yearly/monthly basis. After it is created, you can manually change the billing mode to yearly/monthly.

2 Resource Planning and Costs

This solution will deploy the resources listed in the following table. The costs are only estimates and may differ from the final prices. For details, see [Price Calculator](#).

HA Deployment

Table 2-1 Resource and cost planning (yearly/monthly)

Huawei Cloud Service	Example Configuration	Estimated Monthly Cost
Elastic Cloud Server (ECS)	<ul style="list-style-type: none">• Region: AP-Singapore• Billing Mode: Yearly/Monthly• CPU Architecture: x86 ECS c6.xlarge.2 4 vCPUs 8 GiB• Image: SUSE for SAP 15 SP3 3 to 4 vCPUs Singapore• System Disk: High I/O 40 GB• Quantity: 2	261.29 x 2 = \$522.58 USD
Elastic Cloud Server (ECS)	<ul style="list-style-type: none">• Region: AP-Singapore• Billing Mode: Yearly/Monthly• CPU Architecture: x86 ECS c6.2xlarge.4 8 vCPUs 32 GiB• Image: SUSE for SAP 15 SP3 5 to 300 vCPUs Singapore• System Disk: High I/O 40 GB• Quantity: 2	432.20 x 2 = \$864.4 USD

Huawei Cloud Service	Example Configuration	Estimated Monthly Cost
Scalable File Service (SFS) Turbo	<ul style="list-style-type: none"> Region: AP-Singapore Billing Mode: Yearly/Monthly Type: SFS Turbo Standard Storage: 500 GB Required Duration: 1 month Quantity: 2 	40 x 2 = \$80.00 USD
Elastic Volume Service (EVS)	<ul style="list-style-type: none"> Region: AP-Singapore Billing Mode: Yearly/Monthly Disk Type: Ultra-high I/O Quantity: 20 (total capacity: 2,440 GB) Required Duration: 1 month 	\$497.76 USD
Total		\$1964.74 USD

Table 2-2 Resource and cost planning (pay-per-use)

Huawei Cloud Service	Example Configuration	Estimated Monthly Cost
Elastic Cloud Server (ECS)	<ul style="list-style-type: none"> Pay-per-use: \$0.615 USD/hour/ECS Region: AP-Singapore Billing Mode: Pay-per-use CPU Architecture: x86 ECS c6.xlarge.2 4 vCPUs 8 GiB Image: SUSE for SAP 15 SP3 3 to 4 vCPUs Singapore System Disk: High I/O 40 GB Quantity: 2 	0.615 x 24 x 30 x 2 = \$885.6 USD

Huawei Cloud Service	Example Configuration	Estimated Monthly Cost
Elastic Cloud Server (ECS)	<ul style="list-style-type: none"> ● Pay-per-use: \$0.9725 USD/hour/ECS ● Region: AP-Singapore ● Billing Mode: Pay-per-use ● CPU Architecture: x86 ECS c6.2xlarge.4 8 vCPUs 32 GiB ● Image: SUSE for SAP 15 SP3 5 to 300 vCPUs Singapore ● System Disk: High I/O 40 GB ● Quantity: 2 	$0.9725 \times 24 \times 30 \times 2 =$ \$1400.4 USD
Scalable File Service (SFS) Turbo	<ul style="list-style-type: none"> ● Pay-per-use: \$0.06 USD/hour ● Region: AP-Singapore ● Billing Mode: Pay-per-use ● Type: SFS Turbo Standard ● Storage: 500 GB ● Required Duration: 720 hours ● Quantity: 2 	$46.08 \times 2 =$ \$92.16 USD
Elastic Volume Service (EVS)	<ul style="list-style-type: none"> ● Pay-per-use: \$0.68 USD/hour ● Region: AP-Singapore ● Billing Mode: Pay-per-use ● Disk Type: Ultra-high I/O ● Quantity: 20 (total capacity: 2,440 GB) ● Required Duration: 720 hours 	\$491.90 USD
Total		\$2870.06 USD

Standard Deployment

Table 2-3 Resource and cost planning (yearly/monthly)

Huawei Cloud Service	Example Configuration	Estimated Monthly Cost
Elastic Cloud Server (ECS)	<ul style="list-style-type: none"> ● Region: AP-Singapore ● Billing Mode: Yearly/Monthly ● CPU Architecture: x86 ECS c6.xlarge.2 4 vCPUs 8 GiB ● Image: SUSE for SAP 15 SP3 3 to 4 vCPUs Singapore ● System Disk: High I/O 40 GB ● Quantity: 2 	261.29 x 2 = \$522.58 USD
Elastic Cloud Server (ECS)	<ul style="list-style-type: none"> ● Region: AP-Singapore ● Billing Mode: Yearly/Monthly ● CPU Architecture: x86 ECS c6.2xlarge.4 8 vCPUs 32 GiB ● Image: SUSE for SAP 15 SP3 5 to 300 vCPUs Singapore ● System Disk: High I/O 40 GB ● Quantity: 1 	\$432.20 USD
Scalable File Service (SFS) Turbo	<ul style="list-style-type: none"> ● Region: AP-Singapore ● Billing Mode: Yearly/Monthly ● Type: SFS Turbo Standard ● Storage: 500 GB ● Required Duration: 1 month 	\$40.00 USD
Elastic Volume Service (EVS)	<ul style="list-style-type: none"> ● Region: AP-Singapore ● Billing Mode: Yearly/Monthly ● Disk Type: Ultra-high I/O ● Quantity: 12 (total capacity: 1,280 GB) ● Required Duration: 1 month 	\$261.12 USD
Total	\$1255.9 USD	

Table 2-4 Resource and cost planning (pay-per-use)

Huawei Cloud Service	Example Configuration	Estimated Monthly Cost
Elastic Cloud Server (ECS)	<ul style="list-style-type: none"> • Pay-per-use: \$0.615 USD/hour/ECS • Region: AP-Singapore • Billing Mode: Pay-per-use • CPU Architecture: x86 ECS c6.xlarge.2 4 vCPUs 8 GiB • Image: SUSE for SAP 15 SP3 3 to 4 vCPUs Singapore • System Disk: High I/O 40 GB • Quantity: 2 	$0.615 \times 24 \times 30 \times 2 =$ \$885.6 USD
Elastic Cloud Server (ECS)	<ul style="list-style-type: none"> • Pay-per-use: \$0.9725 USD/hour/ECS • Region: AP-Singapore • Billing Mode: Pay-per-use • CPU Architecture: x86 ECS c6.2xlarge.4 8 vCPUs 32 GiB • Image: SUSE for SAP 15 SP3 5 to 300 vCPUs Singapore • System Disk: High I/O 40 GB • Quantity: 1 	$0.9725 \times 24 \times 30 =$ \$700.2 USD
Scalable File Service (SFS) Turbo	<ul style="list-style-type: none"> • Pay-per-use: \$0.06 USD/hour • Region: AP-Singapore • Billing Mode: Pay-per-use • Type: SFS Turbo Standard • Storage: 500 GB • Required Duration: 720 hours 	\$46.08 USD
Elastic Volume Service (EVS)	<ul style="list-style-type: none"> • Pay-per-use: \$0.36 USD/hour • Region: AP-Singapore • Billing Mode: Pay-per-use • Disk Type: Ultra-high I/O • Quantity: 12 (total capacity: 1,280 GB) • Required Duration: 720 hours 	\$258.05 USD
Total	\$1889.93 USD	

3 Procedure

- [3.1 Preparations](#)
- [3.2 Quick Deployment](#)
- [3.3 Getting Started](#)
- [3.4 Quick Uninstallation](#)

3.1 Preparations

Creating the rf_admin_trust Agency

- Step 1** On the Huawei Cloud official website, log in to the **console**. Hover over the account name and choose **Identity and Access Management**.

Figure 3-1 Console

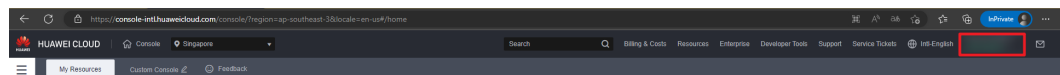
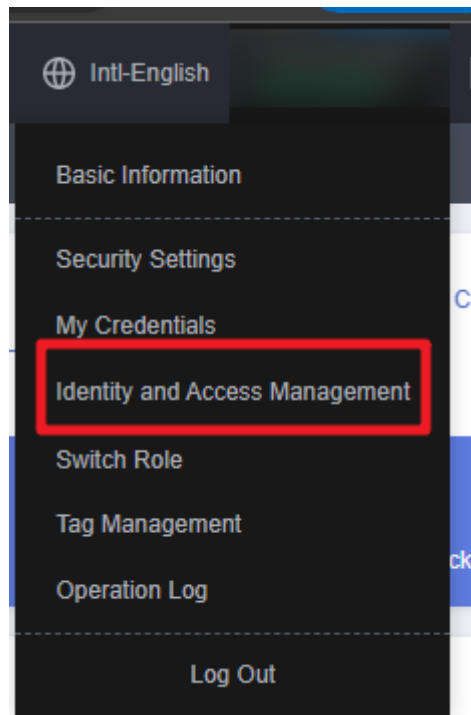
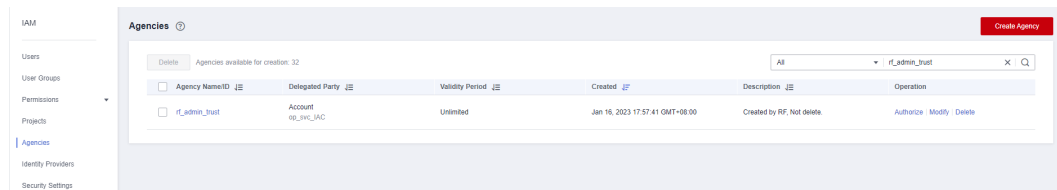


Figure 3-2 Identity and Access Management



Step 2 Choose **Agencies** in the navigation pane and search for the **rf_admin_trust** agency.

Figure 3-3 Agency list



- If the agency is found, skip the following steps.
- If the agency is not found, perform the following steps.

Step 3 Click **Create Agency** in the upper right corner of the page. On the displayed page, enter **rf_admin_trust** for **Agency Name**, select **Cloud service** for **Agency Type**, select **RFS** for **Cloud Service**, and click **Next**.

Figure 3-4 Create Agency

Agencies / Create Agency

* Agency Name

* Agency Type Account
Delegate another HUAWEI CLOUD account to perform operations on your resources.
 Cloud service
Delegate a cloud service to access your resources in other cloud services.

* Cloud Service

* Validity Period

Description
0/255

Step 4 Search for **Tenant Administrator**, select it in the search results, and click **Next**.

Figure 3-5 Selecting a policy/role

Authorize Agency

1 Select Policy/Role 2 Select Scope 3 Finish

Assign selected permissions to rf_admin_trust1. Create Policy

View Selected (1)	Copy Permissions from Another Project	Policy/Role Name	Type
<input type="checkbox"/>		DME AdministratorAccess Recommended Data Model Engine tenant administrator with full permissions.	System-defined policy
<input checked="" type="checkbox"/>		Tenant Administrator Tenant Administrator (Exclude IAM)	System-defined role
<input type="checkbox"/>		CS Tenant Admin Cloud Stream Service Tenant Administrator, can manage multiple CS users	System-defined role

Step 5 Select **All resources** and click **OK**.

Figure 3-6 Selecting a scope

Authorize Agency

1 Select Policy/Role 2 Select Scope 3 Finish

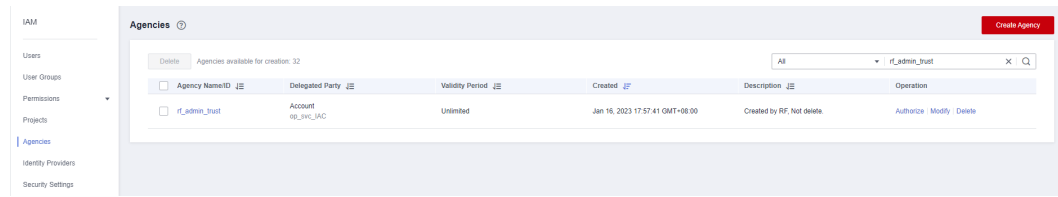
i The following are recommended scopes for the permissions you selected. Select the desired scope requiring minimum authorization.

Scope

All resources
IAM users will be able to use all resources, including those in enterprise projects, region-specific projects, and global services under your account based on assigned permissions.
[Show More](#)

Step 6 If **rf_admin_trust** is displayed in the agency list, the agency has been created.

Figure 3-7 Agency list



----End

3.2 Quick Deployment

This section describes how to deploy the solution.

Table 3-1 Parameters required for HA deployment

Parameter	Type	Mandatory	Description	Default Value
availability_zone	string	Yes	AZ where the solution is deployed. Only AZs in AP-Singapore are supported. For details about how to obtain AZ information, see here .	ap-southeast-3c
enterprise_project_id	string	Yes	Enterprise project ID. Obtain the ID in Enterprise Project Management (EPS) . 0 indicates the default enterprise project.	0
vpc_name	string	Yes	VPC name. This template uses a newly created VPC and the VPC name must be unique. It can contain 1 to 64 characters and can include letters, digits, underscores (_), hyphens (-), and periods (.).	sap-s4hana-ha-demo
vpc_cidr	string	Yes	VPC CIDR block. Value range: 10.0.0.0/8-24, 172.16.0.0/12-24, 192.168.0.0/16-24.	10.10.0.0/16
subnet_sap_cidr	string	Yes	Subnet CIDR block of the ECS where SAP S/4HANA application software is to be deployed. Value range: 10.0.0.0/8-24, 172.16.0.0/12-24, 192.168.0.0/16-24.	10.10.1.0/24
subnet_db_cidr	string	Yes	Subnet CIDR block of SAP HANA. Value range: 10.0.0.0/8-24, 172.16.0.0/12-24, 192.168.0.0/16-24.	10.10.2.0/24

Parameter	Type	Mandatory	Description	Default Value
subnet_hb_cidr	string	Yes	Subnet CIDR block of heartbeat. Value range: 10.0.0.0/8-24, 172.16.0.0/12-24, 192.168.0.0/16-24.	10.10.3.0/24
subnet_sfs_turbo_cidr	string	Yes	SFS Turbo subnet CIDR block. Value range: 10.0.0.0/8-24, 172.16.0.0/12-24, 192.168.0.0/16-24.	10.10.4.0/24
ecs_password	string	Yes	ECS initial password. After an ECS is created, change the password by referring to Resetting the Password for Logging In to an ECS on the Management Console . It can contain 8 to 26 characters and must include at least three of the following character types: uppercase letters, lowercase letters, digits, and special characters (!@%_-+[];./?).	
sap_s4_name	string	Yes	Prefix of the name of the ECS where SAP S/4HANA is deployed. The name must be unique. It can contain 1 to 47 characters and can include letters, digits, underscores (_), hyphens (-), and periods (.).	S4
sid	string	Yes	SAP system ID. The value can contain 3 to 8 characters, including letters and digits. It is recommended that the value start with a letter.	PRD
ascs_instance_number	string	Yes	ASCS instance number, which is used to form a directory name. Value range: a two-digit number.	01
ers_instance_number	string	Yes	ERS instance number, which is used to form a directory name. Value range: a two-digit number. The value must be different from that of ascs_instance_number .	02

Parameter	Type	Mandatory	Description	Default Value
ecs_s4_flavor	string	Yes	Flavor name of the ECS where SAP S/4HANA is to be deployed. For details about the supported flavors , see the marketplace image SUSE Linux for SAP 15 SP3 (a flavor with one to four vCPUs are supported by the default image).	c6.xlarge.2 (c6 4 vCPUs 8 GiB)
s4_image_1	string	Yes	Image ID of the active ECS where SAP S/4HANA is to be deployed, which can be a shared image ID, private image ID, or public image ID. The marketplace image SUSE Linux for SAP 15 SP3 is used by default.	a8b7692c-db58-40f4-8ba8-d90d6d1057b6
s4_image_2	string	Yes	Image ID of the standby ECS where SAP S/4HANA is to be deployed, which can be a shared image ID, private image ID, or public image ID. The marketplace image SUSE Linux for SAP 15 SP3 is used by default.	a8b7692c-db58-40f4-8ba8-d90d6d1057b6
s4_system_disk_type	string	Yes	Type of the system disk used by the ECS where SAP S/4HANA is to be deployed. Value options: ESSD (Extreme SSD), SSD (Ultra-high I/O), GPSSD (General Purpose SSD), or SAS (High I/O).	SAS
s4_system_disk_size	number	Yes	Size of the system disk used by the ECS where SAP S/4HANA is to be deployed. The unit is GB. The value ranges from 40 to 1024. The system disk size cannot be reduced. Default value: 40.	40
s4_businessIP_1	string	Yes	Service IP address of the active ECS where SAP S/4HANA is to be deployed. Value range: an IP address within the CIDR block of subnet-sap .	10.10.1.11

Parameter	Type	Mandatory	Description	Default Value
s4_businessIP_2	string	Yes	Service IP address of the standby ECS where SAP S/4HANA is to be deployed. Value range: an IP address within the CIDR block of subnet-sap .	10.10.1.12
s4_heartbeatIP_1	string	Yes	Heartbeat IP address of the active ECS where SAP S/4HANA is to be deployed. Value range: an IP address within the CIDR block of sap-hb .	10.10.3.11
s4_heartbeatIP_2	string	Yes	Heartbeat IP address of the standby ECS where SAP S/4HANA is to be deployed. Value range: an IP address within the CIDR block of sap-hb .	10.10.3.12
s4_vip	string	Yes	Virtual IP address of the active/standby ECS where SAP S/4HANA is to be deployed. Value range: an IP address within the CIDR block of subnet-sap .	10.10.1.200
evs_s4_swap_type	string	Yes	Type of EVS disk used as the swap volume. Value options: SAS (high I/O), SSD (ultra-high I/O), GPSSD (general-purpose SSD), and ESSD (Extreme SSD).	SSD
evs_s4_swap_size	number	Yes	Size of EVS disk used as the swap volume. The unit is GB, and the value ranges from 10 to 32768.	20
evs_s4_sap_type	string	Yes	EVS disk type. Value options: SAS (high I/O), SSD (ultra-high I/O), GPSSD (general-purpose SSD), and ESSD (Extreme SSD). Mount path: /usr/sap.	SSD
evs_s4_sap_size	string	Yes	EVS disk size in GB. The value ranges from 10 to 32768. Mount path: /usr/sap.	50
evs_s4_sbd_type	string	Yes	Type of shared EVS disk used as the SBD volume. Value options: SAS (high I/O), SSD (ultra-high I/O), GPSSD (general-purpose SSD), and ESSD (Extreme SSD).	SSD

Parameter	Type	Mandatory	Description	Default Value
evs_s4_sbd_size	number	Yes	Size of shared EVS disk used as the SBD volume. The unit is GB, and the value ranges from 10 to 32768.	10
evs_s4_ascs_type	string	Yes	Type of shared EVS disk. Value options: SAS (high I/O), SSD (ultra-high I/O), GPSSD (general-purpose SSD), and ESSD (Extreme SSD). Mount path: /usr/sap/<SID>/ASCSEX. The disk is shared to the active ASCS node for ASCS instance installation.	SSD
evs_s4_ascs_size	number	Yes	Size of shared EVS disk. The unit is GB, and the value ranges from 10 to 32768. Mount path: /usr/sap/<SID>/ASCSEX. The disk is shared to the active ASCS node for ASCS instance installation.	80
evs_s4_ers_type	string	Yes	Type of shared EVS disk. Value options: SAS (high I/O), SSD (ultra-high I/O), GPSSD (general-purpose SSD), and ESSD (Extreme SSD). Mount path: /usr/sap/<SID>/ERSXX. The disk is shared to the standby ASCS node for ERS instance installation.	SSD
evs_s4_ers_size	number	Yes	Size of shared EVS disk. The unit is GB, and the value ranges from 10 to 32768. Mount path: /usr/sap/<SID>/ERSXX. The disk is shared to the standby ASCS node for ERS instance installation.	80
sap_hana_name	string	Yes	Prefix of the name of the ECS where SAP HANA is deployed. The name must be unique. It can contain 1 to 52 characters and can include letters, digits, underscores (_), hyphens (-), and periods (.).	HANA

Parameter	Type	Mandatory	Description	Default Value
ecs_hana_flavor	string	Yes	Flavor name of the ECS where SAP HANA is to be deployed. For details about the supported flavors , see the marketplace image SUSE Linux for SAP 15 SP3 (eight or more vCPUs are supported by the default image ID).	c6.2xlarge.4 (c6 8 vCPUs 32 GiB)
hana_image_1	string	Yes	Image ID of the active ECS where SAP HANA is to be deployed, which can be a shared image ID, private image ID, or public image ID. The marketplace image SUSE Linux for SAP 15 SP3 is used by default.	eafbd213-067a-409e-9c0f-07a3d6ac1488
hana_image_2	string	Yes	Image ID of the standby ECS where SAP HANA is to be deployed, which can be a shared image ID, private image ID, or public image ID. The marketplace image SUSE Linux for SAP 15 SP3 is used by default.	eafbd213-067a-409e-9c0f-07a3d6ac1488
hana_system_disk_type	string	Yes	Type of the system disk. Value options: ESSD (Extreme SSD), SSD (Ultra-high I/O), GPSSD (General Purpose SSD), or SAS (High I/O).	SAS
hana_system_disk_size	number	Yes	Size of the system disk used by the ECS where SAP HANA is to be deployed. The unit is GB. The value ranges from 40 to 1024. The system disk size cannot be reduced.	40
hana_businessIP_1	string	Yes	Service IP address of the active ECS where SAP HANA is to be deployed. Value range: an IP address within the CIDR block of subnet-db .	10.10.2.21
hana_businessIP_2	string	Yes	Service IP address of the standby ECS where SAP HANA is to be deployed. Value range: an IP address within the CIDR block of subnet-db .	10.10.2.22

Parameter	Type	Mandatory	Description	Default Value
hana_heartbeatIP_1	string	Yes	Heartbeat IP address of the active ECS where SAP HANA is to be deployed. Value range: an IP address within the CIDR block of heartbeatIP .	10.10.3.21
hana_heartbeatIP_2	string	Yes	Heartbeat IP address of the standby ECS where SAP HANA is to be deployed. Value range: an IP address within the CIDR block of heartbeatIP .	10.10.3.22
hana_vip	string	Yes	Virtual IP address of the active/standby ECS where SAP HANA is to be deployed. Value range: an IP address within the CIDR block of subnet-db .	10.10.2.200
evs_hana_swap_type	string	Yes	Type of EVS disk used as the swap volume. Value options: SAS (high I/O), SSD (ultra-high I/O), GPSSD (general-purpose SSD), and ESSD (Extreme SSD).	SSD
evs_hana_swap_size	number	Yes	Size of EVS disk used as the swap volume. The unit is GB, and the value ranges from 10 to 32768.	10
evs_hana_sap_type	string	Yes	EVS disk type. Value options: SAS (high I/O), SSD (ultra-high I/O), GPSSD (general-purpose SSD), and ESSD (Extreme SSD). Mount path: /usr/sap.	SSD
evs_hana_sap_size	string	Yes	EVS disk size in GB. The value ranges from 10 to 32768. Mount path: /usr/sap.	50
evs_hana_log_type	string	Yes	EVS disk type. Value options: SAS (high I/O), SSD (ultra-high I/O), GPSSD (general-purpose SSD), and ESSD (Extreme SSD). Mount path: /hana/log.	SSD

Parameter	Type	Mandatory	Description	Default Value
evs_hana_log_size	number	Yes	EVS disk size in GB. The value ranges from 10 to 32768. Mount path: /hana/log. When the memory size is less than or equal to 512 GB, the log volume capacity is half of the memory size and rounded up for decimal places. When the memory size is greater than 512 GB, the log volume capacity is 512 GB.	200
evs_hana_shared_type	string	Yes	EVS disk type. Value options: SAS (high I/O), SSD (ultra-high I/O), GPSSD (general-purpose SSD), and ESSD (Extreme SSD). Mount path: /hana/shared.	SSD
evs_hana_shared_size	number	Yes	EVS disk size in GB. The value ranges from 10 to 32768. Mount path: /hana/shared. The recommended size is at least 1.2 times that of the memory size.	400
evs_hana_data_type	string	Yes	EVS disk type. Value options: SAS (high I/O), SSD (ultra-high I/O), GPSSD (general-purpose SSD), and ESSD (Extreme SSD). Mount path: /hana/data.	SSD
evs_hana_data_size	number	Yes	EVS disk size in GB. The value ranges from 10 to 32768. Mount path: /hana/data. The recommended size is at least 1.2 times that of the memory size.	400
evs_hana_sbd_type	string	Yes	Type of shared EVS disk used as the SBD volume. Value options: SAS (high I/O), SSD (ultra-high I/O), GPSSD (general-purpose SSD), and ESSD (Extreme SSD).	SSD
evs_hana_sbd_size	number	Yes	Size of shared EVS disk used as the SBD volume. The unit is GB, and the value ranges from 10 to 32768.	10

Parameter	Type	Mandatory	Description	Default Value
obs_bucket_name	string	No	OBS bucket name prefix. The bucket name must be unique. If OBS is not used for HANA backup, set this parameter to null . Value range: 3 to 56 characters, including lowercase letters, digits, hyphens (-), and periods (.).	
ak	string	No	Access key ID. The access key ID is provided for the obsfs tool to mount the parallel file system. If the parallel file system does not need to be mounted, set it to null . For details about how to obtain the access key ID, see here .	
sk	string	No	Secret access key used together with the access key ID. The secret access key ID is provided for the obsfs tool to mount the parallel file system. If the parallel file system does not need to be mounted, set it to null .	
charging_mode	string	Yes	Billing mode. Value options: prePaid (yearly/monthly) or postPaid (pay-per-use).	prePaid
charging_unit	string	No	Subscription period unit. This parameter is valid only when charging_mode is set to prePaid . The value can be month or year .	month
charging_period	number	No	Subscription period. This parameter is valid only when charging_mode is set to prePaid . If charging_unit is set to month , the value ranges from 1 to 9 . If charging_unit is set to year , the value ranges from 1 to 3 .	1

Table 3-2 Parameters required for standard deployment

Parameter	Type	Mandatory	Description	Default Value
availability_zone	string	No	AZ where the solution is deployed. Only AZs in AP-Singapore are supported. For details about how to obtain AZ information, see here .	ap-southeast-3c
enterprise_project_id	string	Yes	Enterprise project ID. Obtain the ID in Enterprise Project Management (EPS) . 0 indicates the default enterprise project.	0
vpc_name	string	No	VPC name. This template uses a newly created VPC and the VPC name must be unique. It can contain 1 to 64 characters and can include letters, digits, underscores (_), hyphens (-), and periods (.).	sap-s4hana-standard-demo
vpc_cidr	string	No	VPC CIDR block. Value range: 10.0.0.0/8-24, 172.16.0.0/12-24, 192.168.0.0/16-24.	10.10.0.0/16
subnet_sap_cidr	string	No	Subnet CIDR block of the ECS where SAP S/4HANA application software is to be deployed. Value range: 10.0.0.0/8-24, 172.16.0.0/12-24, 192.168.0.0/16-24.	10.10.101.0/24
subnet_db_cidr	string	No	Subnet CIDR block of SAP HANA. Value range: 10.0.0.0/8-24, 172.16.0.0/12-24, 192.168.0.0/16-24.	10.10.102.0/24
subnet_sfs_turbo_cidr	string	No	SFS Turbo subnet CIDR block. Value range: 10.0.0.0/8-24, 172.16.0.0/12-24, 192.168.0.0/16-24.	10.10.103.0/24
dev_name	string	No	Name of the ECS where the SAP development environment (DEV) is deployed. It can contain 1 to 64 characters and can include letters, digits, underscores (_), hyphens (-), and periods (.).	DEV

Parameter	Type	Mandatory	Description	Default Value
ecs_dev_flavor	string	No	Flavor name of the ECS where the SAP development environment is deployed. For details about the supported flavors , see the marketplace image SUSE Linux for SAP 15 SP3 (a flavor with one to four vCPUs are supported by the default image).	c6.xlarge.2 (c6 4 vCPUs 8 GiB)
dev_image_id	string	No	Image ID of the ECS where the SAP development environment is deployed, which can be a shared image ID, private image ID, or public image ID. The marketplace image SUSE Linux for SAP 15 SP3 is used by default.	a8b7692c-db58-40f4-8ba8-d90d6d1057b6
dev_password	string	No	Initial password for logging in to the ECS where the SAP development environment is deployed. After an ECS is created, change the password by referring to Resetting the Password for Logging In to an ECS on the Management Console . It can contain 8 to 26 characters and must include at least three of the following character types: uppercase letters, lowercase letters, digits, and special characters (!@%_-+[{ } ; , / ?).	
dev_system_disk_type	string	No	Type of the system disk used by the ECS where the SAP development environment is deployed. Value options: ESSD (Extreme SSD), SSD (Ultra-high I/O), GPSSD (General Purpose SSD), or SAS (High I/O).	SAS
dev_system_disk_size	number	No	Size of the system disk used by the ECS where the SAP development environment is deployed. The unit is GB, and the value ranges from 40 to 1024. The system disk size cannot be reduced.	40

Parameter	Type	Mandatory	Description	Default Value
dev_businessIP	string	No	Service IP address of the ECS where the SAP development environment is deployed. Value range: an IP address within the CIDR block of subnet-sap .	10.10.101.10
dev_swap_type	string	No	Type of EVS disk attached to the ECS where the SAP development environment is deployed. The disk is used as the swap volume. Value options: SAS (high I/O), SSD (ultra-high I/O), GPSSD (general-purpose SSD), and ESSD (Extreme SSD).	SSD
dev_swap_size	number	No	Size of EVS disk attached to the ECS where the SAP development environment is deployed. The unit is GB, and the value ranges from 10 to 32768. The disk is used as the swap volume.	20
dev_sap_type	string	No	Type of EVS disk attached to the ECS where the SAP development environment is deployed. Mount path: /usr/sap. Value options: SAS (high I/O), SSD (ultra-high I/O), GPSSD (general-purpose SSD), and ESSD (Extreme SSD).	SSD
dev_sap_size	string	No	Size of EVS disk attached to the ECS where the SAP development environment is deployed. The unit is GB, and the value ranges from 10 to 32768. Mount path: /usr/sap.	50
dev_sapmnt_type	string	No	Type of EVS disk attached to the ECS where the SAP development environment is deployed. Mount path: /sapmnt. Value options: SAS (high I/O), SSD (ultra-high I/O), GPSSD (general-purpose SSD), and ESSD (Extreme SSD).	SSD
dev_sapmnt_size	number	No	Size of EVS disk attached to the ECS where the SAP development environment is deployed. Mount path: /sapmnt. The value ranges from 10 to 32768.	40

Parameter	Type	Mandatory	Description	Default Value
qas_name	string	No	Name of the ECS where SAP quality assurance (QAS) is deployed. The name must be unique. It can contain 1 to 64 characters and can include letters, digits, underscores (_), hyphens (-), and periods (.).	QAS
ecs_qas_flavor	string	No	Flavor name of the ECS where SAP QAS is deployed. For details about the supported flavors , see the marketplace image SUSE Linux for SAP 15 SP3 (a flavor with one to four vCPUs are supported by the default image).	c6.xlarge.2 (c6 4 vCPUs 8 GiB)
qas_image_id	string	No	Image ID of the ECS where SAP QAS is deployed, which can be a shared image ID, private image ID, or public image ID. The marketplace image SUSE Linux for SAP 15 SP3 is used by default, and it can only be purchased on a yearly/monthly basis.	a8b7692c- db58-40f4- 8ba8- d90d6d105 7b6
qas_password	string	No	Initial password for logging in to the ECS where SAP QAS is deployed. After an ECS is created, change the password by referring to Resetting the Password for Logging In to an ECS on the Management Console . It can contain 8 to 26 characters and must include at least three of the following character types: uppercase letters, lowercase letters, digits, and special characters (!@%_-=+[{ }];,./?).	
qas_system_disk_type	string	No	Type of the system disk used by the ECS where SAP QAS is deployed. Value options: ESSD (Extreme SSD), SSD (Ultra-high I/O), GPSSD (General Purpose SSD), or SAS (High I/O).	SAS

Parameter	Type	Mandatory	Description	Default Value
qas_system_disk_size	number	No	Size of the system disk used by the ECS where SAP QAS is deployed. The unit is GB, and the value ranges from 40 to 1024. The system disk size cannot be reduced.	40
qas_businessIP	string	No	Service IP address of the ECS where SAP QAS is deployed. Value range: an IP address within the CIDR block of subnet-sap .	10.10.101.20
qas_swap_type	string	No	Type of EVS disk attached to the ECS where SAP QAS is deployed. The disk is used as the swap volume. Value options: SAS (high I/O), SSD (ultra-high I/O), GPSSD (general-purpose SSD), and ESSD (Extreme SSD).	SSD
qas_swap_size	number	No	Size of EVS disk attached to the ECS where SAP QAS is deployed. The unit is GB, and the value ranges from 10 to 32768. The disk is used as the swap volume.	20
qas_sap_type	string	No	Type of EVS disk attached to the ECS where SAP QAS is deployed. Mount path: /usr/sap. Value options: SAS (high I/O), SSD (ultra-high I/O), GPSSD (general-purpose SSD), and ESSD (Extreme SSD).	SSD
qas_sap_size	string	No	Size of EVS disk attached to the ECS where SAP QAS is deployed. The unit is GB, and the value ranges from 10 to 32768. Mount path: /usr/sap.	50
qas_sapmnt_type	string	No	Type of EVS disk attached to the ECS where SAP QAS is deployed. Mount path: /sapmnt. Value options: SAS (high I/O), SSD (ultra-high I/O), GPSSD (general-purpose SSD), and ESSD (Extreme SSD).	SSD

Parameter	Type	Mandatory	Description	Default Value
gas_sapmnt_size	number	No	Size of EVS disk attached to the ECS where SAP QAS is deployed. Mount path: /sapmnt. The value ranges from 10 to 32768.	40
sap_hana_name	string	No	Prefix of the name of the ECS where SAP HANA is deployed. The name must be unique. It can contain 1 to 52 characters and can include letters, digits, underscores (_), hyphens (-), and periods (.).	HANA
ecs_hana_flavor	string	No	Flavor name of the ECS where SAP HANA is to be deployed. For details about the supported flavors , see the marketplace image SUSE Linux for SAP 15 SP3 (eight or more vCPUs are supported by the default image ID).	c6.2xlarge.4 (c6 8 vCPUs 32 GiB)
hana_password	string	No	Initial password for logging in to the ECS where SAP HANA is deployed. After an ECS is created, change the password by referring to Resetting the Password for Logging In to an ECS on the Management Console . It can contain 8 to 26 characters and must include at least three of the following character types: uppercase letters, lowercase letters, digits, and special characters (!@%_-+[{];./?).	
hana_image_id	string	No	Image ID of the ECS where SAP HANA is deployed, which can be a shared image ID, private image ID, or public image ID. The marketplace image SUSE Linux for SAP 15 SP3 is used by default, and it can only be purchased on a yearly/monthly basis.	eafbd213-067a-409e-9c0f-07a3d6ac1488
hana_system_disk_type	string	No	Type of the system disk. Value options: ESSD (Extreme SSD), SSD (Ultra-high I/O), GPSSD (General Purpose SSD), or SAS (High I/O).	SAS

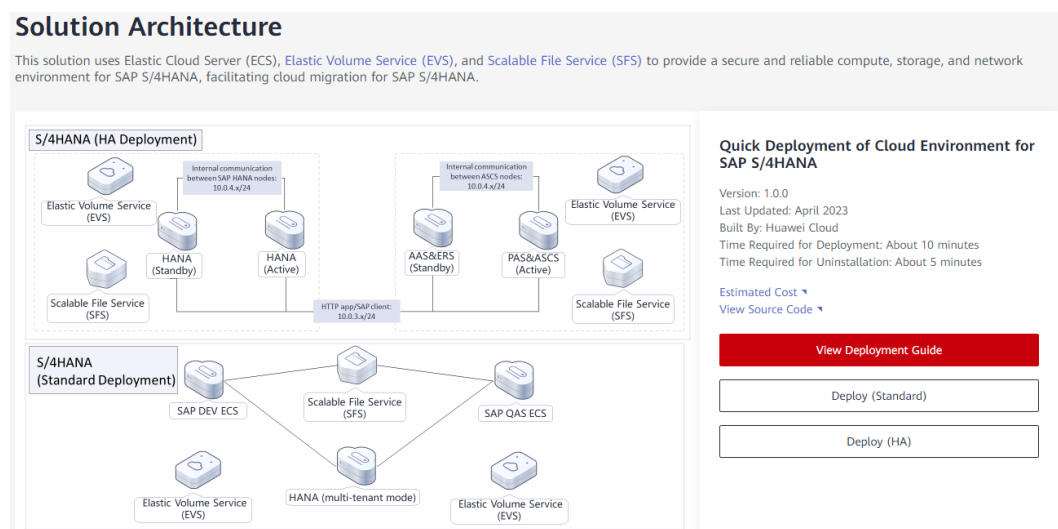
Parameter	Type	Mandatory	Description	Default Value
hana_system_disk_size	number	No	Size of the system disk used by the ECS where SAP HANA is to be deployed. The unit is GB. The value ranges from 40 to 1024. The system disk size cannot be reduced.	40
hana_businessIP	string	No	Service IP address of the active ECS where SAP HANA is to be deployed. Value range: an IP address within the CIDR block of subnet-db .	10.10.102.10
evs_hana_swap_type	string	No	Type of EVS disk used as the swap volume. Value options: SAS (high I/O), SSD (ultra-high I/O), GPSSD (general-purpose SSD), and ESSD (Extreme SSD).	SSD
evs_hana_swap_size	number	No	Size of EVS disk used as the swap volume. The unit is GB, and the value ranges from 10 to 32768.	10
evs_hana_sap_type	string	No	EVS disk type. Value options: SAS (high I/O), SSD (ultra-high I/O), GPSSD (general-purpose SSD), and ESSD (Extreme SSD). Mount path: /usr/sap.	SSD
evs_hana_sap_size	string	No	EVS disk size in GB. The value ranges from 10 to 32768. Mount path: /usr/sap.	50
evs_hana_log_type	string	No	EVS disk type. Value options: SAS (high I/O), SSD (ultra-high I/O), GPSSD (general-purpose SSD), and ESSD (Extreme SSD). Mount path: /hana/log.	SSD
evs_hana_log_size	number	No	EVS disk size in GB. The value ranges from 10 to 32768. Mount path: /hana/log. When the memory size is less than or equal to 512 GB, the log volume capacity is half of the memory size and rounded up for decimal places. When the memory size is greater than 512 GB, the log volume capacity is 512 GB.	200

Parameter	Type	Mandatory	Description	Default Value
evs_hana_shared_type	string	No	EVS disk type. Value options: SAS (high I/O), SSD (ultra-high I/O), GPSSD (general-purpose SSD), and ESSD (Extreme SSD). Mount path: /hana/shared.	SSD
evs_hana_shared_size	number	No	EVS disk size in GB. The value ranges from 10 to 32768. Mount path: /hana/shared. The recommended size is at least 1.2 times that of the memory size.	400
evs_hana_data_type	string	No	EVS disk type. Value options: SAS (high I/O), SSD (ultra-high I/O), GPSSD (general-purpose SSD), and ESSD (Extreme SSD). Mount path: /hana/data.	SSD
evs_hana_data_size	number	No	EVS disk size in GB. The value ranges from 10 to 32768. Mount path: /hana/data. The recommended size is at least 1.2 times that of the memory size.	400
obs_bucket_name	string	Yes	OBS bucket name prefix. The bucket name must be unique. If OBS is not used for HANA backup, set this parameter to null . Value range: 3 to 56 characters, including lowercase letters, digits, hyphens (-), and periods (.).	
ak	string	Yes	Access key ID. The access key ID is provided for the obsfs tool to mount the parallel file system. For details about how to obtain the access key ID, see here .	
sk	string	Yes	Secret access key used together with the access key ID. This parameter is provided for the obsfs tool to mount parallel file systems. If OBS is not used for HANA backup, leave this parameter blank.	
charging_mode	string	No	Billing mode. Value options: prePaid (yearly/monthly) or postPaid (pay-per-use).	prePaid

Parameter	Type	Mandatory	Description	Default Value
charging_unit	string	Yes	Subscription period unit. This parameter is valid only when charging_mode is set to prePaid . The value can be month or year .	month
charging_period	number	Yes	Subscription period. This parameter is valid only when charging_mode is set to prePaid . If charging_unit is set to month , the value ranges from 1 to 9 . If charging_unit is set to year , the value ranges from 1 to 3 .	1

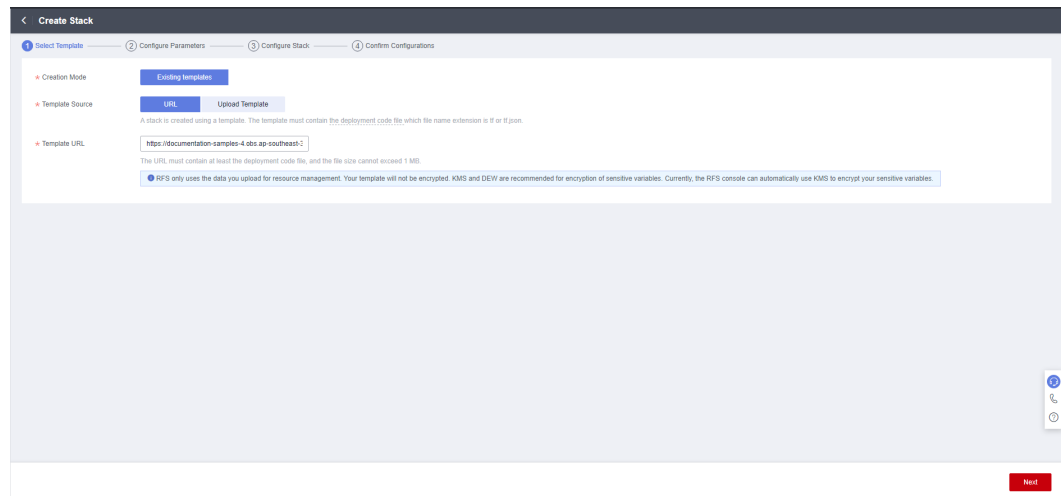
Step 1 Log in to Huawei Cloud Solution Best Practices and choose **Quick Deployment of Cloud Environment for SAP S/4HANA**.

Figure 3-8 Solution



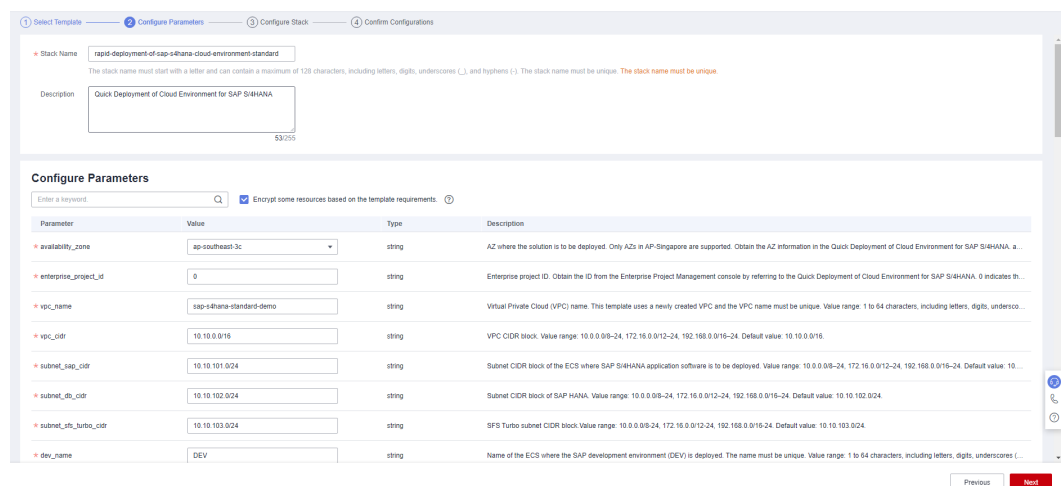
Step 2 Select the desired deployment mode and click the according button to switch to the stack creation page.

Figure 3-9 Creating a stack



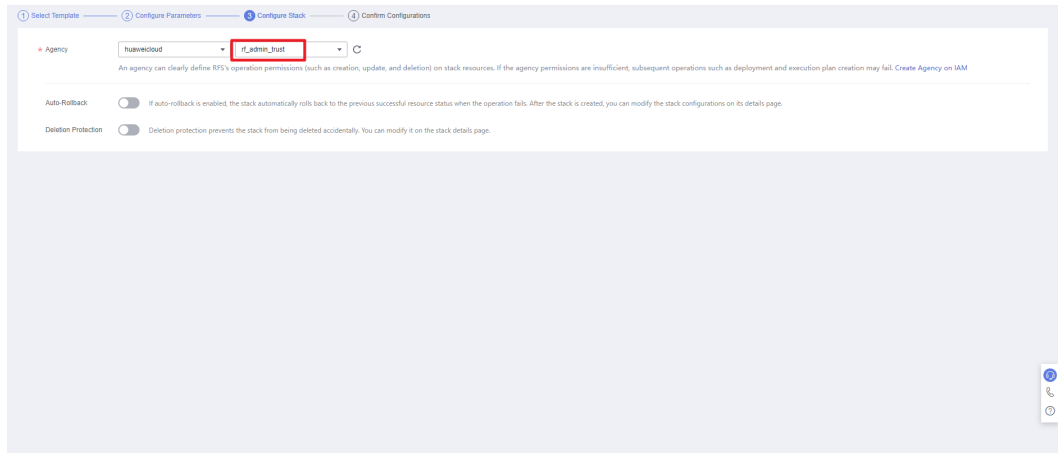
Step 3 Click **Next** and configure parameters by referring to **Table 3-2**.

Figure 3-10 Configuring parameters



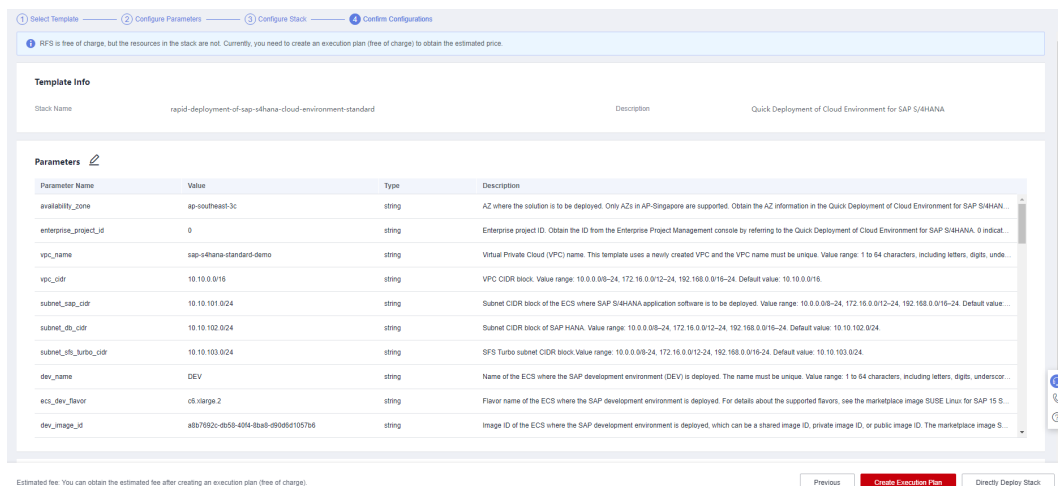
Step 4 On the displayed page, select **rf_admin_trust** from the **Agency** drop-down list and click **Next**.

Figure 3-11 Configuring a stack



Step 5 Click **Next** and confirm the configurations.

Figure 3-12 Confirming the configurations



Step 6 On the **Confirm Configurations** page, click **Create Execution Plan**. In the displayed dialog box, enter the execution plan name, and click **OK**.

Figure 3-13 Creating an execution plan

Create Execution Plan

- Before deploying a stack, you can create an execution plan to preview the stack information and check its configurations to evaluate the impact on running resources.
- RFS is free of charge, but the resources in the stack are not. After the execution plan is created, a stack (occupies the stack quota) for which no resource is enabled is generated, and the estimated price is displayed in the execution plan details.

* Execution Plan Name

Description

0/255

OK Cancel

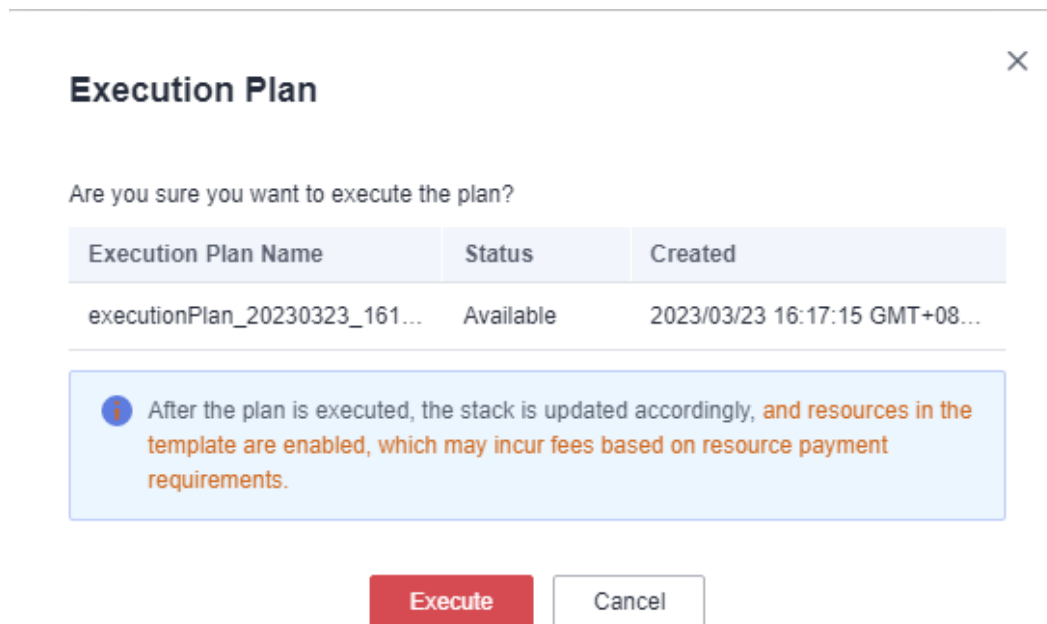
Figure 3-14 Execution plan created

rapid-deployment-of-sap... Delete Update Template Parameter

Execution Plan Name/ID	Status	Estimated Price	Created	Description	Operation
executionPlan_20230323_1617_2f9a	Available	View Details	2023/03/23 16:17:15 GMT+08:00	--	Delete Deploy

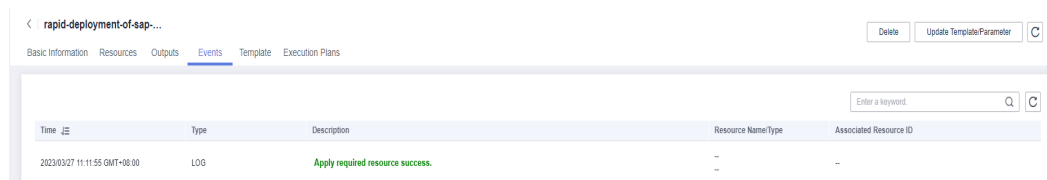
Step 7 Click **Deploy**. In the displayed dialog box, click **Execute**.

Figure 3-15 Confirming the execution plan



Step 8 Click the **Events** tab and check whether the message "Apply required resource success." is displayed. If yes, the solution is successfully deployed.

Figure 3-16 Solution deployed



----End

3.3 Getting Started

(Optional) Modifying Security Group Rules

NOTICE

This solution uses port 22 to remotely log in to the ECS. By default, the VPC subnet created in this solution allows access from port 22. Configure an IP address whitelist by referring to [Modifying a Security Group Rule](#).

A security group is a collection of access control rules for cloud resources, such as cloud servers, containers, and databases, to control inbound and outbound traffic. Cloud resources associated with the same security group have the same security requirements and are mutually trusted within a VPC.

If the rules of the security group associated with your instance cannot meet your requirements, for example, you need to add, modify, or delete a TCP port, do as follows:

- Adding a security group rule: **Add an inbound rule** and enable a TCP port if needed.
- Modifying a security group rule: Inappropriate security group settings can be a serious security risk. You can **modify security group rules** to ensure the network security of your ECSs.
- Deleting a security group rule: If the source or destination IP address of an inbound or outbound security group rule changes, or a port does not need to be enabled, you can **delete the security group rule**.

Software Installation

Step 1 On the **ECS** console, view the created ECSs.

Figure 3-17 Created ECSs

Name/ID	Monitor...	AZ	Status	Specifications/Image	IP Address	Billing Mode	Enterprise Project	Operation
S4-1 54734926-0658-411b-8995-550a4...		AZ3	Running	4 vCPUs 8 GiB c6.xlarge.2 (Marketplace) SUSE for SAP 15 SP3 ...	10.10.1.11 (Private IP)	Pay-per-use Created on Mar 24, 2023 1...	default	Remote Login More ▾
HANA-2 239a07d4-62c8-437b-b88b-2450e1...		AZ3	Running	8 vCPUs 32 GiB c6.2xlarge.4 (Marketplace) SUSE for SAP 15 SP3 ...	10.10.2.22 (Private IP)	Pay-per-use Created on Mar 24, 2023 1...	default	Remote Login More ▾
S4-2 3ba34efc-912d-442e-938b-ccc89...		AZ3	Running	4 vCPUs 8 GiB c6.xlarge.2 (Marketplace) SUSE for SAP 15 SP3 ...	10.10.1.12 (Private IP)	Pay-per-use Created on Mar 24, 2023 1...	default	Remote Login More ▾
HANA-1 7347c2a-eee1-4e0e-ad0e-9d9f7...		AZ3	Running	8 vCPUs 32 GiB c6.2xlarge.4 (Marketplace) SUSE for SAP 15 SP3 ...	10.10.2.21 (Private IP)	Pay-per-use Created on Mar 24, 2023 1...	default	Remote Login More ▾

Step 2 Visit the **SAP S/4HANA (1809) HA Deployment Best Practice** and perform operations in section "Software Installation".

NOTE

Except **Configuring SSH Switching Permissions**, all operations in section "Resource Creation" of the best practice will be automatically performed. You only need to proceed to the follow-up steps. Configure the SSH switching permissions manually if needed.

----End

3.4 Quick Uninstallation

Procedure

Step 1 Log in to **Application Orchestration Service**. On the **Stacks** page, locate the row containing the solution stack you created in **Step 3**, and click **Delete** in the **Operation** column. In the displayed **Delete Stack** dialog box, enter **Delete** in the text box and click **OK**.

Figure 3-18 Deleting a solution stack

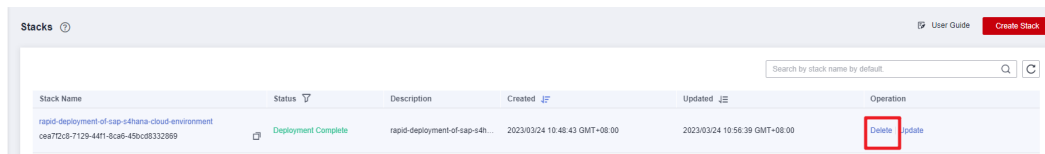
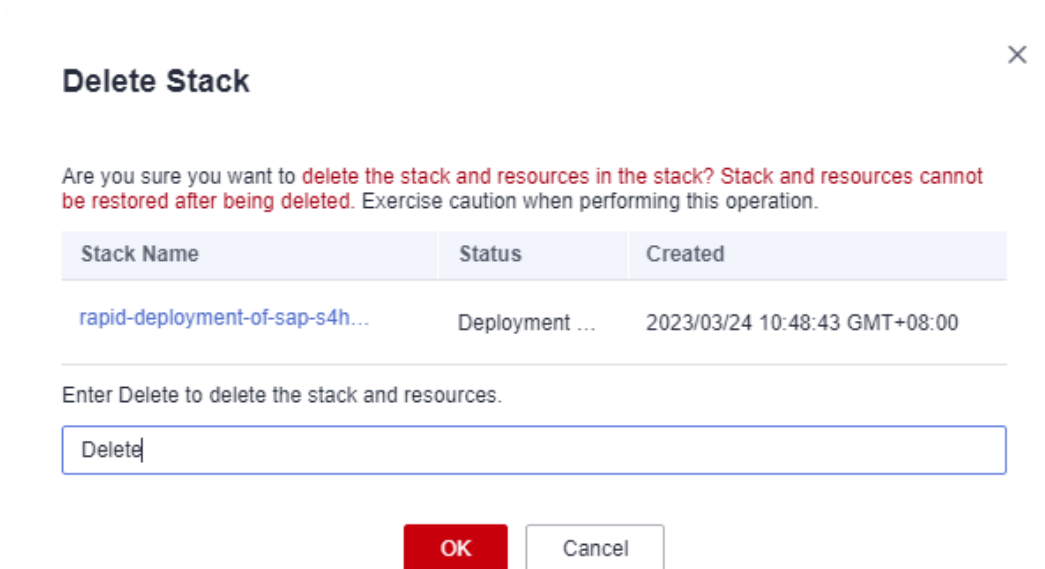


Figure 3-19 Confirming the deletion



----End

4 Appendix

Terms

- **Elastic Cloud Server (ECS):** ECS provides secure, scalable, on-demand compute resources, enabling you to flexibly deploy applications and workloads.
- **Elastic IP (EIP):** EIP provides static public IP addresses and scalable bandwidths that enable your cloud resources to communicate with the Internet. You can easily bind an EIP to an ECS, BMS, virtual IP address, NAT gateway, or load balancer, enabling immediate Internet access.
- **Virtual Private Cloud (VPC):** VPC allows you to isolate online resources with virtual private networks. VPC enables your cloud resources to securely communicate with each other, the internet, and on-premises networks.
- **Security Group:** A security group is a collection of access control rules for ECSs that have the same security protection requirements and are mutually trusted within a VPC. After a security group is created, you can create different access rules for the security group, these rules will apply to any ECS that the security group contains.
- **SAP S/4HANA:** SAP S/4HANA is an enterprise resource planning (ERP) business suite based on the SAP HANA in-memory database and provides consumer-grade user experience through SAP Fiori.
- **PAS** stands for the primary application server.
- **AAS** stands for the additional application server.
- **ABAP Central Services (ASCS)** is the core SAP application service. It consists of following servers:
 - Message Server: works as a load balancer. All user requests are first processed by the message server and then distributed to each SAP application server.
 - Enqueue Server: manages lock table. To prevent different operations from modifying a record at the same time, the table is locked to ensure data consistency.
- The differences between **PAS** and **AAS**: The PAS contains the ASCS, but an AAS does not. In a system, there is only one PAS, but there can be multiple AASs. The number depends on the service requirements. If any problem occurs in the ASCS, the entire SAP system breaks down. Therefore, adopt the HA architecture for the ASCS.

5 Change History

Released On	Description
2023-04-30	This issue is the first official release.