

SAP S/4HANA

Quick Deployment Guide

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1 Overview

This guide describes how to use the Enterprise Management service on HUAWEI CLOUD to quickly deploy Elastic Cloud Server (ECSs) and SAP S/4HANA. You must be familiar with the SAP on Cloud solution and HUAWEI CLOUD services related to the SAP on Cloud solution.

- **Applicable version:** This guide applies only to the deployment of the SAP S/4HANA software of versions 1610, 1709, and 1809 on HUAWEI CLOUD.
- **Reference:** If you are new to HUAWEI CLOUD, visit the following links to obtain more information.
 - Log in at HUAWEI CLOUD (<https://www.huaweicloud.com/intl/en-us/solution/sap/>) to obtain basic information.
 - Log in to HUAWEI CLOUD Help Center (<https://support.huaweicloud.com/intl/en-us/wtsnew-sap/index.html>) to obtain technical details.

Introduction to SAP S/4HANA

SAP S/4HANA is for real-time resource management of enterprise digital services. Based on SAP HANA, a high-performance in-memory platform, SAP S/4HANA provides up to 1800 times faster business analysis and report generation compared with traditional platforms. HUAWEI CLOUD supports automatic deployment of SAP S/4HANA and ECSs, reducing deployment workload and time.

Required Cloud Services

Table 1-1 shows the cloud services used by a resource template to provision SAP S/4HANA ECSs in the quick deployment scenario.

Table 1-1 Required Cloud Services

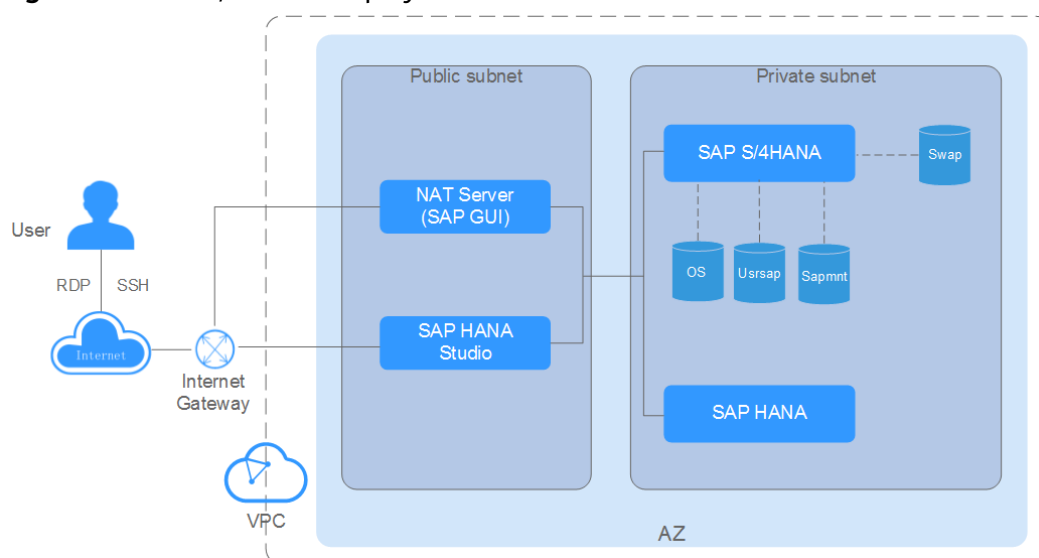
Cloud Service Name	Description
Elastic Cloud Server (ECS)	SAP S/4HANA is deployed on ECSs.
Elastic Volume Service (EVS)	All ECSs where SAP S/4HANA is deployed have EVS disks attached.

Cloud Service Name	Description
Virtual Private Cloud (VPC)	All ECSs where SAP S/4HANA is deployed belong to the same VPC. They are isolated using VPC subnets and security groups for network security.
Image Management Service (IMS)	Images are required for creating ECSs.
Enterprise Management	Templates are used to create resources and install SAP S/4HANA.
Object Storage Service (OBS)	OBS bucket is used to store the SAP S/4HANA installation package, and initialization and automatic installation scripts.
Scalable File Service (SFS)	The backup volume of the SAP HANA database is provided by SFS.

2 Scheme

Figure 2-1 shows the deployment scheme of SAP S/4HANA in the SAP system.

Figure 2-1 SAP S/4HANA deployment scheme



Parameters are described as follows:

- VPC network: All SAP S/4HANA nodes are deployed within a VPC, and all ECSs in an SAP S/4HANA system belong to the same AZ to ensure network security.
- Public subnet:
 - Network Address Translation (NAT) server: allows you to access ECSs from the NAT server using Secure Shell (SSH). SAP GUI is installed on the NAT server.
 - SAP HANA Studio ECS: used for deploying the SAP HANA Studio software. You can use Remote Desktop Protocol (RDP) or SSH to access the SAP HANA Studio ECS and manage the SAP HANA system.
- Private subnet:
 - SAP HANA ECS: used for deploying the SAP HANA software.
 - SAP S/4HANA ECS: used for deploying the SAP S/4HANA software. [Table 2-1](#) lists the disks required by the ECS.

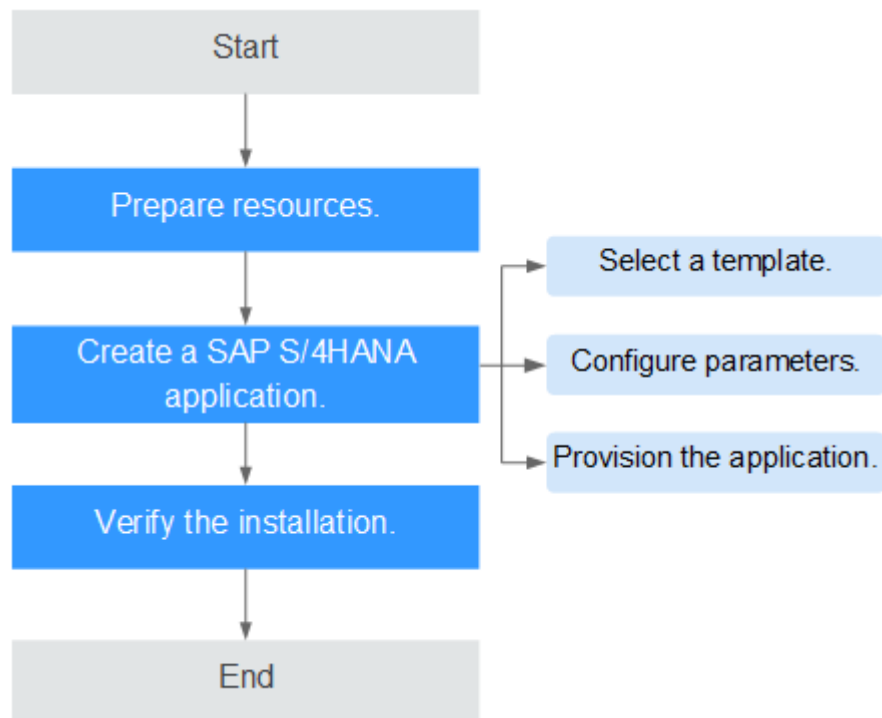
Table 2-1 Disks required by an SAP S/4HANA ECS

Disk	Description
OS disk	Used to install the OS
Sapmnt disk	Used to install SAP S/4HANA
Ursap disk	Used to mount to the <code>/usr/sap</code> directory
Swap disk	Used to mount the swap partition

Deployment Process

Figure 2-2 shows the SAP S/4HANA deployment flowchart.

Figure 2-2 SAP S/4HANA deployment flowchart



Parameters are described as follows:

When creating SAP S/4HANA applications, you can create [SAP S/4HANA application system without SAP HANA installed](#) or [SAP S/4HANA system and SAP HANA database](#).

3 Planning

Before deploying SAP S/4HANA, you need to plan required resources.

ECS Specifications

Table 3-1 describes the specifications of SAP-certified ECSs.

Table 3-1 Recommended ECS specifications

ECS Type	Flavor	vCPUs	Memory (GB)
Memory-optimized	m6.large.8	2	16
	m6.xlarge.8	4	32
	m6.2xlarge.8	8	64
	m6.4xlarge.8	16	128
	m6.8xlarge.8	32	256
General Computing-plus	c6.large.4	2	8
	c6.xlarge.4	4	16
	c6.2xlarge.4	8	32
	c6.3xlarge.4	12	48
	c6.4xlarge.4	16	64
	c6.6xlarge.4	24	96
	c6.8xlarge.4	32	128

Requirements on OSs and Disks

Table 3-2 and **Table 3-3** lists the requirements on OSs and disks.

Table 3-2 OS requirements

Item	Specifications
OS	<ul style="list-style-type: none"> • SUSE Linux Enterprise Server for SAP Applications 12 SP3 • SUSE Linux Enterprise Server for SAP Applications 12 SP4 • SUSE Linux Enterprise Server for SAP Applications 12 SP5 • SUSE Linux Enterprise Server for SAP Applications 15 • SUSE Linux Enterprise Server for SAP Applications 15 SP1

Table 3-3 Disk requirements

Disk	Type	Sharing Mode	Format	Size
OS disk	High I/O	Non-shared disk	ext3	The size must be greater than or equal to that required by the image.
Sapmnt disk	High I/O	Non-shared disk	xfs	> 100 GB
Ursap disk	High I/O	Non-shared disk	xfs	50 GB
Swap disk	High I/O	Non-shared disk	xfs	64 GB

 **NOTE**

SAS hard disks have high I/O while SSD hard disks have ultra-high I/O.

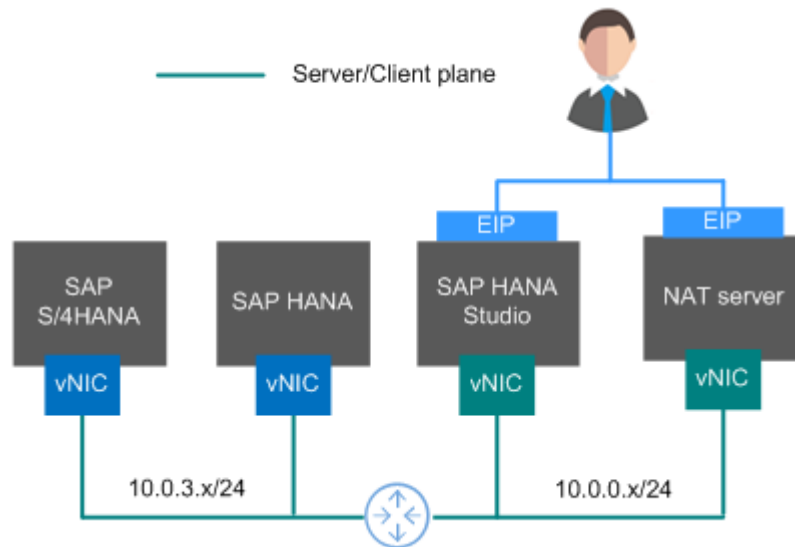
Network Plane Planning

Figure 3-1 shows the network plane.

 **NOTE**

The network segments and IP addresses are for reference only.

Figure 3-1 SAP S/4HANA network plane



In this scenario, only one NIC is used by each ECS for network communication.

Table 3-4 shows the planned network information.

Table 3-4 Network planning

Parameter	Description	Example Value
IP address of the server/client plane	SAP S/4HANA nodes communicate with the SAP HANA database or the SAP GUI client using this IP address.	SAP HANA node: 10.0.3.2 SAP S/4HANA: 10.0.3.102 SAP HANA Studio: 10.0.0.102 NAT server: 10.0.0.202

Security Group Planning

Table 3-5, **Table 3-6**, **Table 3-7** and **Table 3-8** show the security group rules of SAP HANA, SAP S/4HANA, SAP HANA Studio, and NAT Server, respectively.

NOTE

- The network segments and IP addresses are for reference only. The following security group rules are recommended practices. You can configure your own security group rules as needed.
- In the following table, ## stands for the SAP HANA instance ID, such as **00**. Ensure that this ID is the same as the instance ID specified when you install the SAP HANA software.
- For more information about specific ports and security group rules to be accessed by SAP, see [SAP official documents](#).

Table 3-5 Security group rules (SAP HANA)

Source/ Destination	Protocol	Port Range	Description
Inbound			
10.0.0.0/24	TCP	3##13	Allows SAP HANA Studio to access SAP HANA.
10.0.0.0/24	TCP	3##15	Provides ports for the service plane.
10.0.0.0/24	TCP	3##17	Provides ports for the service plane.
10.0.0.0/24	TCP	5##13	Allows SAP HANA Studio to access sapstartsrv.
10.0.0.0/24	TCP	22	Allows SAP HANA to be accessed using SSH.
10.0.0.0/24	TCP	43##	Allows access to XS Engine from the 10.0.0.0/24 subnet using HTTPS.
10.0.0.0/24	TCP	80##	Allows access to XS Engine from the 10.0.0.0/24 subnet using HTTP.
10.0.0.0/24	TCP	8080 (HTTP)	Allows Software Update Manager (SUM) to access SAP HANA using HTTP.
10.0.0.0/24	TCP	8443 (HTTPS)	Allows Software Update Manager (SUM) to access SAP HANA using HTTPS.
10.0.0.0/24	TCP	1128-1129	Allows access to SAP Host Agent using SOAP/HTTP.

Source/ Destination	Protocol	Port Range	Description
Automatically specified by the system	All	All	Security group rule created by the system by default Allows ECSs in the same security group to communicate with each other.
Outbound			
All	All	All	Security group rule created by the system by default Allows SAP HANA to access all peers.

Table 3-6 Security group rules (SAP S/4HANA)

Source/ Destination	Protocol	Port Range	Description
Inbound			
10.0.0.0/24	TCP	32##	Allows SAP GUI to access SAP S/4HANA.
10.0.0.0/24	TCP	3##13	Allows SAP HANA Studio to access SAP S/4HANA.
10.0.0.0/24	TCP	3##15	Provides ports for the service plane.
10.0.3.0/24	TCP	5##13 to 5##14	Allows ASCS to access SAP application server.
10.0.3.0/24	TCP	33## and 48##	Ports used by CPIC and RFC
10.0.0.0/24	TCP	22	Allows SAP S/4HANA to be accessed using SSH.

Source/ Destination	Protocol	Port Range	Description
10.0.3.0/24	UDP	123	Allows other servers to synchronize time with SAP S/4HANA ECSs.
Determined by the public cloud	All	All	Security group rule created by the system by default Allows ECSs in the same security group to communicate with each other.
Outbound			
All	All	All	Security group rule created by the system by default Allows SAP S/4HANA ECSs to access all peers.

Table 3-7 Security group rules (SAP HANA Studio)

Source/ Destination	Protocol	Port Range	Description
Inbound			
0.0.0.0/0	TCP	3389	Allows users to access SAP HANA Studio using RDP. This rule is required only when SAP HANA Studio is deployed on a Windows ECS.

Source/ Destination	Protocol	Port Range	Description
0.0.0.0/0	TCP	22	Allows users to access SAP HANA Studio using SSH. This rule is required only when SAP HANA Studio is deployed on a Linux ECS.
Automatically specified by the system	All	All	Security group rule created by the system by default Allows ECSs in the same security group to communicate with each other.
Outbound			
All	All	All	Security group rule created by the system by default Allows all peers to access SAP HANA Studio.

Table 3-8 Security group rules (NAT server)

Source/ Destination	Protocol	Port Range	Description
Inbound			
0.0.0.0/0	TCP	22	Allows users to access the NAT server using SSH.
10.0.3.0/24	TCP	80 (HTTP)	Allows access to instances in the same VPC using HTTP.
10.0.3.0/24	TCP	443 (HTTPS)	Allows access to instances in the same VPC using HTTPS.

Source/ Destination	Protocol	Port Range	Description
Automatically specified by the system	All	All	Security group rule created by the system by default Allows ECSs in the same security group to communicate with each other.
Outbound			
10.0.3.0/24	TCP	22 (SSH)	Allows the NAT server to access the 10.0.3.0 subnet using SSH.
0.0.0.0/0	TCP	80 (HTTP)	Allows instances in a VPC to access any network.
0.0.0.0/0	TCP	443 (HTTPS)	Allows instances in a VPC to access any network.

4 SAP S/4HANA Deployment

4.1 Preparing Resources

Software and Tools

Table 4-1 lists the required software and tools.

Table 4-1 Required software and tools

Item	Description	How to Obtain
Local PC	Runs a Windows OS, which is Windows 7 or later.	-
PuTTY and PuTTYgen	Used for logging in to an ECS and running commands.	https://www.chiark.greenend.org.uk/~sgtatham/putty/download.html
OS Image	SUSE Linux Enterprise Server for SAP Applications image After obtaining the ISO file, register it as the ISO image (private image) on HUAWEI CLOUD. For details, see Registering an ISO File as an ISO Image .	https://www.suse.com/products/sles-for-sap/download/

Item	Description	How to Obtain
SAP GUI 7.5	This document uses SAP GUI 7.5 as an example. SAP GUI is deployed on the NAT server.	Log in to the SAP official website to download the installation media: https://support.sap.com/en/my-support/software-downloads.html
SAP S/4HANA	SAP S/4HANA software installation package. You need to upload the software packages to the OBS bucket in the specific region and set OBS Bucket URL to the uploaded file address. For details, see OBS-Getting Started .	

License

SAP S/4HANA is authorized in Bring Your Own License (BYOL) mode. In this mode, you must log in to the SAP [technical support website](#) and apply for a license.


4.2 Configuring an Agency

The Data Provider and Enterprise Project Management need to be granted with the permission to obtain information from the public cloud platform. Therefore, create an agency on the public cloud platform to obtain the platform information.

- Assign the agency to the ECS. Then, the Data Provider installed on the ECS can obtain the platform information through the agency.
- Assign the agency to OBS to ensure that software packages can be uploaded to OBS.

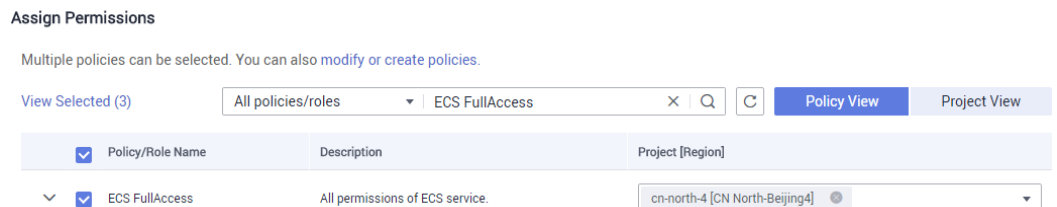
Procedure

Perform the following operations to create an agency.

- Step 1** Log in to the management console.
- Step 2** In the navigation pane on the left, click  and choose **Identity Access Management** under **Management & Deployment**.
- Step 3** Click **Agencies** in the left pane, and then click **Create Agency** in the upper right corner. The **Create Agency** page is displayed.
- Step 4** Set agency parameters.

- **Agency Name:** `DataProviderAccess`. This name is only for reference.
- **Agency Type:** `Cloud service`
- **Cloud Service:** `Elastic Cloud Server (ECS) and Bare Metal Server (BMS)`
- **Validity Period:** Retain the default setting.
- **Permissions:**
 - a. Click **Assign Permissions** next to **Permissions**.
 - b. In the displayed dialog box, enter **Tenant Guest**, **OBS Buckets Viewer**, and **ECS FullAccess** respectively.
 - c. Select **Tenant Guest** and **OBS Buckets Viewer** from the displayed results and then **All policies/roles** in the drop-down list.
 - d. Select **ECS FullAccess** and select the target region in the **Project [Region]** column, for example, **cn-east-4 [CN North-Beijing4]**.

Figure 4-1 Assigning permissions



- e. Click **OK**.

Step 5 Click **OK**.

----End

Follow-up Operations

On the application provisioning page, set **IAM Agency** to `DataProviderAccess` so that the agency can be used.

4.3 Uploading the Software Packages

Before provisioning an application, you need to download the OBS client and upload the required software installation packages to the OBS client.

Prerequisites

You have obtained the required software packages. For details about how to obtain the software packages, see [Table 4-1](#).

Procedure

- Step 1** [Register an account and use OBS](#).
- Step 2** Download OBS Browser. For details, see [Download OBS Browser](#).
- Step 3** Upload the required installation packages. For details, see [OBS Tools](#).

NOTICE

The directory corresponding to the SAP S/4HANA bucket path must contain folders starting with the following prefixes, which are case sensitive:

- **BSK_CD**: contains SAP kernel patch.
- **CLNT_CD**: contains the package corresponding to DB CLIENT.
- **EXP_CD**: contains the package corresponding to EXP and must contain the file whose name ends with **part1.exe**.
- **SWPM_CD**: must contain the .exe file corresponding to SAPCAR and the .sar file corresponding to SWPM. The file suffix must be .exe and .sar.

Upload the required software installation packages to the OBS directory as required.

WARNING

The folder names are case sensitive. Name the folders according to above examples. Otherwise, the software installation packages may fail to be obtained.

- The directory examples for provisioning SAP S/4HANA (without SAP HANA) in the OBS bucket are as follows:

```
obs-sap
├── readme.txt
├── s4hana
│   └── s4hana1709
│       ├── SWPM_CD
│       │   ├── SWPM10SP22_8-20009701.SAR
│       │   └── SAPCAR_721-20010450.EXE
│       ├── EXP_CD
│       │   ├── -51052190_part5.rar
│       │   ├── -51052190_part4.rar
│       │   ├── -51052190_part3.rar
│       │   ├── -51052190_part2.rar
│       │   └── -51052190_part1.exe
│       ├── CLNT_CD
│       │   └── -51052377.ZIP
│       └── BSK_CD
│           ├── -igsexex_1-80003187.sar
│           ├── -igshelper_4-10010245.sar
│           ├── -SAPEXE_16-80002573.SAR
│           ├── -SAPHOSTAGENT32_32-20009394.SAR
│           └── -SAPEXEDB_16-80002572.SAR
```

- The directory examples for provisioning SAP S/4HANA and SAP HANA in the OBS bucket are as follows:

```
obs-sap
├── readme.txt
├── s4hana
│   └── s4hana1709
│       ├── SWPM_CD
│       │   ├── SWPM10SP22_8-20009701.SAR
│       │   └── SAPCAR_721-20010450.EXE
│       ├── EXP_CD
│       │   ├── -51052190_part5.rar
│       │   ├── -51052190_part4.rar
│       │   ├── -51052190_part3.rar
│       │   └── -51052190_part2.rar
```

```
├─51052190_part1.exe
├─CLNT_CD
│ └─51052377.ZIP
├─BSK_CD
│ ├──igsexex_1-80003187.sar
│ ├──igshelper_4-10010245.sar
│ ├──SAPEXE_16-80002573.SAR
│ ├──SAPHOSTAGENT32_32-20009394.SAR
│ └─SAPEXEDB_16-80002572.SAR
├─HANA
│ ├──51053061_part1.exe
│ ├──51053061_part2.rar
│ ├──51053061_part3.rar
│ └─51053061_part4.rar
```

----End

4.4 Provisioning SAP S/4HANA

This section describes how to use an example template to create an SAP S/4HANA application system without SAP HANA installed. For details about how to quickly create SAP S/4HANA with SAP HANA installed, see [Provisioning SAP S/4HANA and SAP HANA](#).

NOTE

The log directory for provisioning the SAP S/4HANA is `/var/log/huawei/auto-install/s4-intall.log`.

Prerequisites

The required single-node SAP SHANA system has been deployed on HUAWEI CLOUD. For details about how to deploy the system, see [SAP HANA User Guide \(Single Node\)](#).

Procedure

Before deploying SAP S/4HANA, you need to select a template in the Enterprise Project Management service.

Step 1 Log in to the management console. In the upper right corner, choose **Enterprise > Project Management**.

The **Enterprise Project Management** page is displayed.

Step 2 In the navigation pane on the left, choose **Application Management > Template Management**.

Step 3 Click the **Example templates** tab, locate the row that contains the target SAP S/4HANA template, and click **Create Application**.

An application is a collection of resources, which may include multiple cloud servers, networks, and EVS disks.

Table 4-2 Parameter information

Parameter	Description	Example Value
Enterprise Project Name	Select an existing enterprise project from the drop-down list box.	SAP
Region	Select a region to create the application. A maximum of 100 applications can be created in each region.	CN-Hong-Kong
Application Name	Specifies the name of the provisioned application.	S4HANA-1709
Application Description	Optional. The description can contain a maximum of 256 characters.	-
Source Type	Select Example templates or My templates as required.	Example Templates
Template Type	Set it to SAP or Common as required.	SAP
Select Template	Select the template from the list. If there are many templates, you can enter the template name in the search box to search for the template.	S4HANA-Standard

Step 4 Click **Next**. After the parameters are verified, the **Configure Parameters** page is displayed.

----End

Configuring Parameters

After the template is uploaded to the Enterprise Management service, you need to specify related parameters to create the application. Parameters, including AZ, VPC and its subnet, security group, key pair, and IAM agency name, must be the same as those of the existing SAP HANA system (single-node deployment). Obtain the required information in advance. On the **Configure Parameter** page, specify the required parameters. For details about the required application parameters, see [Table 4-3](#).

Step 1 Set application parameters. The following uses SAP S/4HANA 1809 as an example.

Table 4-3 Parameter information

Parameter	Description	Example Value
Network Configuration		
VPC Name	VPC ID of the SAP S/4HANA ECS. This value must be the same as the VPC ID of the SAP HANA ECS.	vpc-saphana
Subnet	Subnet ID of the SAP S/4HANA ECS. This value must be the same as the subnet ID of the SAP HANA ECS.	subnet-fd25-sap
Server and Storage Configuration		
AZ	AZ of the SAP S/4HANA ECS. This value must be the same as the AZ of the SAP HANA ECS.	AZ1
ECS Specification	Flavor of the SAP S/4HANA ECS. Select an image based on ECS Specifications .	m3.2xlarge.8 8 vCPUs 64 GB
Image	Image of the SAP S/4HANA ECS. Select an image based on Requirements on OSs and Disks .	Private image: SUSE Linux Enterprise Server for SAP Applications 15
Security Group	Security group of the SAP S/4HANA ECS. This value must be the same as the security group of the SAP HANA ECS.	(sg-saphana)10499571-92ad-466f-a555-a608a3f1c65c
Key Pair	Key pair name. Select the key pair used by the SAP HANA ECS.	KeyPair-HANA
IAM Agency	IAM agency name. After the IAM agency is configured, the ECS has the permission to access OBS and Cloud Eye. For details about the agency name, see Configuring an Agency .	DataProviderAccess
System Disk (GB)	Size of the system disk. The minimum size must be the size (GB) of the SAP S/4HANA ECS image.	100
System Disk Type	Type of the system disk	High I/O
Ursap Disk (GB)	Size of the ursap disk (GB)	50
Ursap Disk Type	Type of the ursap disk	High I/O

Parameter	Description	Example Value
Sapmnt Disk (GB)	Size of the sapmnt disk (GB)	110
Sapmnt Disk Type	Type of the sapmnt disk	High I/O
Swap Disk (GB)	Size of the swap disk (GB)	64
Swap Disk Type	Type of the swap disk	High I/O
SAP Configuration		
S/4HANA Hostname	SAP S/4HANA hostname. The name must be 1 to 13 characters long and must contain only letters, digits, periods (.), hyphens (-), and underscores (_).	s4hana
SAP System ID	SAP system ID. The ID is composed of one uppercase letter and two digits.	S01
ASCS Instance Number	ASCS instance number	00
PAS Instance Number	PAS instance number	01
S/4HANA Password	Password of the SAP S/4HANA system. Confirm the password. The password must comply with the SAP password setting rules.	Set this parameter based on the actual situation.
HANA IP	IP address used to connect to the SAP HANA database.	10.0.3.1
HANA System ID	System ID of the SAP HANA database. The ID is composed of one uppercase letter and two digits.	S00
HANA Instance Number	Instance number of the SAP HANA database	00
HANA Password	Password of user SYSTEM to log in to the SAP HANA database. The password must comply with the SAP password setting rules.	Set this parameter based on the actual situation.

Parameter	Description	Example Value
OBS Backup Directory	Directory of the SAP S/4HANA installation package on OBS. For details, see Uploading the Software Packages . NOTE The OBS bucket directory is in the format of <code>obs://Bucket name/Directory</code> .	obs://obs-s4/SAPS4HANA1709
Extended Configuration		
OS Version	OS version	SUSE 12
S/4HANA Usage Type	Usage type of SAP S/4HANA	DEV
Application Type	SAP S/4HANA application type	S/4HANA
S/4HANA Version	SAP S/4HANA version. Select a version from the drop-down list box.	S/4HANA 1709
SAP Kernel Version	SAP kernel version	773
Install SAP Software	Decide whether to install SAP software based on the site requirements.	Yes

Step 2 Click **Next**, confirm the application information, and click **Submit**.

Step 3 The application management page is displayed. If the application **Status** is **Creation succeeded**, the SAP S/4HANA application is created successfully.

 **NOTE**

If the application **Status** is **Failed to create**, delete the application by referring to [How Do I Delete an Application?](#) and create one again.

----End

Configuring Mutual Trust

To enable the NAT server and SAP S/4HANA ECS to communicate with each other using SSH, you need to configure mutual trust between them. The password for user **root** to log in to the created SAP S/4HANA ECS is the default image password. You need to use the key pair to log in to the NAT server to configure mutual trust between the NAT server and the SAP S/4HANA ECS and change the password of user **root** to log in to the SAP S/4HANA ECS.

Step 1 Use PuTTY to log in to the NAT server. Ensure that user **root** and the private key file (.ppk file) are used for authentication. Send the private key file and the **authorized_keys** file on the NAT server to the SAP S/4HANA ECS through the IP address. The commands are in the following format:


```
scp /root/.ssh/id_rsa Peer IP address:/root/.ssh/id_rsa  
scp /root/.ssh/authorized_keys Peer IP address:/root/.ssh/
```

For example, if the peer IP address is **10.0.3.102**, run the following commands:

```
scp /root/.ssh/id_rsa 10.0.3.102:/root/.ssh/id_rsa  
scp /root/.ssh/authorized_keys 10.0.3.102:/root/.ssh/
```

Step 2 Verify the switching.

Switch from the NAT server to the SAP S/4HANA ECS using SSH. Assume that the IP address of the SAP S/4HANA ECS is **10.0.3.102**.

```
ssh 10.0.3.102
```

 **NOTE**

During the first switching, the system displays the fingerprint as well as the message "Are you sure you want to continue connecting (yes/no)?" In such a case, enter **yes** and continue the switching.

Step 3 After switching to the SAP S/4HANA ECS, run the following command to change the password of user **root**:

```
passwd
```

Enter the new password as prompted and confirm it.

 **NOTE**

Securely keep the **root** password. In addition, ensure that the passwords of user **root** for logging in to all ECSs are the same.

----End

Modifying the Configuration File

Modify the configuration file on the server where the SAP application is deployed. For details, see [What Should I Do If a SAP Application on an ECS Cannot Be Started?](#).

Checking the Deployment Status

After the ECS is created, deploy SAP S/4HANA on the ECS. You can log in to the SAP S/4HANA ECS to view the deployment status.

Step 1 Use PuTTY to log in to the NAT server with an EIP bound. Ensure that the **root** user and the key file (.ppk file) are used for authentication. Then, use SSH to switch to the SAP S/4HANA node.

Step 2 Run the following command on the CLI to view the installation logs:

```
tailf /var/log/huawei/auto-install/s4-intall.log
```

If **Install S4 Successful** is displayed in the installation log, the software deployment is complete. The following is an example of the log content indicating that the installation is successful:

```
INFO 2018-12-26 17:50:26.325 (root/sapinst) (startInstallation) [syuxcpath.cpp:  
441]id=syslib.filesystem.creatingFile CSyPath::createFile()Creating file/tmp/sapinst_instdir/S4HANA1809/
```

```
CORE/HDB/INSTALL/STD/ABAP/instslana.xml.  
INFO 2018-12-26 17:50:29.746 (root/sapinst)(startInstallation) [syuxcdir.cpp:147]  
id=syslib.filesystem.removedDirectoryCSyDirectoryImpl::sap_remove(ISyFSErrorHandler *  
pErrorHandler)Removed directory /root/.sapinst/s41809/4576.  
[2018-12-26 17:50:29] [INFO ] [s4-install.sh 319] Install S4 successful  
[2018-12-26 17:50:29] [INFO ] [s4-install.sh 540] *****End to install S4*****  
[2018-12-26 17:50:29] [INFO ] [s4-install.sh 543] *****cleanpassword in the INIT  
files*****
```

NOTE

The software deployment duration varies according to the software version and resource configuration.

----End

4.5 Provisioning SAP S/4HANA and SAP HANA

This section describes how to create an SAP S/4HANA system and SAP HANA database at the same time using an example template.

NOTE

- The log directory for provisioning SAP HANA is `/var/log/huawei/auto-install/hana-intall.log`.
- The log directory for provisioning the SAP S/4HANA is `/var/log/huawei/auto-install/s4-intall.log`.

Prerequisites

The SAP HANA and SAP S/4HANA software installation packages have been uploaded to the OBS bucket. For details about how to upload packages, see [Uploading the Software Packages](#).

Procedure

Step 1 Log in to the management console. In the upper right corner, choose **Enterprise > Project Management**.

The **Enterprise Project Management** page is displayed.

Step 2 In the navigation pane, choose **Application Management > Applications**.

The application list is displayed in the lower part of the page.

Step 3 Click **Create Application** in the upper left of the application list.

The **Create Application** page is displayed.

Step 4 Configure basic application information. Set the parameters based on [Table 4-4](#).

Table 4-4 Configuration information

Parameter	Description	Example Value
Enterprise Project Name	Select an existing enterprise project from the drop-down list box.	SAP
Region	Select a region to create the application. A maximum of 100 applications can be created in each region.	CN-Hong-Kong
Application Name	Specifies the name of the provisioned application.	S4HANA-1709
Application Description	Optional. The description can contain a maximum of 256 characters.	-
Source Type	Select Example Templates or My Templates as required.	Example Templates
Template Type	Set it to SAP or Common as required.	SAP
Select Template	Select the template from the list. If there are many templates, you can enter the template name in the search box to search for the template.	S4HANA-Standard-With-DB

Step 5 Click **Next**.

Step 6 On the displayed page, configure parameters. For details, see [Table 4-5](#).

Table 4-5 Configuration information

Parameter	Description	Example Value
Network and Basic Configuration		
VPC Name	Name of the VPC where the HANA ECS is located. If no VPC is available, click Create VPC on the management console to create one. For details, see Creating a VPC .	vpc-sap-hana

Parameter	Description	Example Value
Subnet	Subnet used by the HANA ECS If no subnet is available, click Create Subnet on the management console to create one. For details, see Creating a Subnet and Configuring a Security Group .	subnet-fd25-sap-hana
AZ	Name of the AZ where the SAP S/4HANA ECS is located.	AZ1
Security Group	Security group to which the SAP S/4HANA ECS belongs If no security group is available, click Create Security Group on the management console to create one. For details, see Creating a Subnet and Configuring a Security Group .	c28cef02-d150-4a62-8d98-ff5b2a663289
Key Pair	Key pair for logging in to the S/4HANA ECS If no key pair is available, click Create Key Pair on the management console to create one. For details, see Creating a Key Pair .	KeyPair-sap-hana
IAM Agency	IAM agency name. After the IAM agency is configured, the ECS has the permission to access OBS and Cloud Eye. For details about the agency name, see Configuring an Agency .	DataProviderAccess
HANA Database Configuration		
HANA Hostname	SAP HANA hostname. The name must be 1 to 13 characters long and must contain only letters, digits, periods (.), hyphens (-), and underscores (_).	hana-1709
HANA Specifications	Specifications of a HANA ECS. Set this parameter as required.	e3.7xlarge.12 28vCPUs 348GB
Image	Image of a HANA ECS Select an image based on Requirements on OSs and Disks .	Private image: SUSE Linux Enterprise Server for SAP Applications 15
HANA System ID	SAP HANA system ID. The ID is composed of one uppercase letter and two digits.	S00

Parameter	Description	Example Value
System Disk Type	Type of the system disk	Ultra-high I/O
System Disk (GB)	Size of the system disk (GB)	50
Usrsap Disk Type	Type of the usrsap disk	Ultra-high I/O
Usrsap Disk (GB)	Size of the usrsap disk (GB)	50
Swap Disk Type	Type of the swap disk	Ultra-high I/O
Swap Disk (GB)	Size of the swap disk (GB)	10
Shared Disk Type	Type of the shared disk	Ultra-high I/O
Shared Disk (GB)	Size of the shared disk (GB)	418
Log Disk Type	Type of the log disk	Ultra-high I/O
Log Disk (GB)	Size of the log disk (GB)	200
Data Disk Type	Type of the data disk	Ultra-high I/O
Single Data Disk (GB)	Size of an EVS disk (GB) <ul style="list-style-type: none"> • If the LVM is not configured, the value is the size of a single EVS disk. • If the LVM is configured, the value is the size of the EVS disks that from the logical volume. 	250
Data Disk Quantity	Number of data disks. Set this parameter based on the actual situation. <ul style="list-style-type: none"> • If the LVM is not configured, the data disk is an EVS disk. Choose 1 from the drop-down list. • If the LVM is configured, the data disk is a logical volume formed by multiple EVS disks. Choose the number of the EVS disks form the drop-down list. 	1
Backup SFS AZ	Name of the AZ where the SFS ECS is located	AZ1
Backup SFS Size (GB)	Size of the created SFS file system for backing up the HANA database	1044
HANA Instance Number	Instance number of the SAP HANA database	00

Parameter	Description	Example Value
HANA Password	Password of user SYSTEM to log in to the SAP HANA database. The password must comply with the SAP password setting rules.	-
SAP Configuration		
S/4HANA Hostname	SAP S/4HANA hostname. The name must be 1 to 13 characters long and must contain only letters, digits, periods (.), hyphens (-), and underscores (_).	s4hana-1709
S/4HANA ECS Specifications	SAP S/4HANA ECS specifications. Set this parameter based on the site requirements.	m3.large.8 2vCPUs 16GB
Image	Image of the SAP S/4HANA ECS. Select an image based on Requirements on OSs and Disks .	Private image: SUSE Linux Enterprise Server for SAP Applications 15
SAP System ID	SAP system ID. The ID is composed of one uppercase letter and two digits.	S01
System Disk Type	Type of the system disk	High I/O
System Disk (GB)	Size of the system disk (GB)	100
Usrsap Disk Type	Type of the usrsap disk	High I/O
Usrsap Disk (GB)	Size of the usrsap disk (GB)	50
Sapmnt Disk Type	Type of the sapmnt disk	High I/O
Sapmnt Disk (GB)	Size of the sapmnt disk (GB)	110
Swap Disk Type	Type of the swap disk	High I/O
Swap Disk (GB)	Size of the swap disk (GB)	64
ASCS Instance Number	ASCS instance number	01
PAS Instance Number	PAS instance number	02

Parameter	Description	Example Value
S/4HANA Password	Password of the SAP S/4HANA system. Confirm the password. The password must comply with the SAP password setting rules.	-
OBS Backup Directory	Directory of the SAP S/4HANA installation package on OBS. For details, see Uploading the Software Packages . NOTE The OBS bucket directory is in the format of obs://Bucket name/Directory .	obs://obs-sap/s4hana/s4hana1709
Extended Configuration		
OS Version	OS version	SUSE 12
S/4HANA Usage Type	Specifies the usage type of the SAP S/4HANA.	DEV
Application Type	S/4HANA application type	S/4HANA
S/4HANA Version	SAP S/4HANA version. Select a version from the drop-down list box.	S/4HANA 1709
SAP Kernel Version	SAP kernel version	773
Install SAP Software	Decide whether to install SAP software based on the site requirements.	Yes

Step 7 Click **Next**.

On the **Confirm Specifications** page, confirm the basic information and template parameters.

Step 8 Click **Submit and Pay**.

After the application is created, you can view it in the application management list.

----End

Configuring Mutual Trust Between ECSs and Their Password

To enable the NAT server to communicate with SAP HANA and SAP S/4HANA ECSs using SSH, you need to configure mutual trust among them. The password for user **root** to log in to the created SAP S/4HANA ECS is the default image password. You need to use the key pair to log in to the NAT server to configure mutual trust between the NAT server and the SAP S/4HANA and SAP HANA ECSs

and change the password of user **root** to log in to the SAP S/4HANA and SAP HANA ECSs.

Step 1 For details about how to create a NAT server, see the [SAP HANA User Guide \(Single Node\)](#).

Step 2 Use PuTTY to log in to the NAT server. Ensure that user **root** and the private key file (.ppk file) are used for authentication. Send the private key file and the **authorized_keys** file on the NAT server to the SAP S/4HANA and SAP HANA ECSs through the IP addresses. The commands are in the following format:

```
scp /root/.ssh/id_rsa Peer IP address:/root/.ssh/id_rsa
```

```
scp /root/.ssh/authorized_keys Peer IP address:/root/.ssh/
```

For example, if the peer IP addresses are 10.0.3.102 and 10.0.3.2, run the following commands:

```
scp /root/.ssh/id_rsa 10.0.3.102:/root/.ssh/id_rsa
```

```
scp /root/.ssh/authorized_keys 10.0.3.102:/root/.ssh/
```

```
scp /root/.ssh/id_rsa 10.0.3.2:/root/.ssh/id_rsa
```

```
scp /root/.ssh/authorized_keys 10.0.3.2:/root/.ssh/
```

Step 3 Verify the switching.

Switch from the NAT server to the SAP S/4HANA and SAP HANA ECSs using SSH. Assume that the IP address of the SAP S/4HANA ECS is **10.0.3.102**.

```
ssh 10.0.3.102
```

 **NOTE**

During the first switching, the system displays the fingerprint as well as the message "Are you sure you want to continue connecting (yes/no)?". In such a case, enter **yes** and continue the switching.

Step 4 After switching to the SAP S/4HANA and SAP HANA ECSs, run the following command to change the password of user **root**:

```
passwd
```

Enter the new password as prompted and confirm it.

 **NOTE**

Securely keep the **root** password. In addition, ensure that the passwords of user **root** for logging in to all ECSs are the same.

----End

Modifying the Configuration File

Modify the configuration file on the server where the SAP application is deployed. For details, see [What Should I Do If a SAP Application on an ECS Cannot Be Started?](#).

Checking SAP HANA Deployment Status

Step 1 Use PuTTY to log in to the NAT server with an EIP bound. Ensure that the **root** user and the key file (.ppk file) are used for authentication. Then, use SSH to switch to the SAP HANA node.

Step 2 Verify the SAP HANA installation.

1. Run the following command to switch to the **/hana/shared/\$SID/HDB00/** directory:

For example, run the following command to switch to the target directory:

```
cd /hana/shared/S00/HDB00
```

2. Switch to the database system administrator.

Account **s00adm** is displayed on the page during the installation. Run the following command:

```
su - s00adm
```

3. Run the following command to query the database version:

If the version can be queried, the database software is installed.

```
HDB -version
```

After the database is installed, the system returns the version information.

```
HDB version info:
version:      2.00.020.00.1500920972
branch:      fa/hana2sp02
git hash:    7f63b0aa11dca2ea54d450aa302319302c2eeaca
git merge time: 2017-07-24 20:29:32
weekstone:   0000.00.0
compile date: 2017-07-24 20:35:12
compile host: ld4551
compile type: rel
```

Step 3 Check whether the database process is running properly.

1. Run the following command to check the process, taking the SAP HANA instance with ID 00 as an example:

00 is the SAP HANA instance ID.

```
sapcontrol -nr 00 -function GetProcessList
```

In the terminal display, if the **dispstatus** value is **GREEN**, the process is running properly.

```
13.04.2017 16:04:15
GetProcessList
OK
name, description, dispstatus, textstatus, starttime, elapsedtime, pid
hdbdaemon, HDB Daemon, GREEN, Running, 2017 04 13 11:18:33, 4:45:42, 3013
hdbcompileserv, HDB Compileserv, GREEN, Running, 2017 04 13 11:18:42, 4:45:33, 3154
hdbindexserv, HDB Indexserv, GREEN, Running, 2017 04 13 11:18:47, 4:45:28, 3180
hdbnameserv, HDB Nameserv, GREEN, Running, 2017 04 13 11:18:34, 4:45:41, 3027
hdbpreprocessor, HDB Preprocessor, GREEN, Running, 2017 04 13 11:18:42, 4:45:33, 3156
hdbwebdisp, HDB Web Dispatcher, GREEN, Running, 2017 04 13 11:19:09, 4:45:06, 3513
hdbxsengine, HDB XSEngine, GREEN, Running, 2017 04 13 11:18:47, 4:45:28, 3182
```

2. Run the following command to return to user **root**:

```
exit
```

----End

Checking SAP S/4HANA Deployment Status

After the ECS is created, deploy SAP S/4HANA on the ECS. You can log in to the SAP S/4HANA ECS to view the deployment status.

- Step 1** Use PuTTY to log in to the NAT server with an EIP bound. Ensure that the **root** user and the key file (.ppk file) are used for authentication. Then, use SSH to switch to the SAP S/4HANA node.
- Step 2** Run the following command on the CLI to view the installation logs:

```
tailf /var/log/huawei/auto-install/s4-intall.log
```

If **Install S/4HANA Successful** is displayed in the installation log, the software deployment is complete. The following is an example of the log content indicating that the installation is successful:

```
INFO 2018-12-26 17:50:26.325 (root/sapinst) (startInstallation) [syuxcpath.cpp:441]id=syslib.filesystem.creatingFile CSyPath::createFile()Creating file/tmp/sapinst_instdir/S4HANA1809/CORE/HDB/INSTALL/STD/ABAP/instslana.xml.
INFO 2018-12-26 17:50:29.746 (root/sapinst)(startInstallation) [syuxcdire.cpp:147]id=syslib.filesystem.removedDirectoryCSyDirectoryImpl::sap_remove(ISyFSErrHandler * pErrHandler)Removed directory /root/.sapinst/s41809/4576.
[2018-12-26 17:50:29] [INFO ] [s4-install.sh 319] Install S/4HANA successful
[2018-12-26 17:50:29] [INFO ] [s4-install.sh 540] *****End to install S/4HANA 1709*****
[2018-12-26 17:50:29] [INFO ] [s4-install.sh 543] *****clean password in the INIT files*****
```

NOTE

The software deployment duration varies according to the software version and resource configuration.

----End

4.6 Installing Data Provider

Install Data Provider on all cloud servers so that SAP technical support personnel can use this software to collect information of the platform where the cloud servers run, facilitating fault identification and analysis if the SAP system is faulty or the system performance deteriorates.

NOTE

On the server where SAP NetWeaver is deployed, you must specify the **DataproviderAccess** agency for the ECSs created on the server. In addition, install Data Provider on the server.

Procedure

- Step 1** Log in to all cloud servers.
- Step 2** Run the following command to check whether Data Provider has been installed:

```
systemctl status hwdatapviderp3
```

The command output is similar to the following. If the value of **Active** is **active (running)**, Data Provider has been successfully installed. Otherwise, follow the operations described in the [Data Provider for SAP User Guide](#) to install it.

```
SAPTest:~ # systemctl status hwdatapviderp3
● hwdatapviderp3.service - Huawei dataprovider monitor service daemon
   Loaded: loaded (/etc/systemd/system/hwdatapviderp3.service; enabled; vendor preset: disabled)
   Active: active (running) since Thu 2020-01-09 16:10:00 CST; 1 weeks 4 days ago
     Process: 43653 ExecStop=/bin/kill -HUP (code=exited, status=1/FAILURE)
    Main PID: 43688 (python3)
      Tasks: 3 (limit: 512)
   CGroup: /system.slice/hwdatapviderp3.service
           └─43688 /usr/bin/python3 /opt/huawei/dataprovider/dataprovider_linux.py > /dev/null 2>&1

Jan 09 16:10:00 host-192-168-230-179 systemd[1]: Started Huawei dataprovider monitor service daemon.
```

----End

5 Verifying the Installation

After SAP S/4HANA has been deployed, log in to the SAP S/4HANA ECS through SAP GUI to check the running status.

Step 1 Open SAP GUI and click **New Item**. On the displayed dialog box, click **Next**.

Step 2 Configure related parameters. Retain the default values of other parameters unless specified as follows.

- **Description:** Name of a custom connection
- **Application Server:** IP address of the cloud server where SAP S/4HANA is deployed
- **Instance Number:** SAP S/4HANA PAS instance ID
- **System ID:** System ID of the SAP S/4HANA system

For details, see [Figure 5-1](#). Click **Finish**.

Figure 5-1 New item

Create New System Entry ✕

Choose the connection type and change the system parameters as required. Leave the description field empty if you want the system to propose a description. Buttons 'Next >' and 'Finish' are only active when all required input data has been entered.

Connection Type:

System Connection Parameters

Description:

Application Server:

Instance Number:

System ID:

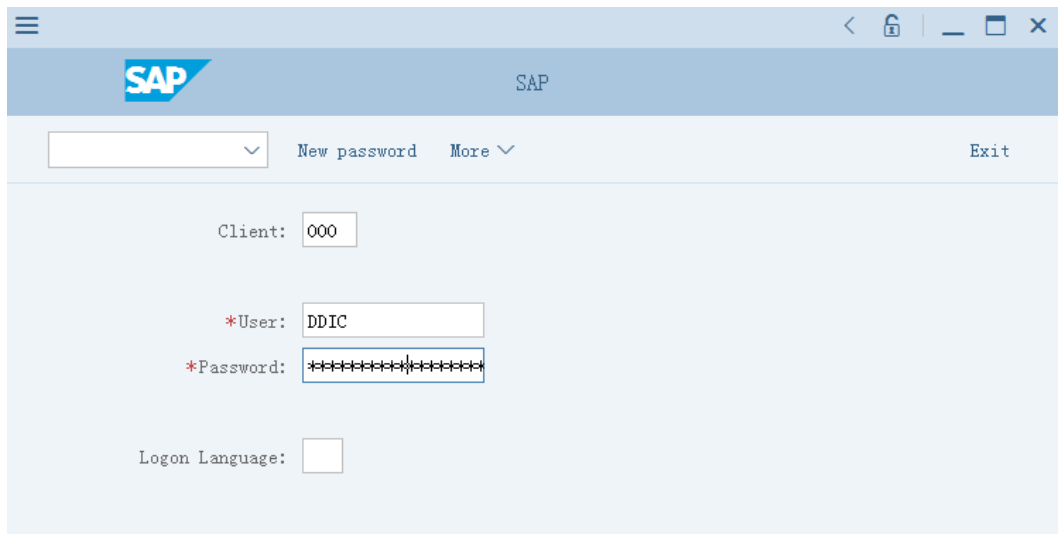
SAProuter String:

Use this page as the first page for subsequent entry creations; setting takes effec...

Step 3 Double-click the created connection.

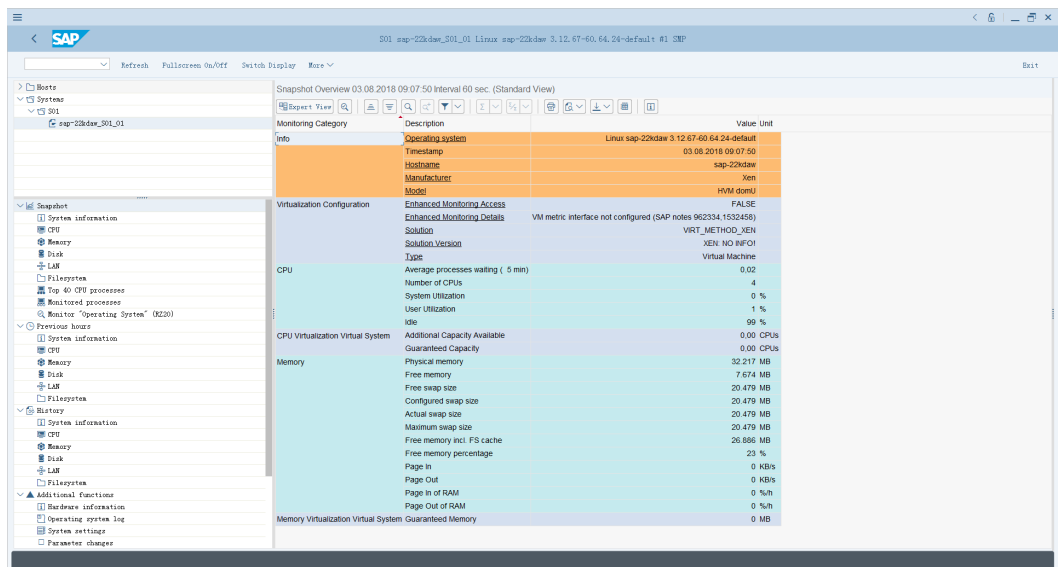
Step 4 On the login page, enter **DDIC** as the username, enter the administrator password of the SAP S/4HANA system, and press **Enter** to log in to the SAP GUI. [Figure 5-2](#) shows the login page.

Figure 5-2 SAP GUI login page



Step 5 Enter **/nST06** in the text box on the upper left corner of the SAP GUI page and press **Enter** to view the operating system monitor. If the resource information is displayed, the SAP S/4HANA system is running properly.

Figure 5-3 System resource information page



----End

6 FAQs

6.1 How Do I Delete an Application?

Scenarios

If you need to redeploy applications or delete related resources during the deployment of SAP S/4HANA, you can clear resources by deleting applications.

Procedure

On the application list page, locate the row that contains the target application and click **Delete** in the **Operation** column to delete the application and related resources.

Figure 6-1 Deleting an application

Name	Source Templ...	Status	Region	Enterprise Proj...	Description	Created At	Operation
app-wang2	wang1	✔ Creatio...	CN East-Shan...	default		Dec 26, 2018 10:2...	Delete Crea.
app-k7iy	template-1709...	❌ Failed t...	CN East-Shan...	default		Dec 26, 2018 09:4...	Delete Crea.

6.2 What Should I Do If a SAP Application on an ECS Cannot Be Started?

Symptom

The `/etc/hosts` file contains "`127.0.0.1 host name host name`". As a result, the SAP application installed on the ECS cannot be started. You need to log in to the ECS where the SAP application is deployed to modify the configurations.

 NOTE

You only need to perform this operation on the ECS where the SAP application software is deployed.

Procedure

Step 1 Log in to the ECS where the SAP application software is deployed as user **root**.

Step 2 Comment out **manage_etc_hosts: localhost** in the configuration file.

1. Run the following command to open the Cloud-Init configuration file **/etc/cloud/cloud.cfg**:

vi /etc/cloud/cloud.cfg

2. Comment out **manage_etc_hosts: localhost** in the configuration file and save the modification.

Example: `#manage_etc_hosts: localhost`

```
datasource_list: ['OpenStack']
manage_etc_hosts: localhost

datasource:
  OpenStack:
    # timeout: the timeout value for a request at metadata service
    timeout : 50
    # The length in seconds to wait before giving up on the metadata
    # service. The actual total wait could be up to
    # len(resolvable_metadata_urls)*timeout
    max_wait : 120
```

Step 3 Delete "**127.0.0.1 host name host name**" from the **/etc/hosts** file.

1. Run the following command to open the **/etc/hosts** file:

vi /etc/hosts

2. Delete "**127.0.0.1 host name host name**" from the **/etc/hosts** file and save the modification.


```
##
# hosts          This file describes a number of hostname-to-address
#                mappings for the TCP/IP subsystem.  It is mostly
#                used at boot time, when no name servers are running.
#                On small systems, this file can be used instead of a
#                "named" name server.
# Syntax:
#
# IP-Address    Full-Qualified-Hostname  Short-Hostname
#
# special IPv6 addresses
::1            localhost                ipv6-localhost  ipv6-loopback

fe00::0       ipv6-localnet

ff00::0       ipv6-mcastprefix
ff02::1       ipv6-allnodes
ff02::2       ipv6-allrouters
ff02::3       ipv6-allhosts

127.0.0.1     localhost
127.0.0.1     localhost                localhost
127.0.0.1     test-xiongdp                test-xiongdp
~
```

Step 4 Restart the SAP application on the ECS where the SAP application has been installed. If the SAP application has not been installed on the ECS, perform the preceding operations and install the SAP software.

----End

A Change History

Description	Released On
This release incorporates the following change: Supported SUSE 15 image.	2019-08-30
This issue is the first official release.	2019-05-24