SAP Application AS Guide

SAP Application AS Guide

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1 Overview

About This Document
Before reading this document, you are assumed to be familiar with SAP systems and public cloud services, such as Elastic Cloud Server (ECS), Elastic Volume Service (EVS), Relational Database Service (RDS), and Identity and Access Management (IAM), and have acquired corresponding skills.

Concepts

Advantages of SAP Application AS
SAP application AS offers the following advantages for your application system:

SAP Application AS and Other Services
This section describes the relationship between SAP application AS and other services.

Use Restrictions
SAP application AS has the following restrictions:

1.1 About This Document

Before reading this document, you are assumed to be familiar with SAP systems and public cloud services, such as Elastic Cloud Server (ECS), Elastic Volume Service (EVS), Relational Database Service (RDS), and Identity and Access Management (IAM), and have acquired corresponding skills.

Before installing SAP application Auto Scaling (AS), you have performed the following operations:

- You have installed SAP S/4HANA 1709, including HANA 2.0, ASCS, DB Instance, and PAS.
- ASCS and PAS are deployed on the same ECS. The **/sapmnt/{SID}** directory is shared using NFS server and the directory is readable and writable.
- A logon group, such as **tst_group**, has been created in the SAP S/4HANA system.
- The pip tool has been installed in the image for installing Additional Application Server Instance (AAS).

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- Sufficient quota and resources are available for installing AAS ECSs.

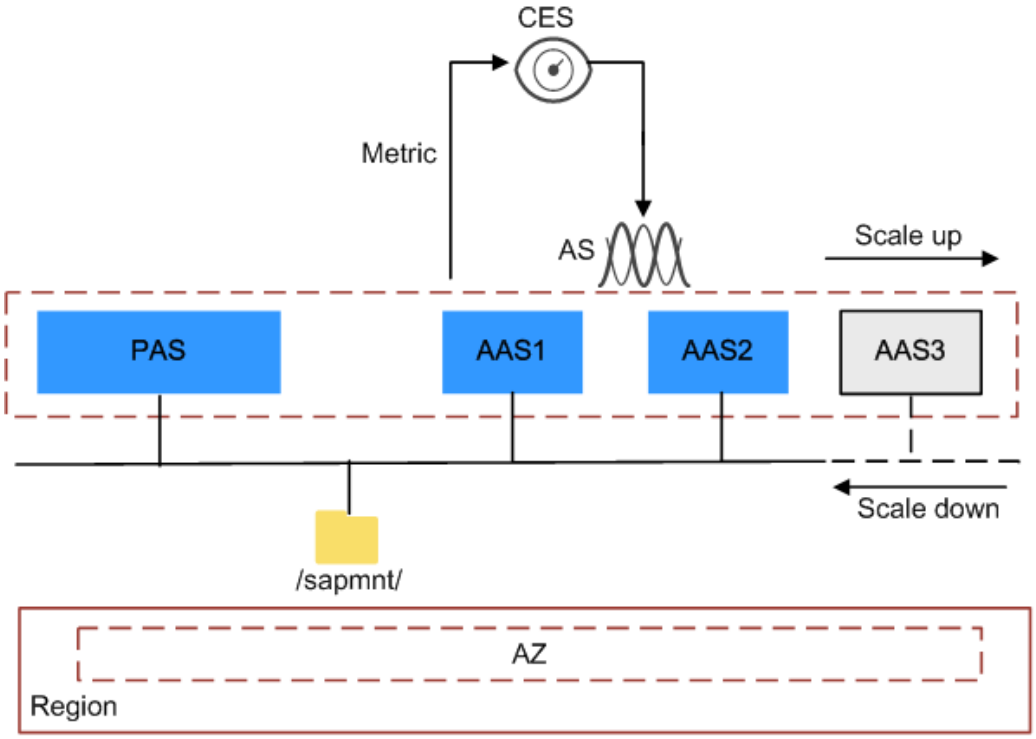
1.2 Concepts

1.2.1 What Is SAP Application AS?

SAP application auto scaling (AS) automatically increases or decreases the number of Additional Application Servers (AASs) as needed depending on your SAP service requirements. You can specify AS configurations and policies based on service requirements. These configurations and policies free you from having to repeatedly adjust resources to keep up with service changes and demand spikes, helping you reduce the resources and manpower required.

Figure 1-1 shows the mechanism of SAP application AS.

Figure 1-1 SAP application AS mechanism



Configure PAS and AAS in the same AS group, and AS policies based on alarm policies. You can set the CPU usage as a metric to configure alarm triggering policies, and customize the alarm triggering threshold. When the monitoring metric reaches the threshold, instances are automatically added in the silent installation mode to ensure proper service running. For details about how to change the CPU threshold, see section **How Do I Change the CPU Threshold?**.

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Table 1-1 Metric configuration

Metric	Description	Formula	Recommended Threshold
CPU usage	Indicates the CPU usage (%) of an AS group.	CPU usage of all instances in an AS group/Number of vCPUs of all instances in the AS group	85% **NOTE** HUAWEI CLOUD monitors the ECS CPU usage every minute. If the CPU usage of ECSs in an AS group exceeds 85% for five consecutive times, scaling is triggered.

SAP application AS is usually used in the following scenarios:

- Automatically adding AASs

  When services increase, AASs are automatically added to ensure the normal running of services, optimizing the cost management of application systems.
- Expanding AASs manually

  If services are temporarily adjusted, you need to manually create AASs to ensure normal service running.
- Releasing AASs manually

  After the service pressure decreases, no running process exists in the AAS. To reduce resource waste, you can delete the AAS.

1.2.2 AS Group

An AS group consists of a collection of instances that apply to the same scenario. It is the basis for enabling or disabling AS policies and performing scaling actions.

AS group involves the following terms:

- An instance is an ECS in an AS group.
- AS policy: specifies a condition for triggering a scaling action.

  AS supports the following policies:
  - **Alarm**

    AS automatically increases or decreases the number of instances in an AS group or sets the number of instances to the configured value when Cloud Eye generates an alarm for a configured metric, such as high CPU usage.
  - **Periodic**

    AS increases or decreases the number of instances in an AS group or sets the number of instances to a specified value at a configured interval, such as one day, one week, or month.
  - **Scheduled**

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AS automatically increases or decreases the number of instances or sets the number of instances to the configured value at a specified time.

1.2.3 AS Configuration

An AS configuration is an ECS instance template in the AS group, specifying specifications of the ECS to be added, including the ECS flavor, vCPU, memory, image, disk, and login mode.

1.2.4 Scaling Actions

A scaling action adds or removes instances to or from an AS group so that the number of instances in the AS group is the same as the expected number for proper service running.

A scaling action is triggered when the number of instances in an AS group is not the same as the expected number. This occurs when the condition specified by an AS policy is met or after you manually change the expected number of instances.

- When the condition specified by an AS policy is met, AS changes the expected number of instances according to the value or percentage specified in the AS policy. In this case, the expected number of instances is inconsistent with the actual number, triggering a scaling action.
- After you manually change the expected number of instances, it becomes inconsistent with the actual number of instances in the AS group, and a scaling action is triggered.

The following describes the expected number of instances (**Expected Instances**) and its related concepts.

- **Expected Instances** is the expected number of instances in an AS group.
- **Min. Instances** or **Max. Instances** are the minimum or maximum number of instances in an AS group.

  The expected number of instances must fall between the minimum and maximum.
- **Cooling Duration** is the duration for cooling a scaling action.

  The system begins to count the cooling duration after a scaling action is triggered. During the cooling duration, the AS group denies scaling actions triggered by an alarm policy. Other AS policies, including periodic and scheduled policies, are not affected.

1.2.5 Region and AZ

Concept

A region and availability zone (AZ) identify the location of a data center. You can create resources in a specific region and AZ.

- Regions are divided based on geographical location and network latency. Public services, such as Elastic Cloud Server (ECS), Elastic Volume Service (EVS), Object Storage Service (OBS), Virtual Private Cloud (VPC), Elastic IP (EIP), and Image Management Service (IMS), are shared within the same

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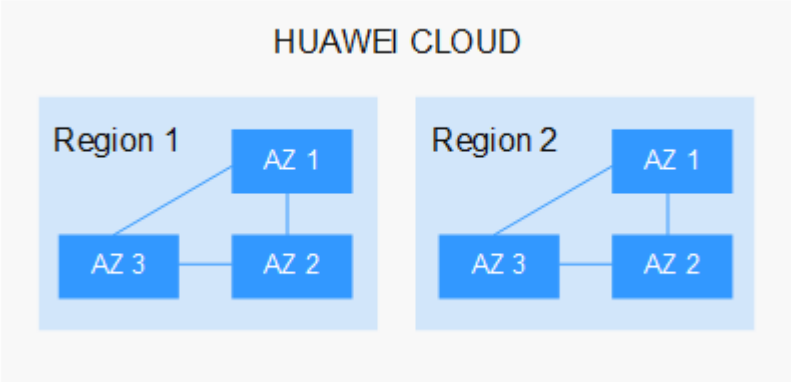
region. Regions are classified into universal regions and dedicated regions. A universal region provides universal cloud services for common tenants. A dedicated region provides specific services for specific tenants.

- An AZ contains one or more physical data centers. Each AZ has independent cooling, fire extinguishing, moisture-proof, and electricity facilities. Within an AZ, computing, network, storage, and other resources are logically divided into multiple clusters. AZs within a region are interconnected using high-speed optical fibers, to support cross-AZ high-availability systems.

Figure 1-2 shows the relationship between regions and AZs.

Figure 1-2 Regions and AZs



Huawei Cloud provides services in many regions around the world. You can select a region and an AZ based on requirements. For more information, see **Huawei Cloud Global Regions**.

Selecting a Region

When selecting a region, consider the following factors:

- Location

  It is recommended that you select the closest region for lower network latency and quick access.

  - If your target users are in Asia Pacific (excluding the Chinese mainland), select the **CN-Hong Kong**, **AP-Bangkok**, or **AP-Singapore** region.
  - If your target users are in Africa, select the **AF-Johannesburg** region.
  - If your target users are in Latin America, select the **LA-Santiago** region.

    NOTE

    The **LA-Santiago** region is located in Chile.

- Resource price

  Resource prices may vary in different regions. For details, see **Product Pricing Details**.

Selecting an AZ

When deploying resources, consider your applications' requirements on disaster recovery (DR) and network latency.

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- For high DR capability, deploy resources in different AZs within the same region.
- For lower network latency, deploy resources in the same AZ.

Regions and Endpoints

Before you use an API to call resources, specify its region and endpoint. For more details, see **Regions and Endpoints**.

1.3 Advantages of SAP Application AS

SAP application AS offers the following advantages for your application system:

- Reducing labor costs

  Reducing the workload of adjusting resources repeatedly to cope with service changes and peak times, saving resources and reducing labor costs.
- Reducing resource costs

  SAP application AS adds resources for your application system when the access volume increases and reduces extra resources from the system when the access volume drops, eliminating wasted resources and reducing costs.

1.4 SAP Application AS and Other Services

This section describes the relationship between SAP application AS and other services.

Virtual Private Cloud (VPC)

All ECSs in the SAP application AS belong to the same VPC. They are isolated using VPC subnets and security groups for security.

Image Management Service (IMS)

AS uses a specified image to provision ECSs for installing AAS.

Elastic Cloud Server (ECS)

The instances added in a scaling action can be managed and maintained on the ECS console.

Key Management Service (KMS)

KMS encrypts and saves configuration files that contain sensitive information to prevent information leakage.

Domain Name Service (DNS)

Nodes in the SAP S4/HANA system resolve domain names using DNS.

Simple Message Notification (SMN)

After the SMN service is enabled for AS, you can use SMN to promptly send AS group information to users so that they can learn the AS group status.

Cloud Eye

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If an alarm-triggered policy is configured, AS triggers scaling actions when an alarm triggering condition specified in Cloud Eye is met.

1.5 Use Restrictions

SAP application AS has the following restrictions:

- Currently, only automatic expansion of AAS is supported.
- PAS and AAS must be in the same AZ.
- PAS and ASCS must be deployed on the same ECS.
- Sufficient quota and resources are available for installing AAS ECSs.
- Table 1-2 lists the version mapping.

Table 1-2 Version mapping

Product Name	Product Version
SAP S/4HANA	1709
SAP NetWeaver RFC SDK	7.50 Linux on x86_64 64bit
PyRFC	1.9.91 cp27mu

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2 Deployment

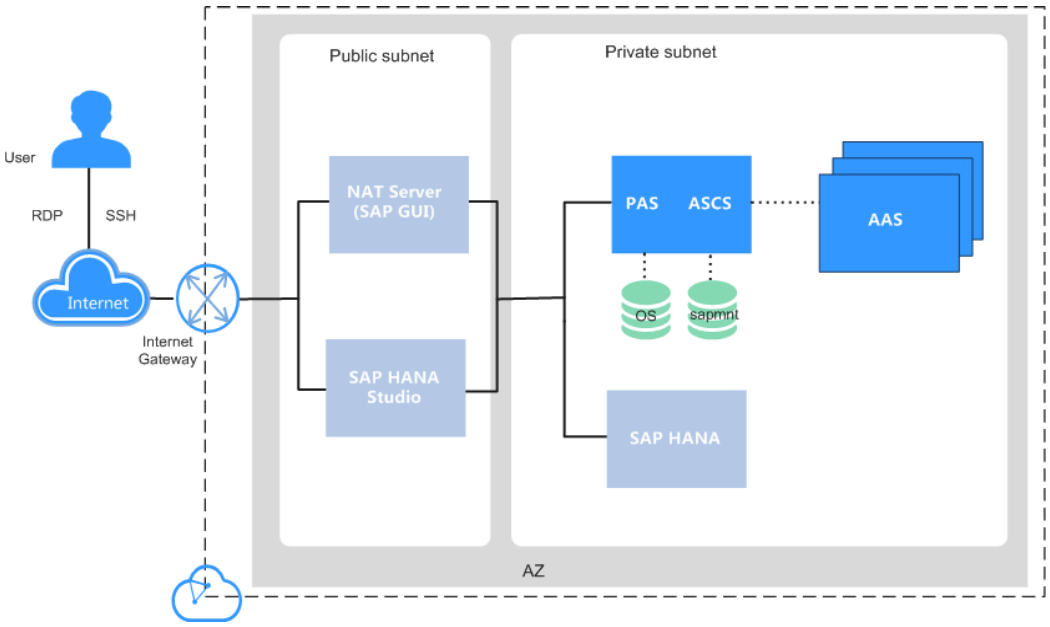
Deployment Introduction
This section describes the deployment scheme of SAP application AS.
Deployment Process
This section describes the entire process of deploying SAP application AS.
Preparing Resources
Deploying SAP Application AS
This section describes how to deploy SAP application AS.
Verifying the Deployment
This section describes how to verify that the SAP application AS has been successfully deployed.

2.1 Deployment Introduction

This section describes the deployment scheme of SAP application AS.

Figure 2-1 shows the deployment scheme.

Figure 2-1 Deployment scheme



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The description is as follows:

- VPC network: All SAP HANA nodes are deployed within a VPC, and all ECSs and HANA ECSs in the SAP HANA system belong to the same availability zone (AZ) to ensure security.
- Public subnet:
  - Network Address Translation (NAT) server ECS: allows you to access HANA ECSs using Secure Shell (SSH).
  - SAP HANA Studio ECS: runs 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:
  - HANA ECS: used for deploying the SAP HANA software.
  - PAS and ASCS ECSs: used to deploy the SAP S/4HANA software and the AS service. **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	provides the directory for installing the OS.
sapmnt disk	provides the directory for installing SAP S/4HANA and the AS service.

  - AAS ECS: is expanded after AS is triggered.

2.2 Deployment Process

This section describes the entire process of deploying SAP application AS.

Figure 2-2 shows the SAP application AS deployment flowchart.

Figure 2-2 SAP application AS deployment flowchart

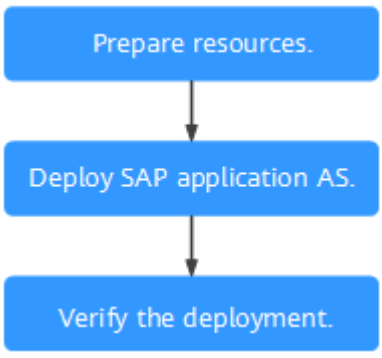

Table 2-2 lists the installation and configuration process.

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Table 2-2 Installation and configuration description

Description		Description
Preparing Resources	Obtaining Required Software Packages	Describes the required software packages.
	Uploading Software Packages	Describes how to upload the software packages required by AAS to the OBS bucket.
	Preparing the packages.json File	Describes how to write the path of the software packages required by AAS stored in the OBS bucket into the **packages.json** file.
	Creating an Agency	Describes how to create an agency.
	Preparing the Configuration File	Describes how to write parameter information into the configuration file.
Deploying SAP Application AS		Describes how to deploy SAP application AS.
Verifying the Deployment		Describes how to verify that the deployment is successful.

2.3 Preparing Resources

2.3.1 Obtaining Required Software Packages

Obtain the required packages before deploying SAP application AS.

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AS Installation Package

Table 2-3 AS installation package

Software	Description	How to Obtain
s4autoscaling.zip	AS installation package	CN-Hong Kong: https://obs-sap-ap-southeast-1.obs.ap-southeast-1.myhuaweicloud.com/autoscaling/s4autoscaling.zip
		AP-Bangkok: https://obs-sap-ap-southeast-2.obs.ap-southeast-2.myhuaweicloud.com/autoscaling/s4autoscaling.zip

Packages Required by AAS

Table 2-4 Software installation packages required by the AAS

Software	Description	How to Obtain
SAPEXEDB	SAPEXEDB with the kernel that is the same as that of the S/4HANA 1709 system	Obtain from the SAP official website.
SAPEXE	SAPEXE with the kernel that is the same as that of the S/4HANA 1709 system	
igsexe	IGSEXE with the kernel that is the same as that of the S/4HANA 1709 system	
igshelper	IGSHELPER with the kernel that is the same as that of the S/4HANA 1709 system	

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Software	Description	How to Obtain
HDBClient	HDB Client with the kernel that is the same as that of the S/4HANA 1709 system. Select the software package whose format is SAR on the Linux X86_64 platform.	
SAPCAR	EXE format, non-SAR format	
SWPM	Latest version, SAR format	
Netweaver RFC SDK	Select the software package of the Linux X86_64 platform. The latest version is as follows: nwrfc750P_1-70002752.zip	1. Log in at **https://launchpad.support.sap.com**. 2. Select **Downloads** from the drop-down list box in the search area. 3. Enter the keyword **NetWeaver RFC SDK**. 4. Select the Linux X86_64 version and download the latest version **nwrfc750P_1-70002752.zip**.
pyrfc	Download the .whl package of **Python 2.7-linux_x86_64**. The latest version is as follows: pyrfc-1.9.92-cp27-cp27mu-linux_x86_64.whl	**https://github.com/SAP/PyRFC/releases**

Tool Installation Packages

Table 2-5 Tool packages to be downloaded

Software	Description	How to Obtain
PuTTY	Used for remote SSH login and centralized server management.	**https://www.chiark.greenend.org.uk/~sgtatham/putty/**

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Software	Description	How to Obtain
7-Zip	Used to decompress software packages.	https://downloads.sourceforge.net/sevenzip
WinSCP	Used to upload key files to cloud servers.	https://www.winscp.net

License

Software required by AAS is authorized in Bring Your Own License (BYOL) mode. In this mode, you need to log in to the SAP **technical support website** and apply for a license.

2.3.2 Uploading Software Packages

Before deploying SAP application AS, upload the software installation packages required by AASs to the OBS bucket.

Prerequisites

You have obtained the software packages required by AASs. For details about how to obtain the software packages, see **Table 2-4**.

Procedure

Step 1 Install the OBS Browser client based on the **Object Storage Service Client Guide (OBS Browser+)** and upload the software installation packages required by AASs to the OBS Browser.

----End

2.3.3 Preparing the packages.json File

This section describes how to write the path of the software packages required by AASs stored in the OBS bucket into the packages.json file, so that the package information can be obtained during AAS expansion.

Prerequisites

You have obtained the path of the installation packages in the OBS bucket in **Table 2-4**.

Procedure

Step 1 Decompress the **s4autoscaling.zip** software package on the local PC.

Step 2 Open the extracted **packages.json** file.

Step 3 Write the path of the software packages listed in **Table 2-4** and stored in the OBS bucket into the **packages.json** file.

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The content is as follows:

```
{
  "S4_1709": {
    "Basket": [
      {
        "SAPEXEDB": "https://obs.cn-north-1.myhwclouds.com/sap-dev/S4HANA/1709/SAPEXEDB_200-80002572.SAR",
        "SAPEXE": "https://obs.cn-north-1.myhwclouds.com/sap-dev/S4HANA/1709/SAPEXE_200-80002573.SAR",
        "SAPHOSTAGENT": "https://obs.cn-north-1.myhwclouds.com/sap-dev/S4HANA/1709/SAPHOSTAGENT36_36-20009394.SAR",
        "igsexe": "https://obs.cn-north-1.myhwclouds.com/sap-dev/S4HANA/1709/igsexe_4-80003187.sar",
        "igshelper": "https://obs.cn-north-1.myhwclouds.com/sap-dev/S4HANA/1709/igshelper_17-10010245.sar"
      }
    ],
    "HDBClient": "https://obs.cn-north-1.myhwclouds.com/sap-dev/S4HANA/1709/IMDB_CLIENT20_003_106-80002082.SAR"
  },
  "Common":[
    {
      "SWPM": "https://obs.cn-north-1.myhwclouds.com/sap-dev/Tools/SWPM10SP23_6-20009701.SAR",
      "SAPCAR": "https://obs.cn-north-1.myhwclouds.com/sap-dev/Tools/SAPCAR_617-80000935-Linux-x86-64bit.exe",
      "NWRFC":"https://obs.cn-north-1.myhwclouds.com/sap-dev/autoscaling/nwrfc750P_1-70002752.zip",
      "pyrfc":"https://obs.cn-north-1.myhwclouds.com/sap-dev/autoscaling/pyrfc-1.9.91-cp27-cp27mu-linux_x86_64.whl"
    }
  ]
}
```

----End

2.3.4 Creating an Agency

During the installation of AAS, ECSs in SAP application AS group need to obtain the authorization to access HUAWEI CLOUD services. An agency needs to be created in advance. Thus, the agency will be assigned to AAS ECSs automatically during ECS provisioning.

Procedure

Perform the following operations to create an agency.

Step 1 Log in to the management console.

Step 2 On the management console, click **Service List** and choose **Management & Deployment** > **Identity and Access Management**.

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**: **NW_scaling_agency**. This name is only for reference.
- **Agency Type**: **Cloud service**
- **Cloud Service**: **ECS BMS**
- **Validity Period**: Retain the default setting.
- **Permissions**: Locate the **Region** and **Project** in which the target ECS locates and click **Modify** in the **Operation** column. On the displayed page, select **DNS**, **KMS**, and **SMN** to configure the permissions for the ECS.

Step 5 Click **OK** to save the agency parameter configuration.

----End

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Follow-Up Operations

On the ECS provisioning page, set **Agency Name** to **NW_scaling_agency** so that the agency can be used by the ECS.

2.3.5 Preparing the Configuration File

This section describes how to configure parameters in the config.json file. During the installation of SAP application AS and AAS expansion, information in the config.json configuration file will be obtained.

Procedure

Step 1 Log in to an ASCS node as user **root** using a key or password.

Step 2 On the CLI, download the compressed software package **s4autoscaling.zip** to the **/sapmnt/**{sid} directory, for example, **/sapmnt/NW0/**.

wget https://obs-sap.cn-east-2.myhuaweicloud.com/autoscaling/s4autoscaling.zip -P /sapmnt/NW0

Step 3 Run the following command to decompress **s4autoscaling.zip**:

unzip s4autoscaling.zip -d /sapmnt/NW0

Step 4 Run the following command to open the **config.json** file:

vi /sapmnt/NW0/autoscaling/config.json

Step 5 Edit the parameters in the **config.json** file based on actual requirements. For details, see **Table 2-6**.

Table 2-6 Parameter description

Parameter	Description	Example Value
SID	System ID of the SAP S/4HANA system	NW0
SchemaPW	Schema password of the SAP HANA database	xiaoxiao@123
MasterPW	Password configured when installing AAS	xiaoxiao@123
SYSTEMPW	SYSTEM password of the SAP HANA database	xiaoxiao@123
SapmntPATH	**sapmnt** directory shared to AAS, for example, **/sapmnt/{SID}**	10.0.0.41:/sapmnt/NW0
PASInctanceNR	PAS instance ID	01
Region	Region where the S/4HANA system resources are located	cn-south-1

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Parameter	Description	Example Value
DDICPasswd	DDIC user password	xiaoxiao@123
LogonGroup	Name of the created logon group	tst_group
InstallVersion	In the current version, only 1709 is supported. The value must be **S4_1709**.	S4_1709
AASImageID	Image ID required by AAS ECSs. If this parameter is left blank, use the image that is the same as that of PAS. **NOTE** The pip tool must be installed in the image for provisioning AAS ECSs.	Leave this parameter blank.
ExistedAASIDs	• If AASs already exist in the S/4HANA system, set this parameter to, for example, **ExistedAASIDs": ["981224766","964679324"]**. • If no AAS exists in the S/4HANA system, leave this parameter blank. For example, **[]**.	["981224766","964679324"]
AASFlavorID	Flavor of AAS ECSs. If this parameter is left blank, select the flavor that is the same as that of PASs.	s1.xlarge
AgencyName	Agency name, which must be the same as that of the created agency in section **Creating an Agency**.	NW_scaling_agency
UserName	HUAWEI CLOUD username	sap_xiao458925
DomainName	HUAWEI CLOUD domain name	sap_xxx4157666

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Parameter	Description	Example Value
IAMEndpoint	Endpoint address of HUAWEI CLOUD IAM. The value must be **iam.myhuaweicloud.com**.	iam.myhuaweicloud.com
KeypairName	Name of the key pair used for provisioning AAS ECSs. If this parameter is left blank, use the key pair that is the same as that of PASs. (You can only use key pairs to log in to AASs.)	Keypair-lf
ContactPhone	Phone number of the S/4HANA system administrator, which is used to receive AS information	188292004xx
ContactEmail	Email address of the S/4HANA system administrator, which is used to receive AS information	1oss.zhang@huawei.com

Step 6 After the editing is complete, press **Esc** to exit the editing mode.

Step 7 Enter **:wq** and press **Enter**.

----End

2.4 Deploying SAP Application AS

This section describes how to deploy SAP application AS.

Prerequisites

- You have installed S/4HANA 1709, including HANA 2.0, ASCS, DB Instance, and PAS.
- ASCS and PAS are deployed on the same ECS. The **/sapmnt/{SID}** directory is shared using NFS server and the directory is readable and writable.
- You have obtained the AS installation package **s4autoscaling.zip**.
- The logon group has been created in the SAP S/4HANA 1709 system.
- The pip tool has been installed in the image for installing AAS.
- Sufficient quota and resources are available for installing AAS ECSs.

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Procedure

Step 1 Log in to an ASCS node as user **root** using a key or password.

Step 2 Run the following commands to install the SAP application AS:

cd /sapmnt/NW0/autoscaling

python deploying_autoscale.py

Information similar to the following is displayed:

```
s4-pas:/sapmnt/NW0/autoscaling # python deploying_autoscale.py
Authorize using user/password.
Please input password for user zhangjingbin:
Instance eb444219-2268-44bd-9d26-a6ad905cb6bf exists.
KeyPair-lf does not exist.
Flavor (s1.xlarge) exists
All packages are available in OBS.
```

Step 3 Enter the HUAWEI CLOUD password to complete the deployment.

If you have entered your mobile number and email address and agreed to receive the subscription information, you will receive a message indicating successful subscription. You are advised to accept the subscription. Then, scaling information will be sent to you at the first time.

To cancel the subscription, click **here** in the message indicating that the subscription is successful.

----End

2.5 Verifying the Deployment

This section describes how to verify that the SAP application AS has been successfully deployed.

Procedure

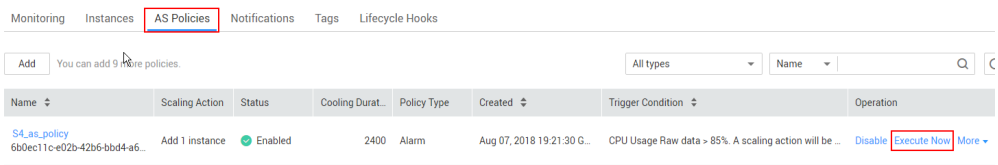
Step 1 Log in to the management console.

Step 2 Click **Service List** and choose **Computing** > **Auto Scaling**.

Step 3 In the displayed AS group list, click the target AS group.

Step 4 On the displayed page, click the **AS Policies** tab.

Step 5 Locate the row that contains the target policy and click **Execute Now** in the **Operation** column.



Step 6 In the displayed dialog box, click **OK** to manually create the AAS.

Step 7 Wait for about 10 minutes and perform the following operations to check whether SAP application AS has been successfully deployed.

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If the status is normal, the deployment is successful. Otherwise, the deployment fails. For detail about how to manually release the AAS, see section **Deleting AASs Manually**. Then, deploy SAP application AS again or contact technical support.

1. Log in to WinSCP and upload the key file of the AAS to the ASCS.
2. Log in to an ASCS node as user **root** using a key or password.
3. Run the following command to query the installation progress:

   tailf logs/AASInstall.log
4. Run the following command to view the AAS host name:

   grep set-hostname logs/AASIntall.log
5. Run the following command to modify the permission of the file:

   chmod 600 *.pem

   NOTE

   *.pem is the private key file.
6. Run the following command to log in to the expanded AAS node:

   ssh -i *.pem {AAS Hostname}
7. Run the following command to check whether the AAS process is running properly:

   sapcontrol -nr 00 -function GetProcessList
8. Check whether the AAS has been added to the specified logon group on the SAP GUI.

----End

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3 SAP Application AS Management

Expanding AASs Manually
If services are temporarily adjusted, you need to manually create AASs to ensure normal service running.

Deleting AASs Manually
After the service pressure decreases, no running process exists in the AAS. To reduce resource waste, you can delete the AAS.

3.1 Expanding AASs Manually

If services are temporarily adjusted, you need to manually create AASs to ensure normal service running.

Procedure

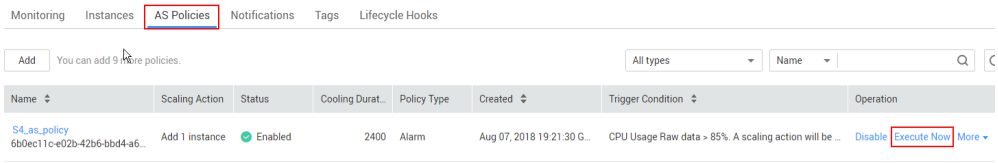
Step 1 Log in to the management console.

Step 2 Click **Service List** and choose **Computing** > **Auto Scaling**.

Step 3 In the displayed AS group list, click the target AS group.

Step 4 On the displayed page, click the **AS Policies** tab.

Step 5 Locate the row that contains the target policy and click **Execute Now** in the **Operation** column.



Step 6 In the displayed dialog box, click **OK** to manually create the AAS.

----End

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3.2 Deleting AASs Manually

After the service pressure decreases, no running process exists in the AAS. To reduce resource waste, you can delete the AAS.

NOTICE

- If you want to stop the PAS ECS, you need to stop its AS group first. This prevents the PAS ECS from being removed from the AS group due to the health check of the AS.
- To restart the PAS ECS, start the PAS ECS first and then enable the AS group.

Procedure

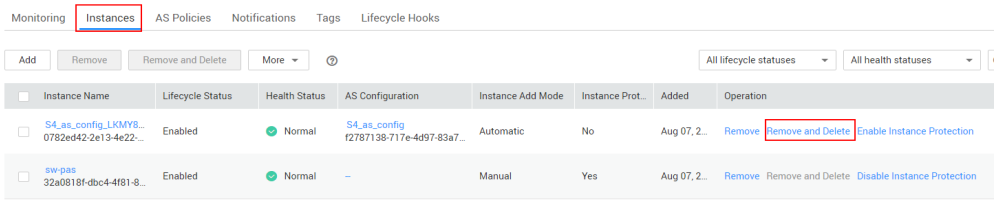
Step 1 Log in to the management console.

Step 2 Click **Service List** and choose **Computing** > **Auto Scaling**.

Step 3 In the displayed AS group list, click the target AS group.

Step 4 On the displayed page, click the **Instances** tab.

Step 5 Locate the row that contains the target policy and click **Remove and Delete** in the **Operation** column.



Step 6 In the displayed dialog box, click **OK** to release the AAS.

----End

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4 FAQs

What Is SAP Application AS?

What Are the Advantages of SAP Application AS?

What Are Restrictions on Using SAP Application AS?

How Many AS Policies and AS Configurations Can I Create and Use?

How Many AS Policies Can Be Enabled?

How Can I View the Logs of SAP Application AS?

How Do I Change the CPU Threshold?

4.1 What Is SAP Application AS?

SAP application AS automatically increases or decreases the number of AASs based on the SAP service requirements of users. You can specify AS configurations and policies based on service requirements. These configurations and policies free you from having to repeatedly adjust resources to keep up with service changes and demand spikes, helping you reduce the resources and manpower required.

Figure 4-1 shows the mechanism of SAP application AS.

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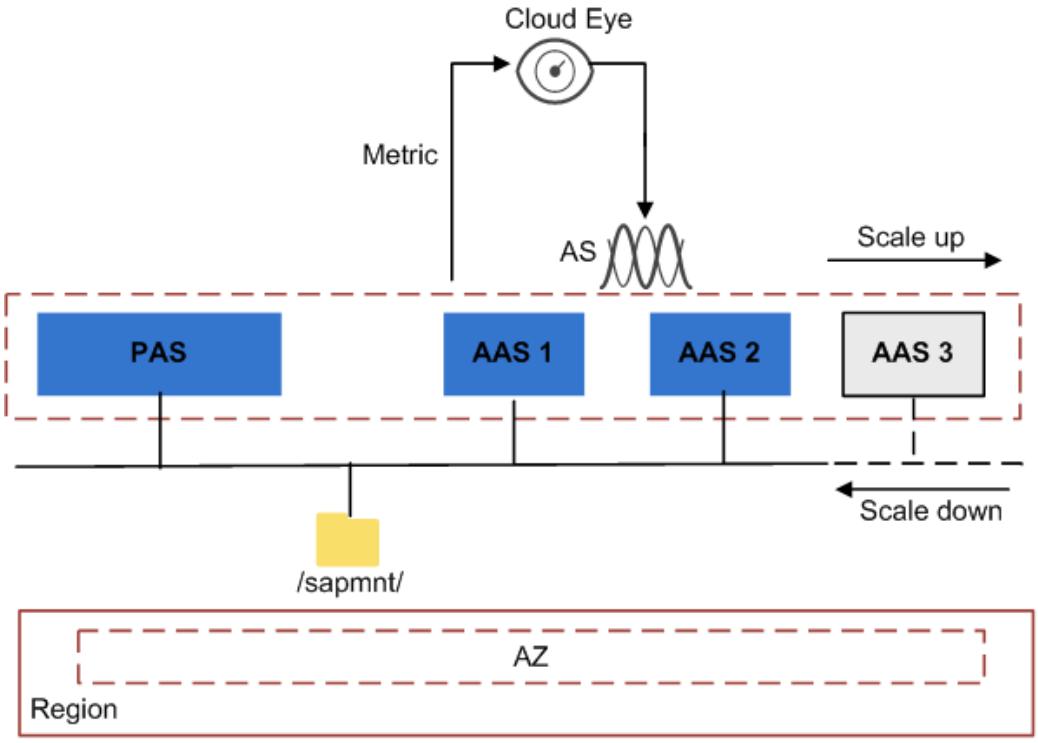
Figure 4-1 SAP application AS mechanism



Configure PAS and AAS in the same AS group, and AS policies based on alarm policies. You can set the CPU usage as a metric to configure alarm triggering policies, and customize the alarm triggering threshold. When the monitoring metric reaches the threshold, instances are automatically added in the silent installation mode to ensure proper service running.

Table 4-1 Metric configuration

Metric	Description	Formula	Recommended Threshold
CPU usage	Indicates the CPU usage (%) of an AS group.	CPU usage of all instances in an AS group/Number of vCPUs of all instances in the AS group	85% **NOTE** HUAWEI CLOUD monitors the ECS CPU usage every minute. If the CPU usage of ECSs in an AS group exceeds 85% for five consecutive times, scaling is triggered.

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4.2 What Are the Advantages of SAP Application AS?

SAP application AS offers the following advantages for your SAP application system:

- Reducing labor costs

  Reducing the workload of adjusting resources repeatedly to cope with service changes and peak times, saving resources and reducing labor costs.
- Reducing resource costs

  AS adds resources for your application system when the access volume increases and reduces extra resources from the system when the access volume drops, eliminating wasted resources and reducing costs.

4.3 What Are Restrictions on Using SAP Application AS?

SAP application AS has the following restrictions:

- Currently, only automatic expansion of AAS is supported.
- AS resources must comply with quota requirements listed in **Table 4-2**.

Table 4-2 Quota list

Category	Description	Default Value
AS group	Maximum number of AS groups that you can create	10
AS configuration	Maximum number of AS configurations that you can create	100
AS policy	Maximum number of AS policies that can be added to an AS group	10
AS instance	Maximum number of instances that can be added to an AS group **NOTE** If you do not specify this parameter, the default value is 5 and the upper limit is 20.	20

4.4 How Many AS Policies and AS Configurations Can I Create and Use?

You can create up to 10 AS groups and 100 AS configurations by default. An AS group supports 1 AS configuration and 10 AS policies at a time.

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If the default configurations fail to meet your service requirements, contact the administrator.

4.5 How Many AS Policies Can Be Enabled?

You can enable one or more AS policies as required.

4.6 How Can I View the Logs of SAP Application AS?

If the AS operation fails or an error occurs when the AAS is automatically expanded, you can view logs to analyze the fault. All logs are stored in the **/sapmnt/{sid}/autoscaling/logs** directory.

Procedure

Step 1 Log in to an ASCS node as user **root** using a key or password.

Step 2 Run the following command to switch to the **/sapmnt/{sid}/autoscaling/logs** directory:

cd /sapmnt/{sid}/autoscaling/logs

Step 3 Run the following command to check all the logs:

ll

NOTE

- The **ASInstall.log** file records the execution logs of AS scripts.
- The **AASInstall_{aashostname}.log** file records the log information about the installation of each AAS.

----End

4.7 How Do I Change the CPU Threshold?

After the SAP application AS is installed, the default CPU usage threshold is 85%. When the CPU usage exceeds 85%, instances are automatically extended. You can change the CPU threshold based on actual requirements to ensure the stable running of the system.

Procedure

Step 1 Log in to the management console.

Step 2 On the public cloud management console, click **Service List** and choose **Management & Deploy** > **Cloud Eye**.

Step 3 In the navigation pane on the left, choose **Alarm Management** > **Alarm Rules**.

Step 4 Locate the row that contains the alarm rule **S4_scaling_alarm** in the **Operation** column and click **More** and then **Modify**.

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Step 5 In the displayed dialog box, change the threshold.

Step 6 Click **OK**. The threshold is changed.

----End

A Change History

What's New	Released On
This issue is the first official release.	2018-11-30

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