SAP Deployment Guide

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Issue   01
Date   2023-11-13

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Security Declaration

Vulnerability

Huawei's regulations on product vulnerability management are subject to the *Vul. Response Process.* For details about this process, visit the following web page:
https://www.huawei.com/en/psirt/vul-response-process
For vulnerability information, enterprise customers can visit the following web page:
https://securitybulletin.huawei.com/enterprise/en/security-advisory

Contents

1 About This Document

This document describes how to deploy and run SAP solutions on HUAWEI CLOUD. This document is intended for SAP Basis and NetWeaver administrators who have experience in implementing SAP systems on traditional infrastructure and want to run SAP systems on HUAWEI CLOUD. You must be familiar with the SAP on Cloud solution and HUAWEI CLOUD services related to the SAP on Cloud solution.

If you are new to HUAWEI CLOUD, visit the following link to obtain more information:

- Log in at HUAWEI CLOUD (**https://www.huaweicloud.com/intl/en-us/**) to obtain basic information.

- Log in at HUAWEI CLOUD Help Center (**https://support.huaweicloud.com/intl/en-us/index.html**) to obtain technical details.

For details about how to install SAP, see the **SAP official document**. If you have any trouble in installing and using SAP system due to its own problems, contact the SAP technical support.

2 Abstract

Targeting the enterprise market, Huawei launches the SAP on Cloud solution. It allows enterprises to deploy SAP key services on Huawei Cloud, provides automatic management and lifecycle management services, and leverages Huawei's leading computing, network, storage, and security services, helping enterprises realize digital transformation, optimize operations, and maximize investment. This document provides basic information and best practices for installing and running SAP products on Huawei Cloud.

3 Service Overview

3.1 Computing Services

This section describes the Elastic Cloud Server (ECS), Bare Metal Server (BMS), and Image Management Service (IMS) to help you better understand these computing services.

ECS

An ECS is a computing server consisting of CPUs, memory, images, and EVS disks that allows on-demand allocation and elastic scaling. With VPCs, virtual firewalls, and multi-data-copy capabilities, ECSs create an efficient, reliable, and secure computing environment, ensuring stable and uninterrupted operation of services. ECSs support self-service creation, modification, and operation. You can create ECSs by specifying the CPU, memory, image specifications, and login authentication mode. After creating an ECS, you can modify its specifications as required. After creating an ECS, you can use it like using your local computer or physical server.

For details, see **Elastic Cloud Server Product Introduction**.

BMS

A BMS is a physical server dedicated for users. It provides remarkable computing performance and stability for running key applications. BMSs and ECSs can communicate with each other through the internal network, allowing hybrid deployment to flexibly cope with various service scenarios.

For details, see **Bare Metal Server Product Introduction**.

IMS

IMS provides easy-to-use self-service image management functions. You can use a private, public, or shared image conveniently. You can also create a private image using an existing cloud server or an external image file.

For details, see **Image Management Service Product Introduction**.

3.2 Storage Services

This section describes Elastic Volume Service (EVS), Scalable File Service (SFS), Object Storage Service (OBS), and others alike to help you better understand storage services.

EVS

The EVS service offers scalable block storage for cloud servers. With high reliability, high performance, and rich specifications, EVS disks can be used for distributed file systems, development and test environments, data warehouse applications, and high-performance computing (HPC) scenarios to meet diverse service requirements.

For details, see **Elastic Volume Service Product Introduction**.

VBS

VBS backs up EVS disks and uses the backups to restore original EVS disks, ensuring user data accuracy and security.

For details, see **VBS Product Introduction**

SFS

SFS provides high-performance file storage that is scalable on demand. It can be shared with multiple cloud servers. SFS works based on the standard file access protocol. Therefore, users can integrate their applications and tools seamlessly with SFS. In addition, SFS features high reliability and high availability and enables file system performance to increase as capacity grows.

For details, see **Scalable File Service Product Introduction**.

OBS

OBS is an object-based storage service. It provides massive, secure, highly reliable, and low-cost data storage service.

For details, see **Object Storage Service Product Introduction**.

CSBS

CSBS offers the backup protection service for Elastic Cloud Servers (ECSs) and Bare Metal Servers (BMSs) (ECSs and BMSs are referred to as servers in the following content). It works based on the consistent snapshot technology for disks. With CSBS, you can use backup data to restore server data.

For details, see **CSBS Introduction**.

3.3 Network Services

This section describes the virtual private cloud (VPC), Direct Connect, and Virtual Private Network (VPN) to help you better understand these network services.

VPC

VPC enables you to create secure, isolated virtual networks. VPC provides you with virtual networks that have no difference with traditional networks. You can easily configure and manage networks on the management console. You can configure security groups, virtual private networks (VPNs), and IP address segments, and allocate bandwidth in a VPC. With a VPC, you can manage and configure internal networks and change network configurations, simplifying network management. You can also customize the cloud server access rules within a security group to strengthen cloud server security protection. The advantages of a VPC are as follows:

- Have full control over your virtual networks, for example, creating your own network and configuring the DHCP service.
- Create security groups to improve your network security.
- Assign elastic IP addresses (EIPs) for use in a VPC, and bind them to cloud servers in your VPC to connect the cloud servers to the Internet.
- Connect a VPC to your data center using a VPN for smooth application migration to the cloud.
- Communicate with other VPCs using VPC peering connections.

For details, see **Virtual Private Cloud Product Introduction**.

Direct Connect

Direct Connect helps you establish a dedicated network that connects your local data center to the public cloud. Direct Connect sets up dedicated connections between the Direct Connect gateway and a VPC on the public cloud. With Direct Connect, you can establish network circuits between the cloud and your data center, office, or collocation environment. Direct Connect can effectively reduce network latency and improve network experience.

For details, see **Direct Connect Product Introduction**.

VPN

VPN establishes a secure, encrypted communication tunnel between the VPN gateway of the VPC on HUAWEI CLOUD and the VPN gateway of your local data center, allowing you to directly use resources in the VPC through the VPN.

By default, cloud servers in a VPC cannot communicate with your physical data center or private network. To enable communication between them, use a VPN.

For details, see **Virtual Private Network Product Introduction**.

3.4 Security Services

This section describes Anti-DDoS and Web Application Firewall (WAF) to help you better understand these security services.

Anti-DDoS

Anti-DDoS service uses dedicated anti-DDoS devices to provide refined protection for customer Internet applications, defending against all DDoS attacks, such as CC, SYN flood, and UDP flood. You can configure parameters to specify the threshold for DDoS prevention based on their rented bandwidth and service model. When the system detects a DDoS attack, it notifies the user of defending against the attack.

For details, see **Anti-DDoS Product Introduction**.

WAF

WAF detects and protects website service traffic in multiple dimensions. It intelligently identifies malicious request characteristics and defends against unknown threats based on deep machine learning to prevent common attacks such as SQL injection or cross-site scripting, preventing these attacks from affecting the availability, security, or using excessive resources of web applications. This service reduces the risk of data tampering and theft.

For details, see **WAF Product Introduction**.

3.5 Management and Governance Services

This section describes the Cloud Eye and Identity and Access Management (IAM) services to help you better understand management and governance services.

Cloud Eye

Cloud Eye is a multi-dimensional monitoring platform for resources such as cloud servers and bandwidth. With Cloud Eye, you can understand the resource usage and running status of services running on the cloud platform, receive alarm notifications in a timely manner, and react to changes to keep your services running smoothly. After a cloud server is created, Cloud Eye automatically starts monitoring. No manual intervention or plug-in installation is required.

For details, see the **Cloud Eye Product Introduction**.

Identity and Access Management

IAM provides identity authentication and permissions management. With IAM, you can manage user accounts (such as employees, systems, and applications) and control their access to cloud resources through permissions policies.

For details, see .

For details, see the **IAM Product Introduction**.

4 Planning

Before deploying the SAP system, you can choose a hybrid architecture or a full-cloud architecture to deploy the SAP system.

Before deploying the SAP system, you need to upload the SAP installation media to the cloud server.

To size an SAP system, you need to determine the system indicators, including memory, CPU, disk capacity, and I/O performance. You are advised to use the SAP Quick Sizer tool to perform the sizing. Cloud servers support Auto Scaling (AS). You can select a proper cloud server on HUAWEI CLOUD based on the sizing result and SAP consultants' opinions to deploy your SAP system.

4.1 Licenses

The SAP on Cloud solution supports following licenses:

- Bring Your Own License (BYOL)

  SAP is authorized in BYOL mode. In this mode, you need to log in to the SAP technical support website and apply for a license. If you select the BYOL license, you are required to manage licenses by yourself. The public cloud

platform provides functions for you to maintain license compliance during the license lifecycle.

- Free development software license

  For SAP HANA, express edition, you can use free SAP HANA development software licenses provided by SAP.

- Free trial license

  For a trial, you can use a free trial license provided by SAP, and will be billed for the HUAWEI CLOUD infrastructure used during the trial.

4.2 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 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.

Figure 4-1 shows the relationship between regions and AZs.

Figure 4-1 Regions and AZs
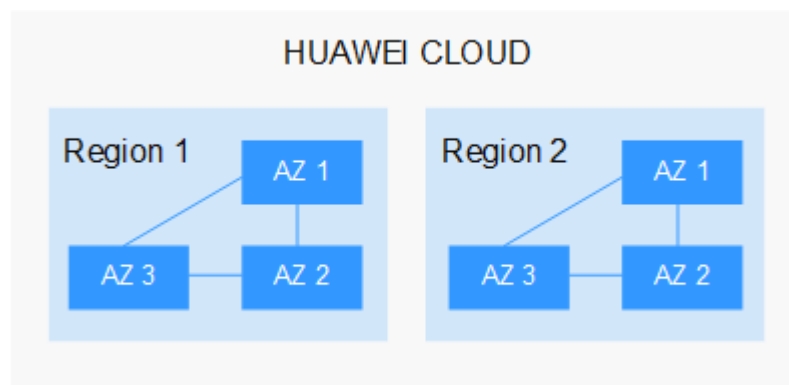
Huawei Cloud provides services in many regions around the world. You can select a region and an AZ based on requirements. For more information, see **Huawei Cloud Global Regions**.

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.

- 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**.

4.3 Deployment Architecture

Before deploying the SAP system, you can choose a hybrid architecture or a full-cloud architecture to deploy the SAP system.

- **Full-cloud architecture**

  You can deploy the entire SAP system on HUAWEI CLOUD and access the SAP system through IPSec VPN or Direct Connect connections. **Figure 4-2** shows the architecture. The following scenarios are supported:

  - Deploy a new SAP system on HUAWEI CLOUD.

  - Migrate existing on-premises SAP systems to HUAWEI CLOUD.

Figure 4-2 Full-cloud architecture
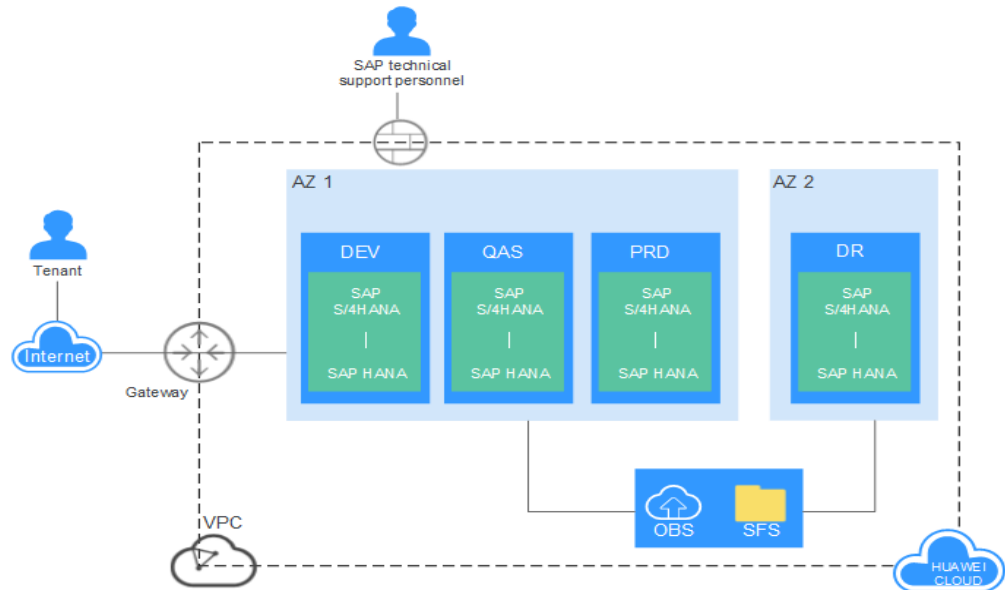
- **Hybrid architecture**

  HUAWEI CLOUD allows a hybrid deployment that employs both on-cloud and on-premises systems. You can deploy systems such as the test system, the training and demonstration system, the development system, and the quality assurance system on HUAWEI CLOUD, and connect the development system and the quality assurance system to the on-premises production system. You can access the VPC network through IPSec VPN or Direct Connect to establish connections among the production, development, and test systems.

Figure 4-3 Hybrid architecture
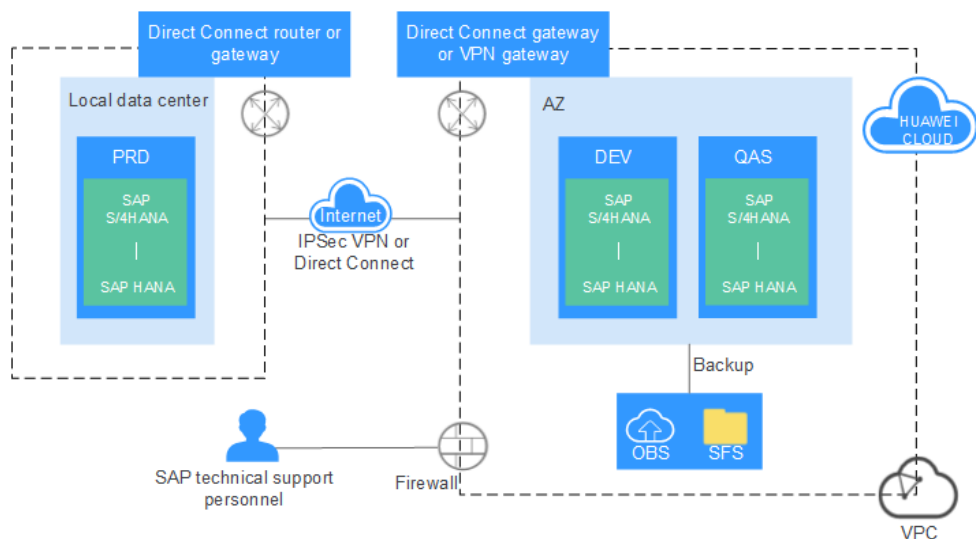
4.4 Cloud Server Specifications

Cloud servers refer to ECSs and BMSs. You can deploy SAP applications on cloud servers of the specifications you need.

ECS

Table 4-1 ECS specifications

Type	Flavor	CPUs	Memory (GB)
High-performance computing	h1.8xlarge.4	32 vCPUs	128
	h1.4xlarge.4	16 vCPUs	64
	h1.2xlarge.4	8 vCPUs	32
	h1.xlarge.4	4 vCPUs	16
Memory-optimized	m3.large.8	2 vCPUs	16
	m3.xlarge.8	4 vCPUs	32
	m3.2xlarge.8	8 vCPUs	64
	m3.3xlarge.8	12 vCPUs	96
	m3.4xlarge.8	16 vCPUs	128
	m3.6xlarge.8	24 vCPUs	192
	m3.8xlarge.8	32 vCPUs	256
	m6.large.8	2	16
	m6.xlarge.8	4	32
	m6.2xlarge.8	8	64
	m6.3xlarge.8	12	96
	m6.4xlarge.8	16	128
	m6.6xlarge.8	24	192
	m6.8xlarge.8	32	256
	m6.16xlarge.8	64	512
General computing-plus	c6.large.4	2 vCPUs	8
	c6.xlarge.4	4 vCPUs	16
	c6.2xlarge.4	8 vCPUs	32
	c6.3xlarge.4	12 vCPUs	48

Type	Flavor	CPUs	Memory (GB)
	c6.4xlarge.4	16 vCPUs	64
	c6.6xlarge.4	24 vCPUs	96
	c6.8xlarge.4	32 vCPUs	128
	c7.large.4	2 vCPUs	8
	c7.xlarge.4	4 vCPUs	16
	c7.2xlarge.4	8 vCPUs	32
	c7.3xlarge.4	12 vCPUs	48
	c7.4xlarge.4	16 vCPUs	64
	c7.6xlarge.4	24 vCPUs	96
	c7.8xlarge.4	32 vCPUs	128

HUAWEI CLOUD provides SAP Netweaver-certified ECSs with various specifications for the SAP on Cloud solution, which can be used for SAP application servers, as shown in **Table 4-1**.

Table 4-2 ECS specifications

Type	Flavor	vCPUs	Memory (GB)
Large-memory	e1.4xlarge	16 pCPUs	470
	e1.8xlarge	32 pCPUs	940
	e2.4xlarge	18 pCPUs	445
	e2.9xlarge	36 pCPUs	890
	e3.7xlarge.12	28 vCPUs	348
	e3.14xlarge.12	56 vCPUs	696
	e3.26xlarge.14	104 vCPUs	1466
	e3.52xlarge.14	208 vCPUs	2932
	e3.52xlarge.20	208 vCPUs	4096
	e6.26xlarge.28	104 vCPUs	2948
	e6.52xlarge.28	208 vCPUs	5896
Memory-optimized (M6)	m6.8xlarge.8	32	256
	m6.16xlarge.8	64	512

HUAWEI CLOUD provides SAP HANA-certified ECSs with various specifications for the SAP on Cloud solution, which can be used for SAP HANA databases, as shown in **Table 4-2**.

4.5 OS

Currently, HUAWEI CLOUD provides the following dedicated OSs for the SAP on Cloud solution: SUSE Linux Enterprise Server (SLES) 12 SP1 for SAP or later.

4.6 Storage

HUAWEI CLOUD provides multiple data storage modes. Each storage mode has a unique performance and durability. You can use these storage options separately or in combination to meet your requirements. This section describes the storage modes and functions provided in the SAP on Cloud solution.

- EVS

  With EVS disks, HUAWEI CLOUD provides scalable virtual block storage devices. You can create EVS disks online and attach them to the ECS. You can use EVS disks in the same manner as conventional hard disks. Compared with conventional hard disks, the EVS disks are easier to handle and have better I/O throughput and reliability.

  EVS Disk Types

  - Ultra-high I/O EVS disk

    EVS disks that use solid state disk (SSD). These EVS disks provide ultra-high I/O and low latency.

    IOPS: up to 20,000; data throughput rate: up to 320 MB/s; response period: 1 to 3 ms.

  - High I/O EVS disk

    EVS disks that use serial attached SCSI (SAS). These EVS disks provide high I/O and low latency.

    IOPS: up to 3,000; data throughput rate: up to 120 MB/s; response period: 6 to 10 ms

- VBS

  You can create data backups for EVS disks and use the backups to restore the EVS disks, maximizing user data correctness and ensuring service security.

- SFS

  On-demand high-performance file storage, which can be shared by multiple ECSs on the cloud. In the SAP system, the backup volume is provided by the SFS. You need to create an SFS file system for file sharing. Backup files in the backup volume are uploaded to OBS to provide dual protection for backup data.

- OBS

  You can use OBS to store SAP installation media and backup and archive data in the SAP system.

- CSBS

SAP applications use the CSBS backup function to periodically back up data to OBS.

4.7 Network

HUAWEI CLOUD VPC is an isolated and private virtual network environment that users apply for on the HUAWEI CLOUD. You can configure IP address ranges, subnets, and security groups, assign EIP addresses, and allocate bandwidth in a VPC.

VPC provides multiple connections between the local system of a user and the SAP system running on HUAWEI CLOUD. You can select a connection type as required.

- Direct Internet Connection

  You can configure a public EIP address on the cloud server to connect it to the public network through the EIP service.

- Direct Connect

  Direct Connect helps you establish a dedicated network that connects your local data center to the public cloud. Direct Connect sets up dedicated connections between the Direct Connect gateway and a VPC on the public cloud. With Direct Connect, you can establish network circuits between the cloud and your data center, office, or collocation environment. Direct Connect can effectively reduce network latency and improve network experience.

- VPN

  VPN establishes a secure, encrypted communication tunnel between the VPN gateway of the VPC on HUAWEI CLOUD and the VPN gateway of your local data center, allowing you to directly use resources in the VPC through the VPN.

  By default, cloud servers in a VPC cannot communicate with your physical data center or private network. To enable communications between them, use a VPN.

4.8 Security

Enterprises store core data in the SAP system. The cloud platform security and the network configuration ensure the security of the SAP system.

For details, see **SAP Security White Paper**.

Cloud Platform Security

- Infrastructure security

  Huawei develops physical environments, networks, platforms, and data based on security compliance standards to ensure HUAWEI CLOUD infrastructure security.

- O&M security

  HUAWEI CLOUD provides one-stop pre-integrated services that integrate multiple devices, allowing for hundreds of millions of connections and O&M-free service provision.

- Security compliance

  HUAWEI CLOUD provides customers with cloud services that comply with security and compliance requirements both in and outside China. HUAWEI CLOUD and its cloud services have been certified by multiple authorities.

Network Configuration

- Security group

  A security group implements access control for ECSs within a security group or in different security groups, enhancing ECS security. You can define different access control rules for a security group, and these rules take effect for all ECSs added to this security group. By default, a security group allows all outgoing data packets. ECSs in the same security group can access each other without the need to add access rules.

- Access control

  You can set up multi-dimensional access protection through access control to properly restrict access to sensitive data. This is especially necessary for enterprises.

- Firewall

  You can use a firewall to strengthen your network security and configure all security software (such as password, encryption, identity authentication, and audit) on the firewall to ensure your network security.

4.9 Monitoring

HUAWEI CLOUD console is a web interface for deploying and managing HUAWEI CLOUD resources. After deploying an SAP system, you can use Cloud Eye to monitor the cloud services used by this system.

Cloud Eye

Cloud Eye is a multi-dimensional monitoring platform for resources such as cloud servers and bandwidth. With Cloud Eye, you can understand the resource usage and running status of services running on the cloud platform, receive alarm notifications in a timely manner, and react to changes to keep your services running smoothly. After a cloud server is created, Cloud Eye automatically starts monitoring. No manual intervention or plug-in installation is required.

4.10 SAP Installation Media

Before deploying the SAP system, you need to upload the SAP installation media to the cloud server.

The options for copying SAP installation media to HUAWEI CLOUD are as follows:

- Download from the SAP official website.

  Connect to the **SAP official website** from your cloud server to download the required installation media.

  You can create a specific disk to store all your installation media. Then you can attach this disk to multiple cloud servers. For parallel use of the disk, we

offer the snapshot technology. This enables you to create disks in batches, shortening the overall deployment time.

- Copy from your local PC.

  If you have the required installation media on your local PC, you can directly upload them to the cloud server.

4.11 Sizing

To size an SAP system, you need to determine the system indicators, including memory, CPU, disk capacity, and I/O performance. You are advised to use the SAP Quick Sizer tool to perform the sizing. Cloud servers support Auto Scaling (AS). You can select a proper cloud server on HUAWEI CLOUD based on the sizing result and SAP consultants' opinions to deploy your SAP system.

For additional information about the SAP sizing, log in at **https://www.sap.com/about/benchmark/sizing.html**.

5 **Deployment**

Huawei Cloud takes advantages of SAP DMO to migrate on-premises SAP systems to the cloud and uses the SUM tool to migrate on-premises databases to the cloud.

5.1 Deploying an SAP System on HUAWEI CLOUD

5.1.1 Registering a HUAWEI ID and Enabling Huawei Cloud Services

Before deploying an SAP system on Huawei Cloud, you need to register a HUAWEI ID and enable Huawei Cloud services. With this account, you can use Huawei Cloud services and pay only for the services you use.

For details, see **Registering a HUAWEI ID and Enabling Huawei Cloud Services**.

5.1.2 Configuring the Network Environment

You need to configure the network before deploying SAP systems on HUAWEI CLOUD. On the management console, you can create and manage VPCs, create subnets and security groups as required, and create VPNs.

Procedure

Step 1 Apply for a VPC.

Log in to the management console, click **Service List**, choose **Network** > **Virtual Private Cloud**, and click **Create VPC**. On the **Create VPC** page, set parameters as prompted.

Step 2 Create a subnet.

On the **Network Console** page, choose **Virtual Private Cloud** and click the VPC to which the SAP system belongs. Click the **Subnets** tab and then **Create Subnet**. On the displayed page, set parameters as prompted.

Step 3 Create a security group.

On the **Network Console** page, choose **Security Group** and click **Create Security Group**. On the displayed page, enter the security group name and click **OK**.

In the security group list, locate the security group for which a rule is to be added. Click **Add Rule** to add rules according to the network plan.

Step 4 Create a VPN connection.

Log in to the management console, click **Service List**, choose **Network** > **VPN**, and click **Create VPN Connection**. On the displayed page, set parameters as prompted.

----End

5.1.3 Agency Configuration

The Data Provider needs 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 and assign the agency to a cloud server. Then, the Data Provider installed on the cloud server can obtain the platform information through the agency.

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** in the search box and select **Tenant Guest**. Select the target region in the **Project [Region]** column.

Figure 5-1 Assigning permissions
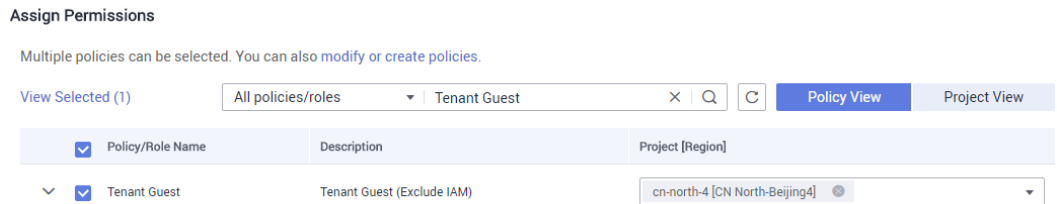
c. Click **OK.**

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

----End

Follow-Up Operations

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

5.1.4 Creating an ECS

Based on the deployment scheme, create ECSs with different specifications, such as computing capability, memory, and storage. The following describes how to create an ECS.

For details about how to install SAP HANA, see the **SAP HANA User Guide**. For details about how to install SAP NetWeaver, see the **SAP NetWeaver User Guide**.

Procedure

Step 1 Log in to the management console, click **Service List** and choose **Computing** > **Elastic Cloud Server**. On the displayed page, click **Buy ECS**.

📖 NOTE

If you need to create a BMS, click **Service List** and choose **Computing** > **Bare Metal Server**. On the displayed page, click **Buy BMS**.

Step 2 Set the parameters as prompted.

Note the following:

- **Type**: Select **All** and set **Flavor Name** as planned.
- **Login Mode**: Select **Key pair**.

   📖 NOTE

   Ensure that all nodes in the SAP system use the same key. Otherwise, the SAP software installation will fail.

Step 3 Click **Next**. On the displayed page, select **I have read and agree to Huawei Image Disclaimer**, and click **Submit**.

Step 4 Click **Pay**.

----End

5.1.5 Installing the SAP Software

After an ECS is created, you can install SAP software on it. The installation mode is the same as that of installing SAP systems on physical servers or other VMs. Install the software based on standard SAP documents.

5.2 HA and DR

Compared with traditional HA, cloud-based HA has the following advantages:

- Agility: HA systems can be deployed on the cloud quickly and effectively. However, to realize traditional HA, you need to purchase servers and hardware, complete hardware planning, and require skilled engineers for construction.

- Flexible expansion: HA systems on the cloud can be dynamically expanded as required to meet system performance requirements. However, the traditional HA architecture is fixed and not easy to be dynamically expanded.

- O&M: Tenants do not need to maintain the cloud-based HA. It is maintained by the cloud service providers. However, traditional HA requires local O&M teams for maintenance.

- Reliability: HA on the cloud can be deployed in different regions based on the tenant's requirements to achieve cross-region HA and ensure system security.

- Costs: Compared with traditional HA, cloud-based HA is cost-effective.

HUAWEI CLOUD provides comprehensive HA and DR schemes for SAP HANA. For details, see **SAP HANA HA and DR Guide**.

5.3 Migrating an Existing SAP System to Huawei Cloud

Huawei Cloud takes advantages of SAP DMO to migrate on-premises SAP systems to the cloud and uses the SUM tool to migrate on-premises databases to the cloud.

For details, see the SAP document at https://help.sap.com/doc/38301960cfe4484587f9cedb8c6a740f/dmosum20.17/en-US/dmo_of_sum2_to_hana.pdf.

6 Backup and Restoration

Back up and restore SAP systems, including SAP NetWeaver instances and SAP HANA databases.

- Backup and restoration of SAP NetWeaver

  Formulate backup policies based on service requirements and HUAWEI CLOUD best practices. You can use a private image as a backup of OS disks and use VBS to back up data disks, allowing cloud servers to quickly restore data when data is lost or damaged and ensuring proper service running. You can also back up and restore data by referring to standard documents on the SAP official website.

- Backup and restoration of SAP HANA databases

  The HANA system or storage replication function ensures HA and remote DR and restoration for SAP HANA databases. You can back up SAP HANA in following ways:

  - Use SAP HANA Studio to back up SAP HANA. For details, see section "Backing up and Restoring Data" in the **SAP HANA User Guide (Single Node)**.

  - For more information about how to back up and restore SAP HANA databases, see **SAP HANA Database Backup and Recovery** of SAP company.

For details about how to back up and restore EVS disks, see sections **Data Backup Using a Backup Policy** and **Data Restoration Using a VBS Backup** in the **Volume Backup Service User Guide**.

7 Summary

This document describes the best practices of achieving SAP reliability, availability, high performance, and cost-effectiveness on Huawei Cloud. The difference between deploying SAP products on traditional infrastructure and Huawei Cloud can be ignored. When deploying SAP products on Huawei Cloud, precautions related to computing, storage, security, management, and monitoring should be considered to obtain better results.

8 Support Information

8.1 Huawei Support

You can contact us in the following ways if you have any questions when using HUAWEI CLOUD.

- HUAWEI CLOUD Help Center: **https://support.huaweicloud.com/intl/en-us/index.html**.
- If any problem occurs when using HUAWEI CLOUD, contact the technical support team.
  - Hotline

    Pre-sales service (7*8): You can dial +852-800-931-122 and follow the IVR navigation to obtain the related service support.
  - Online consulting
  - Email

    Pre-sales service email address (8/7): sales@huaweicloud.com

    ICP support email address (8/5): beian@huaweicloud.com

    Marketplace consultation email address (8/5): partner@huaweicloud.com
  - Work order

    You can submit work orders online for service consultation.

8.2 SAP Support

If you have any questions during the use of SAP, you can obtain SAP support from the help center of the SAP official website.

Visit **SAP Support Portal Home** to obtain SAP support.

A Change History

Change History	Released On
This issue is the second official release, which incorporates the following change: Added C6 ECS specifications.	2020-01-17
This issue is the second official release, which incorporates the following change: Added the planning section.	2019-06-03
This issue is the first official release.	2018-11-23