VPC Endpoint

Service Overview

Issue 01

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HUAWEI TECHNOLOGIES CO., LTD.

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Contents

1 What Is VPC Endpoint?

VPC Endpoint (VPCEP) is a cloud service that provides secure and private channels to connect your VPCs to VPC endpoint services, including cloud services or your private services. It allows you to plan networks flexibly without having to use EIPs.

Architecture

There are two types of resources: VPC endpoint services and VPC endpoints.

- VPC endpoint services are cloud services or private services that you manually configure in VPCEP. You can access these endpoint services using VPC endpoints.

  For more information, see **VPC Endpoint Services**.

- VPC endpoints are secure and private channels for connecting VPCs to VPC endpoint services.

  For more information, see **VPC Endpoints**.

Figure 1-1 How VPCEP works

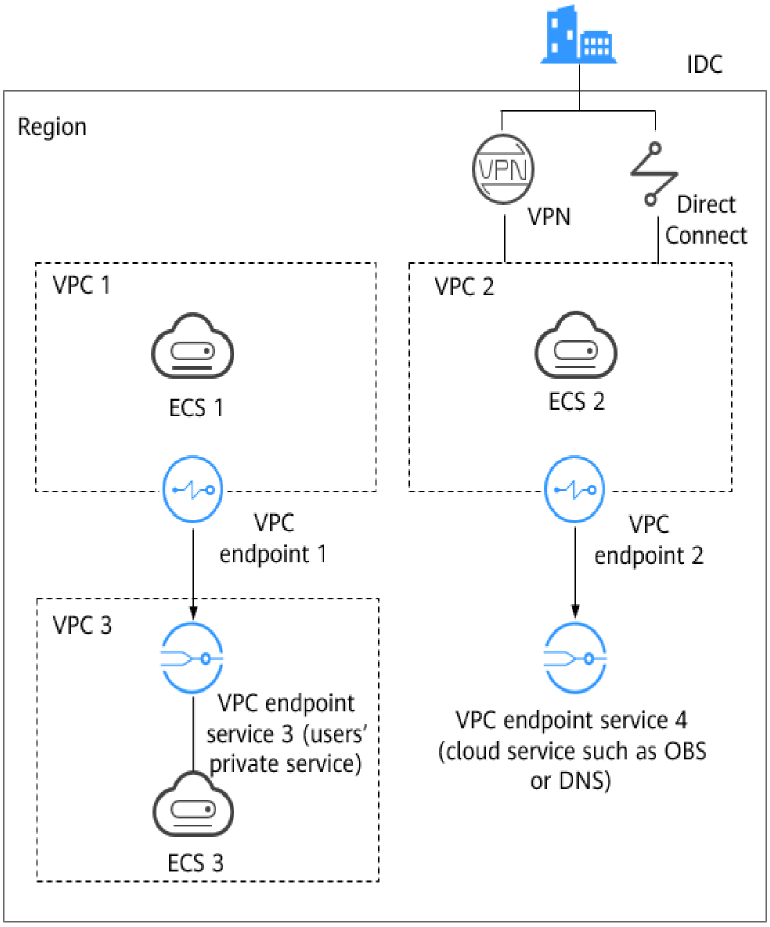

IDC
Region
VPN
Direct Connect
VPC 1
ECS 1
VPC endpoint 1
VPC 2
ECS 2
VPC endpoint 2
VPC 3
VPC endpoint service 3 (users' private service)
ECS 3
VPC endpoint service 4 (cloud service such as OBS or DNS)

Figure 1-1 shows the process of establishing channels for network communications between:

- VPC 1 (ECS 1) and VPC 3 (ECS 3)
- VPC 2 (ECS 2) and cloud services such as OBS and DNS
- IDC and VPC 2 over VPN or Direct Connect to finally access a cloud service such as OBS or DNS

For more information, see **Application Scenarios**.

Accessing VPCEP

A web-based console and HTTPS APIs are provided for you to access VPCEP.

- Web-based console

  You can access VPCEP using the web-based console.

  – If you have registered an account, log in to the management console and choose **Networking** > **VPC Endpoint**.

  – If you do not have an account, register an account with Huawei Cloud first by referring to **Preparations**.

Upon a quick configuration on the management console, you can start using VPCEP.

- APIs

  Use this method if you need to integrate VPCEP into a third-party system for secondary development. For details, see **VPC Endpoint API Reference**.

2 Product Advantages

- **Excellent Performance**: Each gateway supports up to 1 million concurrent connections in a variety of application scenarios.
- **Immediately Ready for Use Upon Creation**: VPC endpoints take effect a few seconds after they are created.
- **Easy to Use**: You can use VPC endpoints to access resources over private networks, without having to use EIPs.
- **High Security**: VPC endpoints enable you to access VPC endpoint services without exposing server information, minimizing security risks.

3 Application Scenarios

VPCEP establishes a secure and private channel between a VPC endpoint (cloud resources in a VPC) and a VPC endpoint service in the same region.

You can use VPCEP in different scenarios.

High-Speed Access to Cloud Services

After you connect an IDC to a VPC using VPN or Direct Connect, you can use a VPC endpoint to connect the VPC to a cloud service or one of your private services, so that the IDC can access the cloud service or private service.

Figure 3-1 Access to cloud services

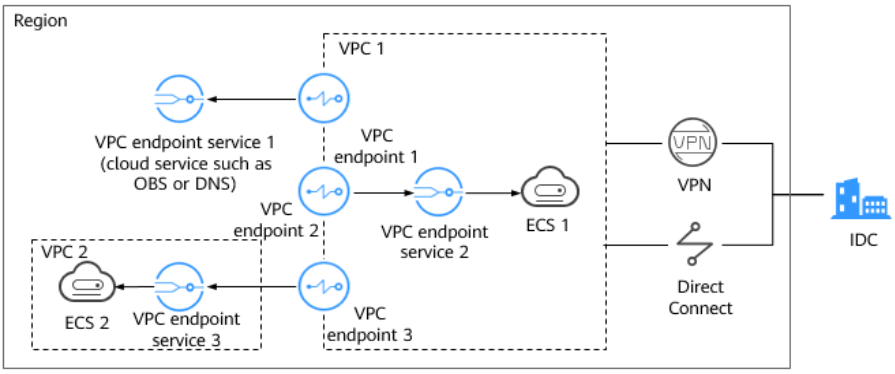


Figure 3-1 shows the process of connecting an IDC to VPC 1 over VPN or Direct Connect, for the purposes of:

- Accessing OBS or DNS using VPC endpoint 1
- Accessing ECS 1 in VPC 1 using VPC endpoint 2
- Accessing ECS 2 in VPC 2 using VPC endpoint 3

For cloud migration, VPCEP has the following advantages:

- Simple and efficient

  The IDC is directly connected to the VPC endpoint service over a private network, reducing access latency and improving efficiency.

- Low cost

  With VPCEP, your IDC can access cloud resources over a private network, reducing your costs on public resources.

For details, see **Configuring a VPC Endpoint for Accessing the Private IP Address of OBS over Private Networks**.

Cross-VPC Connection

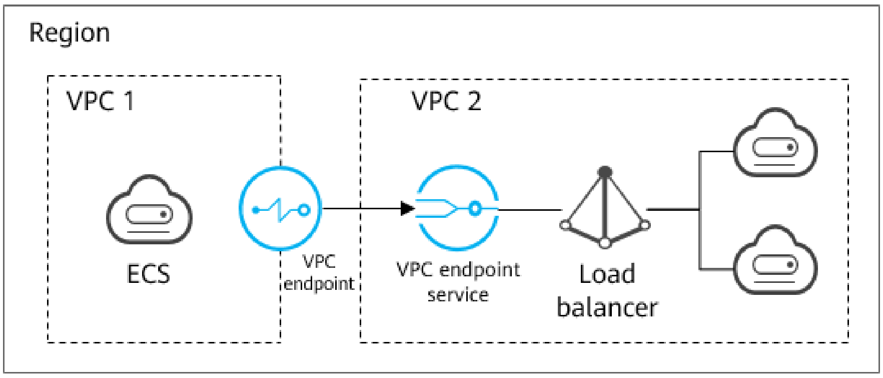
With VPCEP, resources in two different VPCs can communicate with each other despite of logic isolation between them as long as the two VPCs are in the same region.

NOTE

VPC endpoints and VPC peering connections are different in security, communications methods, route configurations, and more.

For more information, see **What Are the Differences Between VPC Endpoints and VPC Peering Connections?**

Figure 3-2 Cross-VPC connection



An ECS in VPC 1 uses a VPC endpoint to access a load balancer in VPC 2 over a private network. **Figure 3-2** shows the connection process.

VPCEP has the following advantages:

- High performance

  Each gateway supports up to 1 million concurrent connections.
- Simplified operations

  VPCEP resources can be created within seconds and take effect quickly.

For details, see the following sections:

- **Configuring a VPC Endpoint for Communications Across VPCs of the Same Account**
- **Configuring a VPC Endpoint for Communications Across VPCs of Different Accounts**

4 Constraints

Resource Quotas

Table 4-1 describes constraints on the VPCEP resource quota.

Table 4-1 VPCEP resource quotas

Resource	Default Quota	How to Increase Quota
VPC endpoint services per account in one region	20	**Submit a service ticket**.
VPC endpoints per account in one region	50	**Submit a service ticket**.
Traffic types	IPv4 traffic	N/A
Types of backend resources that can be configured as VPC endpoint services	Load balancer, ECS, and BMS	
Protocols supported by VPC endpoint services	TCP	

Other Constraints

- When you buy a VPC endpoint, ensure that the associated VPC endpoint service has been created and is in the same region as the VPC endpoint.
- One VPC endpoint can connect to only one VPC endpoint service.
- A VPC endpoint supports a maximum of 3,000 concurrent requests.
- One VPC endpoint service can be connected by multiple VPC endpoints.
- One VPC endpoint service corresponds to only one backend resource.

5 VPCEP and Other Services

Table 5-1 shows the relationship between VPCEP and other cloud services.

Table 5-1 Relationships with other services

Interactive Function	Service	Reference
Creating VPC endpoint services for resources in your VPC	VPC	● **Configuring a VPC Endpoint for Communications Across VPCs of the Same Account** ● **Configuring a VPC Endpoint for Communications Across VPCs of Different Accounts**
Connecting an IDC to your VPC using a VPN connection and connecting your VPC to a cloud service through VPCEP	VPN	**Configuring a VPC Endpoint for Accessing the Private IP Address of OBS over Private Networks**
Connecting an IDC to your VPC using a Direct Connect connection and connecting your VPC to a cloud service through VPCEP	Direct Connect	**Configuring a VPC Endpoint for Accessing OBS Using the OBS Private Address**
When an enterprise needs to provide VPCEP for multiple users, IAM can be used to create users and control access of these accounts to enterprise resources.	IAM	**Permission Management**

Interactive Function	Service	Reference
Configured as a gateway VPC endpoint service by default. You can buy a VPC endpoint to access the VPC endpoint service.	OBS	**Buying a VPC Endpoint**
Configured as an interface VPC endpoint service by default. You can buy VPC endpoints to access these endpoint services.	DNS	**Buying a VPC Endpoint**
Configured as an interface VPC endpoint service by default. You can buy VPC endpoints to access these endpoint services.	API Gateway	**Buying a VPC Endpoint**
Configuring a private service as a VPC endpoint service. You can buy a VPC endpoint to access the VPC endpoint service.	ELB	**Creating a VPC Endpoint Service**
Configuring a private service as a VPC endpoint service. You can buy a VPC endpoint to access the VPC endpoint service.	ECS	**Creating a VPC Endpoint Service**
Configuring a private service as a VPC endpoint service. You can buy a VPC endpoint to access the VPC endpoint service.	BMS	**Creating a VPC Endpoint Service**

6 Billing

Billing Items

VPCEP provides VPC endpoint services and VPC endpoints. VPC endpoint services are free. VPC endpoints are billed based on your usage duration.

Table 6-1 VPC endpoint billing

Billing Mode	Billing Item	Billing Formula
Pay-per-use	VPC endpoint for accessing DNS or OBS	Free
	VPC endpoint for accessing any other cloud services except DNS and OBS	Required duration x Unit price $0.014 USD/hour

For details, see **Product Pricing Details**.

Billing Modes

Pay-per-use

VPC endpoints are billed based on how many hours (accurate to seconds) the VPC endpoint is retained in your account.

Formula: Required duration x Unit price

For example, if you buy a VPC endpoint and retain it in your account for 5 hours, you will be charged for the 5 hours you keep it.

NOTE

Billing starts once a VPC endpoint is purchased even though it has never been used.

Renewal

For details, see **Renewal Management**.

Expiration and Overdue Payment

For details, see **Service Suspension and Resource Release** and **Payment and Repayment**.

7 Security

7.1 Shared Responsibilities

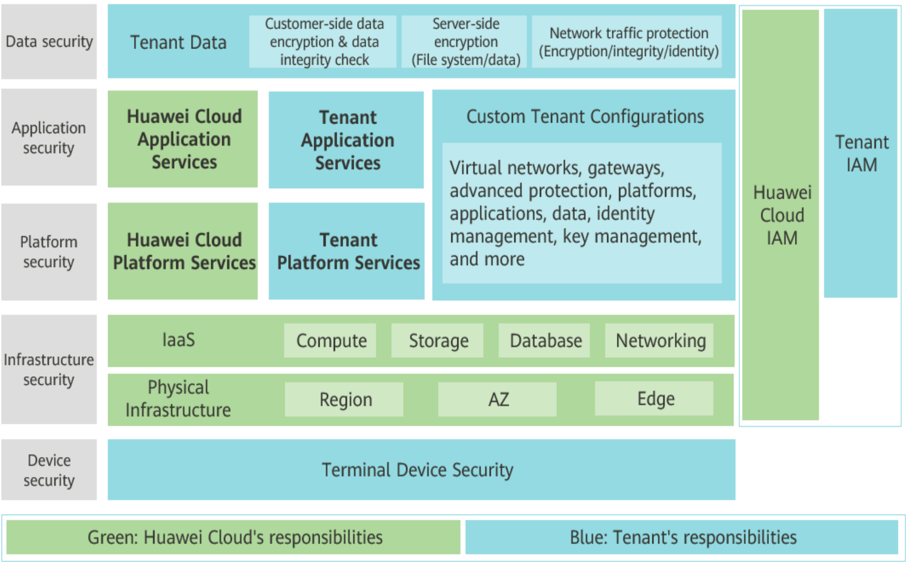
Huawei guarantees that its commitment to cyber security will never be outweighed by the consideration of commercial interests. To cope with emerging cloud security challenges and pervasive cloud security threats and attacks, Huawei Cloud builds a comprehensive cloud service security assurance system for different regions and industries based on Huawei's unique software and hardware advantages, laws, regulations, industry standards, and security ecosystem.

Figure 7-1 illustrates the responsibilities shared by Huawei Cloud and users.

- **Huawei Cloud**: Ensure the security of cloud services and provide secure clouds. Huawei Cloud's security responsibilities include ensuring the security of our IaaS, PaaS, and SaaS services, as well as the physical environments of the Huawei Cloud data centers where our IaaS, PaaS, and SaaS services operate. Huawei Cloud is responsible for not only the security functions and performance of our infrastructure, cloud services, and technologies, but also for the overall cloud O&M security and, in the broader sense, the security and compliance of our infrastructure and services.
- **Tenant**: Use the cloud securely. Tenants of Huawei Cloud are responsible for the secure and effective management of the tenant-customized configurations of cloud services including IaaS, PaaS, and SaaS. This includes but is not limited to virtual networks, the OS of virtual machine hosts and guests, virtual firewalls, API Gateway, advanced security services, all types of cloud services, tenant data, identity accounts, and key management.

Huawei Cloud Security White Paper elaborates on the ideas and measures for building Huawei Cloud security, including cloud security strategies, the shared responsibility model, compliance and privacy, security organizations and personnel, infrastructure security, tenant service and security, engineering security, O&M security, and ecosystem security.

Figure 7-1 Huawei Cloud shared security responsibility model


Data security
Tenant Data
Customer-side data encryption & data integrity check
Server-side encryption (File system/data)
Network traffic protection (Encryption/integrity/identity)
Application security
Huawei Cloud Application Services
Tenant Application Services
Custom Tenant Configurations
Virtual networks, gateways, advanced protection, platforms, applications, data, identity management, key management, and more
Platform security
Huawei Cloud Platform Services
Tenant Platform Services
Infrastructure security
IaaS
Compute
Storage
Database
Networking
Physical Infrastructure
Region
AZ
Edge
Device security
Terminal Device Security
Huawei Cloud IAM
Tenant IAM
Green: Huawei Cloud's responsibilities
Blue: Tenant's responsibilities

7.2 Identity and Access Management

Permissions Management

You can use Identity and Access Management (IAM) to control access to your VPCEP resources. IAM permissions define which actions on your cloud resources are allowed or denied. After creating an IAM user, the administrator needs to add it to a user group and grant the permissions required by VPCEP to the user group. Then, all users in this group automatically inherit the granted permissions.

For details, see **Permissions**.

Access Control

- To control the access to a VPC endpoint service in one account from a VPC endpoint in another, configure a whitelist for the VPC endpoint service. For details, see **Managing Whitelist Records of a VPC Endpoint Service**.
- To control IP addresses and CIDR blocks that can access a VPC endpoint, configure a whitelist. When or after purchasing a VPC endpoint, you can enable or disable access control for the VPC endpoint, and add or delete a whitelist record. For details, see **Configuring Access Control for a VPC Endpoint**.

7.3 Auditing and Logging

Cloud Trace Service (CTS) is a log audit service intended for Huawei Cloud security. It allows you to collect, store, and query cloud resource operation records. You can use these records to perform security analysis, audit compliance, track resource changes, and locate faults.

After CTS is enabled, traces can be generated for operations performed on VPCEP.

- For details about how to enable and configure CTS, see **Enabling CTS**.
- For details about key operations of VPCEP, see **Key Operations Recorded by CTS**.
- For details about traces, see **Viewing Traces**.

7.4 Resilience

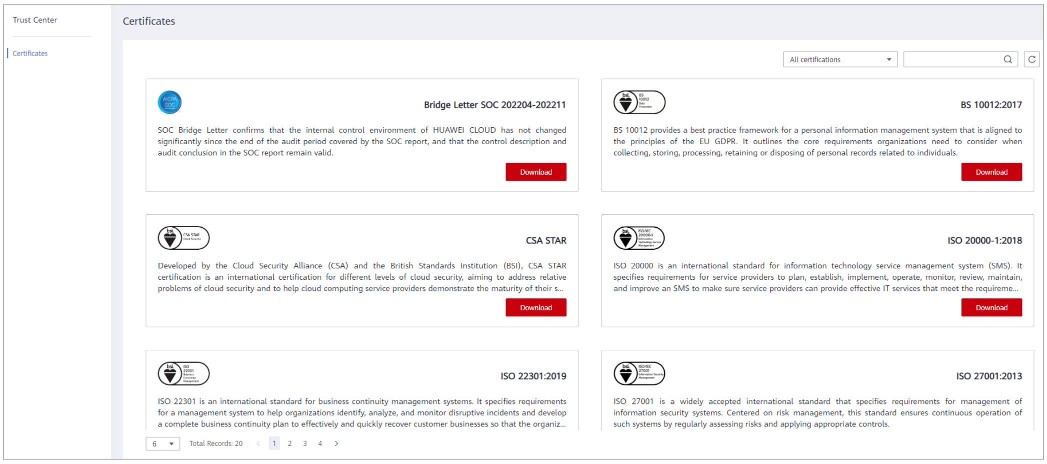
Huawei Cloud VPCEP provides multi-AZ, multi-cluster disaster recovery in more than 20 countries and regions around the world. Even if some nodes, clusters, or regions are faulty, your services will not be interrupted, greatly improving service reliability.

7.5 Certificates

Compliance Certificates

Huawei Cloud services and platforms have obtained various security and compliance certifications from authoritative organizations, such as International Organization for Standardization (ISO). You can **download** them from the console.

Figure 7-2 Downloading compliance certificates



Bridge Letter SOC 202204-202211

SOC Bridge Letter confirms that the internal control environment of HUAWEI CLOUD has not changed significantly since the end of the audit period covered by the SOC report, and that the control description and audit conclusion in the SOC report remain valid.

BS 10012:2017

BS 10012 provides a best practice framework for a personal information management system that is aligned to the principles of the EU GDPR. It outlines the core requirements organizations need to consider when collecting, storing, processing, retaining or disposing of personal records related to individuals.

CSA STAR

Developed by the Cloud Security Alliance (CSA) and the British Standards Institution (BSI), CSA STAR certification is an international certification for different levels of cloud security, aiming to address relative problems of cloud security and to help cloud computing service providers demonstrate the maturity of their s...

ISO 20000-1:2018

ISO 20000 is an international standard for information technology service management system (SMS). It specifies requirements for service providers to plan, establish, implement, operate, monitor, review, maintain, and improve an SMS to make sure service providers can provide effective IT services that meet the requireme...

ISO 22301:2019

ISO 22301 is an international standard for business continuity management systems. It specifies requirements for a management system to help organizations identify, analyze, and monitor disruptive incidents and develop a complete business continuity plan to effectively and quickly recover customer businesses so that the organiz...

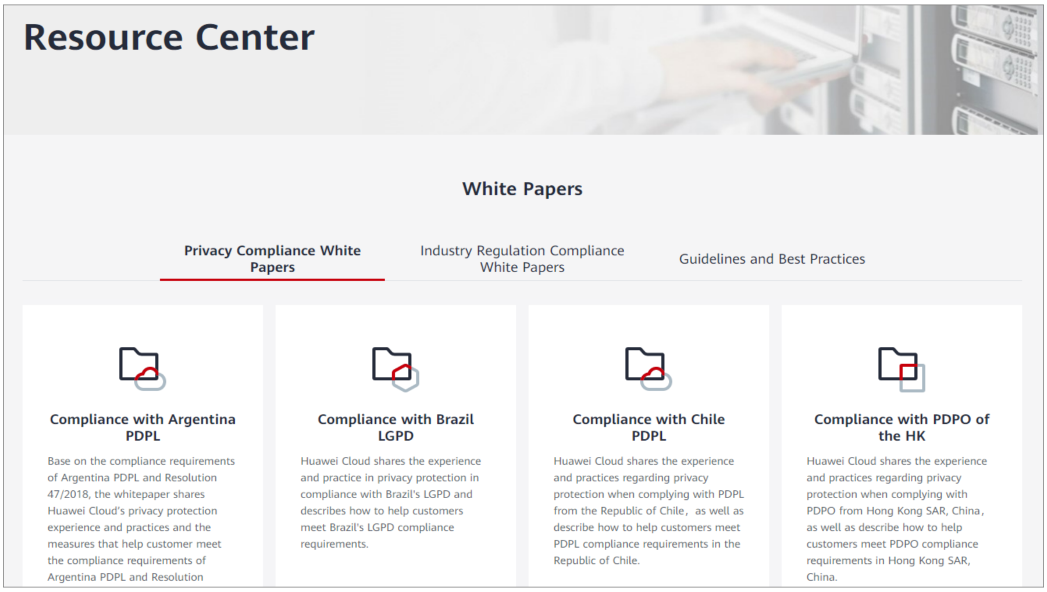
ISO 27001:2013

ISO 27001 is a widely accepted international standard that specifies requirements for management of information security systems. Centered on risk management, this standard ensures continuous operation of such systems by regularly assessing risks and applying appropriate controls.

Resource Center

Huawei Cloud also provides the following resources to help users meet compliance requirements. For details, see **Resource Center**.

Figure 7-3 Resource center



Resource Center

White Papers

Privacy Compliance White Papers

Industry Regulation Compliance White Papers

Guidelines and Best Practices

Compliance with Argentina PDPL

Base on the compliance requirements of Argentina PDPL and Resolution 47/2018, the whitepaper shares Huawei Cloud's privacy protection experience and practices and the measures that help customer meet the compliance requirements of Argentina PDPL and Resolution

Compliance with Brazil LGPD

Huawei Cloud shares the experience and practice in privacy protection in compliance with Brazil's LGPD and describes how to help customers meet Brazil's LGPD compliance requirements.

Compliance with Chile PDPL

Huawei Cloud shares the experience and practices regarding privacy protection when complying with PDPL from the Republic of Chile，as well as describe how to help customers meet PDPL compliance requirements in the Republic of Chile.

Compliance with PDPO of the HK

Huawei Cloud shares the experience and practices regarding privacy protection when complying with PDPO from Hong Kong SAR, China，as well as describe how to help customers meet PDPO compliance requirements in Hong Kong SAR, China.

8 Permissions

If you need to assign different permissions to personnel in your enterprise to access your VPCEP resources, Identity and Access Management (IAM) is a good choice for fine-grained permissions management. IAM provides identity authentication, permissions management, and access control, helping you to securely access your Huawei Cloud resources.

With IAM, you can use your HUAWEI ID to create IAM users and assign permissions to control their access to specific Huawei Cloud resources. For example, if you want website maintenance personnel in your enterprise to use VPCEP resources but do not want them to delete other cloud resources or perform any other high-risk operations, you can create IAM users and grant only permissions to use VPCEP resources.

If your HUAWEI ID does not require individual IAM users for permissions management, you can skip this section.

IAM is a free service. You only pay for the resources in your account.

For more information about IAM, see **IAM Service Overview**.

VPCEP Permissions

New IAM users do not have any permissions assigned by default. You need to first add them to one or more groups and attach policies or roles to these groups. The users then inherit permissions from the groups and can perform specified operations on cloud services based on the permissions they have been assigned.

VPCEP is a project-level service deployed for specific regions. You need to select a project such as **ap-southeast-2** for which the permissions will be granted. If you select **All projects**, the permissions will be granted for all the projects. When accessing the VPCEP service, the users need to switch to the authorized region.

Table 8-1 lists all system-defined roles for VPCEP.

Table 8-1 System-defined roles for VPCEP

Role	Description	Category	Dependency
VPCEndpoint Administrator	Full permissions for VPCEP	System-defined role	This role depends on **Server Administrator**, **VPC Administrator**, and **DNS Administrator** roles in the same project.

Table 8-2 lists the common operations supported by system-defined permissions for VPCEP.

Table 8-2 Common operations supported by system-defined permissions

Operation	VPCEndpoint Administrator
Creating a VPC endpoint	√
Deleting a VPC endpoint	√
Querying a VPC endpoint	√
Modifying a VPC endpoint	√
Creating a VPC endpoint service	√
Deleting a VPC endpoint service	√
Querying a VPC endpoint service	√
Modifying a VPC endpoint service	√

Helpful Links

- **IAM Service Overview**
- **Creating a User and Granting Permissions**

9 Product Concepts

9.1 VPC Endpoint Services

A VPC endpoint service is a cloud service or a private service that can be accessed through a VPC endpoint.

There are two types of VPC endpoint services: gateway and interface.

- Gateway VPC endpoint services are created only for cloud services.
- Interface VPC endpoint services can be created for both cloud services and your private services. All VPC endpoint services for cloud services are created by default while those for private services need to be created by users themselves.

Gateway VPC Endpoint Services

Gateway VPC endpoint services are configured from cloud services by the system. You do not have the permissions to configure such VPC endpoint services but can select them when creating a VPC endpoint.

NOTE

Supported cloud services vary in different regions. For details, see the services that can be configured on the management console.

Only in the LA-Mexico City1, LA-Sao Paulo1, and LA-Santiago regions, can OBS be configured as a gateway VPC endpoint service.

Table 9-1 Supported gateway VPC endpoint services

VPC Endpoint Service	Category	Type	Example	Description
OBS	Cloud service	Gateway	LA-Mexico City1: com.myhuaweicloud.na-mexico-1.obs	Select the endpoint service ending with **obs** if you want to access OBS using its private address.

Interface VPC Endpoint Services

Interface VPC endpoint services are mainly configured from:

- Cloud services. You do not have the permissions to configure such VPC endpoint services but can select them when creating a VPC endpoint.
- Your private services

NOTE

Supported cloud services vary in different regions. For details, see the services that can be configured on the management console.

Table 9-2 Supported interface VPC endpoint services

VPC Endpoint Service	Category	Type	Example	Description
DNS	Cloud service	Interface	CN-Hong Kong: com.myhuaweicloud.ap-southeast-1.dns	Select the endpoint service ending with **dns** if you want to access DNS over private networks.
API Gateway	Cloud service	Interface	CN-Hong Kong: com.myhuaweicloud.ap-southeast-1.api	Select the endpoint service ending with **api** if you want to access API Gateway using a VPC endpoint.
Load balancer	Users' private service	Interface	None	Select a load balancer as the backend resource if your services receive high traffic and demand high reliability and disaster recovery (DR) performance.

VPC Endpoint Service	Category	Type	Example	Description
ECS	Users' private service	Interface	None	VPC endpoint services work as servers.
BMS	Users' private service	Interface	None	VPC endpoint services work as servers.

9.2 VPC Endpoints

VPC endpoints are secure and private channels for connecting VPCs to VPC endpoint services.

You can buy a VPC endpoint to connect a resource in your VPC to a VPC endpoint service in another VPC of the same region.

A VPC endpoint comes with a VPC endpoint service. VPC endpoints vary depending on the type of the VPC endpoint services that they can access:

- VPC endpoints for accessing interface VPC endpoint services are elastic network interfaces that have private IP addresses.
- VPC endpoints for accessing gateway VPC endpoint services are gateways, with routes configured to distribute traffic to the associated VPC endpoint services.

NOTE

VPC endpoints for accessing gateway VPC endpoint services can be purchased only in regions LA-Mexico City1, LA-Sao Paulo1, and LA-Santiago.

9.3 User Permissions

The cloud system provides two types of user permissions by default, user management and resource management.

- User management refers to management of users, user groups, and user group permissions.
- Resource management refers to access control over cloud service resources.

VPCEP provides two types of resources: VPC endpoint services and VPC endpoints, both of which are region-level resources. The required permissions must be added for users in the project.

For details about user permissions, see **System Permissions**.

9.4 Region and AZ

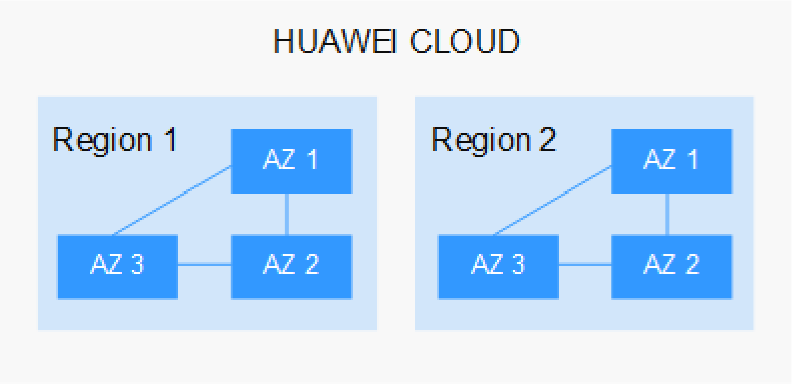
Concept

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. AZs within a region are interconnected using high-speed optical fibers, to support cross-AZ high-availability systems.

Figure 9-1 shows the relationship between regions and AZs.

Figure 9-1 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**.

9.5 Project and Enterprise Project

Project

Projects in IAM are used to group and isolate resources (computing resources, storage resources, and network resources). Resources in your account must be mounted under projects. A project can be a department or a project team. Multiple projects can be created for one account.

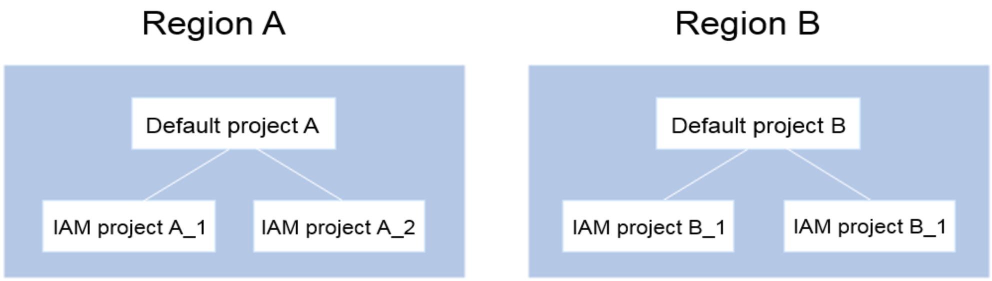
Enterprise Project

Enterprise projects are used to categorize and manage resources. Resources in different regions can belong to one enterprise project. An enterprise can classify resources by department or project group and put relevant resources into one enterprise project for management. Resources can be migrated between enterprise projects.

Differences Between Projects and Enterprise Projects

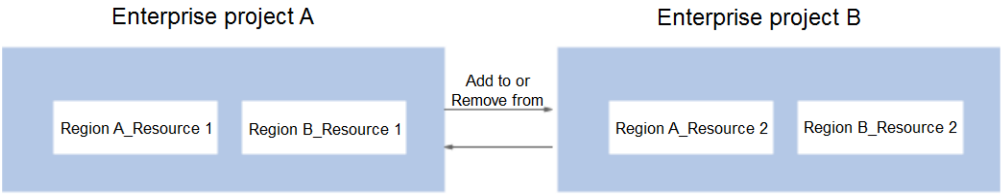
- IAM project

  Projects are used to categorize and physically isolate resources in a region. Resources in an IAM project cannot be transferred. They can only be deleted and then rebuilt.



- Enterprise project

  Enterprise projects are upgraded based on IAM projects and used to categorize and manage resources of different projects of an enterprise. An enterprise project can contain resources of more than one region, and resources can be added to or removed from enterprise projects. If you have enabled enterprise management, you cannot create an IAM project and can only manage existing projects. In the future, IAM projects will be replaced by enterprise projects, which are more flexible.



Both projects and enterprise projects can be managed by one or more user groups. Users who manage enterprise projects belong to user groups. After a policy is granted to a user group, users in the group can obtain the rights defined in the policy in the project or enterprise project.

For details about how to create a project, create an enterprise project, and assign permissions, see **Enterprise Management User Guide**.