

**Direct Connect**

# **Service Overview**

**Issue**            01  
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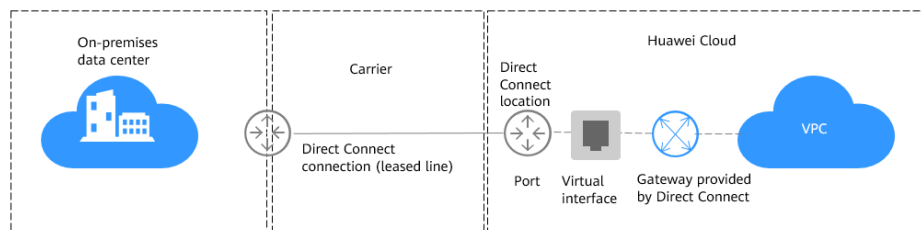
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# 1 What Is Direct Connect?

Direct Connect allows you to establish a stable, high-speed, low-latency, secure dedicated network connection that connects your on-premises data center to Huawei Cloud. Direct Connect allows you to maximize legacy IT facilities and leverage cloud services to build a flexible, scalable hybrid cloud computing environment.

**Figure 1-1** shows how Direct Connect connects an on-premises data center to the cloud.

**Figure 1-1** How Direct Connect works



## Why Direct Connect?

- **Network quality:** Direct Connect allows you to establish a dedicated network for data transmission, which brings high network performance, low latency, and excellent user experience.
- **Security:** Direct Connect establishes private connectivity between your on-premises data center and the cloud. Data is transmitted over a secure dedicated connection.
- **Transmission speed:** A single connection supports up to 100 Gbit/s of bandwidth.

## Components

- **Connection**

A dedicated network connection is established between your on-premises data center and a Direct Connect location over a line you leased from a carrier. You can create a standard connection by yourself or request a hosted connection from a partner.

A standard connection has a dedicated port for your exclusive use and can be associated with multiple virtual interfaces.

A hosted connection is created by a carrier (a partner of Huawei Cloud). Only one virtual interface can be associated with each hosted connection. The partner has pre-connected dedicated lines to the Direct Connect locations of Huawei Cloud and allocates a connection port to you after receiving your request for a hosted connection. This connection port is shared with other users. The partner allocates the VLAN and bandwidth for you.

- **Virtual gateway**

A virtual gateway is a logical gateway for accessing VPCs. A virtual gateway can be associated with only one VPC, and multiple connections can access a VPC through the same virtual gateway.

- **Global DC gateway**

A global DC gateway enables your on-premises data center to access VPCs in multiple regions so you can use a single connection to provide high-speed access to cloud compute and storage resources in any region.

A global DC gateway can only be associated with connections terminated at the same Direct Connect location. If there are multiple connections terminated at different Direct Connect location, you need to create multiple global DC gateways.

- **Virtual interface**

A virtual interface links a connection with one or more virtual gateways, so that your on-premises network can access all the VPCs.

## Accessing Direct Connect

The public cloud provides a web-based user interface, the management console, for you to access the Direct Connect service.

- If you already have an account, log in to the management console and choose **Networking > Direct Connect** on the homepage.
- If you do not have an account, you can sign up for one by referring to [Getting Started](#).

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# 2 Product Advantages

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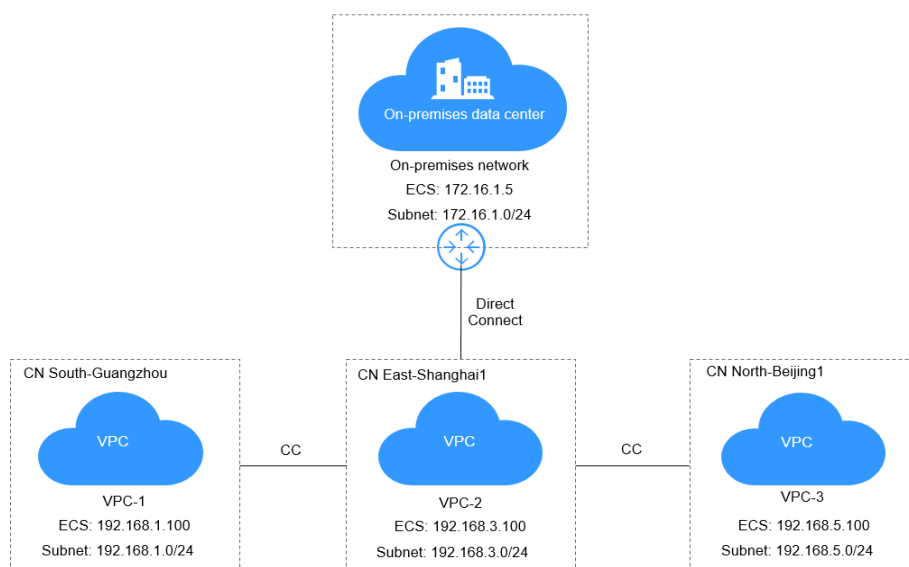
Direct Connect has the following advantages:

- **Dedicated Channels to Safeguard Data Security**
  - Establish private connectivity between your on-premises network and the cloud for stable data transmission without compromising privacy.
  - Secure your data using encrypted, dedicated connections, which provide higher security and more reliability.
- **Multiple Access Options**
  - You can select from optical bare fibers and other types of leased lines, such as MSTP and MPLS VPN.
  - There are a number of Direct Connect locations around the globe, so you can access the cloud from anywhere nearby.
- **Great Scalability for Flexible Service Deployment**
  - By building a hybrid cloud, you can gain access to virtually unlimited cloud resources for flexible, scalable deployment.
  - You can run workloads that span on-premises infrastructure and different cloud regions and flexibly connect networks across regions.
- **Ultra-low Latency and Stable Transmission**
  - Enjoy faster speeds with up to 100 Gbit/s of bandwidth, which meets the requirements of a wide range of services.
  - Configure your connections in active/active or active/standby pairs for higher reliability.

# 3 Application Scenarios

## Access to Multiple VPCs from an On-premises Data Center

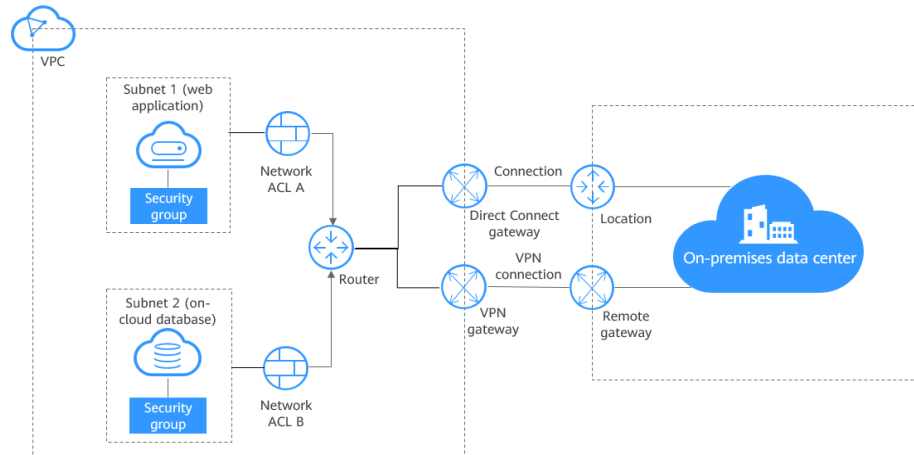
After you connect your on-premises data center to the cloud using Direct Connect, you can use Cloud Connect to connect the VPC that your on-premises data center is accessing to those in other regions, so that your on-premises data center can access all connected VPCs.



## Hybrid Cloud Deployment

Direct Connect allows you to build a hybrid environment for your on-premises data center and leverage the scalability of the cloud to expand the computing capability of your applications.

**Figure 3-1** Hybrid cloud



**Table 3-1** Comparisons of Direct Connect and VPN in hybrid cloud deployment

Cloud Service	Scenario	Description	Helpful Links
Virtual Private Network (VPN)	Connect an on-premises data center to the cloud through an IPsec tunnel.	VPN uses an encrypted communications tunnel to connect a VPC on the cloud to an on-premises data center and sends traffic over the Internet. It is inexpensive, easy to configure, and easy to use. However, VPN connections may be affected by the Internet quality.	<a href="#">Connecting to a VPC Through a VPN</a> <a href="#">What Is an Enterprise Switch?</a>
Direct Connect	Connect an on-premises data center to the cloud using a dedicated network connection.	Direct Connect provides physical connections between VPCs and data centers. It has the advantages of low latency and is very secure. Direct Connect is a good choice when there are strict requirements on network transmission quality.	<a href="#">Connecting to Multiple VPCs that Do Not Need to Communicate with Each Other</a> <a href="#">What Is an Enterprise Switch?</a>



# 4 Network Planning

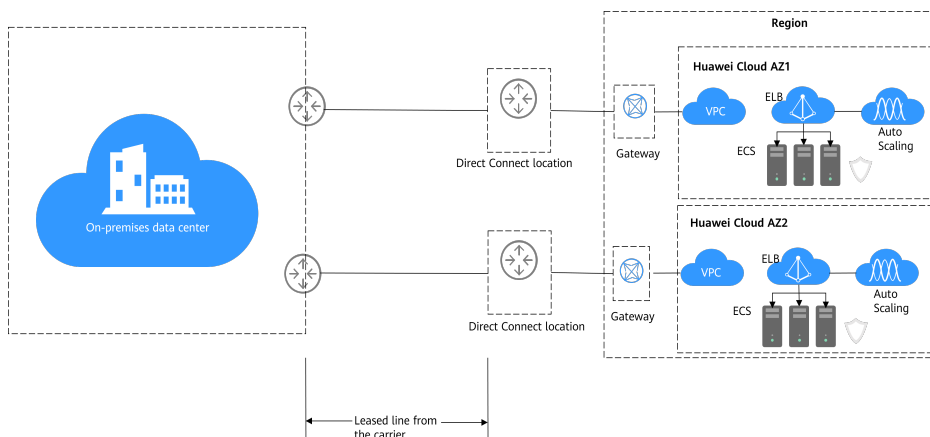
## Overview

You can connect your on-premises data center to the cloud using a standard or hosted connection:

- Standard connection

A dedicated port is provided for your exclusive use. You can create standard connections on the console. To improve reliability, you can create multiple connections that terminate at different locations and allow them to serve as backups for each other. If the connections of only one carrier meet your requirements, or if only one carrier is right for you, you can create redundancy by configuring different routes for your connections.

**Figure 4-1** Accessing the cloud using standard connections

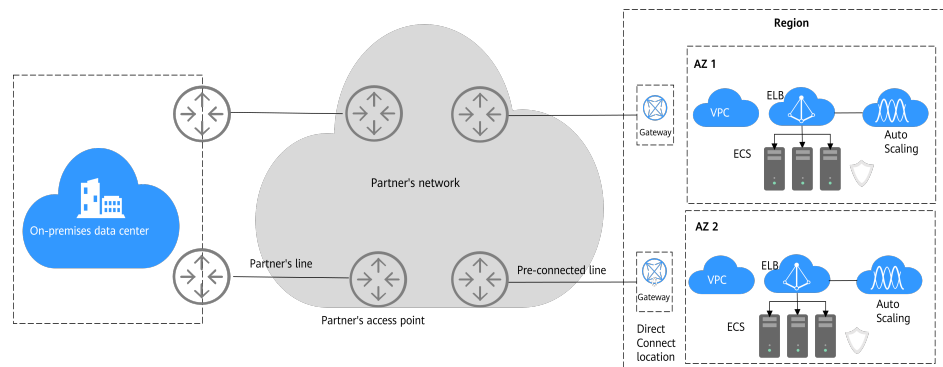


- Hosted connection

If you use a hosted connection to access the cloud, the port you use is shared with other users.

You request a carrier (a partner of Huawei Cloud) to provide a connection to connect to your on-premises data center to Huawei Cloud. The partner has pre-connected dedicated lines to the Direct Connect locations of Huawei Cloud and allocates a connection port to you after receiving your request. This connection port is shared with other users.

**Figure 4-2** Accessing the cloud using hosted connections



### Comparison Between Standard Connections and Hosted Connections

Item	Standard Connection	Hosted Connection
Port	Exclusive port	Shared port
Recommended bandwidth	1 Gbit/s to 100 Gbit/s	Less than 1 Gbit/s
Estimated construction period	Two to three months for local lines, and three to four months for long-distance lines	About one month
Parties involved	Connection user, leased line carrier, equipment room provider, and Huawei Cloud	Connection user, leased line carrier, and Huawei Cloud
Process	<ol style="list-style-type: none"> <li>1. You create a connection on the console to order a port.</li> <li>2. You contact the leased line carrier and supervise the line deployment from your on-premises data center to the equipment room at the location you choose.</li> <li>3. You contact the carrier operating the equipment room at the location you choose to complete the cabling (if required) and connect the jumper inside the equipment room.</li> <li>4. Your carrier works with Huawei Cloud to commission access devices.</li> <li>5. You complete required network configuration on the console, including creating a virtual gateway and virtual interface.</li> </ol>	<ol style="list-style-type: none"> <li>1. The partner deploys the leased line from your on-premises data center to the location you select.</li> <li>2. The carrier completes the commissioning of access devices.</li> <li>3. You complete required network configuration on the console, including creating a virtual gateway and virtual interface.</li> </ol>

Item	Standard Connection	Hosted Connection
Pricing	<ul style="list-style-type: none"><li>• Pay for the port (by month or year) to Huawei Cloud.</li><li>• Pay to the equipment room provider at the location for the cabling inside the equipment room.</li><li>• Pay to the carrier of your on-premises data center for the cabling inside the equipment room.</li><li>• Pay to the leased line carrier for other work and the bandwidth. For details, see <a href="#">Billing</a>.</li></ul>	<ul style="list-style-type: none"><li>• You do not need to pay for the port to Huawei Cloud.</li><li>• Pay to the carrier of your on-premises data center for the cabling inside the equipment room.</li><li>• Pay to the leased line carrier for other work and the bandwidth.</li></ul>

## Network Requirements

- Your on-premises network must use a single-mode fiber with a 1GE, 10GE, 40GE, or 100GE optical module to connect to the access device in Huawei Cloud. In addition, key parameters such as the LC, wavelength, and distance must be consistent with those of the access device on Huawei Cloud. Examples of optical module parameters: 1 GE, LC single-mode, 1,310 nm, and 10 km
- Auto-negotiation for the port must be disabled. Port speed and full-duplex mode must be manually configured.
- 802.1Q VLAN encapsulation must be supported on all devices of the entire connection, including intermediate devices.
- Your device must support Border Gateway Protocol (BGP) and BGP MD5 authentication or static routing.
- (Optional) You can configure Bidirectional Forwarding Detection (BFD) on the network.
- The maximum transmission unit (MTU) supported at the physical layer cannot exceed 1,522 bytes (including 14-byte Ethernet header, 4-byte VLAN tag, 1,500-byte IP datagram, and 4-byte frame check sequence). The recommended value is 1,500.
- Private IP addresses are recommended for cloud and on-premises servers, and the IP address ranges used for communications cannot overlap.

# 5 Notes and Constraints

Resource	Default Quota	How to Increase Quota
Number of connections that can be created by an account in each region	10	<a href="#">Submit a service ticket.</a>
Number of virtual gateways that can be created by an account in each region	5	<a href="#">Submit a service ticket.</a>
Number of virtual interfaces that can be created by an account in each region	50	<a href="#">Submit a service ticket.</a>
Number of local subnets for a virtual gateway	50	Increasing the quota is not allowed.
Number of routes for BGP sessions on a virtual interface	100	<a href="#">Submit a service ticket.</a>
Number of remote subnets for a virtual interface	50	<a href="#">Submit a service ticket.</a>

## Restrictions on Locations

Before creating a connection, you need to select a location. Note the following restrictions:

- There may be more than one location in each region. In this case, network latency from each location to different AZs in the region should be less than 5 ms.

- If your workloads have demanding requirement for network latency, you can [submit a service ticket](#) to confirm which location is the nearest to the AZ where your cloud servers are running.

## Product Use Restrictions

- The CIDR block of the VPC cannot overlap with the CIDR block used by the on-premises network.  
The on-premises network cannot use 100.64.0.0/10, 127.0.0.0/8, 169.254.0.0/16, and 224.0.0.0/3 because they are reserved for the VPC service.
- 1GE and 10GE single-mode optical ports can transmit data up to 10 km. If you need an optical port to transmit data for more than 10 km, or you need a 40GE or 100GE port, you need to purchase optical modules by yourself. For suggestions on optical module selection, [submit a service ticket](#).
- If you use a Direct Connect connection to access ELB, you must select **Source IP hash** as the load balancing algorithm and disable sticky sessions for ELB.
- By default, Direct Connect is not interconnected with Enterprise Switch. To access Enterprise Switch using Direct Connect, [submit a service ticket](#).
- Direct Connect can respond to common ICMP packets (echo packets whose type is 8 and code is 0 and do not carry IP options) for ping detections.
- For each connection, a maximum of 30 ping detections can be performed on the local gateway IP address over the port per second.
- To connect on-premises data centers through enterprise routers, ensure that the on-premises data centers are connected to different devices. For details, [submit a service ticket](#).
- A virtual gateway can be associated with only two different devices.

## Construction Notes

- Your construction company must comply with the regulations presented by the equipment room provider and engineers. In case of any violation, the construction cannot be completed.
- No optical-to-electrical converters can be hosted or installed in the equipment room.
- Network blocking due to state policies or Huawei Cloud management will delay the construction. In the event of such situation, contact your Direct Connect manager.
- The equipment room at a location is operated by a telecom carrier or a third party. If there are fees for connecting your leased line to the equipment room or an in-building cable, pay the fees to the equipment room provider.
- You need to apply for a Letter of Authorization (LOA) and present the LOA when entering the equipment room for construction.

# 6 Direct Connect Locations

A Direct Connect location provides access to Huawei Cloud in a region. Before using Direct Connect to access Huawei Cloud, you need to obtain the details about each location.

Direct Connect provides a number of locations for you to choose from. You can [request a port](#) by creating a connection.

For more information, [submit a service ticket](#) or contact your Direct Connect manager.

**Table 6-1** Direct Connect locations in China

Region	Location	Carrier	Address
CN North-Beijing4	Beijing-Yatai	Neutral	Beijing Yatai
	Beijing-Jiuxianqiao	Dr. Peng	Beijing Universal Creative Park (UCP)
	Beijing-Huitian	Neutral	Beijing Huitian Cloud Industrial Park
	Beijing-Zhongjin	Neutral	Centrin Data in Beijing Economic-Technological Development Area
	Langfang-Wanguo	Neutral	Langfang GDS
	Langfang-Range	China Telecom	Langfang Range Information Port
	Langfang-Huawei	Huawei	Huawei production base in Langfang

Region	Location	Carrier	Address
	Wuhan-Wugang	Neutral	Wuhan Iron & Steel Data Industrial Park
	Wuhan-Huawei	Huawei	Wuhan Research Center
CN North-Ulanqab1	Ulanqab-Jining	Huawei	Ulanqab Huawei Data Center
	Ulanqab-Meiguiping	Huawei	Ulanqab Meiguiping Base
CN East-Shanghai1	Suzhou-Wanguo	Neutral	Suzhou GDS Data Center
	Suzhou-Guoke	China Unicom	SISDC
	Suzhou-Huawei	Huawei	Suzhou Research Center
	Suzhou-Kunhui	Neutral	Suzhou Kunhui Network
	Suzhou-Wujiang	China Mobile	Suzhou Mobile Data Center
	Shanghai-Wanguo	Neutral	Shanghai GDS Data Center
	Shanghai-Baoxin	China Mobile	Shanghai Baoxin Data Center
	Shanghai-Guanghuan	Neutral	Beijing Sinnet Data Center
	Hangzhou-Hanggang	Neutral	Hangzhou Iron & Steel Cloud Data Center
	Hangzhou-Huawei	Huawei	Hangzhou Research Center
CN East-Shanghai2	Shanghai-Wanguo	Neutral	Shanghai GDS Data Center
	Shanghai-Guanghuan	Neutral	Beijing Sinnet Data Center
	Shanghai-Baoxin	China Mobile	Shanghai Baoxin Data Center
CN East2	Wuhu-Jiangbei	Huawei	Wuhu Jiangbei Data Center

Region	Location	Carrier	Address
	Wuhu-Sanshan	Huawei	Wuhu Sanshan Data Center
	Wuhu-Zhijiao	Huawei	Wuhu Zhijiao Data Center
CN East-Qingdao	Qingdao-Jiaozhou	Huawei	Jiaozhou Ka'aosi
	Qingdao-Hongdao	China Mobile	Hongdao Mobile Data Center
CN South-Guangzhou	Guangzhou-Yunpu	China Telecom	Guangzhou Yunpu Data Center
	Guangzhou-Huaxinyuan	Neutral	South China New Materials Innovation Park
	Guangzhou-Daxuecheng	Neutral	Guangzhou Higher Education Mega Center
	Guangzhou-Mingmei	China Unicom	Guangzhou Mingmei Electronics
	Guangzhou-Hualong	China Unicom	Weixin Innovation Industrial Park
	Shenzhen-Baode	Neutral	Shenzhen Guanlan High-Tech Park
	Shenzhen-Futian	Neutral	Futian Zhongpeng Cloud
	Shenzhen-Nanshan	Neutral	Nanshan SDGI
	Shenzhen-Yifeng	Neutral	Dianda Guyuan Industrial Park
	Dongguan-Tuanbowa	Huawei	Huawei Base (Dongguan Songshan Lake)
CN Southwest-Guiyang1	Chengdu-Huawei	Huawei	Huawei Chengdu Research Center
	Guiyang-Gui'an	China Mobile	Gui'an New Area Electron Information Industrial Park



Region	Location	Carrier	Address
	Guiyang-Qixinghu	Huawei	Gui'an Huawei Cloud Data Center
	Guiyang-Gaoduan Yuan	Huawei	Guiyang-High-End Park
CN-Hong Kong	Hong Kong-Sha Tin	China Telecom	Sun Hung Kai Logistics Centre
	HK-Sai Kung-Mobile	China Mobile	China Mobile Global Network Center
	Hong Kong-Sai Kung-Global Switch	China Telecom	Global Switch
	HK-Tsuen Wan-MEGA	Neutral	MEGA

**Table 6-2** Direct Connect locations outside China

Region	Location	Carrier
AP-Bangkok	Bangkok-NTT	NTT
	Bangkok-TRUE	TRUE
AP-Singapore	Singapore-Equinix	Equinix
	Singapore-Global Switch	Global Switch
	Singapore-1Net	1-Net
	Singapore-Singtel	Singtel
	Singapore-Telin3	Telin
	Singapore-STT	STT
AP-Jakarta	Jakarta-DCI	DCI
	Jakarta-EDGE	EDGE
AP-Manila	Manila-GBP	Globe
	Manila-Digital Halo	Digital Halo
AF-Johannesburg	Nigeria-Lagos-Medallion	Medallion
	Johannesburg-IS Parklands	Internet Solutions Parklands
	Johannesburg-Teraco	Teraco

Region	Location	Carrier
	Johannesburg-DPA	Vodacom
	Johannesburg-ADC	ADC
	Johannesburg-MTN	MTN
AF-Cairo	Cairo-Xceed	Xceed
LA-Mexico City1	Mexico-Ixtlahuaca	Ixtlahuaca
	Mexico-Tultitlan	KIO MEX 5
LA-Mexico City2	Mexico-Tultitlan	KIO MEX 5
	Mexico-Scala	Scala
LA-Sao Paulo1	Sao Paulo-Equinix	Equinix
	Sao Paulo-ODATA	OData
	Sao Paulo-Scala	Scala
	Sao Paulo-VIVO	Telefonica
LA-Lima1	Lima-TIC	Telefonica
LA-Santiago	Santiago-Paine	Paine
	Santiago-Claro	Claro
TR-Istanbul	TR-Istanbul	Turkcell
	Istanbul-NGN	NGN
ME-Riyadh	Riyadh-STC Khurais	STC Khurais
	Riyadh-Remal	Remal

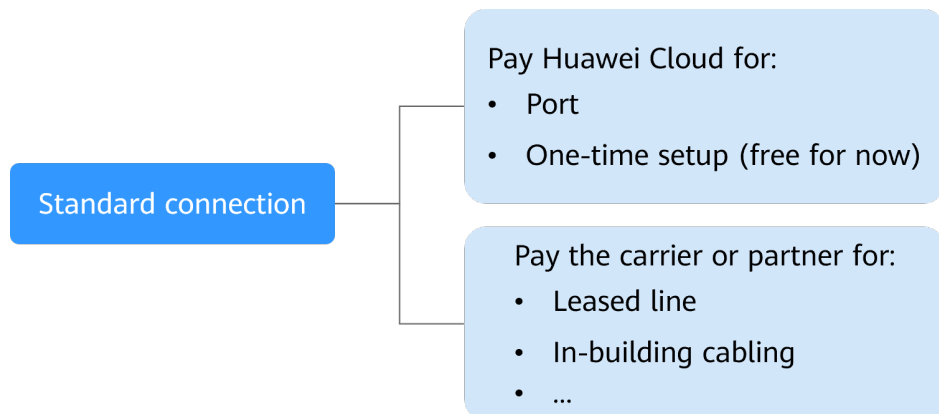
# 7 Billing

You can create a standard connection, which will give you exclusive access to the port. You can also request a hosted connection from a partner and share the port with other users.

## Billed Items

- **Standard connection**

The following figure shows the items that you need to pay for a standard connection.



**Table 7-1** Standard connection pricing

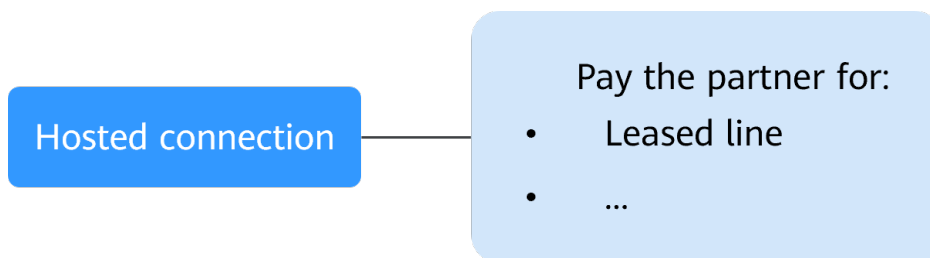
Payee	Billed Item	Description	Payment Method
Huawei Cloud	Port	The port is billed based on its specifications.	Prepaid (yearly/monthly subscription)
	One-time setup	Currently, the one-time setup is free.	-

Payee	Billed Item	Description	Payment Method
Carrier or Huawei Cloud partner	Leased line	To connect your on-premises data center to the cloud, you need to lease a line from a carrier.	-
	In-building cabling	A fiber may be required for connecting your leased line to the equipment room at the Direct Connect location you select if the data center at the Direct Connect location is a carrier-neutral data center. You pay to the property of the neutral data center.	-

- **Hosted connection**

If you request a hosted connection from a Huawei Cloud partner, you share the port with other users and do not need to pay for one-time setup and the port to Huawei Cloud.

The following figure shows the billed items of a hosted connection.



**Table 7-2** Hosted connection billing details

Payee	Billed Item	Description	Payment Method
Carrier or Huawei Cloud partner	Leased line	To connect your on-premises data center to the cloud, you need to lease a line from a carrier.	-

For details, see [Product Pricing Details](#).

## Billing Mode

Yearly/Monthly

## Changing Billing Mode

Only Yearly/Monthly billing is supported, and it cannot be changed.

## Renewal

For details, see [Renewal Management](#).

## Expiration and Overdue Payment

For details, see [Service Suspension and Resource Release](#) and [Payment and Repayment](#).

# 8 Security

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## 8.1 Shared Responsibilities

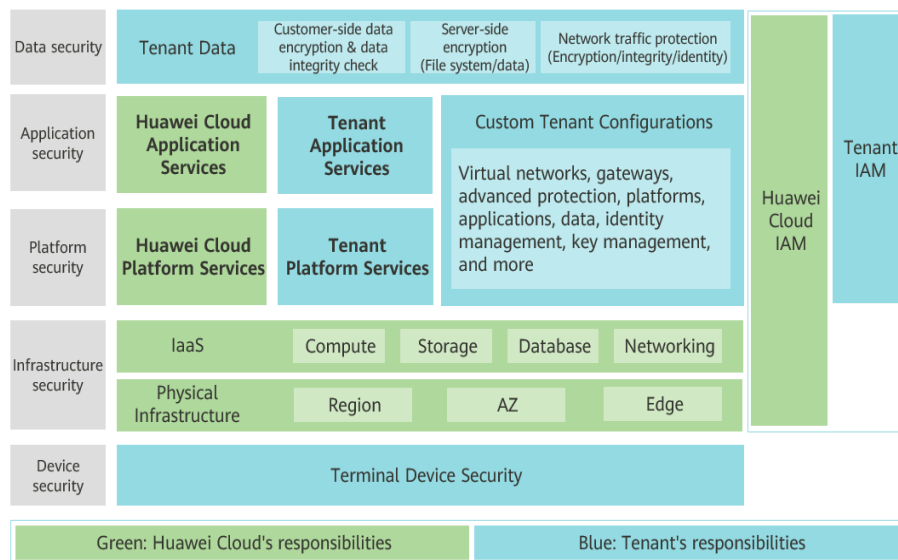
Huawei guarantees that its commitment to cyber security will never be outweighed by the consideration of commercial interests. To cope with emerging cloud security challenges and pervasive cloud security threats and attacks, Huawei Cloud builds a comprehensive cloud service security assurance system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

**Figure 8-1** 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 8-1** Huawei Cloud shared security responsibility model



## 8.2 Identity Authentication and Access Control

### Identity Authentication

You can use Identity and Access Management (IAM) to control access to your Direct Connect 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 Direct Connect to the user group. Then, all users in this group automatically inherit the granted permissions.

For details, see [Permissions](#).

### Access Control

A security group is a collection of access control rules for cloud resources, such as cloud servers, containers, and databases, that have the same security protection requirements and that are mutually trusted within a VPC. After a security group is created, you can create various access rules for the security group, and these rules will apply to all cloud resources added to this security group.

Your account automatically comes with a default security group. The default security group allows all outbound traffic, denies all inbound traffic, and allows all traffic between cloud resources in the group. Your cloud resources in this security group can communicate with each other already without adding additional rules. For details about the default security group rules, see [Default Security Groups and Security Group Rules](#).

In addition, Huawei Cloud allows you to manage security groups and security group rules, including

- Creating, viewing, deleting, modifying, cloning, and adding security groups
- Adding, copying, modifying, deleting, importing, and exporting security group rules

- Quickly adding multiple security group rules
- Viewing and changing security groups of ECSs
- Adding cloud resources to or removing cloud resources from security groups

You can define access control rules for a security group. Then ECSs that will be added to this security group will be protected. For details, see [Security Group](#).

## 8.3 Auditing and Logging

Cloud Trace Service (CTS) is a log audit service 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 the Direct Connect console.

- For details about how to enable and configure CTS, see [Enabling CTS](#).
- For details about key operations of Direct Connect, see [Key Operations Recorded by CTS](#).
- For details about traces, see [Viewing Traces](#).

## 8.4 Monitoring Security Risks

Cloud Eye is a monitoring service provided by Huawei Cloud. It provides capabilities like real-time monitoring, timely alarm reporting, resource groups, and website monitoring. Cloud Eye enables you to keep track of your resource usages and service statuses on the cloud, and quickly respond to exceptions to ensure that services run smoothly.

Monitoring is critical to ensuring the performance, reliability, and availability of Direct Connect. Cloud Eye automatically monitors your connections in real time, collects and displays monitoring data in a convenient, visualized manner, and allows you to manage alarms and notifications, helping you watch your connection performance.

For details about supported metrics and how to create alarm rules, see [Monitoring](#).

## 8.5 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 8-2 Downloading compliance certificates

**Download Compliance Certificates**

Please enter a keyword to search

**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.

Download

**ENS**

Mandatory law for companies in the public sector and their technology suppliers

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**Singapore Multi Tier Cloud Security (MTCS) Level 3**

The MTCS standard was developed under the Singapore Information Technology Standards Committee (ITSC). This standard requires cloud service providers to adopt well-rounded risk management and security practices in cloud computing. The HUAWEI CLOUD Singapore region has obtained the level 3 (highest) certification of MTCS.

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**Trusted Partner Network (TPN)**

The Trusted Partner Network (TPN) is a global, industry-wide media and entertainment content security initiative and community network, wholly owned by the Motion Picture Association. TPN is committed to raising content security awareness and standards and building a more secure future for content partners. TPN can help identify vulnerabilities, increase security capabilities, and efficiently communicate security status to customers.

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**ISO 27001:2022**

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.

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**ISO 27017:2015**

ISO 27017 is an international certification for cloud computing information security. It indicates that HUAWEI CLOUD's information security management has become an international best practice.

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## Resource Center

Huawei Cloud also provides the following resources to help users meet compliance requirements. For details, see [Resource Center](#).

Figure 8-3 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.

# 9 Permissions

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If you need to assign different permissions to employees in your enterprise to access your Direct Connect 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 securely manage access to your Huawei Cloud resources.

With IAM, you can use your account to create IAM users for your employees, and assign permissions to the users to control their access to specific resource types. For example, some software developers in your enterprise need to use Direct Connect but should not be allowed to delete other Direct Connect resources or perform any other high-risk operations. In this scenario, you can create IAM users for the software developers and grant them only the required permissions.

Skip this part if your account does not require individual IAM users for permissions management.

IAM is a free service. You pay only for the resources in your account. For more information about IAM, see the [What Is IAM?](#)

## Direct Connect Permissions

By default, new IAM users do not have permissions assigned. You need to add a user to one or more groups, and attach permissions policies or roles to these groups. Users inherit permissions from the groups to which they are added and can perform specified operations on cloud services.

Direct Connect is a project-level service deployed and accessed in specific physical regions. To assign permissions to a user group, specify the scope as region-specific projects and select projects for the permissions to take effect. If **All projects** is selected, the permissions will take effect for the user group in all region-specific projects. When accessing Direct Connect, the users need to switch to a region where they have been authorized to use this service.

You can grant permissions by using roles or policies.

- **Roles:** A type of coarse-grained authorization mechanism that defines permissions related to user responsibilities. Only a limited number of service-level roles for authorization are available. When using roles to grant permissions, you need to also assign other roles that the permissions depend

on to take effect. However, roles are not an ideal choice for fine-grained authorization and secure access control.

- **Policies:** A fine-grained authorization mechanism that defines permissions required to perform operations on specific cloud resources under certain conditions. This mechanism allows for more flexible policy-based authorization, and meets the requirements for secure access control. For example, you can grant Direct Connect users the permissions for only managing a certain type of Direct Connect resources.

**Table 9-1** lists all system-defined roles or policies supported by Direct Connect.

**Table 9-1** Direct Connect roles or policies

Role/Policy Name	Description	Type	Dependency
Direct Connect Administrator	Has all permissions for Direct Connect resources.  To have these permissions, users must also have the <b>Tenant Guest</b> and <b>VPC Administrator</b> permissions.	System-defined role	<b>Tenant Guest</b> and <b>VPC Administrator</b>  <ul style="list-style-type: none"> <li>• <b>VPC Administrator:</b> project-level policy, which must be assigned in the same project</li> <li>• <b>Tenant Guest:</b> project-level policy, which must be assigned in the same project</li> </ul>
DCaaS Partner	Has permissions of Direct Connect partners. Users who have these permissions can create hosted operations for others.  To have these permissions, users must also have the <b>Tenant Guest</b> and <b>VPC Administrator</b> permissions.	System-defined role	<b>Tenant Guest</b> and <b>VPC Administrator</b>  <ul style="list-style-type: none"> <li>• <b>VPC Administrator:</b> project-level policy, which must be assigned in the same project</li> <li>• <b>Tenant Guest:</b> project-level policy, which must be assigned in the same project</li> </ul>
DCAAS FullAccess	Permissions: all permissions for Direct Connect  Scope: project-level service	System-defined policy	None
DCAAS ReadOnlyAccess	Permissions: read-only permissions for Direct Connect  Scope: project-level service	System-defined policy	None

**Table 9-2** lists common operations supported by each system-defined role or policy for Direct Connect.

**Table 9-2** Common operations supported by each system-defined role or policy

Operation	Direct Connect Administrator	DCaaS Partner	DCAAS FullAccess	DCAAS ReadOnlyAccess
Creating a connection	√	√	√	×
Viewing a connection	√	√	√	√
Modifying a connection	√	√	√	×
Deleting a connection	√	√	√	×
Creating a virtual gateway	√	√	√	×
Viewing a virtual gateway	√	√	√	√
Modifying a virtual gateway	√	√	√	×
Deleting a virtual gateway	√	√	√	×
Creating a global DC gateway	√	√	√	×
Viewing a global DC gateway	√	√	√	√
Modifying a global DC gateway	√	√	√	×
Deleting a global DC gateway	√	√	√	×
Creating a virtual interface	√	√	√	×

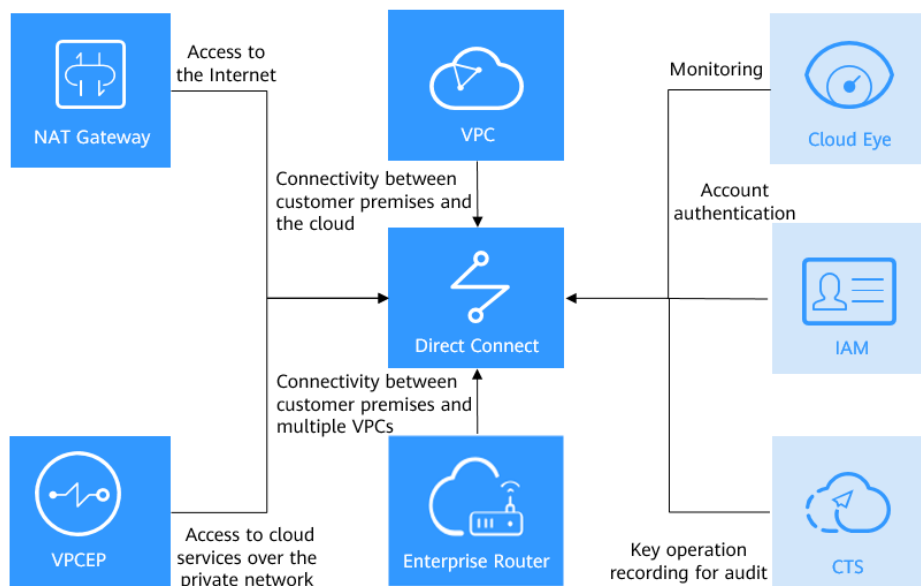
Operation	Direct Connect Administrator	DCaaS Partner	DCAAS FullAccess	DCAAS ReadOnlyAccess
Viewing a virtual interface	√	√	√	√
Modifying a virtual interface	√	√	√	×
Deleting a virtual interface	√	√	√	×
Creating an operations connection	√	√	√	×
Viewing an operations connection	√	√	√	√
Modifying an operations connection	√	√	√	×
Deleting an operations connection	√	√	√	×
Creating a hosted connection	√	√	√	×
Viewing a hosted connection	√	√	√	√
Modifying a hosted connection	√	√	√	×
Deleting a hosted connection	√	√	√	×

## Reference

- [What Is IAM?](#)
- [Creating a User and Granting Permissions](#)

# 10 Direct Connect and Other Services

**Figure 10-1** Direct Connect and other services



**Table 10-1** Related services

Cloud Service	Interaction	Reference
Virtual Private Cloud (VPC)	Your on-premises data center can access the VPCs through Direct Connect.	<a href="#">Creating a VPC</a>
	You can use VPC Peering to connect the VPC your on-premises data center is accessing to other VPCs in the same region so that your on-premises data center can access all these VPCs.	<a href="#">Connecting to Multiple VPCs that Need to Communicate with Each Other</a>

Cloud Service	Interaction	Reference
Enterprise Router	You can connect your on-premises data center to an enterprise router, so that your on-premises data center can access the VPCs attached to the enterprise router.	-
NAT Gateway	On-premises servers can share a NAT gateway to access the Internet or provide services that are accessible from the Internet.	<a href="#">NAT Gateway</a>
VPC Endpoint (VPCEP)	A VPC endpoint can connect your on-premises data center to a cloud service through a VPN or Direct Connect connection over a private network.	<a href="#">Configuring a VPC Endpoint for Accessing OBS Using the OBS Private Address</a>
Cloud Eye	Cloud Eye monitors Direct Connect resources and allows you to view visualized graphs.	<a href="#">Viewing Metrics</a>
Identity and Access Management (IAM)	You can grant different permissions for users to control access Direct Connect resources.	<a href="#">Identity and Access Management</a>
Cloud Trace Service (CTS)	You can record operations performed on Direct Connect.	<a href="#">Key Operations Recorded by CTS</a>

# 11 Basic Concepts

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## 11.1 Connection

A **connection** is dedicated network connection between your on-premises data center and a Direct Connect location over a leased line.

Direct Connect provides ports only. After you request a connection, you need to work with the carrier and Huawei Cloud to establish network connectivity between your on-premises data center and the cloud.

Connections are dedicated channels for on-premises data centers to access the cloud. Connections are more stable, reliable, and secure than Internet-based connections, and provide up to 100 Gbit/s bandwidth.

If you are a regular user, you can request standard connections and hosted connections.

- A standard connection has a dedicated port for your exclusive use and can have multiple virtual interfaces associated.
- A hosted connection is created by a carrier (a partner of Huawei Cloud). The partner has pre-connected dedicated lines to the Direct Connect locations of Huawei Cloud and allocates a connection port to you after receiving your request for a hosted connection. This connection port is shared with other users. The partner allocates the VLAN and bandwidth for you. You can associate only one virtual interface with each hosted connection.

If you are a partner, you can request operations connections and create hosted connections for your users.

- Similar to standard connections, an operations connection has a dedicated port for your exclusive use and can have multiple virtual interfaces associated.
- A hosted connection is created for one of your users based on an operations connection.

If you are a user, you need to lease a line from a carrier.

Connections support redundant configuration. If two connections are terminated at different locations in the same region, they work in an active/standby pair to



back each other up. If one connection becomes faulty, the other will take over, ensuring stable services.

## 11.2 Virtual Gateway

A **virtual gateway** is a logical gateway for accessing a VPC. To access other VPCs, you can use VPC Peering or Cloud Connect to connect the VPC your on-premises data center is accessing to these VPCs.

A virtual gateway can only have one VPC associated. You can link multiple connections to one virtual gateway so that your on-premises data center can access the same VPC.

## 11.3 Virtual Interface

A **virtual interface** is what you use to link connections to virtual gateways. A virtual interface can link a connection to one or more virtual gateways so that your on-premises network can access the VPC associated with each virtual gateway.

Virtual interfaces support static routing and BGP routing. You can choose BGP routing if you want to build a hybrid cloud more efficiently and reliably.

## 11.4 Region and AZ

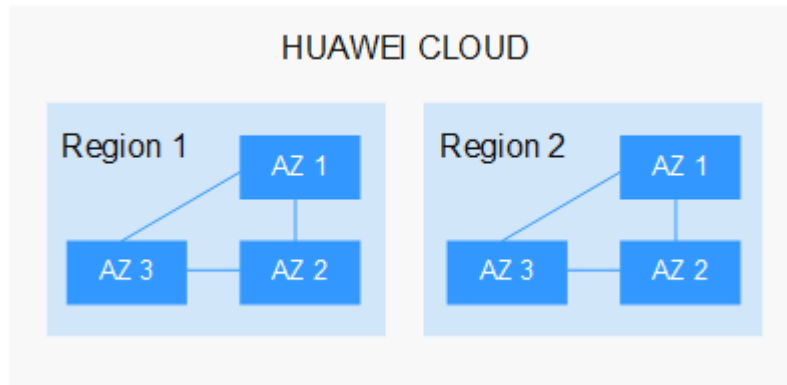
### Concept

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.

**Figure 11-1** shows the relationship between regions and AZs.

**Figure 11-1** 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](#).