Direct Connect

Service Overview

Issue 01

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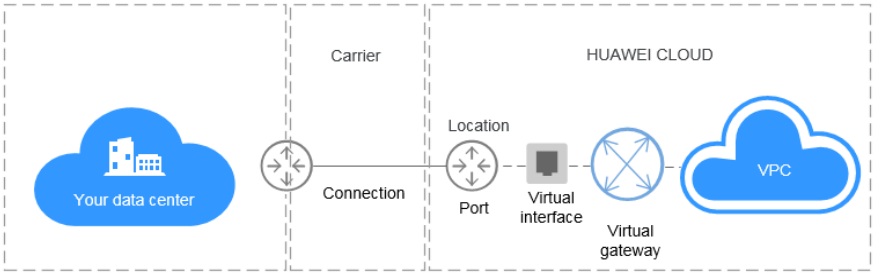
Contents

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

The key components of Direct Connect are a connection, virtual gateway, and virtual interface.

- **Connection**

The connection is dedicated network connection between your premises 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. After you are certified as a partner, you can also create an operations connection.

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

A hosted connection allows you to share a port. Partners with operations connections can provision hosted connections and allocate VLANs and bandwidths for those connections. You can request hosted connections from these partners, and only one virtual interface can be created for a hosted connection.

- **Virtual gateway**

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

- **Virtual interface**

  The virtual interface links a connection with one or more virtual gateways, each of which is associated with a VPC, so that your on-premises network can access all these 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, register an account with Huawei Cloud first by referring to **Getting Started**.

2 Product Advantages

Direct Connect has the following advantages:

- **Data security**

  You can use Direct Connect to connect to VPCs on the cloud. With Direct Connect, a dedicated channel, isolated from other networks, is used for communication, ensuring excellent security.

- **Low latency**

  A dedicated network is used for data transmission, which ensures high network performance, low latency, and excellent user experience.

- **High bandwidth**

  A single connection supports up to 100 Gbit/s of bandwidth.

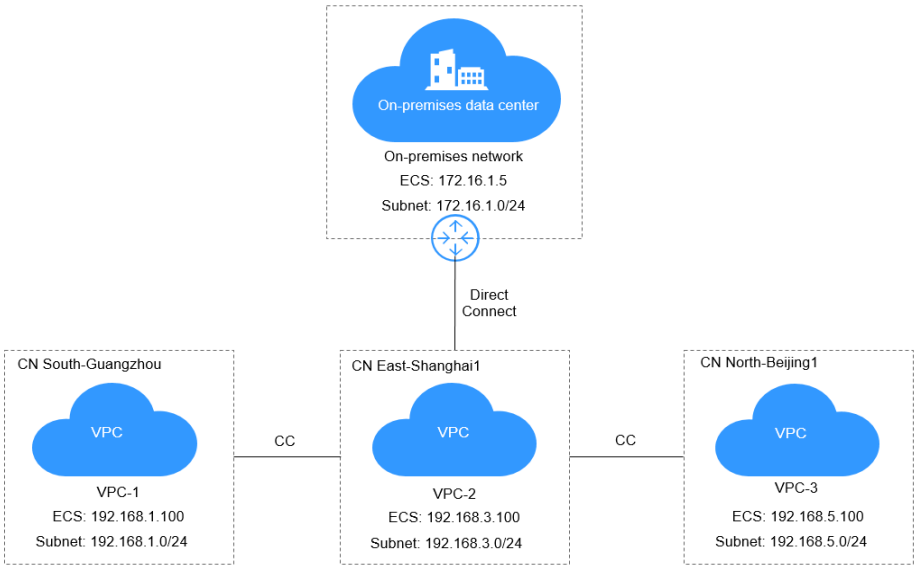
- **Seamless expansion**

  You can use Direct Connect to connect an on-premises data center to the cloud, which enables you to build a hybrid cloud in a flexible and scalable manner.

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

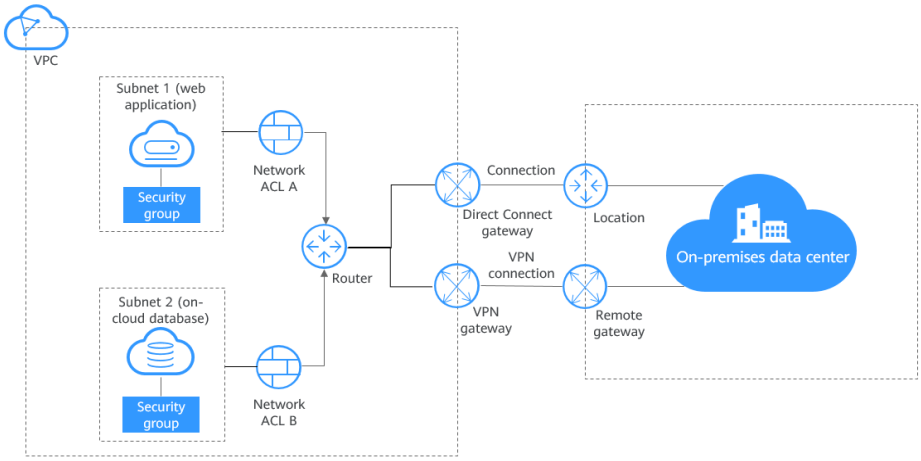


Table 3-1 Comparisons of Direct Connect and VPN in hybrid cloud deployment

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.	**Connecting to a VPC Through a VPN** **What Is an Enterprise Switch?**
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.	**Connecting to Multiple VPCs that Do Not Need to Communicate with Each Other** **What Is an Enterprise Switch?**

4 Network Planning

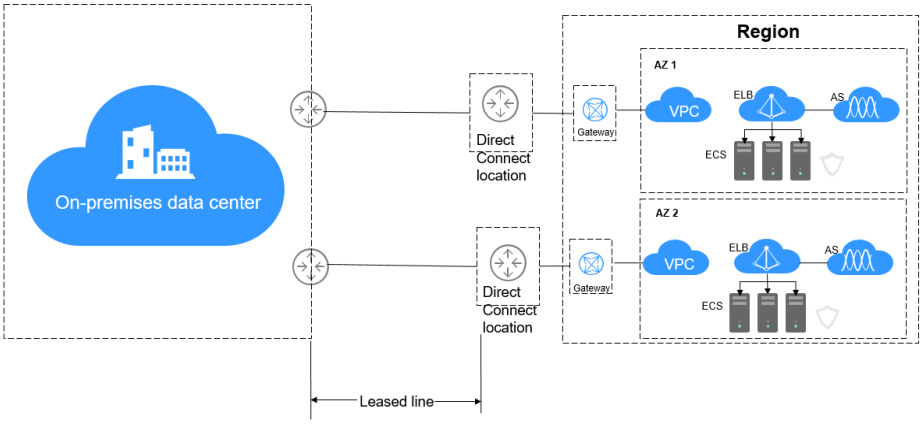
Overview

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

- Standard connection

  A standard connection provides a dedicated port for your exclusive use. You can create standard connections on the console and create multiple connections terminating at different locations as backups for each other to improve reliability. If, for some reason, there is only one carrier, you can create redundancy by configuring different routes for your connections.

  Figure 4-1 Accessing the cloud using standard connections

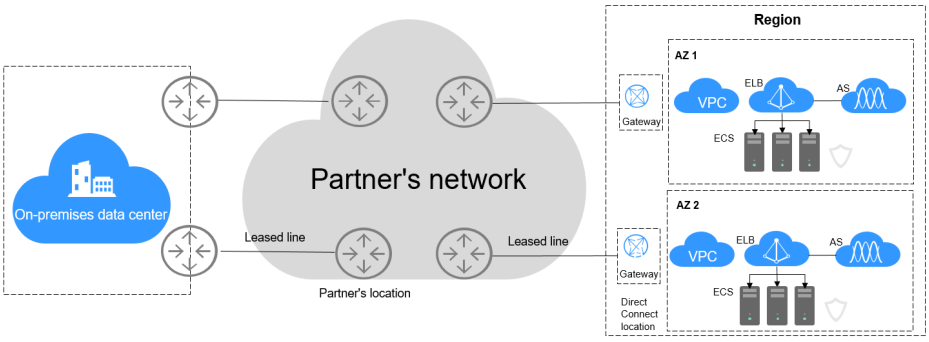


- Hosted connection

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

  After the partner connects to your on-premises data center and Huawei Cloud, the partner provisions a connection for you.

Figure 4-2 Accessing the cloud using hosted connections



Comparison

Item	Standard Connection	Hosted Connection
Port	Exclusive	Shared
Recommended bandwidth	1 Gbit/s to 100 Gbit/s	Less than 1 Gbit/s
Estimated construction period	Two to three months for lines in the same city, and three to four months for lines across cities	About one month
Parties involved	You, leased line carrier, equipment room carrier, and Huawei Cloud	You, leased line carrier, and Huawei Cloud
Process	1. You create a connection on the console to reserve a port. 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. 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. 4. Your carrier works with Huawei Cloud to commission access devices. 5. You complete required network configuration on the console, including creating a virtual gateway and virtual interface.	1. The partner deploys the leased line from your on-premises data center to the location you select. 2. The carrier completes the commissioning of access devices. 3. You complete required network configuration on the console, including creating a virtual gateway and virtual interface.

Item	Standard Connection	Hosted Connection
Pricing	• Pay Huawei Cloud for the port usage duration (by month or year). • Pay the carrier of the equipment room at the location for the cabling inside the equipment room. • Pay the carrier of your on-premises data center for the cabling inside the equipment room. • Pay the carrier of the lease line for other work and the bandwidth. For details, see **Billing**.	• You do not need to pay Huawei Cloud for the port usage. • Pay the carrier of your on-premises data center for the cabling inside the equipment room. • Pay the carrier of the lease line for other work and the bandwidth.

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 the cloud. In addition, key parameters such as the LC, wavelength, and distance must be aligned with the location. 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 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 (14-byte Ethernet header + 4-byte VLAN tag + 1,500-byte IP datagram + 4-byte frame check sequence). The recommended value is 1500.
- Private IP addresses are recommended both on and off the cloud, 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	**Submit a service ticket**.
Number of virtual gateways that can be created by an account in each region	5	**Submit a service ticket**.
Number of virtual interfaces that can be created by an account in each region	50	**Submit a service ticket**.
Number of routes for BGP sessions on a virtual interface	100	**Submit a service ticket**.
Number of remote subnets on a virtual interface	50	**Submit a service ticket**.

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.
- Currently, 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 the optical modules by yourself.
- 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.

Construction Notes

- Your construction company must comply with the regulations presented by the equipment room carrier 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 carrier.
- 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** when creating a connection.

For more information, **submit a service ticket** or contact your Direct Connect manager.

Table 6-1 Direct Connect locations

Geographic Region	City	Region	Location	IDC
Chinese mainland	Beijing	CN North-Beijing4	Langfang-Guangyang-Huawei	Huawei
			Beijing-Tongzhou-Huitian	Huitian
			Beijing-Yizhuang-Centrin	Centrin Data Systems
			Beijing-Yizhuang-Yatai	Yatai Zhongli
			Beijing-Chaoyang-Jiuxianqiao	Jiuxianqiao
			Langfang-GDS	Carrier-neutral data center
			Langfang-Runze-China Telecom	China Telecom
Chinese mainland	Shanghai	CN East-Shanghai2	Shanghai-Pudong-GDS	GDS

Geographic Region	City	Region	Location	IDC
			Shanghai-Baoshan-Baoxin	Baoxin
			Shanghai-Jiading-Sinnet	Sinnet
	Suzhou	CN East-Shanghai1	Suzhou-Kunshan-GDS	GDS
			Suzhou-Wuzhong-Guoke	China Unicom
			Suzhou-Wujiang-Fenhu-China Mobile	China Mobile
			Hangzhou Research Center	Huawei
			Cloud data center of Hangzhou Iron & Steel Group	Carrier-neutral data center
			Shanghai-GDS	Carrier-neutral data center
			Shanghai-Baoxin	China Mobile
			Suzhou-Kunshan-Kunhui	Kunshan Kunhui
			Suzhou-Wuzhong-Huawei Base	Huawei
			Shanghai-Sinnet	Sinnet
	Guangzhou	CN South-Guangzhou	Guangzhou-Huangpu-Huaxinyuan	Bigone
			Guangzhou-Fanyu-University town	Bigone
			Guangzhou-Mingmei-China Unicom	China Unicom
			Guangzhou-Hualong-China Unicom	China Unicom
			Guangzhou-Yunpu-China Telecom	China Telecom

Geographic Region	City	Region	Location	IDC
			Shenzhen-Baode	Carrier-neutral data center
			Shenzhen-Nanshan	
			Shenzhen-Futian	
			Shenzhen-Yifeng	Yifeng
			Dongguan-Tuanbowa	Huawei
	Guiyang	CN Southwest-Guiyang1	Guiyang-Gui'an-China Mobile	China Mobile
			Guiyang–Gui'an–Qixinghu	Huawei
			Guiyang-Gui'an-High-end Park	Huawei
			Guiyang-Xi'an-Xigang	China Telecom
			Guiyang-Xi'an-21vianet	21vianet
Asia Pacific	Hong Kong	CN-Hong Kong	Hong Kong-Sha Tin-China Telecom	China Telecom
			Hong Kong-Sai Kung-China Mobile	China Mobile
			Hong Kong-Sai Kung-Global Switch	GlobalSwitch
	Bangkok	AP-Bangkok	Bangkok-NTT	NTT
			Bangkok-TRUE	TRUE
	Singapore	AP-Singapore	Singapore-DataPro	Equinix
			Singapore-Global Switch	Global Switch
	Jakarta	AP-Jakarta	Jakarta-JK5	JK5
			Jakarta-EDGE	EDGE
Africa	Johannesburg	AF-Johannesburg	Kenya-Nairobi-Sameer Business Park	Nairobi Sameer Business Park
			Nigeria-Lagos-Medallion	Medallion

Geographic Region	City	Region	Location	IDC
			Johannesburg-IS Parklands	Internet Solutions Parklands
			Johannesburg-Teraco	Teraco
Latin America	Mexico	LA-Mexico City1	Mexico City-COM Ixtlahuaca	COM Ixtlahuaca
			Mexico-KIO MEX 5	KIO MEX 5
		LA-Mexico City2	Mexico-Tultitlan	Carrier-neutral data center
			Bogota-Equinix	Equinix
	Sao Paulo	LA-Sao Paulo1	Sao Paulo-Equinix	Equinix
			Sao Paulo-ODATA	OData
	Lima	LA-Lima1	Lima-Telefonica	Telefonica
	Santiago	LA-Santiago	Santiago-Paine	Paine
			Santiago-Claro	Claro
Europe	Türkiye	TR-Istanbul	TR-Istanbul-Turkcell	Turkcell
			TR-Istanbul-NGN	NGN
Other	Riyadh	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, or request a hosted connection from a partner and share the port.

Billing Items

- **Standard connection**

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

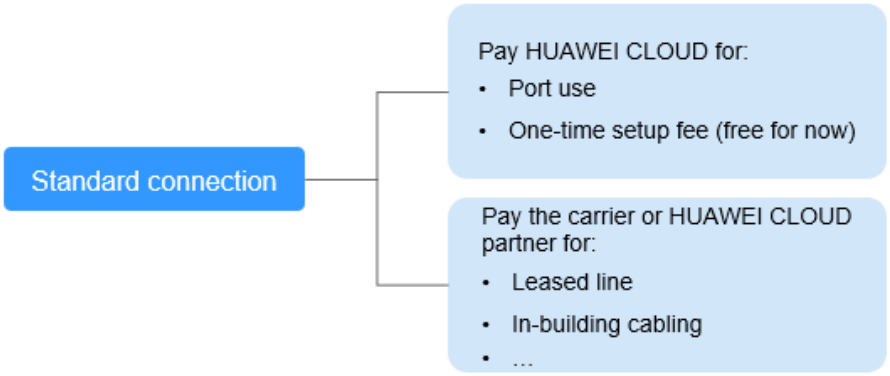


Table 7-1 Standard connection pricing

Payee	Billing Item	Description	Payment Method
Huawei Cloud	Port	The port is billed based on its specifications.	Prepaid (yearly/ monthly subscription)
	One-time setup	Currently, you are not be billed for the one-time setup.	N/A

Payee	Billing 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 the carrier.	N/A
	In-building cabling	If you lease a line for a carrier, you also need to pay for the cabling inside the carrier's equipment room.	N/A

- **Hosted connection**

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

  The following figure shows the fees that you need to pay for a hosted connection.

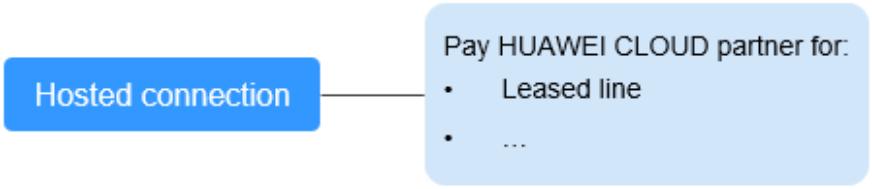


Table 7-2 Hosted connection billing details

Payee	Billing Item	Description	Payment Method
Carrier or Huawei Cloud partner	Leased line	Your partner has established network connectivity with Huawei Cloud. You need to pay the partner for the leased line.	N/A

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

Billing Mode

Only yearly/monthly subscription is available.

Changing Billing Mode

Currently, only **Yearly/Monthly** 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

8.1 Shared Responsibilities

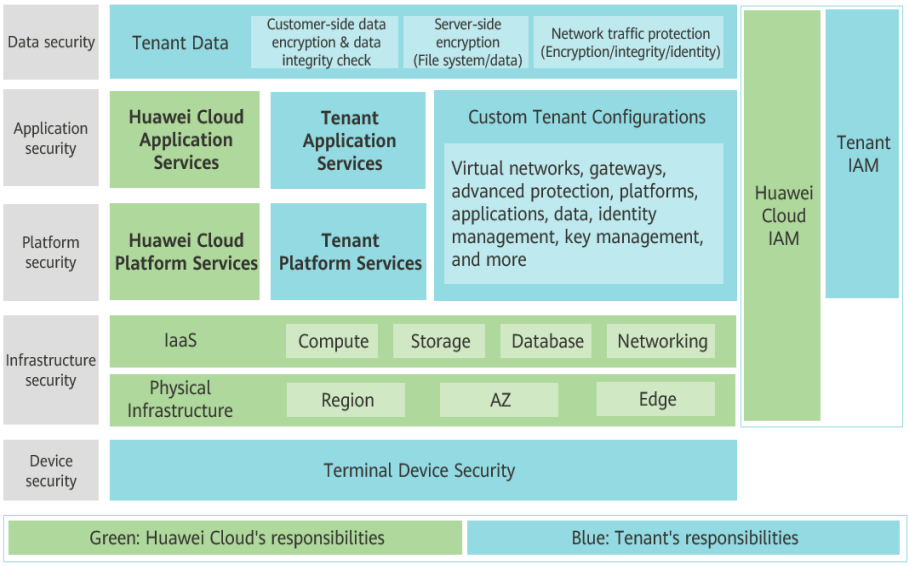
Huawei guarantees that its commitment to cyber security will never be outweighed by the consideration of commercial interests. To cope with emerging cloud security challenges and pervasive cloud security threats and attacks, Huawei Cloud builds a comprehensive cloud service security assurance system 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.

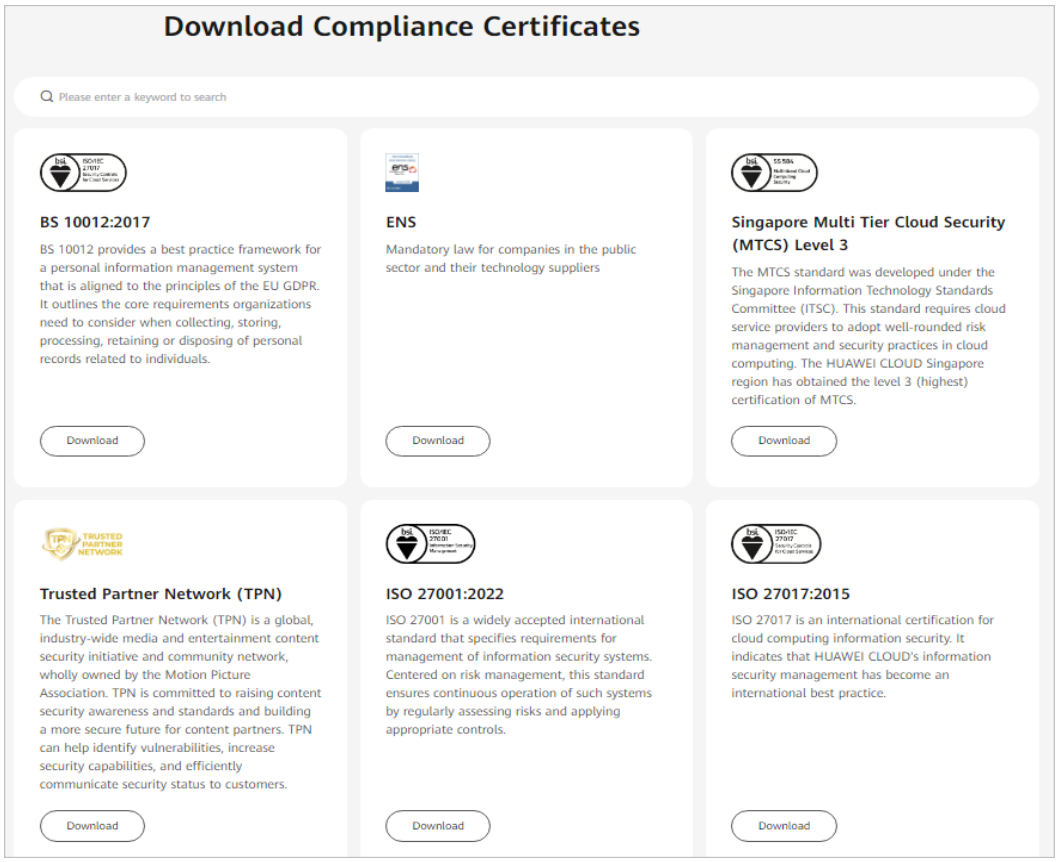
For details about supported metrics and how to create alarm rules, see **Monitoring**.

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.

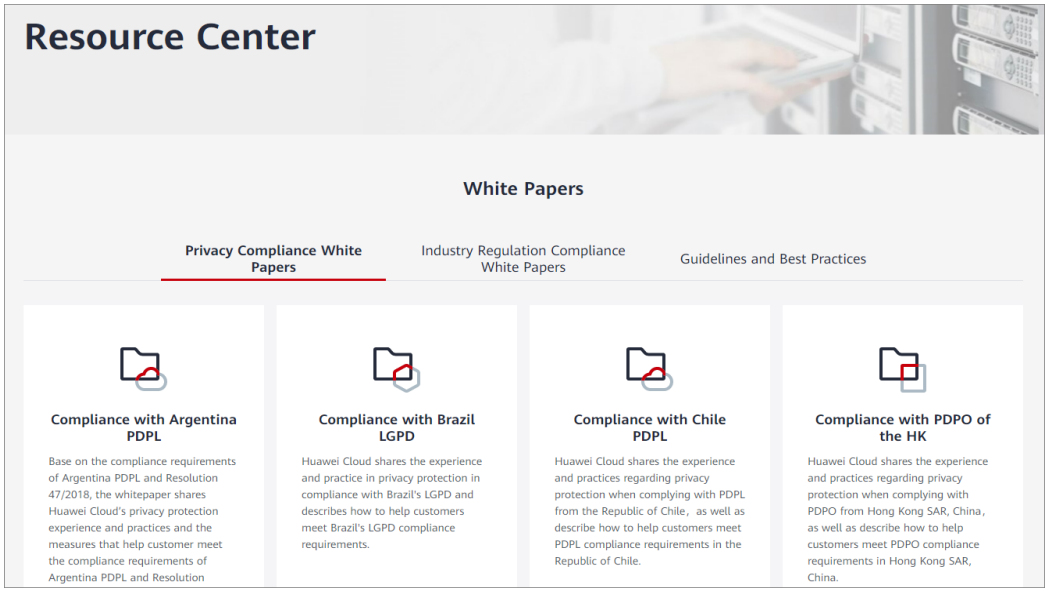
Figure 8-2 Downloading compliance certificates



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



9 Permissions

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 free. 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 users 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 the 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 **Tenant Guest** and **VPC Administrator** permissions.	System-defined role	**Tenant Guest** and **VPC Administrator** • **VPC Administrator**: project-level policy, which must be assigned in the same project • **Tenant Guest**: project-level policy, which must be assigned in the same project
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 **Tenant Guest** and **VPC Administrator** permissions.	System-defined role	**Tenant Guest** and **VPC Administrator** • **VPC Administrator**: project-level policy, which must be assigned in the same project • **Tenant Guest**: project-level policy, which must be assigned in the same project
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 of 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 virtual interface	√	√	√	×
Viewing a virtual interface	√	√	√	√
Modifying a virtual interface	√	√	√	×
Deleting a virtual interface	√	√	√	×
Creating an operations connection	√	√	√	×

Operation	Direct Connect Administrator	DCaaS Partner	DCAAS FullAccess	DCAAS ReadOnlyAccess
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

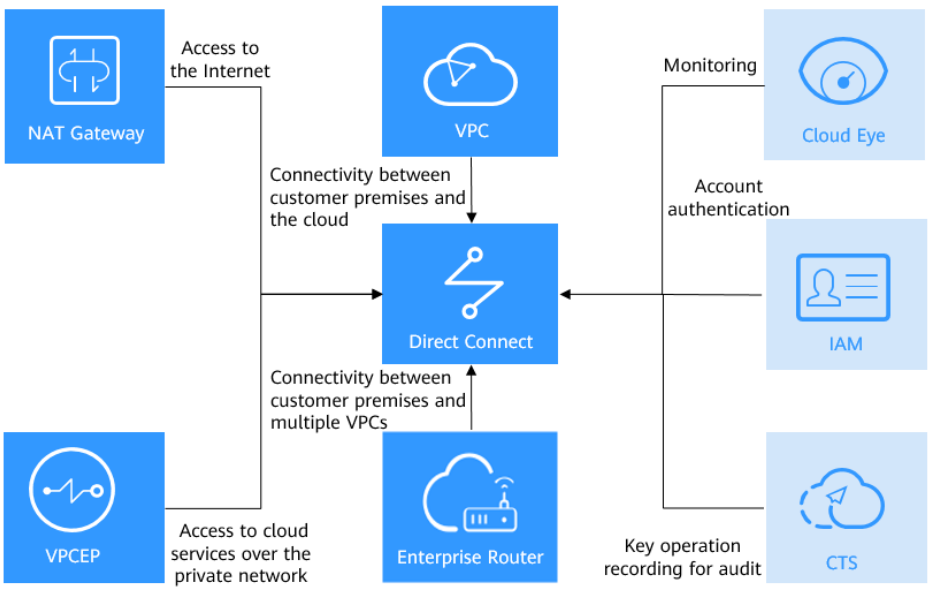


Table 10-1 Related services

Cloud Service	Interaction	Reference
Virtual Private Cloud (VPC)	Your on-premises data center can access the VPCs through Direct Connect.	**Creating a VPC**
	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.	**Connecting to Multiple VPCs that Need to Communicate with Each Other**

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.	N/A
NAT Gateway	On-premises servers can share a NAT gateway to access the Internet or provide services that are accessible from the Internet.	**NAT Gateway**
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.	**Configuring a VPC Endpoint for Accessing OBS Using the OBS Private Address**
Cloud Eye	Cloud Eye monitors Direct Connect resources and allows you to view visualized graphs.	**Viewing Metrics**
Identity and Access Management (IAM)	You can grant different permissions for users to control access Direct Connect resources.	**Identity and Access Management**
Cloud Trace Service (CTS)	You can record operations performed on Direct Connect.	**Key Operations Recorded by CTS**

11 Basic Concepts

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 partner and allows you to share the dedicated port with other users. The partner will allocate a VLAN and bandwidth for the hosted connection you request. 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 regular 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

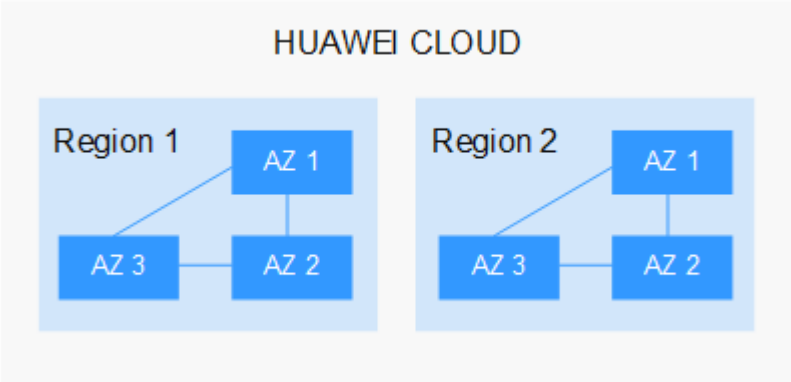
Concept

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

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**.

