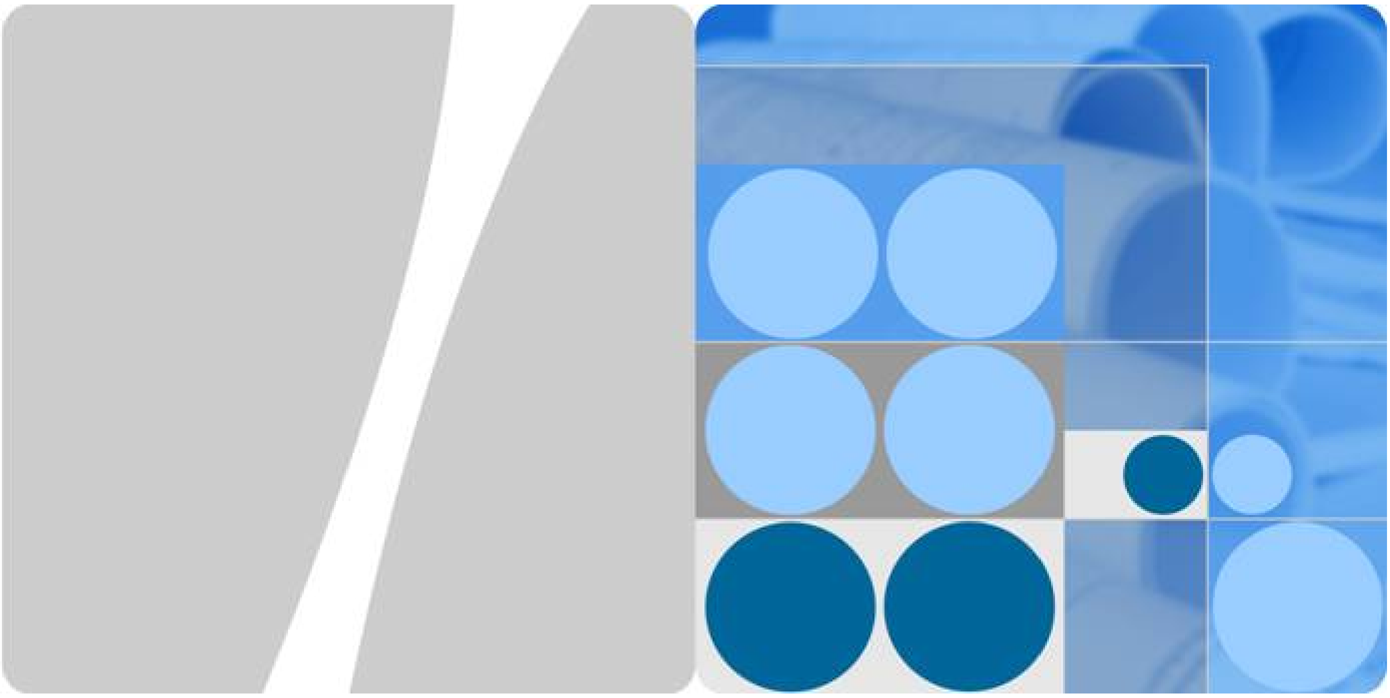


Virtual Private Network

User Guide

Date 2022-08-15

Contents

1 Overview

1.1 Virtual Private Network

Overview

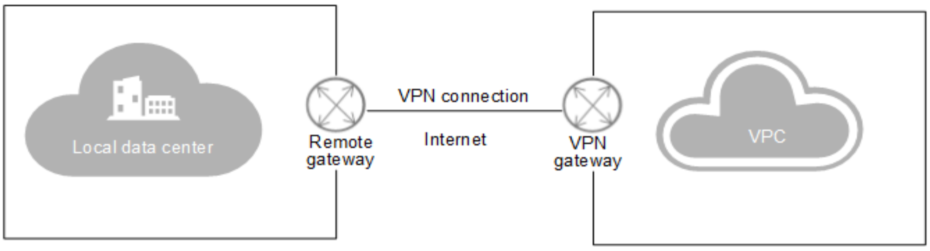
A Virtual Private Network (VPN) establishes an encrypted, Internet-based communications tunnel between your on-premises data center and a Virtual Private Cloud (VPC). With VPN, you can connect to a VPC and access the resources deployed there from your data center.

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

A VPN consists of a VPN gateway and one or more VPN connections. A VPN gateway provides an Internet egress for a VPC and works together with the remote gateway in an on-premises data center. A VPN connection uses the Internet-based encryption technology to connect a VPN gateway and a remote gateway to establish cross-premises connectivity between your data center and your VPC. The VPN connection allows you to quickly build secure hybrid cloud environment.

Figure 1-1 shows the VPN networking.

Figure 1-1 VPN networking



Components

- **VPN Gateway**

A VPN gateway is an egress gateway of a VPC. With a VPN gateway, you can establish secure, reliable, and encrypted connectivity between a VPC and an on-premises data center or between two VPCs in different regions.

A VPN gateway works together with the gateway in an on-premises data center, that is the remote gateway. Each data center must have a remote gateway, and each VPC must have a VPN gateway. The VPN service allows you to set up point-to-point VPN connections or VPN connections from one point to multiple points. A VPN gateway can connect to one or more remote gateways.

- **VPN Connection**

  A VPN connection uses the Internet-based IPsec encryption technology to establish a secure and reliable communications tunnel between a VPN gateway and the remote gateway in your data center. Only IPsec VPN connections are supported.

  VPN connections use IKE and IPsec protocols to encrypt and safely transmit data over the Internet. VPN is more cost-effective than other connection options such as Direct Connect.

1.2 Application Scenarios

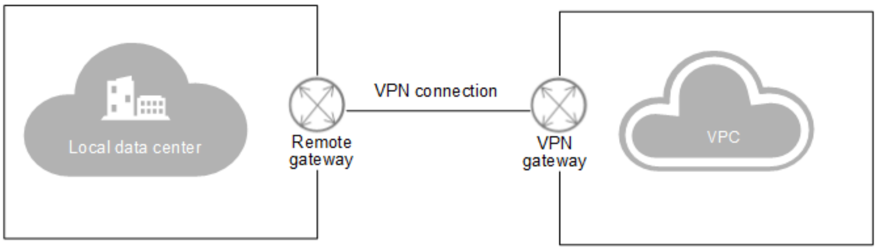
With the VPN between the VPC and your data center, you can easily use the ECSs and block storage resources on the cloud. Applications can be migrated to the cloud and additional web servers can be deployed to increase the computing capacity on a network. In this way, a hybrid cloud is built, which reduces IT O&M costs and protects enterprise core data from being leaked.

The VPN service allows you to set up site-to-site VPN connections or VPN connections from one site to multiple sites.

Site-to-site VPN connection

You can set up a VPN to connect a local data center to a VPC, thus building a hybrid cloud. **Figure 1-2** shows a site-to-site VPN connection.

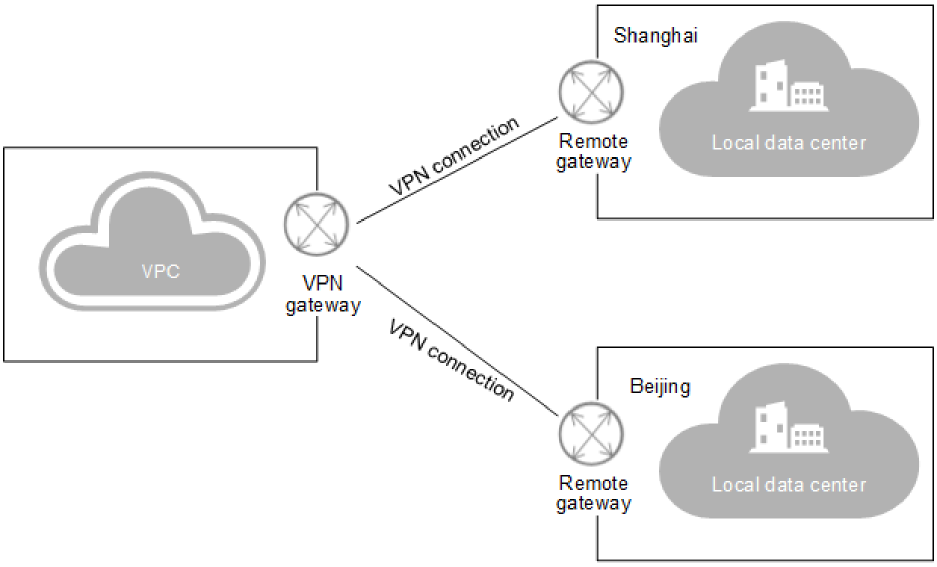
Figure 1-2 Site-to-site VPN connection



VPN connection from one site to multiple sites

You can also set up a VPN to connect multiple data centers to a VPC, thus building a hybrid cloud. **Figure 1-3** shows a VPN connection from one site to multiple sites.

Figure 1-3 VPN connection from one site to multiple sites



NOTE

The subnet CIDR blocks of each site involved in the VPN connection cannot overlap.

1.3 Reference Standards and Protocols

The following standards and protocols are associated with the IPsec VPN:

- RFC 4301: Security Architecture for the Internet Protocol
- RFC 2403: The Use of HMAC-MD5-96 within ESP and AH
- RFC 2409: The Internet Key Exchange (IKE)
- RFC 2857: The Use of HMAC-RIPEMD-160-96 within ESP and AH
- RFC 3566: The AES-XCBC-MAC-96 Algorithm and its use with IPsec
- RFC 3625: More Modular Exponential (MODP) Diffie-Hellman groups for Internet Key Exchange (IKE)
- RFC 3664: The AES-XCBC-PRF-128 Algorithm for the Internet Key Exchange Protocol (IKE)
- RFC 3706: A Traffic-Based Method of Detecting Dead Internet Key Exchange (IKE) Peers
- RFC 3748: Extensible Authentication Protocol (EAP)
- RFC 3947: Negotiation of NAT-Traversal in the IKE
- RFC 4109: Algorithms for Internet Key Exchange version 1 (IKEv1)
- RFC 3948: UDP Encapsulation of IPsec ESP Packets
- RFC 4305: Cryptographic Algorithm Implementation Requirements for Encapsulating Security Payload (ESP) and Authentication Header (AH)
- RFC 4306: Internet Key Exchange (IKEv2) Protocol
- RFC 4307: Cryptographic Algorithms for Use in the Internet Key Exchange Version 2 (IKEv2)

- RFC 4322: Opportunistic Encryption using the Internet Key Exchange (IKE)
- RFC 4359: The Use of RSA/SHA-1 Signatures within Encapsulating Security Payload (ESP) and Authentication Header (AH)
- RFC 4434: The AES-XCBC-PRF-128 Algorithm for the Internet Key Exchange Protocol (IKE)
- RFC 4478: Repeated Authentication in Internet Key Exchange (IKEv2)
- RFC 5996: Internet Key Exchange Protocol Version 2 (IKEv2)

1.4 Permissions Management

If you need to assign different permissions to employees in your enterprise to access your cloud 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 secure access to your cloud service resources.

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

If your account does not need individual IAM users for permissions management, skip this section.

IAM can be used free of charge. You pay only for the resources in your account.

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

VPN 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 based on the permissions.

VPN is a project-level service deployed in specific physical regions. To assign VPN 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 VPN, the users need to switch to a region where they have been authorized to use this service.

Table 1-1 lists all system-defined roles supported by VPN.

Table 1-1 System-defined roles supported by VPN

Role	Description	Dependencies
VPN Administrator	All operations on VPN resources. To be granted this permission, users must also have the **Tenant Guest** and **VPC Administrator** permissions.	**Tenant Guest** and **VPC Administrator** ● **VPC Administrator**: project-level policy, which must be assigned in the same project as the **VPN Administrator** ● **Tenant Guest**: project-level policy, which must be assigned in the same project as the **VPN Administrator**

Table 1-2 lists the common operations supported by each system-defined policy of VPN. Select the permissions as needed.

Table 1-2 Common operations supported by **VPN Administrator**

Operation	VPN Administrator
Creating a VPN gateway	√
Viewing a VPN gateway	√
Modifying a VPN gateway	√
Deleting a VPN gateway	√
Creating a VPN connection	√
Viewing a VPN connection	√
Modifying a VPN connection	√
Deleting a VPN connection	√

Helpful Links

- **What Is IAM?**
- **Creating a User and Granting VPN Permissions**

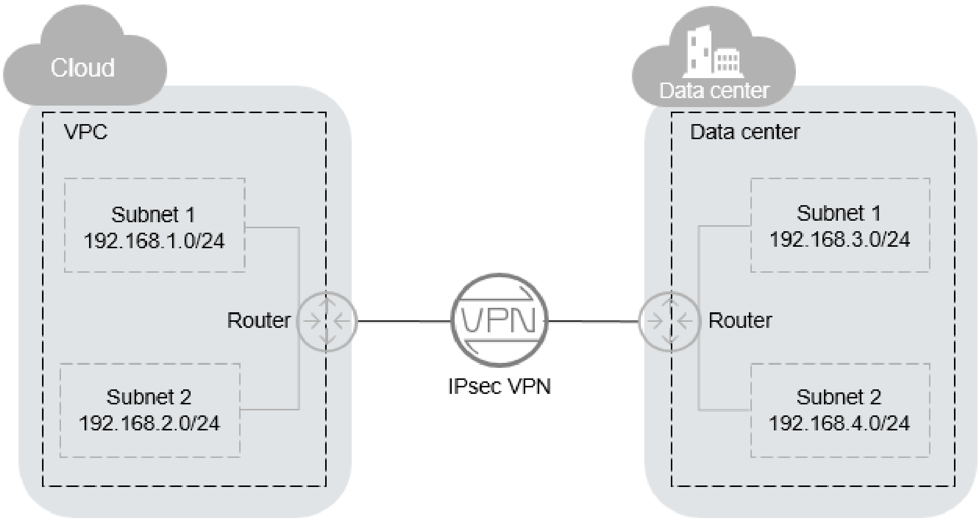
1.5 Basic Concepts

1.5.1 IPsec VPN

The Internet Protocol Security (IPsec) VPN is an encrypted tunneling technology that can establish confidential and secure communications tunnels between different networks.

In **Figure 1-4**, the VPC has subnets 192.168.1.0/24 and 192.168.2.0/24. Your on-premises data center has subnets 192.168.3.0/24 and 192.168.4.0/24. You can create a VPN to enable subnets in your VPC to communicate with those in your data center.

Figure 1-4 IPsec VPN



Both site-to-site and hub-and-spoke VPNs are supported. You need to set up VPNs in both your on-premises data center and the VPC to establish the VPN connection.

Ensure that the Internet Key Exchange (IKE) and IPsec policies at both ends of the VPN are the same. Your device should comply with IPsec standards and protocols.

1.5.2 Region and AZ

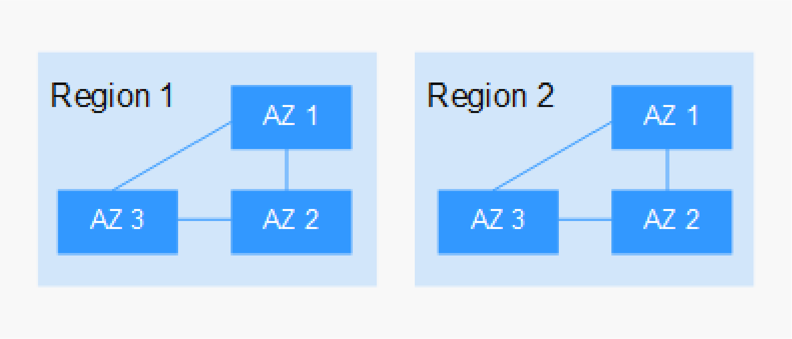
Concept

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

- A region is a physical data center, which is completely isolated to improve fault tolerance and stability. The region that is selected during resource creation cannot be changed after the resource is created.
- An AZ is a physical location where resources use independent power supplies and networks. A region contains one or more AZs that are physically isolated but interconnected through internal networks. Because AZs are isolated from each other, any fault that occurs in one AZ will not affect others.

Figure 1-5 shows the relationship between regions and AZs.

Figure 1-5 Regions and AZs



Selecting a Region

Select a region closest to your target users for lower network latency and quick access.

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

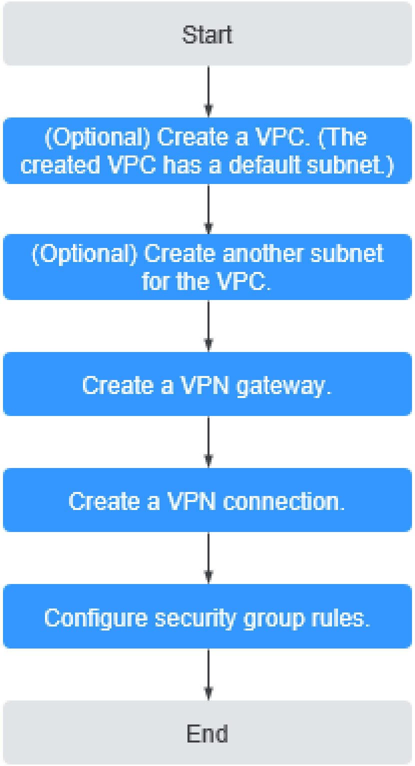
Before you use an API to call resources, specify its region and endpoint. For more details, see **Regions and Endpoints**.

2 Getting Started

2.1 Process Overview

By default, ECSs in a VPC cannot communicate with your on-premises network. To enable communications between them, use a VPN.

Figure 2-1 Flowchart


Start
(Optional) Create a VPC. (The created VPC has a default subnet.)
(Optional) Create another subnet for the VPC.
Create a VPN gateway.
Create a VPN connection.
Configure security group rules.
End

2.2 (Optional) Creating a VPC

Scenarios

A VPC provides an isolated virtual network for ECSs. You can configure and manage the network as required.

You can create a VPC by following the procedure provided in this section. Then, create subnets, security groups, and assign EIPs by following the procedure provided in subsequent sections based on your actual network requirements.

Procedure

1. Log in to the management console.
2. On the console homepage, under **Network**, click **Virtual Private Cloud**.
3. Click **Create VPC**.
4. On the **Create VPC** page, set parameters as prompted.

   A default subnet will be created together with a VPC and you can also click **Add Subnet** to create more subnets for the VPC.

   You can click **Advanced Settings** to configure advanced subnet parameters.

Table 2-1 VPC parameter descriptions

Parameter	Description	Example Value
Region	Regions are geographic areas that are physically isolated from each other. The networks inside different regions are not connected to each other, so resources cannot be shared across different regions. For low network latency and quick resource access, select the region nearest to your target users.	N/A
Name	The VPC name The name can contain a maximum of 64 characters, including only letters, digits, underscores (_), hyphens (-), and periods (.). Spaces are not allowed.	VPC-001

Parameter	Description	Example Value
CIDR Block	The CIDR block of the VPC. The CIDR block of a subnet can be the same as the CIDR block for the VPC (for a single subnet in the VPC) or a subset of the CIDR block for the VPC (for multiple subnets in the VPC). The following CIDR blocks are supported: 10.0.0.0 – 10.255.255.255 172.16.0.0 – 172.31.255.255 192.168.0.0 – 192.168.255.255	192.168.0.0/16
Enterprise Project	When creating a VPC, you can add the VPC to an enabled enterprise project. An enterprise project facilitates project-level management and grouping of cloud resources and users. The default project is **default**. For details about creating and managing enterprise projects, see the *Enterprise Management User Guide*.	default
Tag	The VPC tag, which consists of a key and value pair. You can add a maximum of ten tags to each VPC.	● Key: vpc_key1 ● Value: vpc-01

Table 2-2 Subnet parameter descriptions

Parameter	Description	Example Value
Name	The subnet name. The name can contain a maximum of 64 characters, including only letters, digits, underscores (_), hyphens (-), and periods (.). Spaces are not allowed.	Subnet
CIDR Block	The CIDR block for the subnet. This value must be within the VPC CIDR block.	192.168.0.0/24

Parameter	Description	Example Value
Advanced Settings	Click the drop-down arrow to set advanced settings for the subnet, including **Gateway** and **DNS Server Address**.	Default
Gateway	The gateway address of the subnet. This IP address is used to communicate with other subnets.	192.168.0.1
DNS Server Address	DNS server addresses allow ECSs in a VPC subnet to communicate with each other using private domain names. You can also directly access cloud services through private DNS servers. If you want to use other public DNS servers for resolution, you can change the default DNS server addresses.	100.125.x.x
DHCP Lease Time	The period during which a client can use an IP address automatically assigned by the DHCP server. After the lease time expires, a new IP address will be assigned to the client. Unit: Day/Hour If a DHCP lease time is changed, the new lease automatically takes effect when half of the current lease time has passed. To make the change take effect immediately, restart the ECS or log in to the ECS to cause the DHCP lease to automatically renew.	365

5. Confirm the current configuration and click **Create Now**.

2.3 (Optional) Creating a Subnet for the VPC

Scenarios

A VPC comes with a default subnet. If the default subnet cannot meet your requirements, you can create one.

The subnet is configured with DHCP by default. When an ECS using this VPC starts, the ECS automatically uses DHCP to obtain an IP address.

NOTE

The method to visit the subnet module varies by region.

- In some regions, you can perform operations on subnets on the **Subnets** tab of the VPC details page. This is used as the example of the operation procedure in this section.
- In some regions, under **Network** on the console homepage, click **Virtual Private Cloud**. On the displayed network console, click **Subnets** in the navigation pane on the left, then you can perform operations on the subnet.

Procedure

1. Log in to the management console.
2. On the console homepage, under **Network**, click **Virtual Private Cloud**.
3. In the navigation pane on the left, click **Virtual Private Cloud**.
4. On the **Virtual Private Cloud** page, locate the VPC for which a subnet is to be created and click the VPC name.
5. On the displayed **Subnets** tab, click **Create Subnet**.
6. Configure the required parameters.

Table 2-3 Parameter descriptions

Parameter	Description	Example Value
VPC	The VPC for which you want to create a subnet. This parameter is available only when **Subnets** is displayed in the navigation pane.	-
Name	The subnet name. The name can contain a maximum of 64 characters, including only letters, digits, underscores (_), hyphens (-), and periods (.). Spaces are not allowed.	Subnet
CIDR Block	The CIDR block for the subnet. This value must be within the VPC CIDR block.	192.168.0.0/24

Parameter	Description	Example Value
IPv4 CIDR Block	The CIDR block for the subnet. This value must be within the VPC CIDR block. This parameter will be displayed if you have applied for the IPv6 OBT.	192.168.0.0/24
IPv6 CIDR Block	Specifies whether to enable IPv6. This parameter will be displayed if you have applied for the IPv6 OBT. After the IPv6 function is enabled, the system automatically assigns an IPv6 CIDR block to the created subnet. Currently, the IPv6 CIDR block cannot be customized. IPv6 cannot be disabled after the subnet is created.	-
Advanced Settings	Click the drop-down arrow to set advanced settings for the subnet, including **Gateway** and **DNS Server Address**.	Default
Gateway	The gateway address of the subnet. This IP address is used to communicate with other subnets.	192.168.0.1
DNS Server Address	DNS server addresses allow ECSs in a VPC subnet to communicate with each other using private domain names. You can also directly access cloud services through private DNS servers. If you want to use other public DNS servers for resolution, you can change the default DNS server addresses.	100.125.x.x
DHCP Lease Time	The period during which a client can use an IP address automatically assigned by the DHCP server. After the lease time expires, a new IP address will be assigned to the client. Unit: Day/Hour If a DHCP lease time is changed, the new lease automatically takes effect when half of the current lease time has passed. To make the change take effect immediately, restart the ECS or log in to the ECS to cause the DHCP lease to automatically renew.	365

7. Click **OK**.

Notes

When a subnet is created, there are five reserved IP addresses, which cannot be used. For example, in a subnet with CIDR block 192.168.0.0/24, the following IP addresses are reserved:

- 192.168.0.0: Network ID. This address is the beginning of the private IP address range and will not be assigned to any instance.
- 192.168.0.1: Gateway address.
- 192.168.0.253: Reserved for the system interface. This IP address is used by the VPC for external communication.
- 192.168.0.254: DHCP service address.
- 192.168.0.255: Network broadcast address.

If you set **Advanced Settings** to **Custom** during subnet creation, the reserved IP addresses may be different from the default ones, but there will still be five of them. The specific addresses depend on your subnet settings.

2.4 Creating a VPN Gateway

Scenarios

To connect your ECSs in a VPC to your on-premises network, you must first create a VPN gateway.

Procedure

1. Log in to the management console.
2. Click 📍 in the upper left corner and select the desired region and project.
3. On the console homepage, under **Network**, click **Virtual Private Network**.
4. In the navigation pane on the left, choose **Virtual Private Network** > **VPN Gateways**.
5. On the **VPN Gateways** page, click **Create VPN Gateway**.
6. Configure the parameters as prompted and click **Next**. For details about the VPN gateway parameters, see **Table 2-4**.

Table 2-4 VPN gateway parameter description

Parameter	Description	Example Value
Region	Regions are geographic areas that are physically isolated from each other. The networks inside different regions are not connected to each other, so resources cannot be shared across different regions. For low network latency and quick resource access, select the region nearest to your target users.	N/A

Parameter	Description	Example Value
Name	The name of the VPN gateway	vpngw-001
VPC	The name of the VPC that the VPN connects to	vpc-001
Type	The VPN type **IPsec** is selected by default.	IPsec
Billed By	A pay-per-use VPN gateway can be billed by bandwidth or by traffic. ● **Bandwidth**: You specify a maximum bandwidth and pay for the amount of time you use the bandwidth. ● **Traffic**: You specify a maximum bandwidth and pay for the total traffic you generate.	Traffic
Bandwidth (Mbit/s)	The bandwidth (Mbit/s) of the VPN gateway. The bandwidth is shared by all VPN connections created for the VPN gateway. The total bandwidth size of all VPN connections created for a VPN gateway cannot exceed the VPN gateway bandwidth size.	100

Table 2-5 VPN connection parameter description

Parameter	Description	Example Value
Name	The VPN connection name	vpn-001
VPN Gateway	The name of the VPN gateway used by the VPN connection	vpcgw-001
Local Subnet	The VPC subnets that will access your on-premises network through a VPN ● **Select subnet**: Select the subnets that will access your on-premises network through a VPN. ● **Specify CIDR block**: Enter the CIDR blocks that will access your on-premises network through a VPN. **NOTE** CIDR blocks of local subnets cannot overlap.	192.168.1.0/24, 192.168.2.0/24

Parameter	Description	Example Value
Remote Gateway	The public IP address of the gateway in your on-premises network. This IP address is used for communications with your VPC.	N/A
Remote Subnet	The subnets of your on-premises network that will access a VPC through a VPN The remote and local subnets cannot overlap with each other. The remote subnet cannot overlap with CIDR blocks involved in existing VPC peering, Direct Connect, or Cloud Connect connections created for the local VPC. **NOTE** CIDR blocks of remote subnets cannot overlap.	192.168.3.0/24, 192.168.4.0/24
PSK	The pre-shared key, which can contain 6 to 128 characters PSKs configured at both ends of a VPN connection must be the same.	Test@123
Confirm PSK	Enter the pre-shared key again.	Test@123
Advanced Settings	● **Default**: uses default IKE and IPsec policies. ● **Custom**: uses custom IKE and IPsec policies. For details about the policies, see **Table 2-6** and **Table 2-7**.	Custom

Table 2-6 IKE policy

Parameter	Description	Example Value
Authentication Algorithm	The hash algorithm used for authentication, which can be **SHA1**, **SHA2-256** (default), **SHA2-384**, **SHA2-512**, or **MD5**	SHA2-256
Encryption Algorithm	The encryption algorithm, which can be **AES-128** (default), **AES-192**, **AES-256**, or **3DES** **3DES** is not recommended because it is not strong enough to protect data.	AES-128

Parameter	Description	Example Value
DH Algorithm	The Diffie-Hellman key exchange algorithm, which can be **Group 2**, **Group 5**, or **Group 14** The default algorithm is **Group 14**. DH algorithms configured at both ends of a VPN connection must be the same. Otherwise, the negotiation will fail.	Group 14
Version	The version of the IKE protocol, which can be **v1** or **v2** The default version is **v2**.	v2
Lifecycle (s)	The lifetime of the SA, in seconds. The SA will be renegotiated if its lifetime expires. The default lifecycle is **86400** seconds.	86400

Table 2-7 IPsec policy

Parameter	Description	Example Value
Authentication Algorithm	The hash algorithm used for authentication, which can be **SHA1**, **SHA2-256** (default), **SHA2-384**, **SHA2-512**, or **MD5**	SHA2-256
Encryption Algorithm	The encryption algorithm, which can be **AES-128** (default), **AES-192**, **AES-256**, or **3DES** **3DES** is not recommended because it is not strong enough to protect data.	AES-128
PFS	The perfect forward secrecy (PFS), which is used to configure the IPsec tunnel negotiation The PFS algorithm can be **DH group 2**, **DH group 5**, or **DH group 14**. The default algorithm is **DH group 14**.	DH group 14
Transfer Protocol	The security protocol used for IPsec to transmit and encapsulate user data, which can be **AH**, **ESP**, or **AH-ESP** The default protocol is **ESP**.	ESP

Parameter	Description	Example Value
Lifecycle (s)	The lifetime of the SA, in seconds. The SA will be renegotiated if its lifetime expires. The default lifecycle is **3600** seconds.	3600

7. Confirm the VPN gateway information and click **Submit**.

2.5 Creating a VPN Connection

Scenarios

To connect your ECSs in a VPC to your on-premises private network, you must create a VPN connection after a VPN gateway is obtained.

Procedure

1. Log in to the management console.
2. Click 📍 in the upper left corner and select the desired region and project.
3. On the console homepage, under **Network**, click **Virtual Private Network**.
4. In the navigation pane on the left, choose **Virtual Private Network** > **VPN Connections**.
5. On the **VPN Connections** page, click **Create VPN Connection**.
6. Configure the parameters as prompted and click **Next**. For details about the VPN connection parameters, see **Table 2-8**.

Table 2-8 VPN connection parameter description

Parameter	Description	Example Value
Region	Regions are geographic areas that are physically isolated from each other. The networks inside different regions are not connected to each other, so resources cannot be shared across different regions. For low network latency and quick resource access, select the region nearest to your target users.	N/A
Name	The VPN connection name	vpn-001
VPN Gateway	The name of the VPN gateway used by the VPN connection	vpcgw-001

Parameter	Description	Example Value
Local Subnet	The VPC subnets that will access your on-premises network through a VPN You can set the local subnet using either of the following methods: ● Select subnet ● Specify CIDR block **NOTE** CIDR blocks of local subnets cannot overlap.	192.168.1.0/24, 192.168.2.0/24
Remote Gateway	The public IP address of the gateway in your on-premises network. This IP address is used for communications with your VPC.	N/A
Remote Subnet	The subnets of your on-premises network that will access a VPC through a VPN The remote and local subnets cannot overlap with each other. The remote subnet cannot overlap with CIDR blocks involved in existing VPC peering, Direct Connect, or Cloud Connect connections created for the local VPC. **NOTE** CIDR blocks of remote subnets cannot overlap.	192.168.3.0/24, 192.168.4.0/24
PSK	The pre-shared key, a private key shared by two ends of a VPN connection for negotiation PSKs configured at both ends of the VPN connection must be the same. Enter 6 to 128 characters.	Test@123
Confirm PSK	Enter the pre-shared key again.	Test@123

Parameter	Description	Example Value
Advanced Settings	- **Default**: uses default IKE and IPsec policies. - **Existing**: uses existing IKE and IPsec policies. - **Custom**: including **IKE Policy** and **IPsec Policy**, which specifies the encryption and authentication algorithms of a VPN tunnel. For details about the policies, see **Table 2-9** and **Table 2-10**.	Custom

Table 2-9 IKE policy

Parameter	Description	Example Value
Authentication Algorithm	The hash algorithm used for authentication, which can be **SHA1**, **SHA2-256**, **SHA2-384**, **SHA2-512**, or **MD5** The default algorithm is **SHA2-256**.	SHA2-256
Encryption Algorithm	The encryption algorithm, which can be **AES-128**, **AES-192**, **AES-256**, or **3DES** **3DES** is not recommended because it is not strong enough to protect data. The default algorithm is **AES-128**.	AES-128
DH Algorithm	The Diffie-Hellman key exchange algorithm, which can be **Group 2**, **Group 5**, or **Group 14** The default algorithm is **Group 14**.	Group 14
Version	The version of the IKE protocol, which can be **v1** or **v2** The default version is **v2**.	v2
Lifecycle (s)	The lifetime of the SA, in seconds. The SA will be renegotiated if its lifetime expires. The default lifecycle is **86400** seconds.	86400

Table 2-10 IPsec policy

Parameter	Description	Example Value
Authentication Algorithm	The hash algorithm used for authentication, which can be **SHA1**, **SHA2-256**, **SHA2-384**, **SHA2-512**, or **MD5** The default algorithm is **SHA2-256**.	SHA2-256
Encryption Algorithm	The encryption algorithm, which can be **AES-128**, **AES-192**, **AES-256**, or **3DES** **3DES** is not recommended because it is not strong enough to protect data. The default algorithm is **AES-128**.	AES-128
PFS	The perfect forward secrecy (PFS), which is used to configure the IPsec tunnel negotiation The PFS algorithm can be **DH group 2**, **DH group 5**, or **DH group 14**. The default algorithm is **DH group 14**.	DH group 14
Transfer Protocol	The security protocol used for IPsec to transmit and encapsulate user data, which can be **AH**, **ESP**, or **AH-ESP** The default protocol is **ESP**.	ESP
Lifecycle (s)	The lifetime of the SA, in seconds. The SA will be renegotiated if its lifetime expires. The default lifecycle is **3600** seconds.	3600

NOTE

The IKE policy specifies the encryption and authentication algorithms to use in the negotiation phase of an IPsec tunnel. The IPsec policy specifies the protocol, encryption algorithm, and authentication algorithm to use in the data transmission phase of an IPsec tunnel. Settings of these parameters must be the same at both ends of the VPN connection. If they are different, the VPN connection cannot be set up.

7. Click **Submit**.

2.6 (Optional) Configuring Security Group Rules

2.6.1 Creating a Security Group

Scenarios

You can create security groups, define security group rules, and add ECSs in the VPC to the security groups, improving ECS access security. It is recommended that you allocate ECSs that have different Internet access policies to different security groups.

Procedure

1. Log in to the management console.
2. Click 📍 in the upper left corner and select the desired region and project.
3. On the console homepage, under **Network**, click **Virtual Private Cloud**.
4. In the navigation pane on the left, choose **Access Control** > **Security Groups**.
5. On the **Security Groups** page, click **Create Security Group**.
6. In the **Create Security Group** area, set the parameters as prompted. **Table 2-11** lists the parameters to be configured.

Table 2-11 Parameter descriptions

Parameter	Description	Example Value
Template	A template comes with default security group rules, helping you quickly create security groups. The following templates are provided: ● **Custom**: This template allows you to create security groups with custom security group rules. ● **General-purpose web server**: The security group that will be created using this template is for general-purpose web servers and includes default rules that allow all inbound ICMP traffic and allow inbound traffic on ports 22, 80, 443, and 3389. ● **All ports open**: The security group that will be created using this template includes default rules that allow inbound traffic on any port. Allowing inbound traffic on any port may pose security risks. Exercise caution when using this template.	General-purpose web server

Parameter	Description	Example Value
Name	Specifies the security group name. This parameter is mandatory. The name can contain a maximum of 64 characters, which may consist of letters, digits, underscores (_), hyphens (-), and periods (.). The name cannot contain spaces. **NOTE** You can change the security group name after a security group is created. It is recommended that you give each security group a different name.	sg-318b
Description	Provides supplementary information about the security group. This parameter is optional. The description can contain a maximum of 255 characters and cannot contain angle brackets (< or >).	-

7. Click **OK**.

2.6.2 Adding a Security Group Rule

Scenarios

After you create a security group, you can add rules to the security group. A rule applies either to inbound traffic or outbound traffic. After you add cloud resources to the security group, they are protected by the rules of the group.

- Inbound rules control incoming traffic to ECSs associated with the security group.
- Outbound rules control outgoing traffic from ECSs associated with the security group.

Procedure

1. Log in to the management console.
2. Click 📍 in the upper left corner and select the desired region and project.
3. On the console homepage, under **Network**, click **Virtual Private Cloud**.
4. In the navigation pane on the left, choose **Access Control** > **Security Groups**.
5. On the **Security Groups** page, locate the target security group and click **Manage Rule** in the **Operation** column to switch to the page for managing inbound and outbound rules.
6. On the **Inbound Rules** tab, click **Add Rule**. In the displayed dialog box, set required parameters.

   You can click **+** to add more inbound rules.

Table 2-12 Inbound rule parameter descriptions

Parameter	Description	Example Value
Protocol & Port	**Protocol**: specifies the network protocol. The option can be **All**, **TCP**, **UDP**, **ICMP**, or **GRE**.	Custom TCP
	Port: specifies the port or port range over which the traffic can reach your ECS. Ports 1 to 65535 are all allowed.	22, or 22-30
Source	Specifies the source of the security group rule. The source can be another security group or a single IP address. For example: ● xxx.xxx.xxx.xxx/32 (IPv4 address) ● xxx.xxx.xxx.0/24 (subnet CIDR block) ● 0.0.0.0/0 (any IP address) ● sg-abc (security group)	0.0.0.0/0
Description	(Optional) Provides supplementary information about the security group rule. The description can contain a maximum of 255 characters and cannot contain angle brackets (< or >).	N/A

7. On the **Outbound Rules** tab, click **Add Rule**. In the displayed dialog box, set required parameters.

   You can click **+** to add more outbound rules.

Table 2-13 Outbound rule parameter descriptions

Parameter	Description	Example Value
Protocol & Port	**Protocol**: specifies the network protocol. The option can be **All**, **TCP**, **UDP**, **ICMP**, or **GRE**.	Custom TCP
	Port: specifies the port or port range over which the traffic can leave your ECS. Supported range: 1 to 65535	22, or 22-30
Source	Specifies the source of the security group rule. The source can be another security group or a single IP address. For example: ● xxx.xxx.xxx.xxx/32 (IPv4 address) ● xxx.xxx.xxx.0/24 (subnet CIDR block) ● 0.0.0.0/0 (any IP address) ● sg-abc (security group)	0.0.0.0/0

Parameter	Description	Example Value
Description	(Optional) Provides supplementary information about the security group rule. The description can contain a maximum of 255 characters and cannot contain angle brackets (< or >).	N/A

8. Click **OK**.

3 Management

3.1 Managing VPN Connections

3.1.1 Viewing a VPN Connection

Scenarios

After creating a VPN connection, you can view details about your VPN connection.

Procedure

1. Log in to the management console.
2. Click 📍 in the upper left corner and select the desired region and project.
3. On the console homepage, under **Network**, click **Virtual Private Network**.
4. In the navigation pane on the left, choose **Virtual Private Network** > **VPN Connections**.
5. View all of your VPN connections on the **VPN Connections** page.
6. Locate the row that contains the target VPN connection, click **View Policy** in the **Operation** column to view IKE and IPsec policy details about the VPN connection.

3.1.2 Modifying a VPN Connection

Scenarios

A VPN connection is an encrypted communications channel established between the VPN gateway in your VPC and that in an external data center. You can modify a VPN connection when required.

Procedure

1. Log in to the management console.
2. Click 📍 in the upper left corner and select the desired region and project.
3. On the console homepage, under **Network**, click **Virtual Private Network**.
4. In the navigation pane on the left, choose **Virtual Private Network** > **VPN Connections**.
5. On the **VPN Connections** page, locate the row that contains the target VPN connection and click **Modify** in the **Operation** column.
6. In the displayed dialog box, configure the required parameters.
7. Click **OK**.

3.1.3 Deleting a VPN Connection

Scenarios

You can delete a VPN connection to release network resources if it is no longer required.

Procedure

1. Log in to the management console.
2. Click 📍 in the upper left corner and select the desired region and project.
3. On the console homepage, under **Network**, click **Virtual Private Network**.
4. In the navigation pane on the left, choose **Virtual Private Network** > **VPN Connections**.
5. On the **VPN Connections** page, locate the row that contains the target VPN connection and click **Delete** in the **Operation** column.
6. Click **Yes** in the displayed dialog box.

3.2 Managing VPN Gateways

3.2.1 Viewing a VPN Gateway

Scenarios

After creating a VPN gateway, you can view information about your VPN gateway.

Procedure

1. Log in to the management console.
2. Click 📍 in the upper left corner and select the desired region and project.
3. On the console homepage, under **Network**, click **Virtual Private Network**.
4. In the navigation pane on the left, choose **Virtual Private Network** > **VPN Gateways**.

5. View information about your VPN gateway on the **VPN Gateways** page.

3.2.2 Modifying a VPN Gateway

1. Log in to the management console.
2. Click 📍 in the upper left corner and select the desired region and project.
3. On the console homepage, under **Network**, click **Virtual Private Network**.
4. In the navigation pane on the left, choose **Virtual Private Network** > **VPN Gateways**.
5. On the **VPN Gateways** page, locate the row that contains the target VPN gateway, and choose **More** > **Modify Bandwidth** in the **Operation** column.

   You can also choose **More** > **Modify Basic Information**.
6. Modify the VPN gateway bandwidth, name, or description as required.
7. Click **OK**.

3.2.3 Deleting a VPN Gateway

Scenarios

You can delete a VPN gateway to release network resources if it is no longer required.

A VPN gateway cannot be deleted if it is being used by a VPN connection. You must delete the VPN connection before deleting the VPN gateway.

Procedure

1. In the navigation pane on the left, choose **Virtual Private Network** > **VPN Gateways**.
2. On the **VPN Gateways** page, locate the row that contains the target VPN gateway and click **Delete** in the **Operation** column.
3. Click **Yes** in the displayed dialog box.

3.3 Monitoring

3.3.1 Monitoring VPN

Monitoring is the key for ensuring VPN performance, reliability, and availability. Using monitored data, you can determine VPN resource usage. The cloud platform provides the Cloud Eye service to help you to obtain the running status of your VPNs. You can use Cloud Eye to automatically monitor VPNs in real time and manage alarms and notifications, so that you can keep track of VPN performance metrics.

3.3.2 Metrics

Description

This section describes monitored metrics reported by a VPN to Cloud Eye as well as their namespaces and dimensions. You can use the Cloud Eye management console to query the metrics of the monitored objects and alarms generated for the VPN.

Namespace

SYS.VPN

Metrics

Table 3-1 VPN connection status monitoring

Metric	Name	Description	Value Range	Monitored Object	Monitoring Interval (Raw Data)
connection_status	VPN connection status	Status of a VPN connection: 0: The VPN connection is not established. 1: The VPN connection has been established.	0 or 1	VPN connection	5 minutes

Dimensions

Key	Value
connection_id	VPN connection

3.3.3 Creating Alarm Rules

Scenarios

You can configure alarm rules to customize the monitored objects and notification policies and to learn VPN status at any time.

Procedure

1. Log in to the management console.
2. Click 📍 in the upper left corner and select the desired region and project.

3. On the console homepage, under **Management & Deployment**, click **Cloud Eye**.
4. In the left navigation pane, choose **Alarm Management** > **Alarm Rules**.
5. On the **Alarm Rules** page, click **Create Alarm Rule** and set required parameters to create an alarm rule, or modify an existing alarm rule.
6. After the parameters are set, click **Create**.

   After the alarm rule is set, the system automatically notifies you when an alarm is triggered.

   NOTE

   For more information about alarm rules of VPN, see the .

3.3.4 Viewing Metrics

Scenarios

View the usage of bandwidth and EIP.

Procedure

1. Log in to the management console.
2. Click 📍 in the upper left corner and select the desired region and project.
3. On the console homepage, under **Network**, click **Virtual Private Network**.
4. Locate the row that contains the target VPN gateway and click **View Metric** in the **Operation** column to check the bandwidth or EIP monitoring information.

   You can view data during the last one, three, or twelve hours.

3.4 Permissions Management

3.4.1 Creating a User and Granting VPN Permissions

This section describes how to use **IAM** to implement fine-grained permissions control for your VPN resources. With IAM, you can:

- Create IAM users for employees based on the organizational structure of your enterprise. Each IAM user has their own security credentials, providing access to VPN resources.
- Grant only the permissions required for users to perform a specific task.
- Entrust account or cloud service to perform professional and efficient O&M on your VPN resources.

If your account does not require individual IAM users, skip over this section.

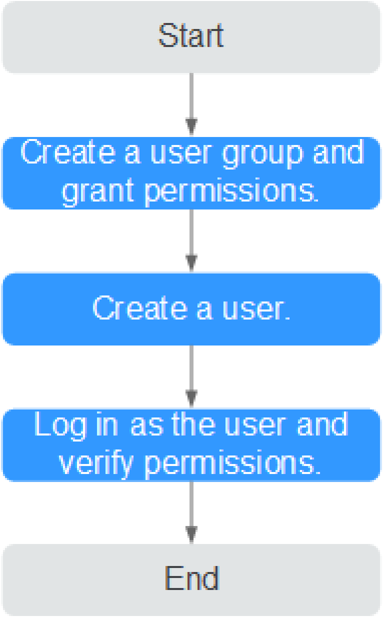
This section describes the procedure for granting permissions (see **Figure 3-1**).

Prerequisites

Learn about the permissions (see **Permissions Management**) supported by VPN. For system permissions of other cloud services, see **Permissions**.

Process Flow

Figure 3-1 Process for granting VPN permissions


Start
Create a user group and grant permissions.
Create a user.
Log in as the user and verify permissions.
End

1. **Create a user group and assign permissions to it**.

   Create a user group on the IAM console and attach the **VPN Administrator** policy to the group.

2. **Create an IAM user and add it to the user group**.

   Create a user on the IAM console and add the user to the group created in **1**.

3. **Log in** and verify permissions.

   Log in to the management console as the created user. Switch to the authorized region and verify the permissions.

   – Choose **Service List** > **Network** > **Virtual Private Network**. Then click **Buy VPN Gateway** in the upper right corner. If the VPN gateway is successfully created, the **VPN Administrator** policy has already taken effect.

   – Choose any other service in **Service List**. If a message appears indicating that you have insufficient permissions to access the service, the **VPN Administrator** policy has already taken effect.

3.5 Quotas

What Is Quota?

Quotas can limit the number or amount of resources available to users, such as the maximum number of ECSs or EVS disks that can be created.

If the existing resource quota cannot meet your service requirements, you can apply for a higher quota.

How Do I View My Quotas?

1. Log in to the management console.
2. Click 📍 in the upper left corner and select the desired region and project.
3. In the upper right corner of the page, click 📊 .

   The **Service Quota** page is displayed.
4. View the used and total quota of each type of resources on the displayed page.

   If a quota cannot meet service requirements, apply for a higher quota.

How Do I Apply for a Higher Quota?

1. Log in to the management console.
2. In the upper right corner of the page, choose **Resources** > **My Quotas**.

   The **Service Quota** page is displayed.
3. Click **Increase Quota**.
4. On the **Create Service Ticket** page, configure parameters as required.

   In **Problem Description** area, fill in the content and reason for adjustment.
5. After all necessary parameters are configured, select **I have read and agree to the Tenant Authorization Letter and Privacy Statement** and click **Submit**.

4 Best Practice

4.1 Connecting to a VPC Through a VPN

Scenarios

By default, ECSs in a VPC cannot communicate with your on-premises network. To enable communications between them, use a VPN. After a VPN is created, configure the security group and check the connectivity between the local and remote networks to ensure that the VPN is available. VPNs can be classified into the following two types:

- Site-to-site VPN: The local side is a VPC on the cloud service platform, and the remote side is a user data center. A site-to-site VPN is a communications tunnel between a user data center and a single VPC.
- Hub-and-spoke VPN: The local side is a VPC on the cloud service platform, and the remote side is user data centers. A hub-and-spoke VPN is a communications tunnel between user data centers and a VPC.

Ensure that the following requirements are met when configuring a VPN:

- The local and remote subnets cannot overlap.
- Different local subnets cannot overlap.
- IKE policies, IPsec policies, and PSK at both ends of the VPN must be the same.
- The local and remote subnet and gateway parameters must be matched pairs.
- The security group used by ECSs in the VPC allows traffic from and to the remote side.
- After a VPN is created, its status changes to **Normal** only after the VMs or physical servers on the two sides of the VPN communicate with each other.

Prerequisites

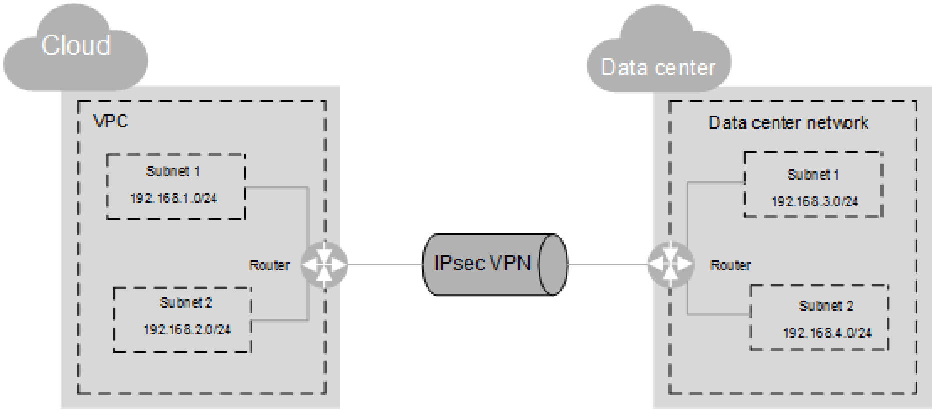
You have created the VPC and subnet required by the VPN.

Procedure

1. On the management console, select the appropriate IKE and IPsec policies to create a VPN.
2. Check the IP address pools for the local and remote subnets.

   In **Figure 4-1**, the VPC has subnets 192.168.1.0/24 and 192.168.2.0/24. Your on-premises data center has subnets 192.168.3.0/24 and 192.168.4.0/24. You can create a VPN to enable subnets in your VPC to communicate with those in your data center.

   Figure 4-1 IPsec VPN

   The IP address pools for the local and remote subnets cannot overlap with each other. For example, if the local VPC has two subnets, 192.168.1.0/24 and 192.168.2.0/24, the IP address pool for the remote subnets cannot contain these two subnets.
3. Configure security group rules for the VPC.
4. Check the security group of the VPC.

   The security group must allow packets from the VPN to pass. You can run the **ping** command to check whether the security group of the VPC allows packets from the VPN to pass.
5. Check the remote LAN configuration (network configuration of the remote data center).

   A route must be configured for the remote LAN to enable VPN traffic to be forwarded to network devices on the LAN. If the VPN traffic cannot be forwarded to the network devices, check whether the remote LAN has policies configured to refuse the traffic.

5 FAQs

5.1 Do IPsec VPNs Support Automatic Negotiation?

The IPsec VPN tunnel works in passive mode, which triggers automatic negotiation only when traffic sent by the local end passes through the tunnel.

5.2 What Do I Do If VPN Connection Setup Fails?

1. Check the IKE and IPsec policies to see whether the negotiation modes and encryption algorithms between the local and remote sides of the VPN are the same.
   a. If the IKE policy has been set up during phase one and the IPsec policy has not been enabled in phase two, the IPsec policies between the local and remote sides of the VPN may be inconsistent.
   b. If a Cisco physical device is used at your on-premises data center, it is recommended that you use MD5, and set **Authentication Mode** to **MD5** in the IPsec policy for the VPN created on the cloud.
2. Check whether the ACL configurations are correct.

   If the subnets of your data center are 192.168.3.0/24 and 192.168.4.0/24, and the VPC subnets are 192.168.1.0/24 and 192.168.2.0/24, configure the ACL rules for each data center subnet to allow the communications with the VPC subnets. The following provides an example of ACL configurations:

   ```
   rule 1 permit ip source 192.168.3.0 0.0.0.255 destination 192.168.1.0 0.0.0.255
   rule 2 permit ip source 192.168.3.0 0.0.0.255 destination 192.168.2.0 0.0.0.255
   rule 3 permit ip source 192.168.4.0 0.0.0.255 destination 192.168.1.0 0.0.0.255
   rule 4 permit ip source 192.168.4.0 0.0.0.255 destination 192.168.2.0 0.0.0.255
   ```
3. After the configuration is complete, ping the local and the remote side from each other to check whether the VPN connection is normal.

5.3 What Should I Do If I Cannot Access the ECSs on the Cloud from My Data Center or LAN Even If the VPN Has Been Set Up?

The security group denies the access from all sources by default. If you want to access your ECSs, modify the security group configuration and allow the access from the remote subnets.

5.4 What Should I Do If I Cannot Access My Data Center or LAN from the ECSs After a VPN Connection Has Been Set Up?

Check whether you have properly configured the firewall policies for the access from the public IP address of the cloud VPN to the public IP address of your data center or LAN. No policies are configured to limit the access by default.

5.5 Does a VPN Allow for Communication Between Two VPCs?

If the two VPCs are in the same region, you can use a VPC peering connection to enable communication between them.

If the two VPCs are in different regions, you can use a VPN to enable communication between the VPCs. The CIDR blocks of the two VPCs are the local and remote subnets, respectively.

5.6 What Is the Limitation on the Number of Local and Remote Subnets of a VPN?

- You can use VPN to connect up to 5 local subnets. The product of the number of local subnets and that of remote subnets cannot exceed 225.
- A VPC delivers VPC subnet routes based on the remote subnets of a VPN connection, remote subnets of a Direct Connect connection, and subnets of a VPC peering connection. Each subnet has one subnet route.
- The number of VPC subnet routes cannot exceed 200. That is, the total number of remote subnets of a VPN connection, remote subnets of a Direct Connect connection, subnets of a VPC peering connection, and custom routes in a VPC cannot exceed 200.

5.7 Why Is Not Connected Displayed as the Status for a Successfully Created VPN?

After a VPN is created, its status changes to **Normal** only after the VMs or physical servers on the two sides of the VPN communicate with each other.

- IKE v1:

  If no traffic goes through the VPN for a period of time, the VPN needs to be renegotiated. The negotiation time depends on the value of **Lifecycle (s)** in the IPsec policy. Generally, the value of **Lifecycle (s)** is **3600** (1 hour), indicating that the negotiation will be initiated in the fifty-fourth minute. If the negotiation succeeds, the connection remains to the next round of negotiation. If the negotiation fails, the status is set to be disconnected within one hour. The connection can be restored after the two sides of the VPN communicates with each other. The disconnection can be avoided by using a network monitoring tool, such as IP SLA, to generate packets.
- IKE v2: If no traffic goes through the VPN for a period of time, the VPN remains in the connected status.

5.8 How Long Is Required for Issued VPN Configurations to Take Effect?

The time required for VPN configurations to take effect increases linearly with the number obtained by multiplying the number of local subnets and that of remote subnets.

5.9 How Do I Configure a Remote Device for a VPN?

Due to the symmetry of the tunnel, the VPN parameters configured on the cloud must be the same as those configured in your own data center. If they are different, a VPN cannot be established.

To set up a VPN, you also need to configure the IPsec VPN on the router or firewall in your own data center. The configuration method may vary depending on your network device in use. For details, see the configuration guide of your network device.

This section describes how to configure the IPsec VPN on a Huawei USG6600 series V100R001C30SPC300 firewall for your reference.

For example, the subnets of the data center are 192.168.3.0/24 and 192.168.4.0/24, the subnets of the VPC are 192.168.1.0/24 and 192.168.2.0/24, and the public IP address of the IPsec tunnel egress in the VPC is *XXX.XXX.XX.XX*, which can be obtained from the local gateway parameters of the IPsec VPN in the VPC.

Procedure

1. Log in to the CLI of the firewall.

2. Check firewall version information.

```
display version
17:20:502017/03/09
Huawei Versatile Security Platform Software
Software Version: USG6600 V100R001C30SPC300 (VRP (R) Software, Version 5.30)
```

3. Create an access control list (ACL) and bind it to the target VPN instance.

```
acl number 3065 vpn-instance vpn64
rule 1 permit ip source 192.168.3.0 0.0.0.255 destination 192.168.1.0 0.0.0.255
rule 2 permit ip source 192.168.3.0 0.0.0.255 destination 192.168.2.0 0.0.0.255
rule 3 permit ip source 192.168.4.0 0.0.0.255 destination 192.168.1.0 0.0.0.255
rule 4 permit ip source 192.168.4.0 0.0.0.255 destination 192.168.2.0 0.0.0.255
q
```

4. Create an IKE proposal.

```
ike proposal 64
dh group5
authentication-algorithm sha1
integrity-algorithm hmac-sha2-256
sa duration 3600
q
```

5. Create an IKE peer and reference the created IKE proposal. The peer IP address is *x.x.x.x*.

```
ike peer vpnikepeer_64
pre-shared-key ******** (******** specifies the pre-shared key.)
ike-proposal 64
undo version 2
remote-address vpn-instance vpn64 x.x.x.x
sa binding vpn-instance vpn64
q
```

6. Create an IPsec protocol.

```
ipsec proposal ipsecpro64
encapsulation-mode tunnel
esp authentication-algorithm sha1
q
```

7. Create an IPsec policy and reference the IKE policy and IPsec proposal.

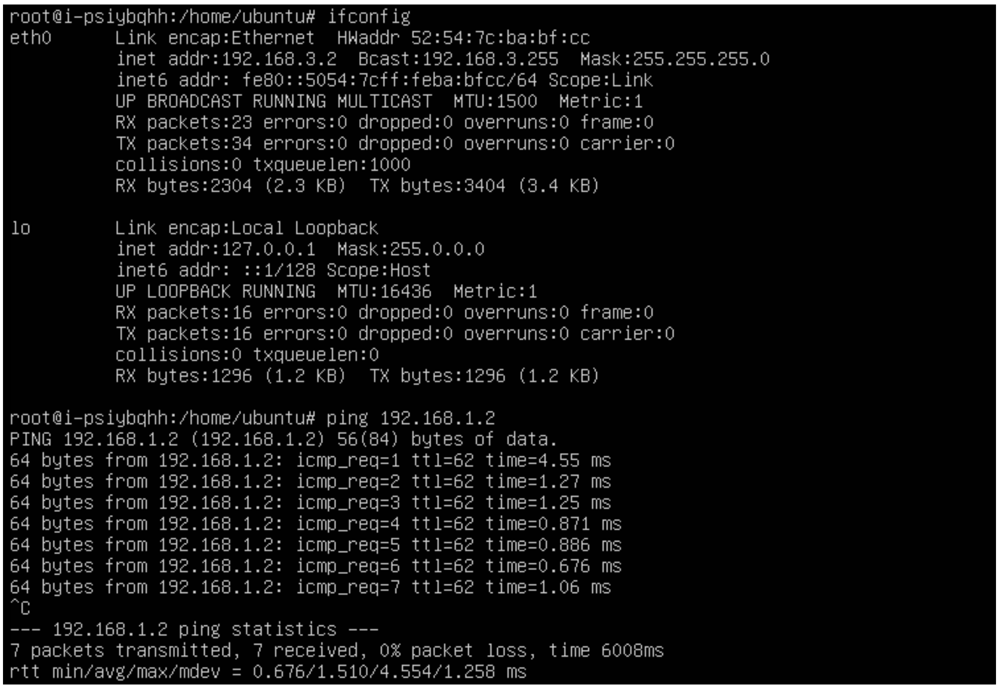
```
ipsec policy vpnipsec64 1 isakmp
security acl 3065
pfs dh-group5
ike-peer vpnikepeer_64
proposal ipsecpro64
local-address xx.xx.xx.xx
q
```

8. Apply the IPsec policy to the subinterface.

```
interface GigabitEthernet0/0/2.64
ipsec policy vpnipsec64
q
```

9. Test the connectivity.

   After you perform the preceding operations, you can test the connectivity between your ECSs in the cloud and the hosts in your data center. For details, see the following figure.



```
root@i-psiybqhh:/home/ubuntu# ifconfig
eth0      Link encap:Ethernet  HWaddr 52:54:7c:ba:bf:cc
          inet addr:192.168.3.2  Bcast:192.168.3.255  Mask:255.255.255.0
          inet6 addr: fe80::5054:7cff:feba:bfcc/64 Scope:Link
          UP BROADCAST RUNNING MULTICAST  MTU:1500  Metric:1
          RX packets:23 errors:0 dropped:0 overruns:0 frame:0
          TX packets:34 errors:0 dropped:0 overruns:0 carrier:0
          collisions:0 txqueuelen:1000
          RX bytes:2304 (2.3 KB)  TX bytes:3404 (3.4 KB)

lo        Link encap:Local Loopback
          inet addr:127.0.0.1  Mask:255.0.0.0
          inet6 addr: ::1/128 Scope:Host
          UP LOOPBACK RUNNING  MTU:16436  Metric:1
          RX packets:16 errors:0 dropped:0 overruns:0 frame:0
          TX packets:16 errors:0 dropped:0 overruns:0 carrier:0
          collisions:0 txqueuelen:0
          RX bytes:1296 (1.2 KB)  TX bytes:1296 (1.2 KB)

root@i-psiybqhh:/home/ubuntu# ping 192.168.1.2
PING 192.168.1.2 (192.168.1.2) 56(84) bytes of data.
64 bytes from 192.168.1.2: icmp_req=1 ttl=62 time=4.55 ms
64 bytes from 192.168.1.2: icmp_req=2 ttl=62 time=1.27 ms
64 bytes from 192.168.1.2: icmp_req=3 ttl=62 time=1.25 ms
64 bytes from 192.168.1.2: icmp_req=4 ttl=62 time=0.871 ms
64 bytes from 192.168.1.2: icmp_req=5 ttl=62 time=0.886 ms
64 bytes from 192.168.1.2: icmp_req=6 ttl=62 time=0.676 ms
64 bytes from 192.168.1.2: icmp_req=7 ttl=62 time=1.06 ms
^C
--- 192.168.1.2 ping statistics ---
7 packets transmitted, 7 received, 0% packet loss, time 6008ms
rtt min/avg/max/mdev = 0.676/1.510/4.554/1.258 ms
```

5.10 Which Remote VPN Devices Are Supported?

Most devices that meet IPsec VPN standard and reference protocol requirements can be used as the remote VPN devices, for example, Cisco ASA firewalls, Huawei USG6*xxxx* series firewalls, USG9*xxxx* series firewalls, Hillstone firewalls, and Cisco ISR routers. **Table 5-1** lists the supported Huawei USG6*xxxx* and USG9*xxxx* firewalls.

Table 5-1 Huawei VPN devices

Supported Remote VPN Device	Description
Huawei USG6000 series	USG6320/6310/6510-SJJ USG6306/6308/6330/6350/6360/6370/6380/6390/6507/6530/6550/6570:2048 USG6620/6630/6650/6660/6670/6680
Huawei USG9000 series	USG9520/USG9560/USG9580

Other devices that meet the requirements in the reference protocols described in section **Reference Standards and Protocols** can also be deployed. However, some devices may fail to add because of inconsistent protocol implementation methods of these devices. If the connection setup fails, rectify the fault by following the instructions provided in section **What Do I Do If VPN Connection Setup Fails?** or contact customer service.

5.11 What Should I Do If the VPN Connection Fails or the Network Speed of the VPN Connection Is Slow?

You can perform the following steps to handle the issues:

1. Check the ECS specifications. Rate limiting is not performed for the VPN ingress on the cloud, so the issue may be caused by the ECS specifications.
2. Rate limiting has been configured for the VPN egress on the cloud. Check whether your bandwidth has reached or exceeded the maximum limit allowed.
3. Check your local network to see whether the network speed is slow.
4. Check whether packets sent between the cloud and the customer data center have been lost.

5.12 Are SSL VPNs Supported?

Currently, the VPN service does not support the SSL VPNs.

A Change History

Release Date	Description
2022-08-15	This issue is the first official release.