

Elastic IP

User Guide

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1 Permissions Management

1.1 Creating a User and Granting EIP Permissions

Currently, the EIP service permissions are included in the VPC permissions. For details, see [Permissions Management](#).

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

- Create IAM users for personnel based on your enterprise's organizational structure. Each IAM user has their own identity credentials for accessing VPC resources.
- Grant users only the permissions required to perform a given task based on their job responsibilities.
- Entrust a cloud account or cloud service to perform efficient O&M on your VPC resources.

If your cloud account meets your permissions requirements, you can skip this section.

[Figure 1-1](#) shows the process flow for granting permissions.

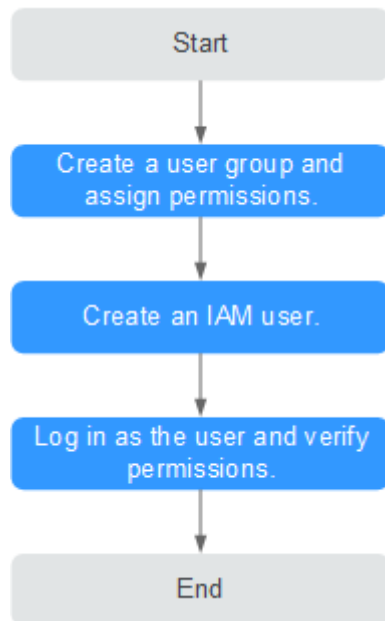
Prerequisites

Before granting permissions to user groups, learn about EIP [permissions](#).

To grant permissions for other services, learn about all [system-defined permissions](#) supported by IAM.

Process Flow

Figure 1-1 Process for granting EIP permissions



1. On the IAM console, **create a user group and grant it permissions**.
Create a user group on the IAM console and assign the **EIP ReadOnlyAccess** permissions to the group.
2. **Create an IAM user and add it to the created user group**.
Create a user on the IAM console and add the user to the group created in 1.
3. **Log in as the IAM user** and verify permissions.
In the authorized region, perform the following operations:
 - Choose **Service List > Elastic IP**. Then click **Buy EIP** on the EIP console. If a message appears indicating that you have insufficient permissions to perform the operation, the **EIP ReadOnlyAccess** policy is in effect.
 - Choose another service from **Service List**. If a message appears indicating that you have insufficient permissions to access the service, the **EIP ReadOnlyAccess** policy is in effect.

1.2 EIP Custom Policies

Custom policies can be created as a supplement to the system policies of EIP. For the actions supported for custom policies, see [Permissions Policies and Supported Actions](#).

You can create custom policies in either of the following ways:

- Visual editor: Select cloud services, actions, resources, and request conditions. This does not require knowledge of policy grammar.
- JSON: Create a JSON policy or edit an existing one.

For details, see [Creating a Custom Policy](#). The following section contains examples of common EIP custom policies.

Example Custom Policies

- Example 1: Grant permission to assign and view EIPs.

```
{
  "Version": "1.1",
  "Statement": [
    {
      "Effect": "Allow",
      "Action": [
        "vpc:publicips:create",
        "vpc:publicips:list"
      ]
    }
  ]
}
```

- Example 2: Grant permission to deny EIP deletion.

A policy with only "Deny" permissions must be used together with other policies. If the permissions granted to an IAM user contain both "Allow" and "Deny", the "Deny" permissions take precedence over the "Allow" permissions.

Assume that you want to grant the permissions of the **EIP FullAccess** policy to a user but want to prevent them from releasing EIPs. You can create a custom policy for denying EIP release, and attach both policies to the user. As an explicit deny in any policy overrides any allows, the user can perform all operations on EIPs except releasing them. Example policy denying EIP release:

```
{
  "Version": "1.1",
  "Statement": [
    {
      "Effect": "Deny",
      "Action": [
        "vpc:publicips:delete"
      ]
    }
  ]
}
```

- Example 3: Create a custom policy containing multiple actions.

A custom policy can contain the actions of one or multiple services that are of the same type (global or project-level). Example policy containing multiple actions:

```
{
  "Version": "1.1",
  "Statement": [
    {
      "Effect": "Allow",
      "Action": [
        "vpc:publicips:update",
        "vpc:publicips:create"
      ]
    },
    {
      "Effect": "Deny",
      "Action": [
        "vpc:publicips:delete"
      ]
    }
  ]
}
```

2 Elastic IP

2.1 EIP Overview

EIP

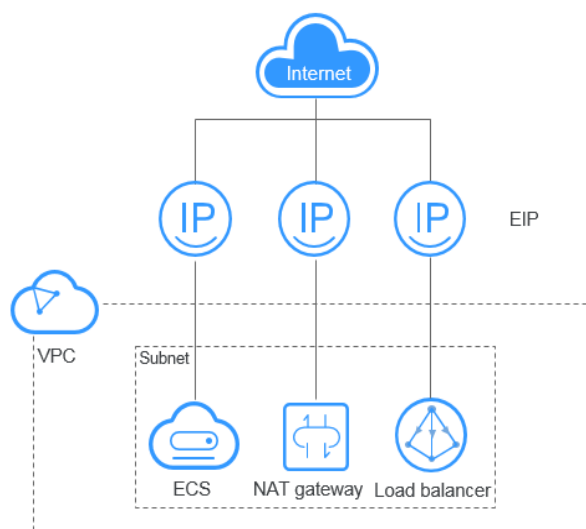
The Elastic IP (EIP) service enables your cloud resources to communicate with the Internet using static public IP addresses and scalable bandwidths. If a resource has an EIP bound, it can directly access the Internet. If a resource only has a private IP address, it cannot directly access the Internet.

EIPs can be bound to or unbound from ECSs, BMSs, virtual IP addresses, NAT gateways, or load balancers.

Each EIP can be bound to only one cloud resource.

You can use public NAT gateways to enable ECSs in the VPC to share an EIP to access or be accessed by the Internet. For details, see [Allowing a Private Network to Access the Internet Using SNAT](#).

Figure 2-1 Connecting to the Internet using an EIP



EIP Quotas

You can log in to the console to query your EIP quotas.

If you want to increase your quota, see [How Do I Apply for a Higher Quota?](#)

- Your request for a larger quota will only be approved if your account has valid orders and you are continuously using cloud resources. If you have released resources immediately after subscribing to them multiple times, your request for quota increase will be declined.
- If you have increased the EIP quota but you have not used the quota for a long time, Huawei Cloud will reduce the quota to the default value.

Constraints

- If a yearly/monthly EIP is not renewed after it expires, or if the arrears of a pay-per-use EIP are not paid in time, the EIP may be released and cannot be recovered.
- If the used EIP bandwidth exceeds the purchased size or is attacked (usually by a DDoS attack), the EIP will be blocked but can still be bound or unbound.
- Restrictions on binding or unbinding an EIP to or from an instance:
 - An EIP can be bound to only one cloud resource.
 - An EIP that has already been bound to a cloud resource cannot be bound to another resource without first being unbound from the current resource.
- The EIP remains unchanged:
 - No matter you start or stop the ECS.
 - When you modify its supported bandwidth.
 - When you modify its billing mode or supported bandwidth.

Binding an EIP to an Instance

Figure 2-2 Process for binding an EIP to an instance



Table 2-1 Process for binding an EIP to an instance

No.	Step	Description
1	Assigning an EIP	You can assign an EIP and bind it to cloud resources to allow them to access the Internet.
2	Binding an EIP to an Instance	<ul style="list-style-type: none">• The procedure for binding an EIP varies depending on the target instance.• The EIP and the instance to be bound must be in the same region.

Related Operations

Binding or Unbinding an EIP: After an EIP is assigned, you can bind it to cloud resources such as ECSs for Internet access.

Adding EIPs to or Removing EIPs from a Shared Bandwidth: After a shared bandwidth is assigned, you can add multiple pay-per-use EIPs to it so that all EIPs share the same bandwidth. Then, your network operation costs will be lowered and your system O&M as well as resource statistics will be simplified.

2.2 Assigning an EIP

Scenarios

You can assign an EIP and bind it to cloud resources to allow them to access the Internet. This section describes how to assign a new or specific EIP.

- By default, **new EIPs** are assigned at random.
 - If you assign a new EIP within 24 hours after releasing an EIP, the released EIP will be assigned first.
 - Other users can call APIs to assign the released EIP 24 hours after it is released.
- You can call APIs to **assign a specific EIP**.

Assigning a New EIP

1. Go to the **Buy EIP** page.
2. Configure parameters as prompted.

Table 2-2 Parameter descriptions

Item	Parameter	Description	Example Value
Basic Configuration	Billing Mode	The following options are available: <ul style="list-style-type: none">• Yearly/Monthly: You pay upfront for the amount of time you expect to use the instance. You need to make sure you have a valid payment method configured first.• Pay-per-use: You can start using the EIP first and then pay as you go. You are billed based on the EIP usage duration (by bandwidth) or used traffic (by traffic).	Pay-per-use

Item	Parameter	Description	Example Value
Basic Configuration	Region	The desired region. Resources in different regions cannot communicate with each other over internal networks. For low network latency and quick resource access, select the region nearest to where your services will be accessed. The region selected for the EIP is its geographical location.	-
Bandwidth Details	EIP Type	<ul style="list-style-type: none">• Dynamic BGP: Dynamic BGP provides automatic failover and chooses the optimal connection when a network connection fails.	Dynamic BGP
Bandwidth Details	Billed By	How the EIP bandwidth will be billed. This parameter is available only when you set Billing Mode to Pay-per-use . <ul style="list-style-type: none">• Bandwidth: You specify a maximum bandwidth and pay for the amount of time you use the bandwidth. This is suitable for scenarios with heavy or stable traffic.• Traffic: You specify a maximum bandwidth and pay for the total outbound traffic you use. This is suitable for scenarios with light or sharply fluctuating traffic.• Shared Bandwidth: The bandwidth can be shared by multiple EIPs and is suitable for scenarios with staggered traffic.	Bandwidth

Item	Parameter	Description	Example Value
Bandwidth Details	Bandwidth (Mbit/s)	The bandwidth size in Mbit/s.	100
Bandwidth Details	Bandwidth Name	The name of the bandwidth. The name: <ul style="list-style-type: none"> • Can contain 1 to 64 characters. • Can contain letters, digits, underscores (_), hyphens (-), and periods (.). 	bandwidth
DDoS Protection	DDoS Protection	Cloud Native Anti-DDoS Basic Cloud Native Anti-DDoS Basic provides up to a certain amount (for example, less than 5 Gbit/s) of DDoS mitigation capacity for free. The actual thresholds are displayed on the console. If the attack to an EIP exceeds the threshold, the EIP will be blocked.	-
EIP Details	EIP Name	The name of the EIP. The name: <ul style="list-style-type: none"> • Can contain 1 to 64 characters. • Can contain letters, digits, underscores (_), hyphens (-), and periods (.). 	eip-test
EIP Details	Enterprise Project	The enterprise project that the EIP belongs to. 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

Item	Parameter	Description	Example Value
EIP Details	Tag	Tags help you quickly identify, organize, and search for your EIPs. For more information about tags, see Managing EIP Tags .	<ul style="list-style-type: none">• Key: Ipv4_key1• Value: 3005eip
Monitoring	Monitoring	Basic monitoring is enabled by default. You can use the management console or APIs provided by Cloud Eye to query the metrics and alarms generated for the EIP and bandwidth.	-
Purchase Details	Required Duration	The duration for which the EIP will be used. The duration must be specified if the Billing Mode is set to Yearly/Monthly .	1 month
Purchase Details	Auto-renew	Whether to select Auto-renew . You can select it if the Billing Mode is set to Yearly/Monthly . The auto-renewal period is determined by the required duration. <ul style="list-style-type: none">• Monthly subscription: The subscription is renewed every month.• Yearly subscription: The subscription is renewed each year.	-
Purchase Details	Quantity	The number of EIPs you want to assign. The quantity must be specified if the Billing Mode is set to Pay-per-use .	1

 **NOTE**

- If you are buying an EIP billed on a pay-per-use basis and you want to use a shared bandwidth, you can only select an existing shared bandwidth from the **Bandwidth Name** drop-down list. If there is no shared bandwidth, create one first.
 - A dedicated bandwidth cannot be changed to a shared bandwidth and vice versa. However, you can purchase a shared bandwidth for pay-per-use EIPs.
 - Add an EIP to a shared bandwidth and then the EIP will use the shared bandwidth.
 - Remove the EIP from the shared bandwidth and then the EIP will use the dedicated bandwidth.
3. Click **Next**.
 4. On the confirmation page:
 - If you select **Pay-per-use** for **Billing Mode**, click **Submit**.
 - If you select **Yearly/Monthly** for **Billing Mode**, click **Pay Now**.On the payment page, confirm the order information, and click **Confirm**.

If you click **Buy Shared Bandwidth** when you buy an EIP, you also need to pay for the bandwidth.

Assigning a Specific EIP

If you want to retrieve an EIP that you have released within seven days (inclusive) or assign a specific EIP, you can use APIs.

You can set the value of **ip_address** to the one that you want to assign. For details, see [Elastic IP API Reference](#).

- If the EIP has been assigned to another user, you will fail to assign your required EIP.
- APIs cannot be used to assign the yearly/monthly EIP that you have released or assign a specific yearly/monthly EIP.
- The management console does not support assigning a specific EIP.

EIPs Not in the Current Region

- Method 1:
 - a. Go to the [EIP list](#) page.
 - b. In the upper left corner of the console, select the region that the EIP to be queried belongs to.
 - c. In the EIP list, view your EIPs.
- Method 2:
 - a. Go to the [My Resources](#) page.
 - b. On the **My Resources** page, set search criteria to quickly find the target EIP.
 - **Service: Virtual Private Cloud (VPC)**
 - **Resource Type: EIPs**

- **Region:** Retain the default value **All** or select the region that the EIP to be queried belongs to.
For example, if you select **All** for **Region**, all of your EIPs will be displayed.
- c. In the EIP list, view your EIPs.

Related Operations

Binding or Unbinding an EIP: After an EIP is assigned, you can bind it to cloud resources such as ECSs for Internet access.

Adding EIPs to or Removing EIPs from a Shared Bandwidth: After a shared bandwidth is assigned, you can add multiple pay-per-use EIPs to it so that all EIPs share the same bandwidth. This reduces network operations costs and simplifies system O&M statistics.

2.3 Modifying an EIP Bandwidth

Scenarios

No matter which billing mode is used, if your EIP is not added to a shared bandwidth, it uses a dedicated bandwidth. A dedicated bandwidth can control how much data can be transferred using a single EIP.

This section describes how to increase or decrease the dedicated bandwidth size. Changing bandwidth size does not change the EIPs.

When you change the bandwidth size, the bandwidth price and effective time depend on the billing mode, which applies to both dedicated and shared bandwidths. For details, see [Table 2-3](#).

NOTE

Decreasing bandwidths may cause packet loss.

Table 2-3 Impact on billing after bandwidth size change

Billing Mode	Billed By	Change	Impact
Yearly/ Monthly	Bandwidth	Increase bandwidth	The change will take effect immediately. The increased bandwidth will be billed accordingly.

Billing Mode	Billed By	Change	Impact
	Bandwidth	Decrease bandwidth upon renewal	<p>The change will not take effect immediately.</p> <p>You need to select a new bandwidth size and a renewal duration. The change will take effect in the first billing cycle after a successful renewal.</p> <ul style="list-style-type: none"> The order can be unsubscribed before the bandwidth takes effect. The bandwidth cannot be modified in the current billing cycle.
Pay-per-use	Bandwidth	Increase or decrease the bandwidth	<p>The change will take effect immediately.</p> <p>CAUTION The pay-per-use (billed by bandwidth) billing mode is based on the fixed bandwidth you purchased. If the actual bandwidth used exceeds the purchased one, no extra charges will apply, but the network quality may be affected. You are advised to plan the bandwidth based on actual service requirements.</p>
	Traffic	Increase or decrease the bandwidth	<p>The change will take effect immediately.</p> <p>The bandwidth size you set is only used to limit the maximum data transfer rate.</p>

Procedure

- Go to the [EIP list](#) page.
- Locate the target EIP and choose **More > Modify Bandwidth** in the **Operation** column.
 - If it is a pay-per-use EIP, the **Modify Bandwidth** page is displayed.
 - If it is a yearly/monthly EIP, select either of the following method to increase or decrease the bandwidth and click **Continue**.
 - Increase bandwidth
 - Decrease bandwidth
- Modify the bandwidth parameters as prompted.
- Click **Next**.
- Click **Submit**.

Helpful Links

- [How Do I Change the EIP Billing Option from Bandwidth to Traffic or from Traffic to Bandwidth?](#)
- [Can I Increase My Bandwidth Billed on Yearly/Monthly Basis and Then Decrease It?](#)

2.4 Binding or Unbinding an EIP

Scenarios

After EIPs are assigned, you can bind them to resources such as ECSs, BMSs, virtual IP addresses, NAT gateways, and load balancers to allow them to access the Internet.

If your instance no longer requires an EIP, you can unbind the EIP from it. To bind an EIP to a new instance, you need to first unbind it from the current one.

If you do not release the pay-per-use EIP after unbinding it, the EIP will be billed. For details, see [Releasing or Unsubscribing From an EIP](#).

Notes and Constraints

Binding an EIP

- An EIP can only be bound to an instance from its same region.
- An EIP can only be bound to an instance from its same account.
- An EIP cannot be bound to a frozen instance.

Unbinding an EIP

- An EIP cannot be unbound if its server is suspected of violations and the EIP is frozen by the national supervision department.

Binding an EIP to an Instance

Bind EIPs to resources such as ECSs, BMSs, virtual IP addresses, NAT gateways, and load balancers to allow them to access the Internet.

Binding an EIP to an ECS, BMS, or Virtual IP Address

1. In the EIP list, locate the row that contains the EIP, and click **Bind**.
2. Select the instance.
3. Click **OK**.

NOTE

To bind an instance to an EIP:

- If the instance is an ECS:
 - The ECS must be in the running or stopped status.
 - The ECS must be in the same region as that of the EIP.
 - The ECS has no EIP bound to it.
- If the instance is a virtual IP address:
 - The virtual IP address must be in the same region as that of the EIP.
 - The virtual IP address must be in the available or assigned status.
- If the instance is a BMS:

The BMS must be in the same region as that of the EIP.

Binding an EIP to a NAT Gateway

If you want to bind a NAT gateway to an EIP, the NAT gateway must be in the same region as that of the EIP. After an EIP is bound to a NAT gateway, ECSs associated with this gateway can share the EIP to access the Internet or provide services accessible from the Internet.

You can bind an EIP to a NAT gateway by configuring SNAT and DNAT rules for the gateway. For details, see [Allowing a Private Network to Access the Internet Using SNAT](#) and [Allowing Internet Users to Access a Service in a Private Network Using DNAT](#).

Binding an EIP to a Load Balancer

If you want to bind a load balancer to an EIP, the load balancer must be in the same region as that of the EIP. Then, the load balancer can receive requests over the Internet. For details, see "Binding or Unbinding an IPv4 EIP" in the *Elastic Load Balance User Guide*.

Unbinding an EIP from an Instance

If an EIP is no longer required, you can unbind it from your instance.

Unbinding an EIP from an ECS, BMS, or Virtual IP Address

Unbinding a single EIP

1. Go to the [EIP list](#) page.
2. On the displayed page, locate the row that contains the target EIP, and click **Unbind** in the **Operation** column.

A confirmation dialog box is displayed.

3. Click **Yes** in the displayed dialog box.

In the EIP list, the target EIP has no associated instance.

Unbinding multiple EIPs at a time

1. Go to the [EIP list](#) page.
2. On the displayed page, select the EIPs to be unbound.
3. In the upper left corner of the EIP list, click **Unbind**.

A confirmation dialog box is displayed.

4. Click **Yes** in the displayed dialog box.

In the EIP list, the target EIPs have no associated instances.

Unbinding an EIP from a NAT Gateway

You can unbind an EIP from a NAT gateway by deleting the SNAT and DNAT rules. For details, see [Deleting a DNAT Rule](#) and [Deleting an SNAT Rule](#).

Unbinding an EIP from a Load Balancer

You can unbind an EIP from a load balancer on the ELB console. For details, see section "Binding or Unbinding an IPv4 EIP" in the *Elastic Load Balance User Guide*.

 NOTE

If a pay-per-use EIP is unbound from an instance, the EIP will be billed to keep it allocated to your account unless it is released.

If an EIP billed by bandwidth is unbound from an instance, the bandwidth will continue to be billed.

No Instance Available for EIP Binding

- There are no instances available when you want to bind an instance to an EIP.
You have instances, but an EIP cannot be bound to any of them.
 - An EIP can only be bound to an instance from its same region.
 - An EIP can only be bound to an instance from its same account.
 - An EIP cannot be bound to a frozen instance.**There are no instances.**
[Create an ECS](#), [create a BMS](#), or [assign a virtual IP address](#).

2.5 Releasing or Unsubscribing From an EIP

Scenarios

If an EIP is no longer required, you can unbind it from your instance and release it if it is a pay-per-use EIP or unsubscribe from it if it is a yearly/monthly EIP. This section describes how to release or unsubscribe from an EIP.

Notes and Constraints

- An EIP that has been bound to an instance cannot be released or unsubscribed from.
- Yearly/Monthly EIPs can only be unsubscribed from.
If you no longer need a yearly/monthly resource, but the subscription has not yet expired, you can unsubscribe from it. Depending on what coupons were used for the purchase, Huawei Cloud may issue you a refund. For details about unsubscription rules, see [Unsubscriptions](#).
- An EIP cannot be released or unsubscribed if its server is suspected of violations and the EIP is frozen by the national supervision department.
- The system preferentially assigns EIPs to you from the ones you released or unsubscribed from, if any. However, if any of these EIPs is already assigned to another user, it cannot be re-assigned to you.
For details, see [Assigning a Specific EIP](#).

Releasing a Pay-per-Use EIP

1. Go to the [EIP list](#) page.
2. In the EIP list, locate the row that contains the EIP and choose **More > Release** in the **Operation** column.
A confirmation dialog box is displayed.
3. Click **OK** in the displayed dialog box.

You can find that the EIP is not in the EIP list.

Unsubscribing From a Yearly/Monthly EIP

1. Go to the [EIP list](#) page.
2. In the EIP list, locate the target EIP, and choose **More > Unsubscribe** in the **Operation** column. The unsubscription page is displayed.
3. Confirm the information and click **Confirm**. A confirmation dialog box is displayed.
4. Confirm the information and click **OK**.

You can find that the EIP is not in the EIP list.

You can also select multiple EIPs and choose **More > Unsubscribe** above the list to release EIPs. Only yearly/monthly EIPs can be unsubscribed from in batches.

Scenarios Where EIPs Cannot Be Released or Unsubscribed from

- An EIP has been bound to an instance.
Only EIPs that have no instances bound can be released or unsubscribed from. To release or unsubscribe from an EIP that has been bound to an instance, unbind it first. For details, see [Binding or Unbinding an EIP](#).
- Yearly/Monthly EIPs
Yearly/Monthly EIPs cannot be released. If you no longer need them, you can [unsubscribe](#) them.
- Frozen EIPs
An EIP cannot be released or unsubscribed if its server is suspected of violations and the EIP is frozen by the national supervision department. For details, see [Why My EIPs Are Frozen? How Do I Unfreeze My EIPs?](#)

2.6 Exporting EIP Information

Scenarios

The information of all EIPs under your account can be exported in an Excel file to a local directory. The file records the ID, status, type, bandwidth name, and bandwidth size of EIPs.

Procedure

1. Go to the [EIP list](#) page.
2. On the EIP list page, select one or more EIPs and click **Export** in the upper left corner.

The system will automatically export all EIPs to an Excel file and download the file to a local directory.

2.7 Managing EIP Tags

Scenarios

You can add tags to EIPs to help identify and manage them more easily. You can add a tag to an EIP when assigning the EIP. Alternatively, you can add a tag to an assigned EIP on the EIP details page. A maximum of 20 tags can be added to each EIP.

If your organization has created a tag policy for EIP, you need to add tags for EIP based on the tag policy. If a tag does not comply with the tagging rules, the EIP may fail to be created or the tag may fail to be added. Contact the organization administrator to learn more about the tag policy.

A tag consists of a key and value pair. [Table 2-4](#) lists the tag key and value requirements.

Table 2-4 EIP tag requirements

Parameter	Requirement	Example Value
Key	<ul style="list-style-type: none">• Cannot be left blank.• Must be unique for each EIP.• Can contain a maximum of 36 characters.• Can contain only the following character types:<ul style="list-style-type: none">- Uppercase letters- Lowercase letters- Digits- Special characters, including hyphens (-) and underscores (_)	ipv4_key1
Value	<ul style="list-style-type: none">• Can contain a maximum of 43 characters.• Can contain only the following character types:<ul style="list-style-type: none">- Uppercase letters- Lowercase letters- Digits- Special characters, including hyphens (-) and underscores (_)	eip-01

Procedure

Searching for EIPs by tag key and value on the EIP list page

1. Go to the [EIP list](#) page.
2. Click the search box above the EIP list.
3. Select the tag key and value of the EIP.
You can add multiple tag keys and values to refine your search results. If you add more than one tag to search for EIPs, the system will display only the EIPs that contain all of the tags you specified.
4. Click **OK**.
The system displays the EIPs you are looking for based on the entered tag keys and values.

Adding, deleting, editing, and viewing tags on the Tags tab of an EIP

1. Go to the [EIP list](#) page.
2. On the displayed page, locate the EIP whose tags you want to manage and click the EIP name.
3. On the page showing EIP details, click the **Tags** tab and perform desired operations on tags.
 - View tags.
On the **Tags** tab, you can view details about tags added to the current EIP, including the number of tags and the key and value of each tag.
 - Add a tag.
Click **Add Tag** in the upper left corner. In the displayed **Add Tag** dialog box, enter the tag key and value, and click **OK**.
 - Edit a tag.
Locate the row that contains the tag you want to edit, and click **Edit** in the **Operation** column. Enter the new tag value, and click **OK**.
The tag key cannot be modified.
 - Delete a tag.
Locate the row that contains the tag you want to delete, and click **Delete** in the **Operation** column. In the displayed dialog box, click **Yes**.

2.8 EIP Configuration Examples

2.8.1 Changing an EIP for an Instance

Scenarios

If you want to change an EIP for an ECS, a load balancer, a NAT gateway, or other cloud resources, you need to unbind the current EIP from the cloud resource first. Then, you can bind a new EIP to the cloud resource to enable Internet access for it.

Changing an EIP for a Cloud Resource

Figure 2-3 Process description



Table 2-5 Process description

No.	Procedure	Description
1	Unbind an EIP	After an EIP is unbound from a cloud resource, the cloud resource can have a new EIP bound for Internet access.
2	Assign a new EIP	If you already have an EIP that you require, skip this step.
3	Bind a new EIP	After a cloud resource has a new EIP bound, it can access the Internet using the new EIP.
4	Release the EIP that has been unbound	<ul style="list-style-type: none">• If an unbound EIP still needs to be used, skip this step.• If an unbound EIP is no longer required, you can release it.

Scenario 1: Unbinding an EIP from an ECS and Binding a New EIP to the ECS

1. Unbind an EIP.
 - a. Go to the [EIP list](#) page.
 - b. On the displayed page, locate the row that contains the target EIP, and click **Unbind** in the **Operation** column.
A confirmation dialog box is displayed.
 - c. Click **Yes** in the displayed dialog box.
In the EIP list, the target EIP has no associated instance.

NOTE

If you already have an EIP that you require, skip this step.

- a. Go to the [EIP list](#) page.
 - b. On the displayed page, click **Buy EIP**.
 - c. Configure parameters as prompted.
 - d. Click **Next**.
3. Bind the new EIP to the ECS.
 - a. Go to the [EIP list](#) page.
 - b. On the **EIPs** page, locate the target EIP, and click **Bind** in the **Operation** column.
 - c. Select the desired ECS.
 - d. Click **OK**.
 4. Release the EIP that is unbound.

NOTE

If an unbound EIP is no longer required, you can release it.

- a. Go to the [EIP list](#) page.
- b. In the EIP list, locate the row that contains the EIP and choose **More > Release** in the **Operation** column.
A confirmation dialog box is displayed.
- c. Click **OK** in the displayed dialog box.
You can find that the EIP is not in the EIP list.

Scenario 2: Unbinding an EIP from a Load Balancer and Binding a New EIP to the Load Balancer

1. Assign an EIP by referring to [2](#).

NOTE

If you already have an EIP that you require, skip this step.

2. Unbind an EIP from a load balancer and bind the new EIP to the load balancer.
 - a. Go to the [load balancer list page](#).
 - b. On the displayed page, locate the row that contains the load balancer and click **More** in the **Operation** column.
 - i. Unbinding an IPv4 EIP
 - 1) Click **Unbind IPv4 EIP**.
 - 2) In the displayed dialog box, confirm the IPv4 EIP that you want to unbind and click **OK**.
 - ii. Binding an IPv4 EIP
 - 1) Click **Bind IPv4 EIP**.
 - 2) In the **Bind IPv4 EIP** dialog box, select the EIP you want to bind to the load balancer and click **OK**.
3. Release the EIP that was replaced. For details, see [4](#).

NOTE

If an unbound EIP is no longer required, you can release it.

Scenario 3: Unbinding an EIP from a NAT Gateway and Binding a New EIP to the NAT Gateway

1. Assign an EIP by referring to [2](#).

NOTE

If you already have an EIP that you require, skip this step.

2. Modify an SNAT rule.
For details, see [Modifying an SNAT Rule](#). In the EIP list, select the new EIP and deselect the existing EIP.
3. Modify a DNAT rule.
For details, see [Modifying a DNAT Rule](#). Select the newly assigned EIP.
4. Release the EIP that was replaced. For details, see [4](#).

 NOTE

If an unbound EIP is no longer required, you can release it.

2.8.2 Binding an EIP to the Extended Network Interface of an ECS to Enable Internet Access

Scenarios

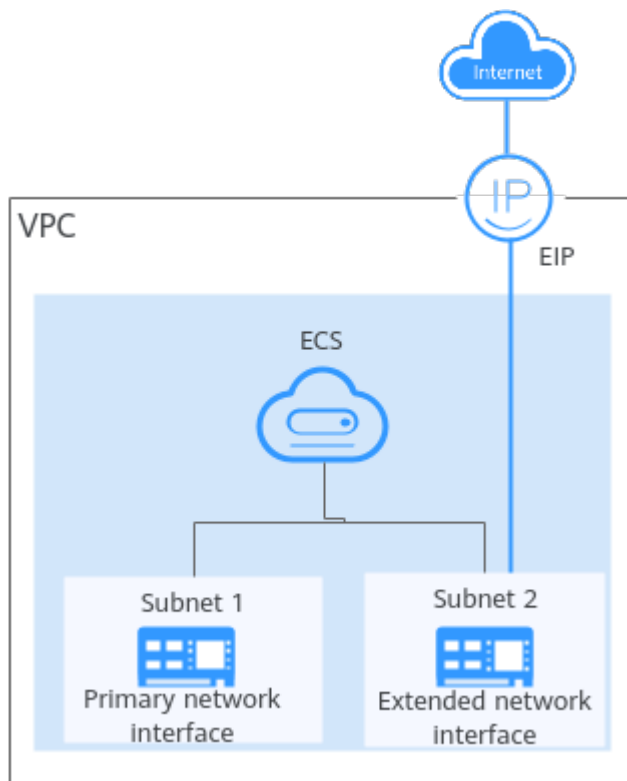
As shown in [Figure 2-4](#), the ECS has two network interfaces, one primary network interface and one extended network interface. You can bind an EIP to the extended network interface of the ECS and configure policy-based routes to ensure that the ECS can access the Internet through the EIP.

This section uses a Linux ECS as an example.

 CAUTION

- After the configuration, the ECS will access the Internet through the **EIP bound to the extended network interface** instead of the **EIP bound to the primary network interface**. The ECS will not be able to communicate with the Internet through the primary network interface, and the original network connection will be interrupted. Exercise caution when performing this operation.
 - Before performing the following operations, you need to configure policy-based routes for the ECS with multiple network interfaces to ensure that the primary and extended network interfaces of the ECS can communicate with external networks. For details, see [Configuring Policy-based Routes for an ECS with Multiple Network Interfaces](#).
-

Figure 2-4 Accessing the Internet through the EIP bound to the extended network interface



Step 1: Create Cloud Resources and Attach an Extended Network Interface

1. Create a VPC and two subnets in the VPC.
In this example, the primary and extended network interfaces of the ECS are in different subnets.
For details, see [Creating a VPC and Subnet](#).
2. Create an ECS in the VPC subnet.
For details, see [Purchasing an ECS in Custom Config Mode](#).
3. Create a network interface and attach it to the ECS as an extended network interface.
When creating a network interface, select a different subnet from where the primary network interface is created. For details, see [Creating a Network Interface](#).
Attach the network interface to the ECS. For details, see [Attaching a Network Interface to a Cloud Server](#).
4. Assign an EIP and bind it to the extended network interface of the ECS.
For details, see [Assigning an EIP](#).
Bind the EIP to the extended network interface of the ECS. For details, see [Binding an EIP to a Network Interface](#).

Step 2: Obtain the ECS Network Information

Before configuring policy-based routes for the extended network interface, you need to obtain the network information in [Table 2-6](#).

Table 2-6 Required ECS network information

Item	Primary Network Interface	Extended Network Interface
Private IP address of the network interface	192.168.11.42	192.168.17.191
Subnet gateway address	192.168.11.1	192.168.17.1

1. Obtain the private IP addresses of the ECS's network interfaces.
 - a. Go to the [ECS list](#) page.
 - b. In the ECS list, locate the target ECS and click its name.
The **Summary** tab page of the ECS is displayed.
 - c. Click the **Network Interfaces** tab and view the private IP addresses of the primary and extended network interfaces of the ECS.
2. Obtain the gateway address of the subnet.
 - a. Go to the [ECS list](#) page.
 - b. In the ECS list, locate the target ECS and click its name.
The **Summary** tab page of the ECS is displayed.
 - c. In the **ECS Information** area, click the VPC name.
The **Virtual Private Cloud** page is displayed.
 - d. In the VPC list and click the number in the **Subnets** column.
The **Subnets** page is displayed.
 - e. In the subnet list, click the subnet name.
The **Summary** page is displayed.
 - f. In the **Gateway and DNS Information** area, view the gateway address of the subnet.

Figure 2-5 Viewing the gateway address of the subnet

Step 3: Configure Policy-based Routes for the Extended Network Interface

1. ECS Remotely log in to the ECS.
For details, see [How Do I Log In to My ECS?](#)
2. Run the following command to query the route information of the network interface:

route -n

The following figure is displayed. In this figure:

- The destination of the route for the primary network interface is 192.168.11.0/24.
- The destination of the route for the extended network interface is 192.168.17.0/24.

```
[root@ecs-b926 ~]# route -n
Kernel IP routing table
Destination    Gateway         Genmask         Flags Metric Ref    Use Iface
0.0.0.0        192.168.11.1   0.0.0.0         UG    0     0     0 eth0
169.254.0.0    0.0.0.0        255.255.0.0     U    1002  0     0 eth0
169.254.0.0    0.0.0.0        255.255.0.0     U    1003  0     0 eth1
169.254.169.254 192.168.11.1  255.255.255.255 UGH   0     0     0 eth0
192.168.11.0   0.0.0.0        255.255.255.0   U    0     0     0 eth0
192.168.17.0   0.0.0.0        255.255.255.0   U    0     0     0 eth1
[root@ecs-b926 ~]#
```

3. Run the following command to query the network interface names of the ECS:

ifconfig

The following figure is displayed. Search for the network interface name based on the network interface address. In this figure:

- 192.168.11.42 is the IP address of the primary network interface, and the network interface name is eth0.
- 192.168.17.191 is the IP address of the extended network interface, and the network interface name is eth1.

```
[root@ecs-b926 ~]# ifconfig
eth0: flags=4163<UP,BROADCAST,RUNNING,MULTICAST> mtu 1500
    inet 192.168.11.42 netmask 255.255.255.0 broadcast 192.168.11.255
    inet6 fe80::f816:3eff:fe7:1c44 prefixlen 64 scopeid 0x20<link>
    ether fa:16:3e:f7:1c:44 txqueuelen 1000 (Ethernet)
    RX packets 127 bytes 21633 (21.1 KiB)
    RX errors 0 dropped 0 overruns 0 frame 0
    TX packets 250 bytes 22412 (21.8 KiB)
    TX errors 0 dropped 0 overruns 0 carrier 0 collisions 0

eth1: flags=4163<UP,BROADCAST,RUNNING,MULTICAST> mtu 1500
    inet 192.168.17.191 netmask 255.255.255.0 broadcast 192.168.17.255
    inet6 fe80::f816:3eff:fe1c:b57f prefixlen 64 scopeid 0x20<link>
    ether fa:16:3e:1c:b5:7f txqueuelen 1000 (Ethernet)
    RX packets 11 bytes 1283 (1.2 KiB)
    RX errors 0 dropped 0 overruns 0 frame 0
    TX packets 12 bytes 1388 (1.3 KiB)
    TX errors 0 dropped 0 overruns 0 carrier 0 collisions 0

lo: flags=73<UP,LOOPBACK,RUNNING> mtu 65536
    inet 127.0.0.1 netmask 255.0.0.0
    inet6 ::1 prefixlen 128 scopeid 0x10<host>
    loop txqueuelen 1 (Local Loopback)
    RX packets 51 bytes 12018 (11.7 KiB)
    RX errors 0 dropped 0 overruns 0 frame 0
    TX packets 51 bytes 12018 (11.7 KiB)
    TX errors 0 dropped 0 overruns 0 carrier 0 collisions 0
```

4. Configure the default route for the ECS so that it can access the Internet through the extended network interface.
 - a. Run the following command to delete the default route of the primary network interface:

```
route del -net 0.0.0.0 gw <subnet-gateway-IP-address> dev <network interface-name>
```

The parameters are described as follows:

- 0.0.0.0: destination IP address, indicating that multiple IP addresses are matched. Do not change the value.
- Subnet gateway IP address: Enter the subnet gateway address of the primary network interface collected in section [Table 2-6](#).
- Network interface name: Enter the name of the primary network interface obtained in [3](#).

Example command:

```
route del -net 0.0.0.0 gw 192.168.11.1 dev eth0
```

 **CAUTION**

This operation will interrupt the ECS traffic. Ensure that services will not be affected before deleting the default route of the primary network interface.

-
- b. Run the following command to configure the default route for the extended network interface:

```
route add default gw Subnet-gateway-IP-address
```

The parameters are described as follows:

Subnet gateway IP address: Enter the subnet gateway address of the extended network interface collected in section [Table 2-6](#).

Example command:

```
route add default gw 192.168.17.1
```

5. Verify network connectivity.

Run the following command to check whether the ECS can access the Internet:

```
ping Public-IP-address-or-domain-name
```

Example command:

```
ping support.huaweicloud.com
```

If information similar to the following is displayed, the ECS can communicate with the Internet.

```
[root@ecs-a01 ~]# ping support.huaweicloud.com
PING hcdnw.cbg-notzj.c.dnhwc2.com (203.193.226.103) 56(84) bytes of data:
64 bytes from 203.193.226.103 (203.193.226.103): icmp_seq=1 ttl=51 time=2.17 ms
64 bytes from 203.193.226.103 (203.193.226.103): icmp_seq=2 ttl=51 time=2.13 ms
64 bytes from 203.193.226.103 (203.193.226.103): icmp_seq=3 ttl=51 time=2.10 ms
64 bytes from 203.193.226.103 (203.193.226.103): icmp_seq=4 ttl=51 time=2.09 ms
...
--- hcdnw.cbg-notzj.c.dnhwc2.com ping statistics ---
4 packets transmitted, 4 received, 0% packet loss, time 3004ms
rtt min/avg/max/mdev = 2.092/2.119/2.165/0.063 ms
```

 **CAUTION**

The routes configured above are temporary. They take effect immediately but are lost after a cloud server restart.

3 IPv6 EIP

3.1 IPv6 EIP Overview

Overview

Both IPv4 and IPv6 EIPs are available. You can map an existing IPv4 EIP to an IPv6 EIP.

After the IPv6 EIP function is enabled, you will obtain both an IPv4 EIP and its corresponding IPv6 EIP. External IPv6 addresses can access cloud resources through this IPv6 EIP.

Application Scenarios of IPv4/IPv6 Dual Stack

If your ECS supports IPv6, you can use the IPv4/IPv6 dual stack. For details about application scenarios and resource planning, see [Table 3-1](#).

The ECS flavors that support IPv6 vary depending on regions and AZs. Check whether an ECS flavor supports IPv6 after you select a region and AZ on the management console.

If the value of **IPv6** is **Yes** for an ECS flavor, the flavor supports IPv6.

NOTE

AZ and **Flavor** determine whether IPv6 is supported.

After you select an AZ, if **IPv6** is not displayed or the value of **IPv6** is **No**, IPv6 is not supported by any or certain flavors in the AZ.

Table 3-1 Application scenarios of IPv4/IPv6 dual stack

Applicable Scenario	Description	Requirement	IPv4 or IPv6 Subnet	ECS
Private IPv4 communication	Your applications on ECSs need to communicate with other systems (such as databases) through private networks using IPv4 addresses.	<ul style="list-style-type: none"> No EIPs have been bound to the ECSs. 	IPv4 CIDR block	Private IPv4 address: used for private IPv4 communications.
Public IPv4 communication	Your applications on ECSs need to communicate with other systems (such as databases) through public IPv4 addresses.	<ul style="list-style-type: none"> EIPs have been bound to the ECSs. 	IPv4 CIDR block	<ul style="list-style-type: none"> Private IPv4 address: used for private IPv4 communications. Public IPv4 address: used for public IPv4 communications.

Applicable Scenario	Description	Requirement	IPv4 or IPv6 Subnet	ECS
Private IPv6 communication	Your applications on ECSs need to communicate with other systems (such as databases) through private IPv6 addresses.	<ul style="list-style-type: none"> • IPv6 has been enabled for the VPC subnet. • The network has been configured for the ECSs as follows: <ul style="list-style-type: none"> – Flavor: Any ECS flavor that supports the IPv6 network. For details, see Elastic Cloud Server User Guide. – VPC and Subnet: IPv6-enabled subnet and VPC. – Self-assigned IPv6 address: Selected. – Shared Bandwidth: Selected Do not configure. 	<ul style="list-style-type: none"> • IPv4 CIDR block • IPv6 CIDR block 	<ul style="list-style-type: none"> • Private IPv4 address + IPv4 EIP: Bind an IPv4 EIP to the instance to allow public IPv4 communications. • Private IPv4 address: Do not bind any IPv4 EIP to the instance and use only the private IPv4 address to allow private IPv4 communications. • IPv6 address: Do not configure shared bandwidth for the IPv6 address to allow private IPv6 communications.

Applicable Scenario	Description	Requirement	IPv4 or IPv6 Subnet	ECS
Public IPv6 communication	An IPv6 network is required for the ECS to access the IPv6 service on the Internet.	<ul style="list-style-type: none"> IPv6 has been enabled for the VPC subnet. The network has been configured for the ECSs as follows: <ul style="list-style-type: none"> VPC and Subnet: IPv6-enabled subnet and VPC. Self-assigned IPv6 address: Selected. Shared Bandwidth: Selected a shared bandwidth. <p>NOTE For details, see Setting Up an IPv6 Network.</p>	<ul style="list-style-type: none"> IPv4 CIDR block IPv6 CIDR block 	<ul style="list-style-type: none"> Private IPv4 address + IPv4 EIP: Bind an IPv4 EIP to the instance to allow public IPv4 communications. Private IPv4 address: Do not bind any IPv4 EIP to the instance and use only the private IPv4 address to allow private IPv4 communications. IPv6 address + shared bandwidth: Allow both private IPv6 communications and public IPv6 communications.

For details, see [IPv4 and IPv6 Dual-Stack Network](#).

Application Scenarios of IPv6 EIP

If you want an ECS to provide IPv6 services but the ECS does not support IPv6 networks or you do not want to build an IPv6 network, you can use IPv6 EIP to

quickly address your requirements. For details about application scenarios and resource planning, see [Table 3-2](#).

Table 3-2 Application scenarios and resource planning of an IPv6 EIP network (with IPv6 EIP enabled)

Applicable Scenario	Description	Requirement	IPv4 or IPv6 Subnet	ECS
Public IPv6 communication	You want to allow an ECS to provide IPv6 services for clients on the Internet without setting up an IPv6 network.	<ul style="list-style-type: none">EIPs have been bound to the ECSs.IPv6 EIP has been enabled.	IPv4 CIDR block	<ul style="list-style-type: none">Private IPv4 address: used for private IPv4 communications.IPv4 EIP (with IPv6 EIP enabled): used for public network communications through IPv4 and IPv6 addresses.

3.2 Enabling or Disabling IPv6 EIP

Scenarios

If your applications deployed on an ECS need to provide services through IPv6 addresses but the ECS does not support IPv6 networks and you do not want to build an IPv6 network either, you can use the IPv6 EIP function to quickly meet your requirements.

Enabling IPv6 EIP

- Method 1:
Assign an EIP with **IPv6 EIP** enabled by referring to section [Assigning an EIP](#). After the IPv6 EIP function is enabled, you will obtain both an IPv4 EIP and an IPv6 EIP. External IPv6 addresses can access cloud resources through this IPv6 EIP.
- Method 2:
If you want an IPv6 EIP in addition to an existing IPv4 EIP, locate the row that contains the target IPv4 EIP, click **More** in the **Operation** column, and select **Enable IPv6 EIP**. Then, a corresponding IPv6 EIP will be assigned.
After the IPv6 EIP function is enabled, you will obtain both an IPv4 EIP and an IPv6 EIP. External IPv6 addresses can access cloud resources through this IPv6 EIP.

 NOTE

- Only dynamic BGP EIPs support the IPv6 EIP function.
- There is no adverse impact on the cloud resources bound with existing IPv4 EIPs.

Configuring Security Groups

After the IPv6 EIP function is enabled, you need to configure security group rules to allow traffic to and from 198.19.0.0/16. For details about the security group rules, see [Table 3-3](#). IPv6 EIP uses NAT64 to convert the source IP address in the inbound direction to an IPv4 address in the IP address range 198.19.0.0/16. The source port can be a random one, the destination IP address is the private IPv4 address of your local server, and the destination port remains unchanged.

For details, see [Virtual Private Cloud User Guide](#).

Table 3-3 Security group rules

Direction	Protocol	Source/Destination
Inbound	All NOTE Configure as required.	Source: 198.19.0.0/16
Outbound	All	Destination: 198.19.0.0/16

Disabling IPv6 EIP (Releasing an IPv6 EIP)

If you do not need an IPv6 EIP anymore, do as follows:

1. Configure security group rules to deny traffic to and from 198.19.0.0/16.
2. In the EIP list, locate the row that contains its corresponding IPv4 EIP, click **More** in the **Operation** column, and click **Disable IPv6 EIP**. Then, the IPv6 EIP will also be released.

You will only have the IPv4 EIP.

4 EIP Billing

4.1 Changing EIP Billing Mode

Scenarios

The EIP service provides multiple billing modes for you to select. You can change your EIP billing mode during the EIP usage period if necessary.

 **NOTE**

Changing the billing mode does not change EIPs or interrupt their use.

[Table 4-1](#) describes the details of changing EIP billing modes.

Table 4-1 EIP billing mode change description

Change	Description
From yearly/monthly to pay-per-use	<ul style="list-style-type: none">• An EIP billed on a yearly/monthly basis can be directly changed to be billed by bandwidth on a pay-per-use basis immediately or upon expiration.• An EIP billed on a yearly/monthly basis cannot be directly changed to be billed by traffic on a pay-per-use basis. To change this:<ol style="list-style-type: none">1. Change the EIP to be billed by bandwidth on a pay-per-use basis.2. Change the EIP to be billed by traffic on a pay-per-use basis. <p>The new billing mode takes effect only after the yearly/monthly subscription expires, if you want to change the EIP to be billed by bandwidth on a pay-per-use basis upon expiration. The new billing mode takes effect immediately, if you want to change the EIP to be billed by bandwidth on a pay-per-use basis immediately.</p>
From pay-per-use to yearly/monthly	<ul style="list-style-type: none">• An EIP that is billed by bandwidth on a pay-per-use basis can be directly changed to be billed on a yearly/monthly basis.• An EIP that is billed by traffic on a pay-per-use basis cannot be directly changed to be billed on a yearly/monthly basis. To change this:<ol style="list-style-type: none">1. Change the EIP to be billed by bandwidth on a pay-per-use basis.2. Change the EIP to be billed on a yearly/monthly basis. <p>The new billing mode takes effect immediately.</p>
<ul style="list-style-type: none">• From billing by traffic (pay-per-use) to billing by bandwidth (pay-per-use)• From billing by bandwidth (pay-per-use) to billing by traffic (pay-per-use)	<ul style="list-style-type: none">• An EIP billed by traffic on a pay-per-use basis can be directly changed to be billed by bandwidth on a pay-per-use basis.• An EIP billed by bandwidth on a pay-per-use basis can be directly changed to be billed by traffic on a pay-per-use basis. <p>The new billing mode takes effect immediately.</p>

Related Operations

The operation guides are as follows:

- [Yearly/Monthly to Pay-Per-Use](#)

- [Pay-per-Use to Yearly/Monthly](#)
- [Pay-per-Use EIPs: Billing Change Between By Traffic and By Bandwidth](#)

4.2 Renewing a Yearly/Monthly EIP

Scenarios

You can renew a yearly/monthly EIP to extend its expiration date.

If your yearly/monthly resource is expired and is not renewed, the resource enters the grace period. If you do not renew the yearly/monthly resource within the grace period, the resource enters a retention period after the grace period has expired. You cannot perform any operations on yearly/monthly resources that are in the grace or retention period. For example, you cannot change your bandwidth if it is in the grace period or retention period.

This section describes how to renew an EIP. Renewing EIPs does not change EIPs.

Procedure

1. Go to the [EIP list](#) page.
2. In the EIP list, renew a single EIP or multiple EIPs.
 - Renewing a single EIP:
Locate the row that contains the EIP, and choose **More > Renew** in the **Operation** column.
 - Renewing multiple EIPs at once:
 - i. Select the EIPs in the EIP list and click **Renew** in the upper left corner of the list.
 - ii. In the displayed dialog box, confirm the information and click **Yes**.
3. On the **Renew** page, set the following parameters:
 - **Renewal Duration**: Select a renewal period as required.
 - **Renewal Date**: The new renewal date may result in slightly different subscription lengths for different resources.
4. Click **Pay**.

5 Shared Bandwidth

5.1 Shared Bandwidth Overview

A shared bandwidth can be shared by multiple EIPs and controls the data transfer rate on these EIPs in a centralized manner. All ECSs and load balancers that have EIPs bound in the same region can share a bandwidth.

When you host a large number of applications on the cloud, if each EIP uses a bandwidth, a lot of bandwidths are required, which significantly increases bandwidth costs. If all EIPs share the same bandwidth, you can lower bandwidth costs and easily perform system O&M.

NOTE

A shared bandwidth cannot control how much data can be transferred using a single EIP. Data transfer rate on EIPs cannot be customized.

Advantages

- **Lowered Bandwidth Costs**
Region-level bandwidth sharing and multiplexing reduce bandwidth usage and O&M costs.
- **Flexible Operations**
You can add pay-per-use EIPs (except for **5_gray** EIPs of dedicated load balancers) to or remove them from a shared bandwidth regardless of the type of instances that they are bound to.
- **Flexible Billing Modes**
The yearly/monthly and pay-per-use billing modes are provided.

Methods of Using a Shared Bandwidth

You can use the shared bandwidth in either of the two ways shown in the following table.

Table 5-1 Methods of using a shared bandwidth

Description	Step
Method 1: Assign a shared bandwidth and add your pay-per-use EIPs to the bandwidth.	<ol style="list-style-type: none">1. Assigning a Shared Bandwidth2. Adding EIPs to or Removing EIPs from a Shared Bandwidth
Method 2: Assign a shared bandwidth, set Billed By to Shared Bandwidth and select the shared bandwidth when you assign pay-per-use EIPs.	<ol style="list-style-type: none">1. Assigning a Shared Bandwidth2. Assigning an EIP

Shared Bandwidth Quotas

- A maximum of 20 EIPs that are billed on a pay-per-use basis can be added to a shared bandwidth. If you want to add more EIPs to a shared bandwidth, submit a service ticket to request a quota increase.

Notes and Constraints

- A shared bandwidth can only be used by resources from its same account.
- The minimum size of a shared bandwidth that can be purchased is 5 Mbit/s. You can only add pay-per-use EIPs to a shared bandwidth.
- If a yearly/monthly shared bandwidth is deleted upon expiration, EIPs sharing the bandwidth will be removed from the bandwidth and be billed based on the mode before they are added to the shared bandwidth.

NOTE

- A dedicated bandwidth cannot be changed to a shared bandwidth and vice versa. However, you can purchase a shared bandwidth for pay-per-use EIPs.
 - Add an EIP to a shared bandwidth and then the EIP will use the shared bandwidth.
 - Remove the EIP from the shared bandwidth and then the EIP will use the dedicated bandwidth.
- If you want to submit a service ticket, refer to [Submitting a Service Ticket](#).

Related Operations

- [Adding EIPs to or Removing EIPs from a Shared Bandwidth](#): After a shared bandwidth is assigned, you can add multiple pay-per-use EIPs to it so that all EIPs share the same bandwidth.
- [Modifying a Shared Bandwidth](#): You can change the size of the shared bandwidth you have assigned.

5.2 Assigning a Shared Bandwidth

Scenarios

When you host a large number of applications on the cloud, if each EIP uses a dedicated bandwidth, a lot of bandwidths are required, which incurs high costs. If all EIPs share the same bandwidth, your network operation costs will be lowered and your system O&M as well as resource statistics will be simplified.

Assign a shared bandwidth for use with EIPs.

Procedure

1. Go to the [Buy Shared Bandwidth](#) page.
2. Set the parameters as prompted.

Table 5-2 Description

Module	Parameter	Description	Example Value
Basic Configuration	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 lower network latency and faster access to your resources, select the region nearest to you.	N/A
Basic Configuration	Billing Mode	A shared bandwidth can be billed on a yearly/monthly or pay-per-use basis. <ul style="list-style-type: none">• Yearly/Monthly: You pay for the bandwidth by year or month before using it. No other charges apply during the validity period of the bandwidth.• Pay-per-use: You pay for the bandwidth based on the amount of time you use the bandwidth.	Yearly/Monthly

Module	Parameter	Description	Example Value
Basic Configuration	Name	The name of the shared bandwidth.	Bandwidth-001
Basic Configuration	Enterprise Project	The enterprise project that the shared bandwidth belongs to. An enterprise project facilitates project-level management and grouping of cloud resources and users. The name of the default project is default .	default
Bandwidth Details	Bandwidth Type	Select a type of the shared bandwidth based on your EIP type. Standard: Dynamic BGP and static BGP EIPs can be added to a shared bandwidth of this type.	Standard
Bandwidth Details	Billed By	The billing method for the shared bandwidth. You can specify a shared bandwidth to be billed by bandwidth.	Bandwidth
Bandwidth Details	Bandwidth (Mbit/s)	The bandwidth size in Mbit/s.	10
Required Duration	Required Duration	The duration for which the purchased shared bandwidth will be used. The duration must be specified if the Billing Mode is set to Yearly/ Monthly .	2 months

Module	Parameter	Description	Example Value
Required Duration	Auto-renew	Whether to select Auto-renew . You can select it if the Billing Mode is set to Yearly/Monthly . The auto-renewal period is determined by the required duration. <ul style="list-style-type: none">Monthly subscription: The subscription is renewed every month.Yearly subscription: The subscription is renewed each year.	N/A

3. Click **Next**.
4. Confirm the configurations.
 - If you set **Billing Mode** to **Pay-per-Use**, click **Submit**.
 - If you set **Billing Mode** to **Yearly/Monthly**, click **Pay Now**.On the payment page, confirm the order information and click **Confirm**.

Related Operations

- **Adding EIPs to or Removing EIPs from a Shared Bandwidth:** After a shared bandwidth is assigned, you can add multiple pay-per-use EIPs to it so that all EIPs share the same bandwidth.
- **Modifying a Shared Bandwidth:** You can change the size of the shared bandwidth you have assigned.

5.3 Adding EIPs to or Removing EIPs from a Shared Bandwidth

Scenarios

You can add multiple EIPs to a shared bandwidth or remove EIPs that are no longer required from a shared bandwidth.

You can add multiple EIPs to a shared bandwidth at the same time.

Constraints

- Currently, yearly/monthly EIPs cannot be added to a shared bandwidth.

Adding EIPs to a Shared Bandwidth

1. Go to the [shared bandwidth list](#) page.
2. In the shared bandwidth list, locate the target shared bandwidth that you want to add EIPs to. In the **Operation** column, choose **Add Public IP Address**.

3. On the **Add Public IP Address** page, select the EIPs or IPv6 addresses to be added.

 **NOTE**

- After an EIP is added to a shared bandwidth, the dedicated bandwidth used by the EIP will become invalid and the EIP will start to use the shared bandwidth. The EIP's dedicated bandwidth will be deleted and will no longer be billed.
4. Click **OK**.

Removing EIPs from a Shared Bandwidth

1. Go to the [shared bandwidth list](#) page.
2. In the shared bandwidth list, locate the row that contains the bandwidth from which EIPs are to be removed, choose **More > Remove Public IP Address** in the **Operation** column.
3. On the **Remove Public IP Address** page, select the EIPs or IPv6 addresses to be removed.
4. Configure the EIP bandwidth after the EIP is removed.
5. Click **OK**.

Helpful Links

[What Are the Differences Between a Dedicated Bandwidth and a Shared Bandwidth? Can a Dedicated Bandwidth Be Changed to a Shared Bandwidth or the Other Way Around?](#)

5.4 Modifying a Shared Bandwidth

Scenarios

You can modify the name and size of a shared bandwidth as required.

- If a shared bandwidth is billed on a pay-per-use basis, the modification will take effect immediately. For details, see [Modifying a Shared Bandwidth \(Pay-per-Use\)](#).
- You can perform the following operations on a yearly/monthly shared bandwidth:
 - [Increasing a Shared Bandwidth \(Yearly/Monthly\)](#): The change will be applied immediately and the price difference will be billed accordingly.
 - [Decreasing a Shared Bandwidth \(Yearly/Monthly\)](#): The change will be applied in the first billing cycle after a successful renewal.

If you want to change the billing mode of a shared bandwidth, see [How Do I Change My EIP Billing Mode from Pay-per-Use to Yearly/Monthly?](#)

Modifying a Shared Bandwidth (Pay-per-Use)

1. Go to the [shared bandwidth list](#) page.

2. In the shared bandwidth list, locate the row that contains the shared bandwidth you want to modify, click **Modify Bandwidth** in the **Operation** column, and modify the bandwidth settings.
3. Click **Next**.
4. Click **Submit**.

Increasing a Shared Bandwidth (Yearly/Monthly)

1. Go to the [shared bandwidth list](#) page.
2. In the shared bandwidth list, locate the row that contains the target shared bandwidth, and click **Modify Bandwidth** in the **Operation** column.
3. Select **Increase bandwidth** and click **Continue**.
4. In the **New Configuration** area on the **Modify Bandwidth** page, change the bandwidth name and size.
5. Click **Next**.
6. Confirm the information and click **Pay Now**.
After you complete the payment, the increased bandwidth will take effect immediately.

Decreasing a Shared Bandwidth (Yearly/Monthly)

1. Go to the [shared bandwidth list](#) page.
2. In the shared bandwidth list, locate the row that contains the target shared bandwidth, and click **Modify Bandwidth** in the **Operation** column.
3. Select **Decrease bandwidth** and click **Continue**.
4. In the **New Configuration** area on the **Modify Bandwidth** page, change the bandwidth name and size.
5. Click **Next**.
6. Confirm the information and click **Pay Now**.
After you complete the payment, the decreased bandwidth will take effect in the first billing cycle after the current subscription ends.

5.5 Deleting or Unsubscribing from a Shared Bandwidth

Scenarios

Delete a shared bandwidth when it is no longer required.

Notes and Constraints

If you want to delete or unsubscribe from a shared bandwidth with EIPs added, you have to [remove the EIPs from the shared bandwidth](#) first.

Deleting a Pay-per-Use Shared Bandwidth

1. Go to the [shared bandwidth list](#) page.
2. In the shared bandwidth list, locate the row that contains the pay-per-use shared bandwidth you want to delete, click **More** in the **Operation** column, and then click **Delete**.
3. Confirm the deletion as prompted. Click **OK**.

Unsubscribing from a Yearly/Monthly Shared Bandwidth

1. Go to the [shared bandwidth list](#) page.
2. In the shared bandwidth list, locate the row that contains the yearly/monthly shared bandwidth you want to delete, click **More** in the **Operation** column, and then click **Delete**. The unsubscription page is displayed.
3. Confirm the information and click **Confirm**. A confirmation dialog box is displayed.
4. Confirm the information and click **Yes**.
Return to the shared bandwidth list and check whether the target shared bandwidth is unsubscribed from.

5.6 Exporting Shared Bandwidths

Scenarios

You can export all your shared bandwidth as an Excel file to a local directory. The Excel records the name, status, ID, type, size, and EIP of the shared bandwidth.

Procedure

1. Go to the [shared bandwidth list](#) page.
2. On the shared bandwidth list page, select one or more shared bandwidths and click **Export** in the upper left corner.
The system will automatically export information about all of your shared bandwidths as an Excel file to a local directory.

6 Cloud Eye Monitoring

6.1 Monitoring EIPs

Scenario

Cloud Eye is a multi-dimensional resource monitoring service that you can use to monitor EIP and bandwidths in real time, set alarm rules, identify resource exceptions, and quickly respond to resource changes.

Cloud Eye is enabled automatically after an EIP is assigned. For more information about Cloud Eye, see [What Is Cloud Eye?](#)

Setting an Alarm Rule

You can configure alarm rules on the Cloud Eye console to send you notifications in case of exceptions.

For details about how to create alarm rules, see [Creating an Alarm Rule](#).

Viewing Metrics

1. Log in to the [Cloud Eye console](#).
2. Click **Cloud Service Monitoring** on the left navigation pane, and choose **Elastic IP and Bandwidth**.
3. Locate the target metric and click **View Metric** in the **Operation** column to check detailed information.

6.2 Monitoring Metrics

Overview

This section describes the namespace, list, and measurement dimensions of metrics of EIPs and bandwidths that you can check on Cloud Eye. You can use APIs or the Cloud Eye console to query the metrics of the monitored metrics and generated alarms.

 NOTE

- Cloud Eye can monitor dimensions nested to a maximum depth of four levels (levels 0 to 3). 3 is the deepest level. For example, if the monitored dimension of a metric is **resourceA_id,resourceB_id**, **resourceA_id** indicates level 0 and **resourceB_id** indicates level 1.
- If a bandwidth is increased or decreased, there is a delay of 5 to 10 minutes for the monitoring metrics to update for the new bandwidth.

Namespace

Namespace of EIPs and bandwidths: SYS.VPC

Monitoring Metrics

Table 6-1 EIP and bandwidth metrics

ID	Name	Description	Value Range	Unit	Conversion Rule	Monitored Object (Dimension)	Monitoring Interval (Raw Data)
upstream_bandwidth	Outbound Bandwidth	Network rate of outbound traffic (Previously called "Upstream Bandwidth")	≥ 0	bit/s	1000 (SI)	bandwidth_id publicip_id	1 minute
downstream_bandwidth	Inbound Bandwidth	Network rate of inbound traffic (Previously called "Downstream Bandwidth")	≥ 0	bit/s	1000 (SI)	bandwidth_id publicip_id	1 minute

ID	Name	Description	Value Range	Unit	Conversion Rule	Monitored Object (Dimension)	Monitoring Interval (Raw Data)
upstream_bandwidth_usage	Outbound Bandwidth Usage	Usage of outbound bandwidth in the unit of percent. Outbound bandwidth usage = Outbound bandwidth/ Purchased bandwidth	0-100	%	N/A	bandwidth_id publicip_id	1 minute
downstream_bandwidth_usage	Inbound Bandwidth Usage	Usage of inbound bandwidth in the unit of percent. Inbound bandwidth usage = Inbound bandwidth/ Purchased bandwidth	0-100	%	N/A	bandwidth_id publicip_id	1 minute
upstream	Outbound Traffic	Network traffic going out of the cloud platform (Previously called "Upstream Traffic")	≥ 0	Byte	1000 (SI)	bandwidth_id publicip_id	1 minute
downstream	Inbound Traffic	Network traffic going into the cloud platform (Previously called "Downstream Traffic")	≥ 0	Byte	1000 (SI)	bandwidth_id publicip_id	1 minute

Dimensions

Key	Value
publicip_id	EIP ID You can call the API Querying an EIP to obtain the value from the response parameters.
bandwidth_id	Bandwidth ID You can call the API Querying a Bandwidth to obtain the value from the response parameters.


7 Managing EIP Quotas

What Is a Quota?

A quota limits the quantity of a resource available to users, thereby preventing spikes in the usage of the resource. For example, an EIP quota limits the number of EIPs that can be assigned.

You can also request for an increased quota if your existing quota cannot meet your service requirements.

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, choose **Resources > My Quotas**.
The **Quotas** 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 **Quotas** page is displayed.
3. Click **Increase Quota** in the upper right corner of the page.
4. On the **Create Service Ticket** page, configure parameters as required.
In the **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 Ticket Service Protocol and Privacy Statement** and click **Submit**.