Alibaba Cloud Elastic IP Address

User Guide

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Generic conventions

Table -1: Style conventions

Style	Description	Example
	This warning information indicates a situation that will cause major system changes, faults, physical injuries, and other adverse results.	 Danger: Resetting will result in the loss of user configuration data.
	This warning information indicates a situation that may cause major system changes, faults, physical injuries, and other adverse results.	 Warning: Restarting will cause business interruption. About 10 minutes are required to restore business.
	This indicates warning information, supplementary instructions, and other content that the user must understand.	 Notice: Take the necessary precautions to save exported data containing sensitive information.
	This indicates supplemental instructions, best practices, tips, and other content that is good to know for the user.	 Note: You can use Ctrl + A to select all files.
>	Multi-level menu cascade.	Settings > Network > Set network type
Bold	It is used for buttons, menus , page names, and other UI elements.	Click OK.
`Courier font`	It is used for commands.	Run the `cd / d C :/ windows` command to enter the Windows system folder.
Italics	It is used for parameters and variables.	`bae log list --instanceid` *Instance_ID*
[] or [a|b]	It indicates that it is a optional value, and only one item can be selected.	`ipconfig` *[-all|-t]*

Style	Description	Example
{} or {a|b}	It indicates that it is a required value, and only one item can be selected.	`swich {stand | slave}`

Contents

1 What is Elastic IP Address?

An Elastic IP Address (EIP) is a public IP address resource that you can purchase and possess independently. You can bind an EIP to an ECS or SLB instance of the VPC network, or a NAT Gateway.

An EIP is a type of NAT IP address. It is located in the public network gateway of Alibaba Cloud, and is mapped to the private network interface card (NIC) of the bound ECS instance using the NAT method. Therefore, an ECS instance bound with an EIP can communicate with the Internet without disclosing the EIP on the NIC.

Differences between an EIP and an ECS public IP

The following table lists the differences between an EIP and an ECS public IP.

Item	EIP	ECS public IP
Supported networks	VPC	VPC and classic network
Independently possessed	Yes	No
Elastically bound to and from an ECS instance	Yes	No
Disclosed on the NIC of the ECS instance	No	Classic Network: Yes VPC: No

Benefits

- Independently purchased and possessed

  You can purchase an EIP as an independent resource instead of purchasing it together with other computing or storage resources.
- Flexible binding

  You can bind an EIP to an instance as needed to make the instance accessible to the Internet. You can release the EIP whenever Internet communication is not needed for the instance.
- Configurable network capabilities

  You can adjust the bandwidth of an EIP as needed. The bandwidth change takes effect immediately.

2 Create an EIP

You can create an Elastic IP Address (EIP), then bind it to an ECS or SLB instance of the VPC network, or a NAT Gateway. The EIP then acts as a public IP to provide the resource with Internet access.

Procedure

1. Log on to the *VPC console*.
2. Click Create EIP.
3. Configure the EIP according to the following information, and then click Buy Now to complete the payment.

Configuration	Description
Region	Select the region of the EIP. Make sure that the EIP and the resource you want to bind it to are in the same region.
Network traffic	The EIP is charged by traffic usage. For more information, see *Pay-As-You-Go*.
Max Bandwidth	Set a peak bandwidth for the EIP.
Quantity	Select the number of EIPs you want to create with the same configurations.

3 Reinstate a released EIP

You can reinstate a released EIP based on the IP address or ID of the EIP. If a released EIP has been allocated to another user, you cannot reinstate it.

Context

The default peak bandwidth of the reinstated EIP is 5 Mbps and the EIP adopts the Pay-As-You-Go billing method (billing based on PayByTraffic).

> Notice:
> You can reinstate an EIP a maximum of 20 times per month. To request an increase of your quota, open a ticket.

Procedure

1. Log on to the *VPC console*.
2. Click Request Specific IP.
3. Select a method to reinstate a released EIP:
   - Click Request by IP Address, enter the IP address of the EIP, and click OK to reinstate the EIP.
   - Click Request by EIP Instance ID, enter the instance ID of the EIP and click OK to reinstate the EIP.

4 Change an ECS public IP to an EIP

You can flexibly use a public IP by changing an ECS public IP to an EIP.

Introduction to public IP

A public IP and network bandwidth is required for an ECS instance if you want users to access the application deployed on the ECS instance.

Alibaba Cloud provides two types of public IP:

- ECS public IP

  If you choose to use the public IP allocated by the system when creating an ECS instance of the VPC network, a public IP will be allocated to the ECS instance after the ECS instance is created and the public IP cannot be unbound from the ECS instance.
- EIP

  An Elastic IP (EIP) address is a public IP address resource that you can purchase and possess independently. You can bind an EIP to an ECS or SLB instance of the VPC network, or a NAT Gateway.

Using the high-quality multi-line BGP network of Alibaba Cloud, a public IP and an EIP have the same capacity in providing Internet services. The greatest difference between the two lies in whether it can be unbound from an ECS instance. You can unbind an EIP from an ECS instance anytime and bind it to the ECS instance again when necessary, while you cannot unbind a public IP from an ECS instance.

Benefits in changing a public IP to an EIP

Public IP will be gradually replaced by EIP. EIP has the following benefits:

- Flexibly defend against DDoS attacks

  If your server is under DDoS attack, you can immediately unbind the EIP from the attacked ECS instance. You can bind a new EIP to the ECS instance and use Anti-DDoS Pro to defend the DDoS attack.
- Simplify system and application extension

  When you need to expend your application to provide external services, you may need to deploy the application on multiple ECS instances and use SLB to distribute traffic. You can unbind the EIP first and then bind it to an SLB instance of the VPC

network to provide external services. Users are insensitive to the architecture change.

- Simplify the management of network access

  You can submit a ticket to apply for continuous public IP addresses to simplify network access management.

Limitation

To change a public IP to an EIP, the following requirements must be met:

- You can only change the public IP of an ECS instance of the VPC network to an EIP.
- You can only change the public IP of an ECS instance in stopped or running.
- If the configuration of the ECS instance is being changed, the conversion cannot be performed.
- The conversion cannot be performed within 24 hours before a Subscription instance expires.
- The conversion cannot be performed for a Subscription ECS instance charged by bandwidth.

Procedure

Complete these steps to change a public IP of an ECS instance of the VPC network to an EIP:

1. Log on to the ECS console.
2. In the left-side navigation pane, click Instances.
3. Select a region and find the target ECS instance.
4. Click More > Convert to EIP.
5. In the displayed dialog box, click OK.
6. Refresh the list of instances.

   After the conversion, the original public IP is labeled as Elastic IP Address.

5 Bind EIP to cloud resources

You can bind an EIP to an ECS instance of the VPC network, an SLB instance of the VPC network, a NAT Gateway or an Elastic Network Interface, so that the resources can communicate with the Internet.

Procedure

1. Log on to the *VPC console*.
2. In the left-side navigation pane, click Elastic IP Addresses.
3. Select the region of the EIP and find the target EIP.
4. Click Bind in the Actions column of the target EIP.

5. **On the Bind Elastic IP Address page, complete the following configurations, and then click OK.**

Configuration	Description
Instance Type	Select the type of instance to bind: • ECS Instance: After binding an EIP, the ECS instance can communicate with the Internet. The ECS instance must meet the following requirements: - The network type of the ECS instance must be VPC. - The ECS instance and the EIP must be in the same region. - The ECS instance must be in the running or stopped status. - The ECS instance does not have a public IP, nor is it bound to any EIP. - One ECS instance can only be bound to one EIP. • NAT Gateway: After binding an EIP, you can use the EIP to configure DNAT and SNAT entries. The NAT Gateway must meet the following requirements: - No bandwidth package was purchased before January 26, 2018 under the account that the NAT Gateway belongs to. - The NAT Gateway and the EIP must be in the same region. - Up to 10 EIPs can be bound to a NAT Gateway. • SLB Instance: After an EIP is bound to an SLB instance, the SLB instance can forward requests from the Internet. The SLB instance must meet the following requirements: - The network type of the SLB instance must be VPC. - The SLB instance and the EIP must be in the same region. - Each SLB instance can have only one EIP bound to it at a time. • Secondary ENI: After an EIP is bound to an ENI, the ECS instance attached with the ENI can access the Internet or provide external services. For more information, see *Bind EIP to an ENI*.

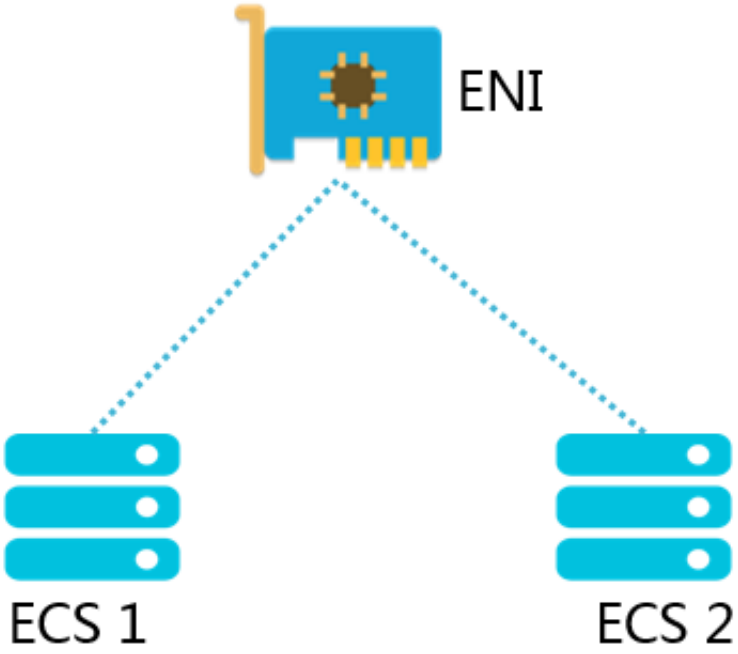
Configuration	Description
NAT Gateway/ ECS Instance/SLB Instance	Select the instance to bind.

6 Bind EIP to an ENI

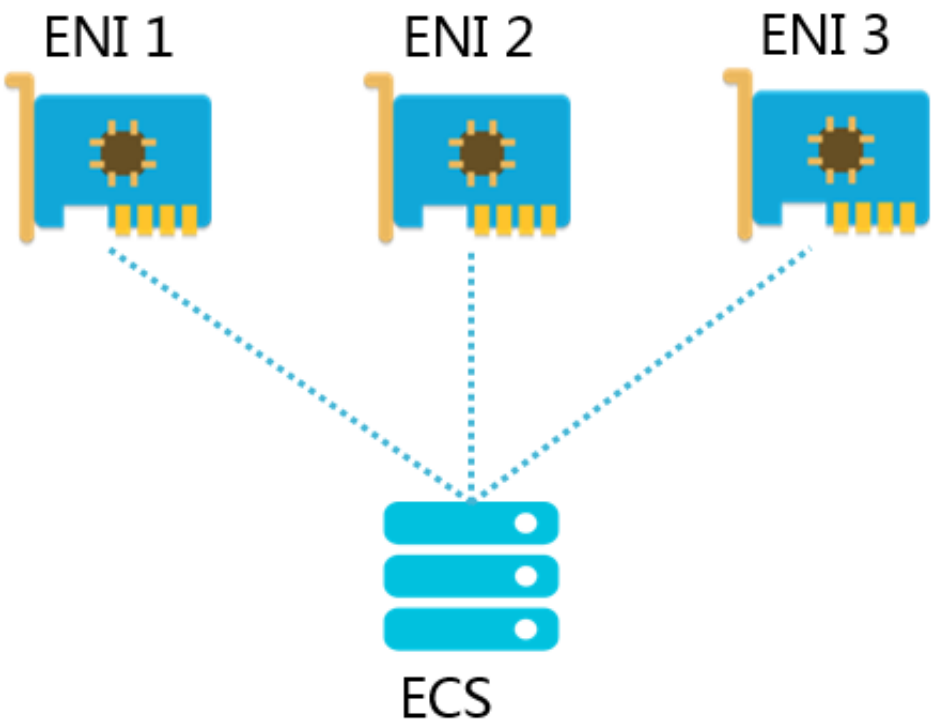
You can bind an EIP to an Elastic Network Interface (ENI). Binding an EIP to an ENI allows you to build a more robust, flexible, and scalable IT solution and enable a single server to use multiple public IPs.

ENI overview

Elastic Network Interface (ENI) is an independent network interface instance. You can attach an ENI to an ECS instance, or detach the ENI from the ECS instance and then attach it to another ECS instance. After you move an ENI from one instance to another one, the network traffic is also directed to the new instance.



Besides, you can attach multiple ENIs to the same ECS instance, so that the instance can use multiple public IPs to provide external services.



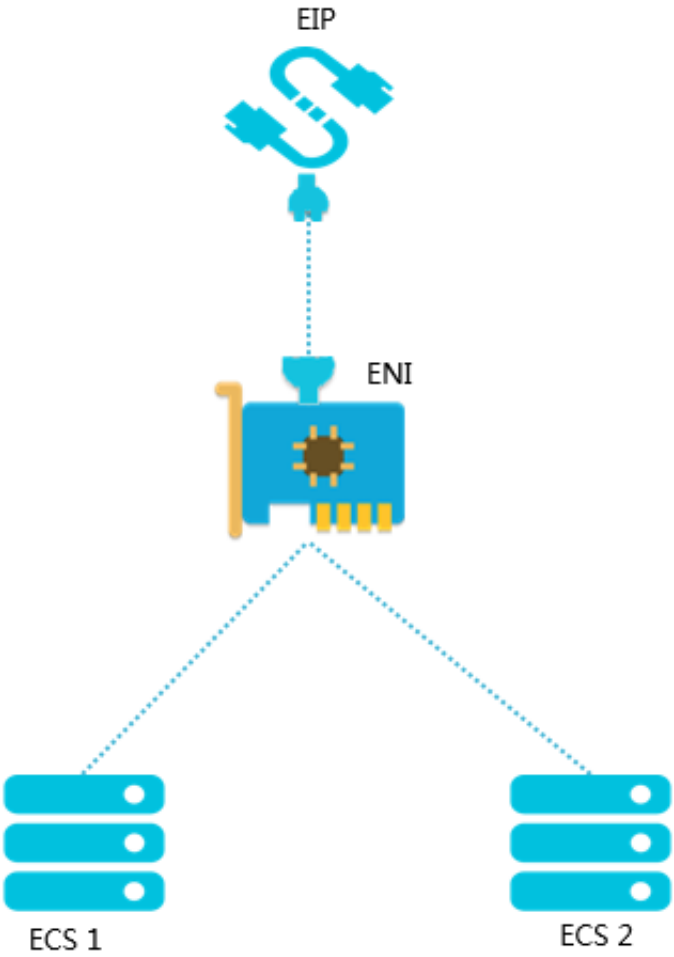
Scenarios

Binding EIP to ENI is applicable to the following scenarios:

- Highly reliable IP migration

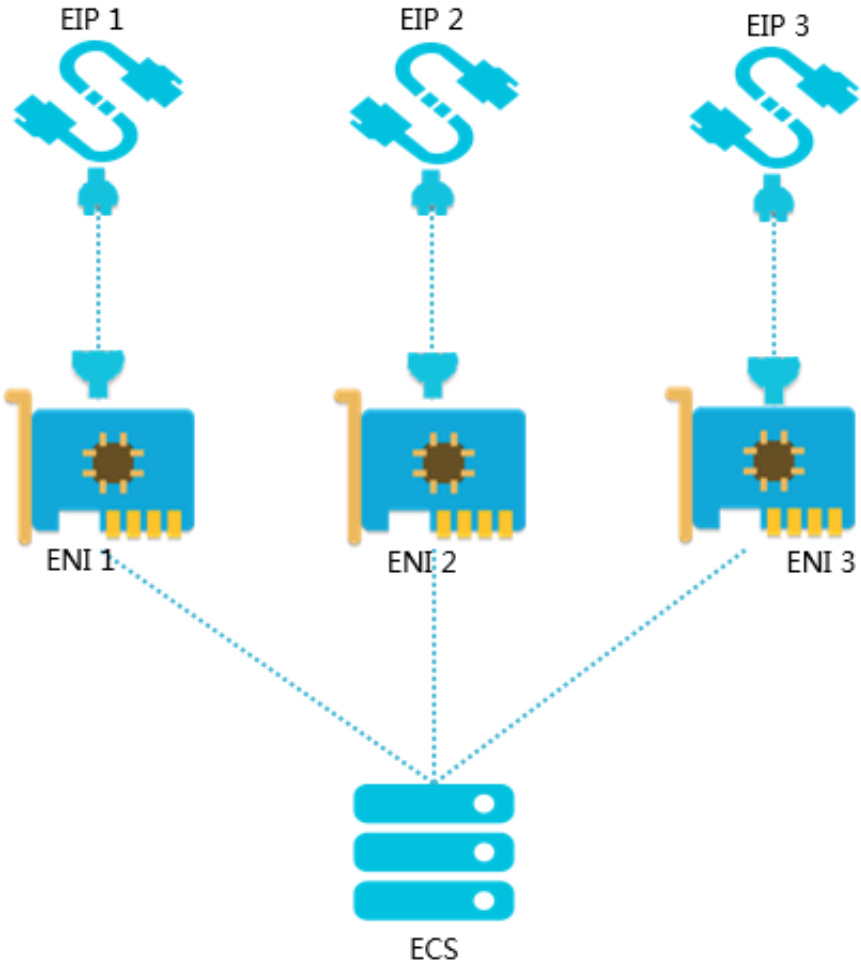
  ENI provides a private IP itself. After an ENI is bound with an EIP, the ENI has both a private IP and a public IP. When moving an ENI bound with an EIP from an ECS instance to another instance, the public IP and private IP are also migrated. It

provides a highly reliable and available IP migration solution for cloud servers that use both public IP and private IP.



- Use multiple pubic IPs to provide services

  You can bind multiple ENIs to an ECS instance and bind an EIP to each ENI, thus the ECS instance has multiple public IPs. You can flexibly use these public IPs to provide external services with corresponding security group rules.



FAQs

Is the EIP instance fee charged after an EIP is bound to an ENI?

Yes.

An EIP is free from instance fee only when it is bound to an ECS instance.

How many EIPs can an ENI be bound to?

One.

Is additional configuration required after an EIP is bound to an ENI that is attached to an ECS instance?

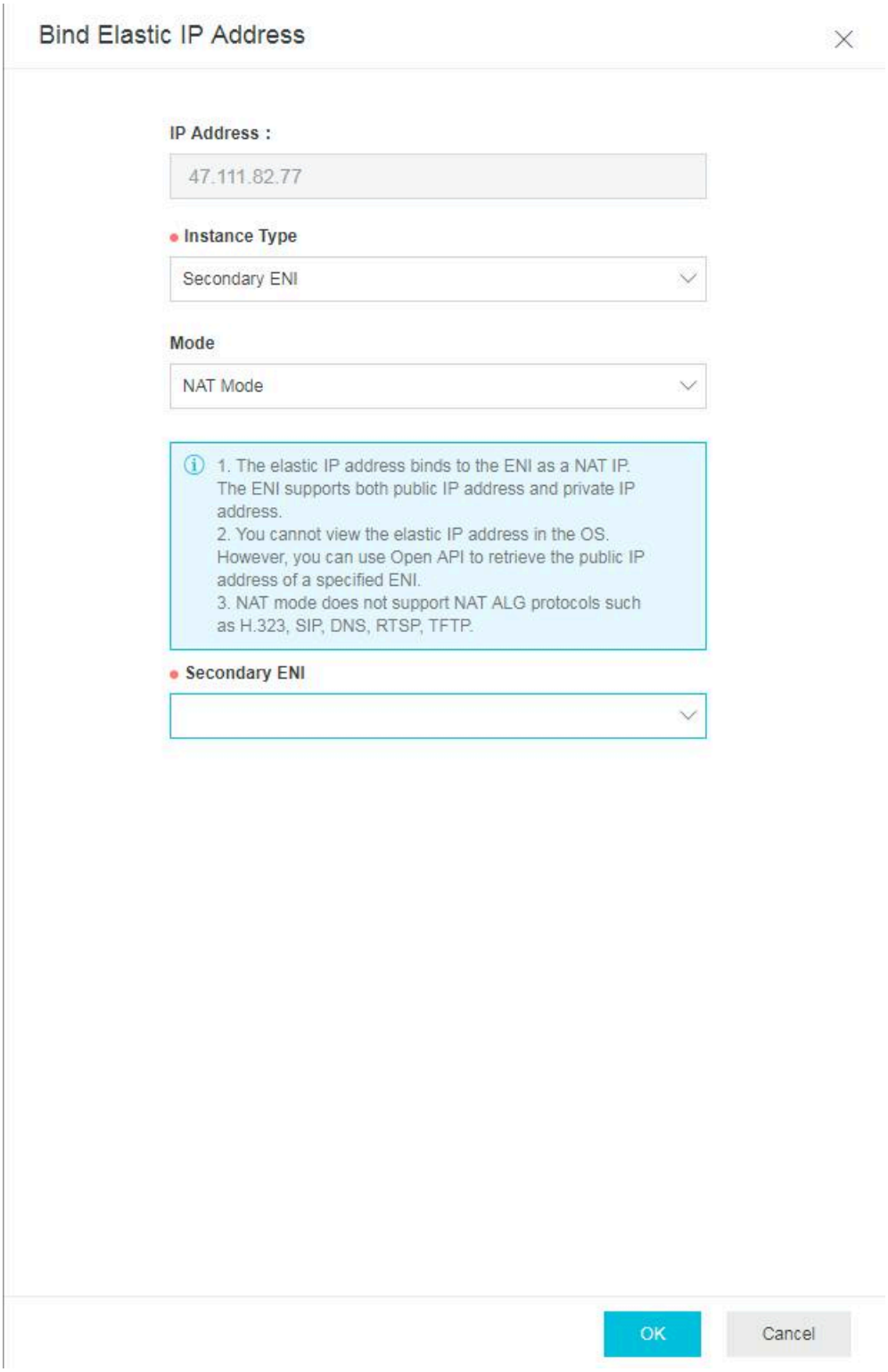
- If an application that provides external services is deployed on the ECS instance , such as a website, you do not need to configure additional routing in the ECS instance or in the VPC. You can directly use the EIP bound to the ENI to provide external service.
- If an application that requires the Internet access is deployed on the ECS instance , you must customize the default routing or add a new route. The default route is sent from the primary NIC. You can adjust the route priority to allow packets to be sent out through ENI. You can also configure a route to distribute packets from multiple NICs in a load-sharing way or randomly distribute them from a NIC.

Bind an ENI

To bind an ENI, complete these steps:

1. Log on to the *VPC console*.
2. In the left-side navigation pane, click Elastic IP Addresses.
3. On the Elastic IP Addresses page, select the region of the target EIP.
4. Locate the target EIP, and then click Bind.

5. On the Bind Elastic IP Address page, select the region of the ENI to bind and the ENI instance, and then click OK.



7 Configure the cut-through mode

When you bind an EIP to a secondary ENI, you can select the Cut-Through Mode. In this mode, the EIP replaces the private IP of the ENI and the ENI becomes a pure Internet network interface. You can see the EIP in the network interface information of the operating system.

Prerequisites

- You have created a secondary ENI. For more information, see *Create an ENI*.
- The secondary ENI is not bound to any ECS instance.

  If the secondary ENI is bound to an ECS instance, unbind the ENI from the instance first. For more information, see *Detach an ENI from an instance*.

Context

An EIP is a NAT IP by nature. Because the public IP of the NAT mode exists in the NAT Gateway and is not on the network interface of the ECS instance, you cannot see the public IP in the operating system and can only see the private IP of the network interface. This improves the complexity of operation and maintenance and the relationship between the network interface/server, and the public IP must be maintained manually. Besides, when the EIP is deployed as NAT ALG (NAT application layer gateway), protocols such as H. 323, SIP, DNS, and RTSP are not supported.

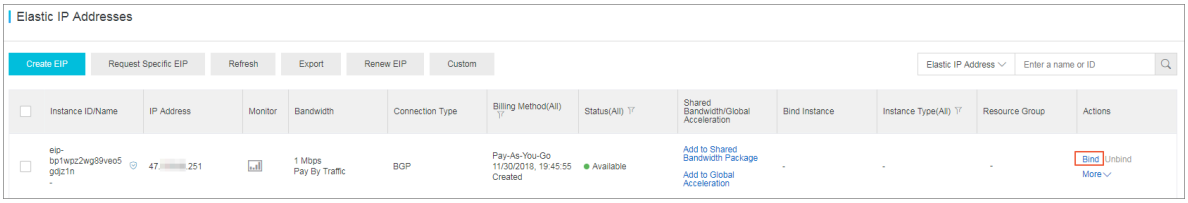
The Cut-Through Mode makes the EIP visible on the network interface and solves the preceding problems. In the EIP cut-through mode:

- The EIP replaces the private IP of the ENI. The ENI becomes a pure Internet network interface and its intranet functions are not available any more.
- You can see the EIP in the ENI of the operating system, and directly obtain the public IP on the ENI by using ifconfig/ipconfig.
- EIP supports all IP protocols such as FTP, H. 323, SIP, DNS, RTSP, and TFTP.

Procedure

1. Log on to the *VPC console*.
2. In the left-side navigation pane, click Elastic IP Addresses and select the region of the EIP.

3. Locate the target EIP, and then click Bind.



4. On the displayed page, complete the following steps:

   a) Instance Type: Select Secondary ENI.

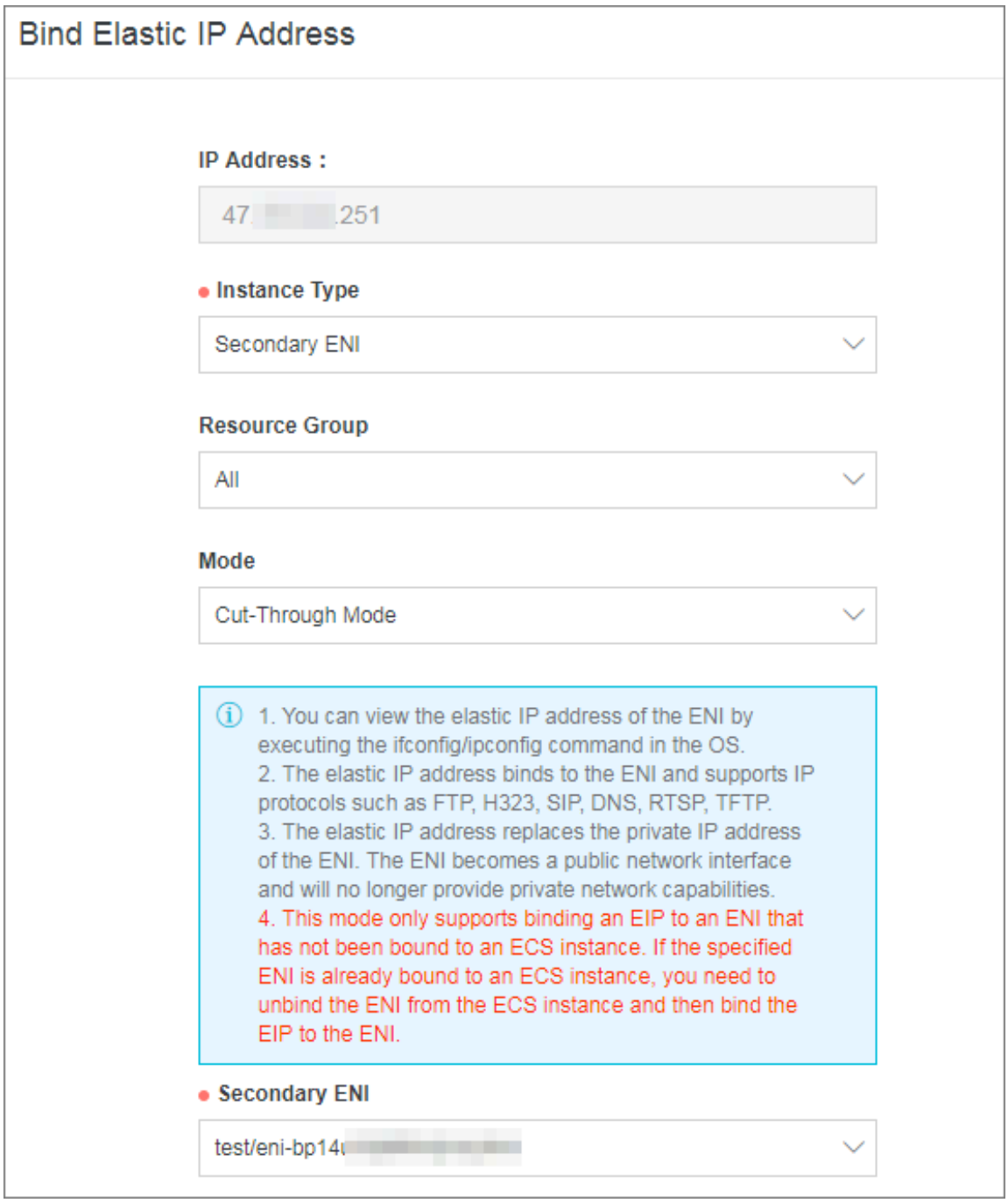
   b) Resource Group: Select the resource group that the EIP belongs to.

   c) Mode: Select Cut-Through Mode.

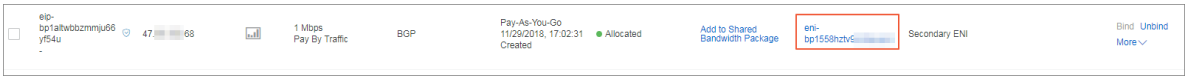
   d) Secondary ENI: Select the ENI to bind.

> **Notice:**

Make sure that the ENI is not bound to any ECS instance.



5. Then click the link of the bound ENI.

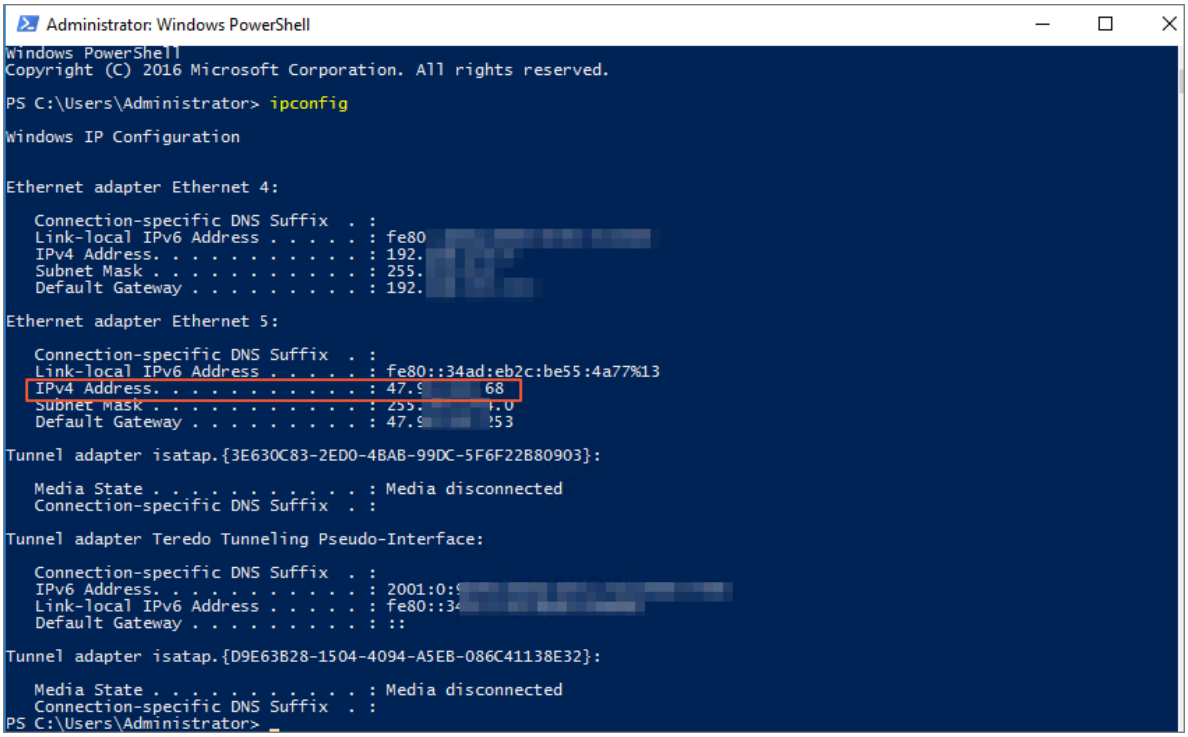


6. On the page of network interfaces, click Bind to Instance to bind the ENI to the ECS instance.

7. Use the bound EIP to log on to the ECS instance to view the network configurations of the instance.

   > **Note:**
   > Make sure the security group rules of the ECS instance allow remote access.

   You can see that the local IP address of the instance has changed to the EIP address.



8 Add EIPs to Internet Shared Bandwidth

Internet Shared Bandwidth provides region-level bandwidth sharing. With Internet Shared Bandwidth, ECS instances, NAT Gateways and VPC SLB instances associated with EIPs added to the bandwidth can share the bandwidth.

Prerequisites

Make sure the following conditions are met before you add EIPs to an Internet Shared Bandwidth instance:

- The EIP adopts the Pay-As-You-Go billing method.
- The EIP and the Internet Shared Bandwidth instance must be in the same region.
- You will not add more than 50 EIPs to an Internet Shared Bandwidth instance. You can open a ticket to increase the quota.
- An Internet Shared Bandwidth instance is created. For more information, see *Create an Internet Shared Bandwidth instance*.

Context

Internet Shared Bandwidth supports the traffic-based Pay-As-You-Go billing method. For more information, see *Internet Shared Bandwidth*.

After you add EIPs to an Internet Shared Bandwidth instance:

- ECS instances, SLB instances, and NAT Gateways associated with the EIPs share the bandwidth.
- The original peak bandwidth of each added EIP loses effect and the peak bandwidth of the Internet Shared Bandwidth takes effect.
- The original billing method of each added EIP loses effect and no additional traffic or bandwidth fee is incurred. Only EIP retention fee is charged on EIPs associated with NAT Gateways or SLB instances, and no additional fee is charged on EIPs associated with ECS instances.

Procedure

1. Log on to the *VPC console*.
2. In the left-side navigation pane, click Elastic IP Addresses.
3. Select the target region and find the target EIP.
4. Click More > Add to Shared Bandwidth Package.

5. Select the target Internet Shared Bandwidth instance and then click OK.

9 Unbind and release an EIP

You can unbind and release an Elastic IP Address (EIP) when Internet access is no longer required. After an EIP address is unbound, you still need to pay the retention fee. To avoid unnecessary cost, release the EIP after unbinding it.

Procedure

1. Log on to the *VPC console*.
2. In the left-side navigation pane, click Elastic IP Addresses.
3. Select a region and find the target EIP.
4. Click Unbind, and then click OK in the displayed dialog.
5. After unbinding the EIP, click More > Release, and then click OK in the displayed dialog box to release the EIP.

10 Modify the bandwidth of an EIP address

You can change the bandwidth of an EIP instance.

Procedure

1. Log on to the *VPC console*.
2. In the left-side navigation pane, click Elastic IP Addresses.
3. Select the region of the target EIP address.
4. Click More > Modify Configuration.
5. Change the bandwidth of the EIP.

11 Use EIP to deploy an FTP server

You can use the EIP cut-through mode to bind an EIP to an FTP server to provide FTP service. This tutorial takes an FTP server deployed on a Windows system as an example.

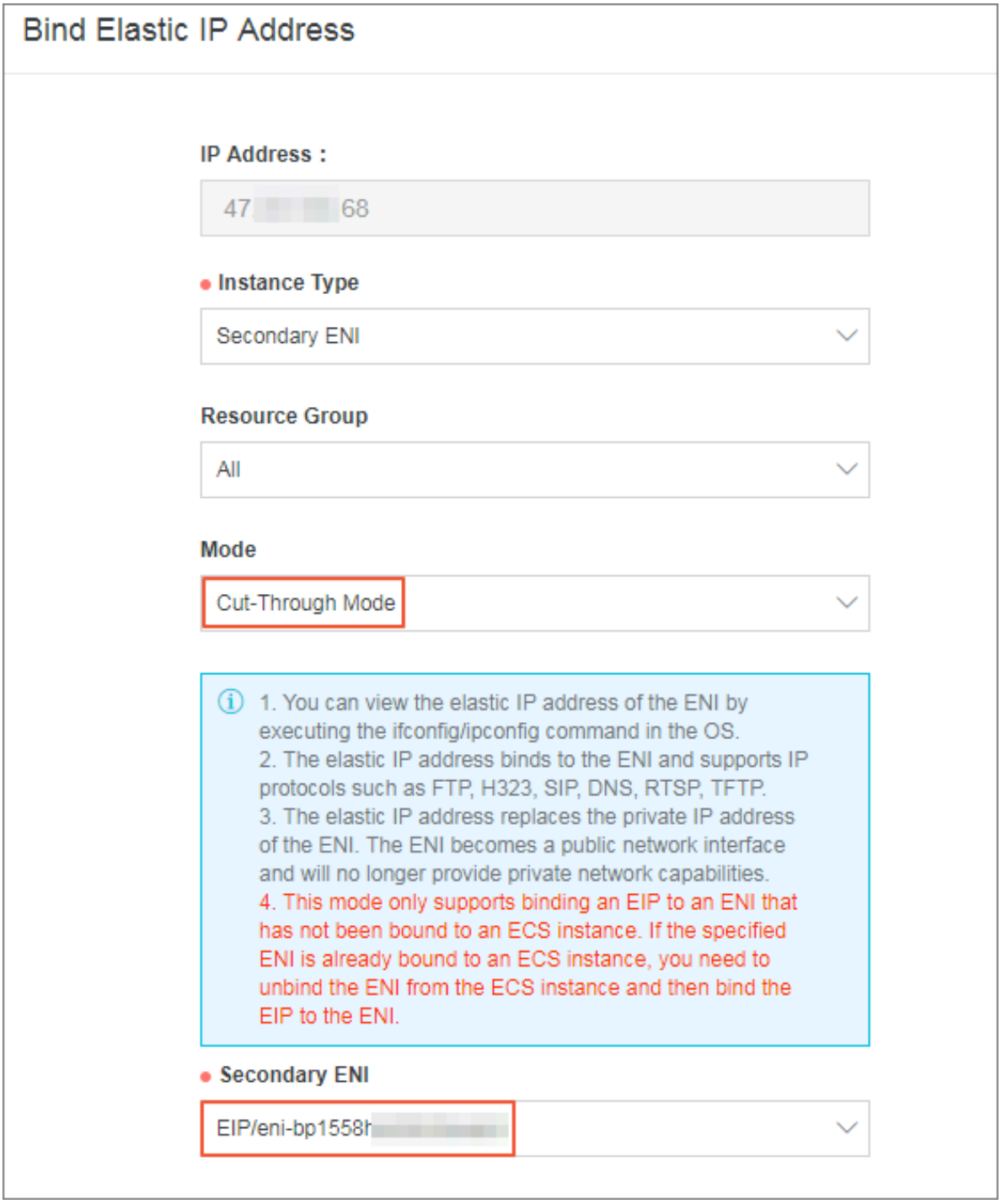
Procedure

1. *Create an EIP*.
2. Bind the EIP to a secondary ENI and select the EIP cut-through mode.

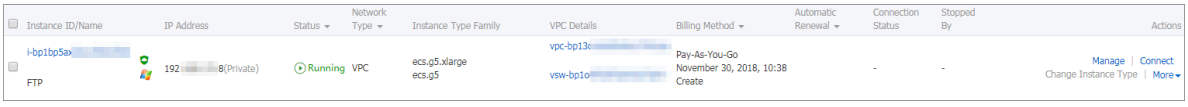
Note:

Make sure that the selected secondary ENI is not bound to any ECS instance.

For more information, see *Configure the cut-through mode*.



3. **Purchase an ECS instance of the Windows Server 2016 system and deploy an FTP service.**



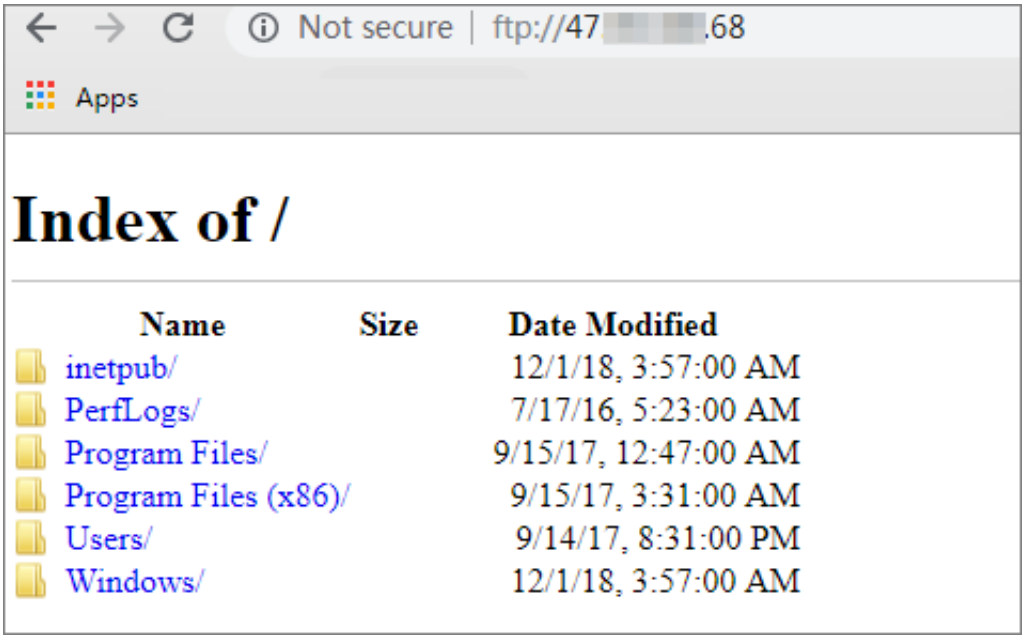
4. On the page of Elastic IP addresses, click the link of the bound ENI.

5. On the Network Interfaces page, find the ENI bound to the EIP and click Bind to Instance to bind the ENI to the ECS instance deployed with the FTP service.

Result

Then use the EIP address bound to the ENI to access the FTP service.

> **Note:**
> Make sure that the security group rules of the ECS instance allow access from the Internet.



12 Manage quotas

You can query current quota usage in the VPC console. If the remaining quota of a resource is insufficient, you can directly apply for increasing the quota.

Procedure

1. Log on to the *VPC console*.
2. In the left-side navigation pane, clickQuota Management.
3. On the Quota Management page, click the EIP tab page to view the usage of the EIP quota.
4. Click Apply in the Actions column.
   - Quantity for Application: Selects the number of EIPs that you can retain.
   - Reason for Application: Details the reason, scenarios and necessity of the application.
   - Mobile/Landline Phone Number: your phone number.
   - Email: your Email address.
5. Click OK.

   The system automatically examines whether the application is reasonable. if the application is unreasonable, the application status isRejected. If the application is reasonable, the application status isApproved, and the quota is automatically increased to the applied quantity immediately.

   You can click Application History in the Application History column to view the application history.