

Alibaba Cloud

NAT Gateway FAQ

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Document conventions









Style	Description	Example
 Danger	A danger notice 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.
 Warning	A warning notice 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 restart an instance.
 Notice	A caution notice indicates warning information, supplementary instructions, and other content that the user must understand.	 Notice: If the weight is set to 0, the server no longer receives new requests.
 Note	A note indicates supplemental instructions, best practices, tips, and other content.	 Note: You can use Ctrl + A to select all files.
>	Closing angle brackets are used to indicate a multi-level menu cascade.	Click Settings > Network > Set network type .
Bold	Bold formatting is used for buttons, menus, page names, and other UI elements.	Click OK .
<code>Courier font</code>	Courier font is used for commands	Run the <code>cd /d C:/window</code> command to enter the Windows system folder.
<i>Italic</i>	Italic formatting is used for parameters and variables.	<code>bae log list --instanceid</code> <i>Instance_ID</i>
[] or [a b]	This format is used for an optional value, where only one item can be selected.	<code>ipconfig [-all -t]</code>
{ } or {a b}	This format is used for a required value, where only one item can be selected.	<code>switch {active stand}</code>

Table of Contents

1.Billing FAQ	05
2.FAQ about Internet NAT gateways	06
3.FAQ about upgrading standard Internet NAT gateways to enha.....	09
4.FAQ about DNAT	14
5.FAQ about SNAT	15
6.Guide for troubleshooting	18

1. Billing FAQ

This topic provides answers to some frequently asked questions about the billing of NAT Gateway.

- [How am I charged for using NAT gateways?](#)
- [What metering methods do pay-as-you-go NAT gateways support?](#)
- [Why am I still charged for an EIP and an Internet NAT gateway after I disassociated the EIP from the Internet NAT gateway?](#)

How am I charged for using NAT gateways?

- To enable Internet access for an Internet NAT gateway, you must associate an elastic IP address (EIP) with the Internet NAT gateway. You are charged for using Internet NAT gateways and EIPs that are associated with the Internet NAT gateways. For more information, see [Billing of Internet NAT gateways](#).
- VPC NAT gateways are billed on a pay-as-you-go basis. For more information, see [Billing of VPC NAT gateways](#).

What metering methods do pay-as-you-go NAT gateways support?

Pay-as-you-go Internet NAT gateways and pay-as-you-go VPC NAT gateways support the pay-by-CU metering method. You are charged based on the resources that a NAT gateway consumes. The fees vary based on the billing cycle. For more information, see the following topics:

- [Billing of Internet NAT gateways](#)
- [Billing of VPC NAT gateways](#)

Why am I still charged for an EIP and an Internet NAT gateway after I disassociated the EIP from the Internet NAT gateway?

You are still charged for the EIP and the Internet NAT gateway because you did not release the EIP and delete the Internet NAT gateway after you disassociated the EIP from the Internet NAT gateway. To stop the billing, release the EIP and delete the Internet NAT gateway. For more information, see [Release a pay-as-you-go EIP](#) and [Delete an Internet NAT gateway](#).

2.FAQ about Internet NAT gateways

This topic provides answers to some frequently asked questions about Internet NAT gateways.

- [Why am I unable to purchase Internet NAT gateways in some zones?](#)
- [Why am I unable to purchase NAT service plans in the NAT Gateway console?](#)
- [How many Internet NAT gateways can I create with an Alibaba Cloud account?](#)
- [How many Internet NAT gateways can I create in a virtual private cloud \(VPC\)?](#)
- [How many EIPs can I associate with an Internet NAT gateway?](#)
- [Why does the outbound bandwidth of an EIP fail to reach the maximum bandwidth after I associate the EIP with an Internet NAT gateway?](#)
- [Why am I unable to associate EIPs in the NAT Gateway console?](#)
- [Can I specify the same EIP in an SNAT entry and a DNAT entry?](#)
- [Can an ECS instance use SNAT to access services that use DNAT to receive external requests if the same enhanced Internet NAT gateway is used for SNAT and DNAT?](#)
- [Can I modify the vSwitch and private IP address of an Internet NAT gateway?](#)

Why am I unable to purchase Internet NAT gateways in some zones?

Internet NAT gateways are unavailable in some zones due to insufficient resources. You can purchase Internet NAT gateways in other zones of the same region. Internet NAT gateways can provide cross-zone services. An Elastic Compute Service (ECS) instance in a zone can use an Internet NAT gateway in another zone of the same region.

Why am I unable to purchase NAT service plans in the NAT Gateway console?

If you did not purchase a NAT service plan before January 26, 2018, you must associate an EIP with your Internet NAT gateway before the Internet NAT gateway can access the Internet. For more information, see [Associate an EIP with an Internet NAT gateway](#).

How many Internet NAT gateways can I create with an Alibaba Cloud account?

The number of Internet NAT gateways that you can create with an Alibaba Cloud account is unlimited.

How many Internet NAT gateways can I create in a virtual private cloud (VPC)?

The number of Internet NAT gateways that you can create in a VPC is based on the type of NAT gateway.

- You can create only one standard Internet NAT gateway in a VPC. The quota cannot be increased.
- You can create up to five enhanced Internet NAT gateways in a VPC. To increase the quota, [submit a ticket](#).

How many EIPs can I associate with an Internet NAT gateway?

By default, each Internet NAT gateway can be associated with at most 20 EIPs.

You can navigate to the [Quota Management](#) page to request a quota increase. For more information, see [Manage quotas](#).

Why does the outbound bandwidth of an EIP fail to reach the maximum bandwidth after I associate the EIP with an Internet NAT gateway?

The maximum number of concurrent connections supported by an Internet NAT gateway is limited by the number of EIPs that are associated with the Internet NAT gateway. If only one EIP is associated with the Internet NAT gateway, the maximum number of concurrent connections that the Internet NAT gateway supports is 55,000.

For example, you deployed multiple ECS instances in a VPC. The ECS instances use an Internet NAT gateway to access the same destination IP address and port on the Internet. The bandwidth that is used by the ECS instances is higher than 2 Gbit/s. To avoid packet loss caused by the limit on concurrent connections for each EIP, we recommend that you associate four to eight EIPs with the Internet NAT gateway and create an SNAT IP address pool. For more information, see [Create an SNAT IP address pool](#).

Why am I unable to associate EIPs in the NAT Gateway console?

If you purchased a NAT service plan before January 26, 2018, you can associate only public IP addresses in the NAT service plan with the Internet NAT gateway. To associate EIPs with the Internet NAT gateway, perform the following operations based on the metering method of your NAT service plan.

- If the NAT service plan is billed on a pay-by-bandwidth basis, you can convert the public IP addresses to EIPs in the NAT Gateway console. For more information, see [Convert a NAT service plan to an EIP bandwidth plan](#).
- If the NAT service plan is billed on a pay-by-data-transfer basis, submit an application to be included in the whitelist. Then, convert the public IP addresses to EIPs. For more information, see [Convert a NAT service plan to an EIP bandwidth plan](#). You can join the DingTalk group 35128151 and submit an application in the group.

Can I specify the same EIP in an SNAT entry and a DNAT entry?

The type of Internet NAT gateway determines whether you can specify the same EIP in an SNAT entry and a DNAT entry.

- For standard Internet NAT gateways, you cannot specify an EIP in both an SNAT entry and a DNAT entry.
- For enhanced Internet NAT gateways, you can specify an EIP in both an SNAT entry and a DNAT entry.

Can an ECS instance use SNAT to access services that use DNAT to receive external requests if the same enhanced Internet NAT gateway is used for SNAT and DNAT?

No.

An ECS instance cannot use SNAT to access services that use DNAT to receive external requests if the same enhanced Internet NAT gateway is used for SNAT and DNAT in a VPC.

If you want an ECS instance to access services that use DNAT to receive external requests in the same VPC, we recommend that you create another enhanced Internet NAT gateway and create SNAT and DNAT entries on different Internet NAT gateways.

Can I modify the vSwitch and private IP address of an Internet NAT gateway?

No, you cannot modify the vSwitch or private IP address of an Internet NAT gateway in the console. For more information, see [Switch to another Internet NAT gateway in the same VPC](#).

3. FAQ about upgrading standard Internet NAT gateways to enhanced Internet NAT gateways

FAQ about upgrading standard Internet NAT gateways to enhanced Internet NAT gateways

This topic provides answers to some frequently asked questions about how to upgrade standard Internet NAT gateways to enhanced Internet NAT gateways.

- Does Alibaba Cloud charge an upgrade fee if I upgrade a standard Internet NAT gateway to an enhanced Internet NAT gateway?
- Does the upgrade have negative impacts on my workloads?
- Can I roll back an upgrade?
- After a standard Internet NAT gateway is upgraded to an enhanced Internet NAT gateway, are the configurations and public IP addresses of the standard Internet NAT gateway changed?
- When does Alibaba Cloud discontinue standard Internet NAT gateways? Can I continue to use my standard Internet NAT gateways after Alibaba Cloud discontinues them?
- How can I upgrade a standard Internet NAT gateway to an enhanced Internet NAT gateway?
- What are the differences between enhanced Internet NAT gateways and standard Internet NAT gateways?
- Do enhanced Internet NAT gateways support cross-zone disaster recovery?
- How can I upgrade a standard Internet NAT gateway that is associated with NAT service plans?
- Why am I unable to find the upgrade option for upgrading my standard Internet NAT gateway in the console?
- Why is a new security group created after my standard Internet NAT gateway is upgraded to an enhanced Internet NAT gateway?
- What are the permissions required for upgrading a standard Internet NAT gateway?
- Multiple ENIs are attached to an ECS instance, and an EIP is associated with one of the ENIs. Why do I fail to access the EIP of the ECS instance after I upgrade my standard Internet NAT gateway to an enhanced Internet NAT gateway?
- Why am I unable to obtain monitoring data by calling the CloudMonitor API after I upgrade a standard Internet NAT gateway to an enhanced Internet NAT gateway?
- After I convert a NAT service plan to an EIP bandwidth plan, why am I unable to collect the original metrics?

Does Alibaba Cloud charge an upgrade fee if I upgrade a standard Internet NAT gateway to an enhanced Internet NAT gateway?

No. You can upgrade a standard Internet NAT gateway to an enhanced Internet NAT gateway free of charge.

- After a pay-as-you-go Internet NAT gateway is upgraded, the billing cycle changes from daily to hourly. However, the total cost does not change. For example, before a small-sized Internet NAT gateway is upgraded, the unit price is CNY 12/day. After the small-sized NAT gateway is upgraded, the unit price is CNY 0.5/hour (CNY 0.5/hour × 24 hours = CNY 12/day).
- After a subscription Internet NAT gateway is upgraded, the billing remains unchanged.

Does the upgrade have negative impacts on my workloads?

It takes approximately 5 minutes to upgrade a standard Internet NAT gateway to an enhanced Internet NAT gateway. During the upgrade process, the NAT gateway may experience one or two transient connections that last a few seconds. The service resumes after your workloads are reconnected.

Can I roll back an upgrade?

- The system monitors the process when you upgrade a standard Internet NAT gateway to an enhanced Internet NAT gateway. If an exception occurs during the upgrade, the system rolls back the upgrade.
- If an exception occurs after the upgrade is completed, you can contact technical support to downgrade the enhanced Internet NAT gateway to a standard Internet NAT gateway. For more information, see [Contact us](#).

After a standard Internet NAT gateway is upgraded to an enhanced Internet NAT gateway, are the configurations and public IP addresses of the standard Internet NAT gateway changed?

The configurations of the elastic IP addresses (EIPs), SNAT rules, and DNAT rules of the standard Internet NAT gateway remain unchanged during the upgrade. You do not need to modify the configurations after the Internet NAT gateway is upgraded.

If the standard Internet NAT gateway to be upgraded is associated with NAT service plans, the public IP addresses provided by the NAT service plans are converted to EIPs. The bandwidth limit and billing method remain unchanged after the NAT service plans are converted to EIP bandwidth plans. Only the NAT service plans are converted to EIP bandwidth plans. The IP addresses, SNAT rules, and DNAT rules remain unchanged. For more information, see [Upgrade notes for standard Internet NAT gateways that are associated with NAT service plans](#).

When does Alibaba Cloud discontinue standard Internet NAT gateways? Can I continue to use my standard Internet NAT gateways after Alibaba Cloud discontinues them?

Alibaba Cloud discontinued standard Internet NAT gateways in November 2020. Standard Internet NAT gateways are no longer updated. However, you can continue to use your purchased standard Internet NAT gateways. Enhanced Internet NAT gateways are highly scalable and provide advanced features. To improve how you can manage your services, we recommend that you use the following methods to upgrade your standard Internet NAT gateways:

- [Upgrade a standard Internet NAT gateway](#)
- [Upgrade a standard Internet NAT gateway at a scheduled time](#)

If you encounter problems during the upgrade process, see [Contact us](#).

How can I upgrade a standard Internet NAT gateway to an enhanced Internet NAT gateway?

You can use one of the following methods:

- Immediately upgrade a standard Internet NAT gateway to an enhanced Internet NAT gateway in the console. For more information, see [Upgrade a standard Internet NAT gateway](#).
- Create a schedule to upgrade a standard Internet NAT gateway to an enhanced Internet NAT

gateway in the console. We recommend that you set the scheduled time to off-peak hours. For more information, see [Upgrade a standard Internet NAT gateway at a scheduled time](#).

What are the differences between enhanced Internet NAT gateways and standard Internet NAT gateways?

Item	Enhanced Internet NAT gateway	Standard Internet NAT gateway	References
Whether a vSwitch must be associated when you create or upgrade an Internet NAT gateway	Yes	No	Create and manage Internet NAT gateways
Whether an IP address must be assigned from a vSwitch to an Internet NAT gateway	Yes	No	
Associating a vSwitch with an Internet NAT gateway	Supported	Not supported	
Deploying multiple Internet NAT gateways in the same virtual private cloud (VPC)	Supported	Not supported	Deploy multiple Internet NAT gateways in one VPC
Pay-by-CU	Supported	Not supported	Pay-as-you-go
Billed on an hourly basis	Supported	Not supported	
Billed on a daily basis	Not supported	Supported	
Processing TCP, UDP, and ICMP fragments	Supported	Not supported	
Metrics	22	4	Monitor and maintain Internet NAT gateways
Network traffic monitoring (TOP ECS)	Supported	Not supported	View traffic monitoring data collected by NAT gateways
Elastic Compute Service (ECS) instances use SNAT to access DNAT services that belong to the same Internet NAT gateway	Not supported	Supported	None
Specifying the same EIP for both SNAT and DNAT entries	Supported	Not supported	Associate an EIP with an Internet NAT gateway

Do enhanced Internet NAT gateways support cross-zone disaster recovery?

Yes.

When you create an enhanced Internet NAT gateway or upgrade a standard Internet NAT gateway to an enhanced Internet NAT gateway, you need to specify only the vSwitch for the primary zone. You do not need to specify the vSwitch for the secondary zone. When the primary zone is down, the enhanced Internet NAT gateway automatically performs cross-zone disaster recovery.

How can I upgrade a standard Internet NAT gateway that is associated with NAT service plans?

NAT service plans cannot be associated with enhanced Internet NAT gateways. You can create a schedule to upgrade a standard Internet NAT gateway that is associated with NAT service plans in the console. You can also convert the NAT service plans to EIP bandwidth plans before you upgrade the standard Internet NAT gateway. For more information, see [How can I upgrade a standard NAT gateway to an enhanced NAT gateway?](#)

Why am I unable to find the upgrade option for upgrading my standard Internet NAT gateway in the console?

The upgrade option is unavailable in the console if your standard Internet NAT gateway is included in an upgrade blacklist due to one of the following reasons:

- DNAT IP mapping or SNAT is configured on your standard Internet NAT gateway for accessing an EIP in a DNAT entry on the same gateway.
- An ECS instance in the VPC where your standard Internet NAT gateway is deployed has multiple ENIs and EIPs are associated with the ENIs.
- The total bandwidth of the NAT service plans and the EIPs that are associated with your standard Internet NAT gateway exceeds the limit, which is 5 Gbit/s.

If your standard Internet NAT gateway does not meet the preceding conditions, you can contact Alibaba Cloud to remove your Internet NAT gateway from the blacklist. Then, you can upgrade the Internet NAT gateway in the console. For more information, see [Contact us](#). If your standard Internet NAT gateway meets one of the preceding conditions, you can also contact Alibaba Cloud to assist you with the upgrade.

Why is a new security group created after my standard Internet NAT gateway is upgraded to an enhanced Internet NAT gateway?

When you create an enhanced Internet NAT gateway, you must associate a vSwitch with the enhanced NAT gateway. The vSwitch assigns a private IP address to the Internet NAT gateway and creates an ENI in the VPC where the NAT gateway is deployed. The vSwitch also creates a security group and associates the security group with the ENI. You are not allowed to modify this security group.

What are the permissions required for upgrading a standard Internet NAT gateway?

NAT Gateway must create an ENI in the VPC where the standard Internet NAT gateway that you want to upgrade is deployed. To create an ENI in the VPC, you must create the required service-linked role for NAT Gateway. After you create the service-linked role, NAT Gateway creates only one ENI and one security group. No other operations are performed. For more information, see [Service-linked roles for NAT Gateway](#).

Multiple ENIs are attached to an ECS instance, and an EIP is associated with one of the ENIs. Why do I fail to access the EIP of the ECS instance after I upgrade my standard Internet NAT gateway to an enhanced Internet NAT gateway?

Multiple ENIs are attached to an ECS instance, and an EIP is associated with one of the ENIs. Different ENIs are used to forward the inbound and outbound traffic of the ECS instance. After you upgrade your standard Internet NAT gateway to an enhanced Internet NAT gateway, the network traffic of the ECS instance is blocked. To avoid this issue, you must modify the route of the ECS instance before you upgrade the standard Internet NAT gateway to an enhanced Internet NAT gateway. Make sure that the inbound and outbound traffic of the ECS instance is forwarded by using the same ENI. For more information, see [Configure routes for a secondary ENI that is bound to an instance that runs an Alibaba Cloud Linux 2 or CentOS 7 operating system](#).

Why am I unable to obtain monitoring data by calling the CloudMonitor API after I upgrade a standard Internet NAT gateway to an enhanced Internet NAT gateway?

Enhanced Internet NAT gateways support more metrics than standard Internet NAT gateways and some metrics use different names from those supported by standard Internet NAT gateways. Therefore, you cannot collect monitoring data from an enhanced Internet NAT gateway if you specify the names of metrics supported by standard Internet NAT gateways when you call the [DescribeMetricList](#) operation. You must specify the names of metrics supported by enhanced Internet NAT gateways when you collect monitoring data from an enhanced NAT gateway. For more information, see [Monitoring metrics of Enhanced NAT gateways](#).

After I convert a NAT service plan to an EIP bandwidth plan, why am I unable to collect the original metrics?

After you convert a NAT service plan to an EIP bandwidth plan, the metrics supported by the NAT service plan become invalid. You can view the metrics supported by the EIP bandwidth plan. For more information, see [Metrics for EIP bandwidth plans](#).

Contact us

If you have questions about NAT gateway upgrades, contact technical support in the DingTalk group 35128151.

4. FAQ about DNAT

This topic provides answers to some frequently asked questions about DNAT.

- [How many DNAT entries can I add to a NAT gateway?](#)
- [Why am I unable to find an existing EIP from the EIP list when I create a DNAT entry?](#)
- [Can I create DNAT entries for ECS instances that are assigned EIPs?](#)

How many DNAT entries can I add to a NAT gateway?

By default, you can add up to 100 DNAT entries to a NAT gateway.

You can navigate to the [Quota Management](#) page to request a quota increase. For more information, see [Manage quotas](#).


Why am I unable to find an existing EIP from the EIP list when I create a DNAT entry?

Before you create a DNAT entry, make sure that a NAT gateway is created and elastic IP addresses (EIPs) are associated with the NAT gateway. For more information, see [Create and manage DNAT entries](#).

Can I create DNAT entries for ECS instances that are assigned EIPs?

No.

Before you can create DNAT entries for the ECS instances, you must disassociate the EIPs from the ECS instances. For more information, see [Disassociate an EIP from a cloud resource](#) and [Create and manage DNAT entries](#).

 **Note** If an ECS instance is associated with an EIP and DNAT is configured for the ECS instance, the ECS instance preferentially uses the associated EIP to communicate with the Internet.

5.FAQ about SNAT

This topic provides answers to some frequently asked questions about the SNAT feature provided by NAT Gateway.

- [How many SNAT entries can I add to a NAT gateway?](#)
- [How many EIPs can I specify in one SNAT entry of an Internet NAT gateway?](#)
- [Can I create an SNAT IP address pool for SNAT entries of Internet NAT gateways?](#)
- [How can I configure the ECS instances in a VPC to use the same EIP to access the Internet?](#)
- [Why am I unable to find an existing EIP from the EIP list when I create an SNAT entry on an Internet NAT gateway?](#)
- [If the source CIDR blocks of multiple SNAT entries overlap, how does the system determine the priorities of the SNAT entries?](#)
- [If an ECS instance is assigned a static public IP address and configured with an SNAT entry, what can I do if I want the ECS instance to preferentially use the EIP specified in the SNAT entry to access the Internet?](#)
- [If an ECS instance is associated with an EIP and configured with an SNAT entry, what can I do if I want the ECS instance to preferentially use the EIP specified in the SNAT entry to access the Internet?](#)
- [If an ECS instance is configured with DNAT IP mapping and an SNAT entry, what can I do if I want the ECS instance to preferentially use the EIP specified in the SNAT entry to access the Internet?](#)

How many SNAT entries can I add to a NAT gateway?

By default, you can add up to 40 SNAT entries to a NAT gateway.

You can navigate to the [Quota Management](#) page to request a quota increase. For more information, see [Manage quotas](#).

How many EIPs can I specify in one SNAT entry of an Internet NAT gateway?

By default, you can specify at most 64 elastic IP addresses (EIPs) in one SNAT entry and you cannot increase the quota.

Can I create an SNAT IP address pool for SNAT entries of Internet NAT gateways?

Yes, you can create an SNAT IP address pool for SNAT entries of Internet NAT gateways. For more information, see [Create an SNAT IP address pool](#).

EIPs in an SNAT IP address pool have the following limits:

- The maximum bandwidth of each EIP associated with a standard NAT gateway cannot exceed 200 Mbit/s.
- The maximum number of concurrent connections to each EIP is 55,000.

We recommend that you associate the EIPs in an SNAT IP address pool with the same EIP bandwidth plan. This prevents service interruptions that are caused when a single EIP reaches its maximum bandwidth. To fully utilize your EIP bandwidth plan and avoid port conflicts caused by insufficient EIPs, we recommend that you add EIPs to the SNAT IP address pool based on the following rules:

- For standard Internet gateways: If the maximum bandwidth of the EIP bandwidth plan is 1,024

Mbit/s, specify at least five EIPs in each SNAT entry.

- For standard NAT gateways: If the maximum bandwidth of the EIP bandwidth plan is higher than 1,024 Mbit/s, specify at least one more additional EIP for each incremental 200 Mbit/s.

How can I configure the ECS instances in a VPC to use the same EIP to access the Internet?

You can configure an SNAT entry for Elastic Compute Service (ECS) instances in a virtual private cloud (VPC). Then, the ECS instances can access the Internet by using the specified EIP. If an ECS instance is assigned a public IP address (assigned a static public IP address, associated with an EIP, or configured with DNAT IP mapping), the ECS instance preferentially uses the public IP address instead of the EIP to access the Internet. For more information, see [Configure ECS instances that are assigned static public IP addresses to use the same elastic IP address \(EIP\) to access the Internet](#), [Configure ECS instances that are associated with EIPs to use the same NAT IP address to access the Internet](#), and [Configure ECS instances that configured with DNAT IP mapping to use the same NAT IP address to access the Internet](#).

Why am I unable to find an existing EIP from the EIP list when I create an SNAT entry on an Internet NAT gateway?

Before you create an SNAT entry, make sure that a NAT gateway is created and the EIP is associated with the NAT gateway. For more information, see [Create and manage SNAT entries](#).

If the source CIDR blocks of multiple SNAT entries overlap, how does the system determine the priorities of the SNAT entries?

The system determines the priorities of SNAT entries based on longest prefix match.

- For example, if you create an SNAT entry for an ECS instance, the subnet mask for the source CIDR block is `/32`, which is the longest prefix. Therefore, the SNAT entry has the highest priority.
- For SNAT entries that you create for other resources, such as vSwitches, VPCs, and custom CIDR blocks, the system determines the priorities of the SNAT entries based on the subnet mask length for the source CIDR block. An SNAT entry with a longer subnet mask length for the source CIDR block has a higher priority.

If an ECS instance is assigned a static public IP address and configured with an SNAT entry, what can I do if I want the ECS instance to preferentially use the EIP specified in the SNAT entry to access the Internet?

You can perform the following steps: Create an elastic network interface (ENI), associate the ENI with the ECS instance, convert the static public IP address to an EIP, and then associate the EIP with the ENI. This way, the ECS instance preferentially uses the EIP in the SNAT entry to access the Internet. The ECS instance uses the ENI to receive requests from the Internet. For more information, see [Configure ECS instances that are assigned static public IP addresses to use the same elastic IP address \(EIP\) to access the Internet](#).

If an ECS instance is associated with an EIP and configured with an SNAT entry, what can I do if I want the ECS instance to preferentially use the EIP specified in the SNAT entry to access the Internet?

You can perform the following operations: Create an ENI, associate the ENI with the ECS instance, disassociate the EIP from the ECS instance, and then associate the EIP with the ENI. This way, the ECS instance preferentially uses the EIP in the SNAT entry to access the Internet. The ECS instance uses the ENI to receive requests from the Internet. For more information, see [Configure ECS instances that are associated with EIPs to use the same NAT IP address to access the Internet](#).

If an ECS instance is configured with DNAT IP mapping and an SNAT entry, what can I do if I want the ECS instance to preferentially use the EIP specified in the SNAT entry to access the Internet?

You can perform the following operations: Create an ENI, associate the ENI with the ECS instance, remove the DNAT IP mapping entry, and then create a new DNAT entry to map the EIP on the NAT gateway to the ENI. This way, the ECS instance preferentially uses the EIP in the SNAT entry to access the Internet. The ECS instance uses the ENI to receive requests from the Internet. For more information, see [Configure ECS instances that configured with DNAT IP mapping to use the same NAT IP address to access the Internet](#).

6. Guide for troubleshooting

This topic describes common faults of NAT gateways and provides solutions.

- Troubleshoot connection failures:
 - An Elastic Compute Service (ECS) instance specified in a DNAT entry cannot be accessed over the Internet
 - ECS instances attached to a newly created vSwitch in a VPC cannot use SNAT to access the Internet
 - ECS instances in a vSwitch cannot access the Internet when multiple NAT gateways exist in a VPC
- Troubleshoot abnormal traffic: Exceptions such as connection timeouts and slow download speeds occur when a client accesses the Internet

An Elastic Compute Service (ECS) instance specified in a DNAT entry cannot be accessed over the Internet

The issue may arise due to one of the following causes:

- The rules of the security group to which the ECS instance is added do not allow Internet access to the private port specified in the DNAT entry.

Check whether the security group rules allow Internet access to the private port specified in the DNAT entry. If the security group rules do not allow Internet access to the private port specified in the DNAT entry, add a rule to allow Internet access to the private port. For more information, see [添加安全组规则](#).

You can run the `telnet <private IP address of the ECS instance> <private port>` command on other ECS instances in the same virtual private cloud (VPC) to check whether the private port specified in the DNAT entry is accessible.

- If the following message is returned, the private port is accessible.

```
Connected to <private IP address of the ECS instance>
```

- If the following message is returned, the private port is inaccessible.

```
unable connect to remote host: Connection timed out
```

If the private port cannot be accessed over the VPC, it cannot be accessed over the Internet.

- The route table does not contain a custom route whose destination CIDR block is 0.0.0.0/0 and whose next hop is the NAT gateway.

The ECS instance specified in the DNAT entry requires a route that points to the NAT gateway to return a response. Check whether the system route table or custom route table contains a 0.0.0.0/0 route that points to the NAT gateway. If the route does not exist, add one. For more information, see [Add routes to a route table](#).

ECS instances attached to a newly created vSwitch in a VPC cannot use SNAT to access the Internet

ECS instances attached to a newly created vSwitch in a VPC cannot use SNAT to access the Internet, but ECS instances attached to other vSwitches in the same VPC can use SNAT to access the Internet. The issue may arise due to one of the following causes:

- Existing SNAT entries of the NAT gateway do not include the CIDR block of the newly created vSwitch.

A NAT gateway does not automatically create an SNAT entry for a newly created vSwitch. You must check whether the CIDR block of the newly created vSwitch is included in the existing SNAT entries of the NAT gateway. If the CIDR block of the vSwitch is not included in existing SNAT entries, the ECS instances that are attached to the vSwitch cannot access the Internet. You must create an SNAT entry for the vSwitch. For more information, see [Create and manage SNAT entries](#).

- The newly created vSwitch is associated with a custom route table, but the custom route table does not contain a custom route whose destination CIDR block is 0.0.0.0/0 and whose next hop is the NAT gateway.

Check whether the custom route table contains such a route. If the route does not exist, add one. For more information, see [Add routes to a route table](#).

ECS instances in a vSwitch cannot access the Internet when multiple NAT gateways exist in a VPC

The issue arises when the following conditions are met: Only the system route table is used in the VPC. The route table contains only one custom route whose destination CIDR block is 0.0.0.0/0 and whose next hop is one of the NAT gateways. The CIDR block of the vSwitch is not included in the SNAT entries of the NAT gateway that the preceding route points to.

- If you do not require multiple NAT gateways, we recommend that you delete the NAT gateways that are not needed and add SNAT entries to the remaining NAT gateways.
- If you require multiple NAT gateways, see [Deploy multiple Internet NAT gateways in one VPC](#).

Exceptions such as connection timeouts and slow download speeds occur when a client accesses the Internet

Exceptions such as connection timeouts and slow download speeds occur when a client, such as an application on an ECS instance, accesses the Internet. You can troubleshoot the issue by using one of the following methods:

- If the monitoring data shows that exceptions occur occasionally and are not caused by the following two reasons, you can enable the traffic monitoring feature to identify the source of exceptions. This improves troubleshooting efficiency when multiple ECS instances are used. For more information, see [View traffic monitoring data collected by NAT gateways](#).
 - If you use a pay-by-specification NAT gateway, check whether the number of concurrent connections, the rate of new connections, or other metrics exceed the upper limits of the specification. For more information, see [View monitoring data](#). If connections are dropped because the upper limits are reached, we recommend that you upgrade the specification of your NAT gateway.
 - View the monitoring data to check whether packets are dropped because the maximum bandwidth value of the EIP associated with your NAT gateway is exceeded. For more information, see [View the monitoring data of EIPs that are associated with NAT gateways](#). If packets are dropped due to bandwidth limits, we recommend that you increase the maximum bandwidth value of the EIP.
- If multiple ECS instances that run Linux access a server that runs Linux by using the NAT gateway, TCP connection requests may be dropped by the Linux kernel, and this may lead to connection timeouts or failures. We recommend that you disable the Linux `net.ipv4.tcp_tw_recycle` option on the server or the Linux `net.ipv4.tcp_timestamps` option on the client.