Virtual Private Cloud

API Reference (Paris Region)

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1 Before You Start

1.1 Overview

Welcome to *Virtual Private Cloud API Reference*. The Virtual Private Cloud (VPC) service enables you to provision logically isolated, configurable, and manageable virtual networks for Elastic Cloud Servers (ECSs), improving the security of resources in the cloud system and simplifying network deployment.

This document describes how to use application programming interfaces (APIs) to perform operations on VPCs, such as creating, querying, deleting, and updating a VPC. For details about all supported operations, see **API Overview**.

If you plan to access VPCs through an API, ensure that you are familiar with VPC concepts. For details, see "Service Overview" in *Virtual Private Cloud User Guide*.

1.2 API Calling

VPC supports Representational State Transfer (REST) APIs, allowing you to call APIs using HTTPS. For details about API calling, see **Calling APIs**.

1.3 Endpoints

An endpoint is the **request address** for calling an API. Endpoints vary depending on services and regions. For the endpoints of all services, see **Regions and Endpoints**.

1.4 Notes and Constraints

The number of VPCs that you can create is determined by your quota. To view or increase the quota, see "What Is a Quota?" in the *Virtual Private Cloud User Guide*.

For more constraints, see API description.

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1.5 Concepts

- Account

  An account is created upon successful registration. The account has full access permissions for all of its cloud services and resources. It can be used to reset user passwords and grant user permissions. The account is a payment entity, which should not be used directly to perform routine management. For security purposes, create Identity and Access Management (IAM) users and grant them permissions for routine management.

- User

  An IAM user is created by an account in IAM to use cloud services. Each IAM user has its own identity credentials (password and access keys).

  API authentication requires information such as the account name, username, and password.

- Region

  A region is a geographic area in which cloud resources are deployed. Availability zones (AZs) in the same region can communicate with each other over an intranet, while AZs in different regions are isolated from each other. Deploying cloud resources in different regions can better suit certain user requirements or comply with local laws or regulations.

- AZ

  An AZ comprises of one or more physical data centers equipped with independent ventilation, fire, water, and electricity facilities. Computing, network, storage, and other resources in an AZ are logically divided into multiple clusters. AZs within a region are interconnected using high-speed optical fibers to allow you to build cross-AZ high-availability systems.

- Project

  A project corresponds to a region. Default projects are defined to group and physically isolate resources (including computing, storage, and network resources) across regions. Users can be granted permissions in a default project to access all resources under their accounts in the region associated with the project. If you need more refined access control, create subprojects under a default project and create resources in subprojects. Then you can assign users the permissions required to access only the resources in the specific subprojects.

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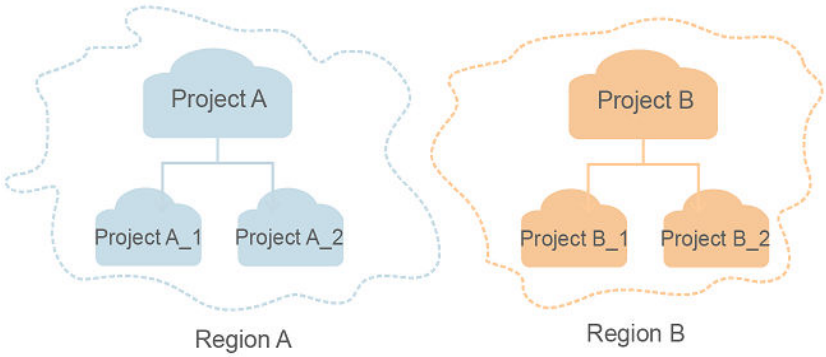
Figure 1-1 Project isolation model



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2 API Overview

VPC APIs include both native OpenStack APIs and extension APIs.

A combination of these two types of APIs allows you to use all functions provided by the VPC service. If a function involves both native OpenStack APIs and extension VPC APIs, use extension VPC APIs preferentially.

Enterprise project users can only use extension VPC APIs. For details about API permissions, see **Permissions Policies and Supported Actions**.

Table 2-1 API description

Type	Subtype	Description
VPC API	VPC	APIs for creating, querying, updating, and deleting VPCs
VPC API	Subnet	APIs for creating, querying, updating, and deleting subnets
VPC API	EIP	APIs for assigning, querying, updating, and releasing EIPs
VPC API	Bandwidth	APIs for querying and updating bandwidth.
VPC API	Bandwidth (V2.0)	• APIs for assigning and deleting shared bandwidth. • APIs for adding an EIP to or removing an EIP from a shared bandwidth
VPC API	Quota	API for querying quota values
VPC API	Private IP address	APIs for assigning, querying, and releasing private IP addresses
VPC API	Security group	• APIs for creating, querying, and deleting security groups

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Type	Subtype	Description
VPC API	VPC peering connection	• APIs for creating, querying, updating, and deleting VPC peering connections • APIs for accepting and rejecting VPC peering connection requests
VPC API	VPC route	APIs for creating, querying, and deleting VPC routes
VPC API	Tag management	• APIs for adding tags to VPCs, as well as querying and deleting VPC tags • APIs for adding tags to subnets as well as querying and deleting subnet tags • APIs for adding tags to EIPs as well as querying and deleting EIP tags
VPC API	Virtual IP addresses	APIs for binding and accessing virtual IP addresses
VPC API	Flow log	APIs for creating, querying, updating, and deleting VPC flow logs
OpenStack Neutron API	API version	APIs for querying all available API versions and displaying the results in pages.
OpenStack Neutron API	Port	APIs for creating, querying, updating, and deleting ports
OpenStack Neutron API	Network	APIs for creating, querying, updating, and deleting networks
OpenStack Neutron API	Subnet	APIs for creating, querying, updating, and deleting subnets
OpenStack Neutron API	Router	APIs for creating, querying, updating, and deleting routers
OpenStack Neutron API	Floating IP address	APIs for assigning, querying, updating, and releasing floating IP addresses
OpenStack Neutron API	network ACL	• APIs for creating, updating, and releasing network ACLs • APIs for creating, updating, deleting, and querying network ACL rules. • APIs for creating, updating, deleting, and querying network ACL policies
OpenStack Neutron API	Security group	• APIs for creating, querying, updating, and deleting security groups • APIs for creating, querying, and deleting security group rules

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3 Calling APIs

3.1 Making an API Request

This section describes the structure of a REST API request, and uses the IAM API for obtaining a user token as an example to demonstrate how to call an API. The obtained token can then be used to authenticate the calling of other APIs.

Request URI

A request URI is in the following format:

{URI-scheme}://{Endpoint}/{resource-path}?{query-string}

Although a request URI is included in the request header, most programming languages or frameworks require the request URI to be transmitted separately.

Table 3-1 URI parameter description

Parameter	Description
URI-scheme	Protocol used to transmit requests. All APIs use HTTPS.
Endpoint	Domain name or IP address of the server bearing the REST service. The endpoint varies between services in different regions. It can be obtained from **Regions and Endpoints**.
resource-path	Access path of an API for performing a specified operation. Obtain the path from the URI of an API. For example, the **resource-path** of the API used to obtain a user token is **/v3/auth/tokens**.
query-string	Query parameter, which is optional. Ensure that a question mark (?) is included before each query parameter that is in the format of *Parameter name*=*Parameter value*. For example, **?limit=10** indicates that a maximum of 10 data records will be displayed.

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NOTE

To simplify the URI display in this document, each API is provided only with a **resource-path** and a request method. The **URI-scheme** of all APIs is **HTTPS**, and the endpoints of all APIs in the same region are identical.

Request Methods

The HTTP protocol defines the following request methods that can be used to send a request to the server.

Table 3-2 HTTP methods

Method	Description
GET	Requests the server to return specified resources.
PUT	Requests the server to update specified resources.
POST	Requests the server to add resources or perform special operations.
DELETE	Requests the server to delete specified resources, for example, an object.
HEAD	Same as GET except that the server must return only the response header.
PATCH	Requests the server to update partial content of a specified resource. If the resource does not exist, a new resource will be created.

For example, in the case of the API used to obtain a user token, the request method is **POST**. The request is as follows:

```
POST https://{{endpoint}}/v3/auth/tokens
```

Request Header

You can also add additional header fields to a request, such as the fields required by a specified URI or HTTP method. For example, to request for the authentication information, add **Content-Type**, which specifies the request body type.

Common request header fields are as follows.

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Table 3-3 Common request header fields

Parameter	Description	Mandatory	Example Value
Host	Specifies the server domain name and port number of the resources being requested. The value can be obtained from the URL of the service API. The value is in the format of *Hostname:Port number*. If the port number is not specified, the default port is used. The default port number for **https** is **443**.	No This field is mandatory for AK/SK authentication.	code.test.com or code.test.com:443
Content-Type	Specifies the type (or format) of the message body. The default value **application/json** is recommended. Other values of this field will be provided for specific APIs if any.	Yes	application/json
Content-Length	Specifies the length of the request body. The unit is byte.	No	3495
X-Project-Id	Specifies the project ID. Obtain the project ID by following the instructions in **Obtaining a Project ID**.	No This field is mandatory for requests that use AK/SK authentication in the Dedicated Cloud (DeC) scenario or multi-project scenario.	e9993fc787d94b6c886cbaa340f9c0f4

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Parameter	Description	Mandatory	Example Value
X-Auth-Token	Specifies the user token. It is a response to the API for obtaining a user token (This is the only API that does not require authentication). After the request is processed, the value of **X-Subject-Token** in the response header is the token value.	No This field is mandatory for token authentication.	The following is part of an example token: MIIPAgYJKoZIhvcNAQcCo...ggg1BBIINPXsidG9rZ

NOTE

In addition to supporting authentication using tokens, APIs support authentication using AK/SK, which uses SDKs to sign a request. During the signature, the **Authorization** (signature authentication) and **X-Sdk-Date** (time when a request is sent) headers are automatically added in the request.

For more details, see "Authentication Using AK/SK" in **Authentication**.

The API used to obtain a user token does not require authentication. Therefore, only the **Content-Type** field needs to be added to requests for calling the API. An example of such requests is as follows:

```
POST https://{{endpoint}}/v3/auth/tokens
Content-Type: application/json
```

(Optional) Request Body

This part is optional. The body of a request is often sent in a structured format (for example, JSON or XML) as specified in the **Content-Type** header field. The request body transfers content except the request header.

The request body varies between APIs. Some APIs do not require the request body, such as the APIs requested using the GET and DELETE methods.

In the case of the API used to obtain a user token, the request parameters and parameter description can be obtained from the API request. The following provides an example request with a body included. Replace *username*, *domainname*, ******** (login password), and *xxxxxxxxxxxxxxxxx* (project name) with the actual values. Obtain a project name from **Regions and Endpoints**.

NOTE

The **scope** parameter specifies where a token takes effect. You can set **scope** to an account or a project under an account. In the following example, the token takes effect only for the resources in a specified project. For more information about this API, see "Obtaining a User Token".

```
POST https://{{endpoint}}/v3/auth/tokens
Content-Type: application/json
```

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```
{
    "auth": {
        "identity": {
            "methods": [
                "password"
            ],
            "password": {
                "user": {
                    "name": "username",
                    "password": "********",
                    "domain": {
                        "name": "domainname"
                    }
                }
            }
        },
        "scope": {
            "project": {
                "name": "xxxxxxxxxxxxxxxxx"
            }
        }
    }
}
```

If all data required for the API request is available, you can send the request to call the API through **curl**, **Postman**, or coding. In the response to the API used to obtain a user token, **X-Subject-Token** is the desired user token. This token can then be used to authenticate the calling of other APIs.

3.2 Authentication

Requests for calling an API can be authenticated using either of the following methods:

- Token authentication: Requests are authenticated using tokens.
- AK/SK authentication: Requests are encrypted using AK/SK pairs. AK/SK authentication is recommended because it is more secure than token authentication.

Token Authentication

NOTE

The validity period of a token is 24 hours. When using a token for authentication, cache it to prevent frequently calling the IAM API used to obtain a user token.

A token specifies temporary permissions in a computer system. During API authentication using a token, the token is added to requests to get permissions for calling the API. You can obtain a token by calling the Obtaining User Token API.

VPC is a project-level service. When you call the API, set **auth.scope** in the request body to **project**.

```
{
    "auth": {
        "identity": {
            "methods": [
                "password"
            ],
            "password": {
                "user": {
                    "name": "username",   // IAM user name
```

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```
                "password": "********",  // IAM user password
                "domain": {
                    "name": "domainname"  // Name of the account to which the IAM user belongs
                }
            }
        }
    },
    "scope": {
        "project": {
            "name": "xxxxxxxx"    // Project Name
        }
    }
  }
}
```

After a token is obtained, the **X-Auth-Token** header field must be added to requests to specify the token when calling other APIs. For example, if the token is **ABCDEFJ....**, **X-Auth-Token: ABCDEFJ....** can be added to a request as follows:

```
POST https://{{endpoint}}/v3/auth/projects
Content-Type: application/json
X-Auth-Token: ABCDEFJ....
```

AK/SK Authentication

NOTE

AK/SK authentication supports API requests with a body not larger than 12 MB. For API requests with a larger body, token authentication is recommended.

In AK/SK authentication, AK/SK is used to sign requests and the signature is then added to the requests for authentication.

- AK: access key ID, which is a unique identifier used in conjunction with a secret access key to sign requests cryptographically.
- SK: secret access key, which is used in conjunction with an AK to sign requests cryptographically. It identifies a request sender and prevents the request from being modified.

In AK/SK authentication, you can use an AK/SK to sign requests based on the signature algorithm or using the signing SDK. For details about how to sign requests and use the signing SDK, see **API Request Signing Guide**.

NOTE

The signing SDK is only used for signing requests and is different from the SDKs provided by services.

3.3 Response

Status Code

After sending a request, you will receive a response, including a status code, response header, and response body.

A status code is a group of digits, ranging from 1xx to 5xx. It indicates the status of a request. For more information, see **Status Codes**.

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For example, if status code **201** is returned for calling the API used to obtain a user token, the request is successful.

Response Header

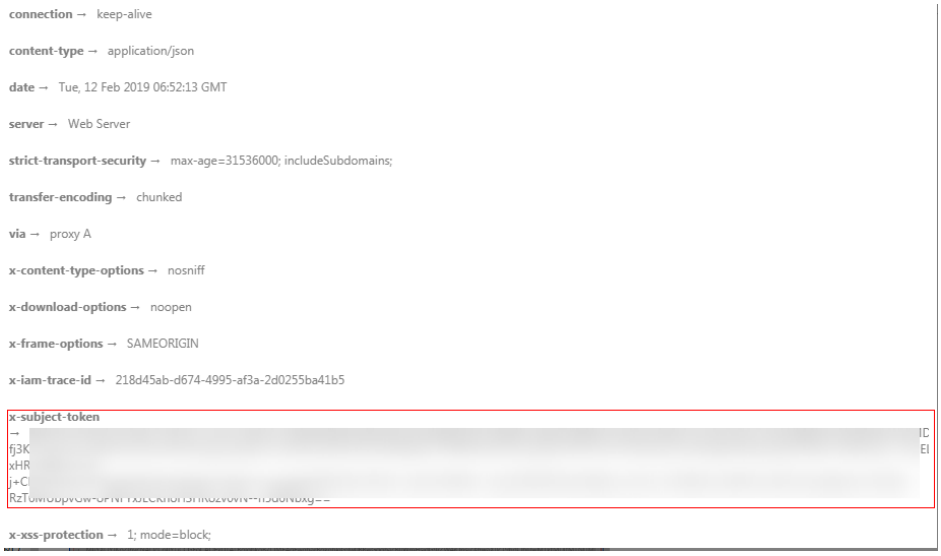
Similar to a request, a response also has a header, for example, **Content-Type**.

Figure 3-1 shows the response header fields for the API used to obtain a user token. The **X-Subject-Token** header field is the desired user token. This token can then be used to authenticate the calling of other APIs.

NOTE

For security purposes, you are advised to set the token in ciphertext in configuration files or environment variables and decrypt it when using it.

Figure 3-1 Header fields of the response to the request for obtaining a user token



(Optional) Response Body

The body of a response is often returned in a structured format (for example, JSON or XML) as specified in the **Content-Type** header field. The response body transfers content except the response header.

The following is part of the response body for the API used to obtain a user token.

```
{
    "token": {
        "expires_at": "2019-02-13T06:52:13.855000Z",
        "methods": [
            "password"
        ],
        "catalog": [
            {
                "endpoints": [
                    {
                        "region_id": "az-01",
.....
```

If an error occurs during API calling, an error code and a message will be displayed. The following shows an error response body.

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```
{
    "error_msg": "The request message format is invalid.",
    "error_code": "IMG.0001"
}
```

In the response body, **error_code** is an error code, and **error_msg** provides information about the error.

4 Getting Started

4.1 Creating a VPC

Scenarios

This section describes how to call the VPC creation API to create a VPC. For details about the parameters for creating a VPC and the response message, see section **Creating a VPC**.

Prerequisites

You have planned the region where you want to create the VPC and obtained the endpoint required for API calls. For details, see **Endpoints**.

To use token authentication, you need to obtain a token and add **X-Auth-Token** to the request headers. Obtain the token by performing the steps provided in section **Authentication**.

NOTE

The token obtained from IAM is valid for only 24 hours. If you want to use one token for authentication, you can cache it to avoid frequently obtaining the token.

Procedure

1. Send **POST https://*VPC endpoint*/v1/{project_id}/vpcs**. Parameter **project_id** indicates the project ID.
2. Add **X-Auth-Token** to the request header.
3. Specify the following parameters in the request body:

```
{
   "vpc": {
      "name": "vpc", //VPC name
      "cidr": "192.168.0.0/16" //Available subnet IP address ranges in the VPC
   }
}
```

4. Check the response message.
   - The request is successful if the following response is displayed. In the response, **id** indicates the VPC ID.

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```
{
   "vpc": {
      "id": "b6684a27-b049-407d-90b4-c9551f2390e1",
      "name": "vpc",
      "cidr": "192.168.0.0/16",
      "status": "CREATING",
      "routes": []
   }
}
```

- For details about the error codes displayed if the request fails, see section **Error Codes**.

5. Query the VPC details as well as update or delete the VPC based on the **vpc_id** and **project_id** values.

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5 APIs

5.1 Virtual Private Cloud

5.1.1 Creating a VPC

Function

This API is used to create a VPC.

URI

POST /v1/{project_id}/vpcs

Table 5-1 describes the parameters.

Table 5-1 Parameter description

Name	Mandatory	Description
project_id	Yes	Specifies the project ID. For details about how to obtain a project ID, see Obtaining a Project ID.

Request Parameters

Table 5-2 Request parameter

Name	Mandatory	Type	Description
vpc	Yes	vpc object	Specifies the VPC objects.

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Table 5-3 VPC objects

Name	Mandatory	Type	Description
name	No	String	• Specifies the VPC name. • The value can contain no more than 64 characters, including letters, digits, underscores (_), hyphens (-), and periods (.). • Each VPC name of a tenant must be unique if the VPC name is not left blank.
description	No	String	• Provides supplementary information about the VPC. • The value can contain no more than 255 characters and cannot contain angle brackets (< or >).
cidr	No	String	• Specifies the available IP address ranges for subnets in the VPC. • Possible values are as follows: – 10.0.0.0/8-24 – 172.16.0.0/12-24 – 192.168.0.0/16-24 • If **cidr** is not specified, the default value is left blank. • The value must be in CIDR format, for example, **192.168.0.0/16**.

Example Request

- Create a VPC named **vpc** and set its CIDR block to 192.168.0.0/16.

```
POST https://{Endpoint}/v1/{project_id}/vpcs

{
    "vpc": {
        "name": "vpc",
        "description": "test",
        "cidr": "192.168.0.0/16"
    }
}
```

Response Parameters

Table 5-4 Response parameter

Name	Type	Description
vpc	**vpc** object	**Specifies the VPC objects.**

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Table 5-5 VPC objects

Name	Type	Description
id	String	Specifies a resource ID in UUID format.
name	String	• Specifies the VPC name. • The value can contain no more than 64 characters, including letters, digits, underscores (_), hyphens (-), and periods (.). • Each VPC name of a tenant must be unique if the VPC name is not left blank.
description	String	• Provides supplementary information about the VPC. • The value can contain no more than 255 characters and cannot contain angle brackets (< or >).
cidr	String	• Specifies the available IP address ranges for subnets in the VPC. • Possible values are as follows: – 10.0.0.0/8-24 – 172.16.0.0/12-24 – 192.168.0.0/16-24 • If **cidr** is not specified, the default value is left blank. • The value must be in CIDR format, for example, **192.168.0.0/16**.
status	String	• Specifies the VPC status. • Possible values are as follows: – **CREATING**: The VPC is being created. – **OK**: The VPC is created successfully.

Example Response

```
{
 "vpc":
    {
    "id": "99d9d709-8478-4b46-9f3f-2206b1023fd3",
    "name": "vpc",
    "description": "test",
    "cidr": "192.168.0.0/16",
    "status": "CREATING",
    }
}
```

Status Code

See **Status Codes**.

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Error Code

See **Error Codes**.

5.1.2 Querying VPC Details

Function

This API is used to query details about a VPC.

URI

GET /v1/{project_id}/vpcs/{vpc_id}

Table 5-6 describes the parameters.

Table 5-6 Parameter description

Name	Mandatory	Description
project_id	Yes	Specifies the project ID. For details about how to obtain a project ID, see **Obtaining a Project ID**.
vpc_id	Yes	Specifies the VPC ID, which uniquely identifies the VPC.

Request Parameters

None

Example Request

```
GET https://{Endpoint}/v1/{project_id}/vpcs/99d9d709-8478-4b46-9f3f-2206b1023fd3
```

Response Parameters

Table 5-7 Response parameter

Name	Type	Description
vpc	**vpc** object	**Specifies the VPC objects.**

Table 5-8 VPC objects

Name	Type	Description
id	String	Specifies a resource ID in UUID format.

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Name	Type	Description
name	String	• Specifies the VPC name. • The value can contain no more than 64 characters, including letters, digits, underscores (_), hyphens (-), and periods (.). • Each VPC name of a tenant must be unique if the VPC name is not left blank.
description	String	• Provides supplementary information about the VPC. • The value can contain no more than 255 characters and cannot contain angle brackets (< or >).
cidr	String	• Specifies the available IP address ranges for subnets in the VPC. • Possible values are as follows: – 10.0.0.0/8-24 – 172.16.0.0/12-24 – 192.168.0.0/16-24 • If **cidr** is not specified, the default value is left blank. • The value must be in CIDR format, for example, **192.168.0.0/16**.
status	String	• Specifies the VPC status. • Possible values are as follows: – **CREATING**: The VPC is being created. – **OK**: The VPC is created successfully.

Example Response

```
{
   "vpc": {
      "id": "99d9d709-8478-4b46-9f3f-2206b1023fd3",
      "name": "vpc",
      "description": "test",
      "cidr": "192.168.0.0/16",
      "status": "OK"

}
}
```

Status Code

See **Status Codes**.

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Error Code

See **Error Codes**.

5.1.3 Querying VPCs

Function

This API is used to query VPCs using search criteria and to display the VPCs in a list.

URI

GET /v1/{project_id}/vpcs

Example:
GET https://{Endpoint}/v1/{project_id}/vpcs?limit=10&marker=13551d6b-755d-4757-b956-536f674975c0

Table 5-9 describes the parameters.

Table 5-9 Parameter description

Name	Mandatory	Type	Description
project_id	Yes	String	Specifies the project ID. For details about how to obtain a project ID, see **Obtaining a Project ID**.

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Name	Mandatory	Type	Description
marker	No	String	Specifies a resource ID for pagination query, indicating that the query starts from the next record of the specified resource ID. This parameter can work together with the parameter **limit**. • If parameters **marker** and **limit** are not passed, resource records on the first page will be returned. • If the parameter **marker** is not passed and the value of parameter **limit** is set to **10**, the first 10 resource records will be returned. • If the value of the parameter **marker** is set to the resource ID of the 10th record and the value of parameter **limit** is set to **10**, the 11th to 20th resource records will be returned. • If the value of the parameter **marker** is set to the resource ID of the 10th record and the parameter **limit** is not passed, resource records starting from the 11th records (including 11th) will be returned.
limit	No	Integer	Specifies the number of records that will be returned on each page. The value is from 0 to intmax (2^31-1). The default value is 2000. **limit** can be used together with **marker**. For details, see the parameter description of **marker**.

Request Parameters

None

Example Request

```
GET https://{Endpoint}/v1/{project_id}/vpcs
```

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Response Parameters

Table 5-10 Response parameter

Name	Type	Description
vpcs	Array of **vpcs** objects	Specifies the VPCs.

Table 5-11 Description of the **vpcs** field

Name	Type	Description
id	String	Specifies a resource ID in UUID format.
name	String	• Specifies the VPC name. • The value can contain no more than 64 characters, including letters, digits, underscores (_), hyphens (-), and periods (.). • Each VPC name of a tenant must be unique if the VPC name is not left blank.
description	String	• Provides supplementary information about the VPC. • The value can contain no more than 255 characters and cannot contain angle brackets (< or >).
cidr	String	• Specifies the available IP address ranges for subnets in the VPC. • Possible values are as follows: – 10.0.0.0/8-24 – 172.16.0.0/12-24 – 192.168.0.0/16-24 • If **cidr** is not specified, the default value is left blank. • The value must be in CIDR format, for example, **192.168.0.0/16**.
status	String	• Specifies the VPC status. • Possible values are as follows: – **CREATING**: The VPC is being created. – **OK**: The VPC is created successfully.

Example Response

```
{
   "vpcs": [
      {
         "id": "13551d6b-755d-4757-b956-536f674975c0",
```

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```
            "name": "default",
            "description": "test",
            "cidr": "172.16.0.0/16",
            "status": "OK"
        },
        {
            "id": "3ec3b33f-ac1c-4630-ad1c-7dba1ed79d85",
            "name": "222",
            "description": "test",
            "cidr": "192.168.0.0/16",
            "status": "OK"
        },
        {
            "id": "99d9d709-8478-4b46-9f3f-2206b1023fd3",
            "name": "vpc",
            "description": "test",
            "cidr": "192.168.0.0/16",
            "status": "OK"
        }
    ]
}
```


Status Code

See **Status Codes**.

Error Code

See **Error Codes**.

5.1.4 Updating VPC Information

Function

This API is used to update information about a VPC.

URI

PUT /v1/{project_id}/vpcs/{vpc_id}

Table 5-12 describes the parameters.

Table 5-12 Parameter description

Name	Mandatory	Description
project_id	Yes	Specifies the project ID. For details about how to obtain a project ID, see **Obtaining a Project ID**.
vpc_id	Yes	Specifies the VPC ID, which uniquely identifies the VPC.

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Request Parameters

Table 5-13 Request parameter

Name	Mandatory	Type	Description
vpc	Yes	**vpc** object	**Specifies the VPC objects.**

Table 5-14 VPC objects

Name	Mandatory	Type	Description
name	No	String	• Specifies the VPC name. • The value can contain no more than 64 characters, including letters, digits, underscores (_), hyphens (-), and periods (.). • Each VPC name of a tenant must be unique if the VPC name is not left blank.
description	No	String	• Provides supplementary information about the VPC. • The value can contain no more than 255 characters and cannot contain angle brackets (< or >).
cidr	No	String	• Specifies the available IP address ranges for subnets in the VPC. • Possible values are as follows: – 10.0.0.0/8-24 – 172.16.0.0/12-24 – 192.168.0.0/16-24 • If **cidr** is not specified, the default value is left blank. • Constraints: The value must be in CIDR format, for example, **192.168.0.0/16**. If you want to update the CIDR block of the VPC, the new CIDR block must contain all subnets in the VPC.
routes	No	Array of **route** objects	• Specifies the route list. For details, see **Table 5-15**.

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Table 5-15 route objects

Name	Mandatory	Type	Description
destination	No	String	• Specifies the destination network segment of a route. • The value must be in the CIDR format. Currently, only the value **0.0.0.0/0** is supported.
nexthop	No	String	• Specifies the next hop of a route. • The value must be an IP address and must belong to the subnet in the VPC. Otherwise, this value does not take effect.

Example Request

- Change the name, description, and CIDR block of the VPC whose ID is 99d9d709-8478-4b46-9f3f-2206b1023fd3 to **vpc1**, **test1**, and **192.168.0.0/16**, respectively.

```
PUT https://{Endpoint}/v1/{project_id}/vpcs/99d9d709-8478-4b46-9f3f-2206b1023fd3

{
    "vpc": {
        "name": "vpc1",
        "description": "test1",
        "cidr": "192.168.0.0/16"
    }
}
```

Response Parameters

Table 5-16 Response parameter

Name	Type	Description
vpc	**vpc** object	**Specifies the VPC objects.**

Table 5-17 VPC objects

Name	Type	Description
id	String	Specifies a resource ID in UUID format.
name	String	Specifies the VPC name.
description	String	• Provides supplementary information about the VPC. • The value can contain no more than 255 characters and cannot contain angle brackets (< or >).

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Name	Type	Description
cidr	String	• Specifies the available IP address ranges for subnets in the VPC. • Possible values are as follows: – 10.0.0.0/8-24 – 172.16.0.0/12-24 – 192.168.0.0/16-24 • If **cidr** is not specified, the default value is left blank. • The value must be in CIDR format, for example, **192.168.0.0/16**.
status	String	• Specifies the VPC status. • Possible values are as follows: – **CREATING**: The VPC is being created. – **OK**: The VPC is created successfully.
routes	Array of **route** objects	• Specifies the route information. • For details, see the description of the **route objects**.

Table 5-18 route objects

Name	Type	Description
destination	String	• Specifies the destination network segment of a route. • The value must be in the CIDR format. Currently, only the value **0.0.0.0/0** is supported.
nexthop	String	• Specifies the next hop of a route. • The value must be an IP address and must belong to the subnet in the VPC. Otherwise, this value does not take effect.

Example Response

```
{
    "vpc": {
        "id": "99d9d709-8478-4b46-9f3f-2206b1023fd3",
        "name": "vpc1",
        "description": "test1",
        "cidr": "192.168.0.0/16",
        "status": "OK"
    }
}
```

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Status Code

See **Status Codes**.

Error Code

See **Error Codes**.

5.1.5 Deleting a VPC

Function

This API is used to delete a VPC.

URI

DELETE /v1/{project_id}/vpcs/{vpc_id}

Table 5-19 describes the parameters.

Table 5-19 Parameter description

Name	Mandatory	Description
project_id	Yes	Specifies the project ID. For details about how to obtain a project ID, see **Obtaining a Project ID**.
vpc_id	Yes	Specifies the VPC ID, which uniquely identifies the VPC.

Request Parameters

None

Example Request

```
DELETE https://{Endpoint}/v1/{project_id}/vpcs/13551d6b-755d-4757-b956-536f674975c0
```

Response Parameters

None

Example Response

None

Status Code

See **Status Codes**.

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Error Code

See **Error Codes**.

5.2 Subnet

5.2.1 Creating a Subnet

Function

This API is used to create a subnet.

Notes and Constraints

- IPv6 subnets can be created only when IPv4 subnets have been created on the network.
- A VXLAN network can have only one IPv4 subnet and one IPv6 subnet.

URI

POST /v1/{project_id}/subnets

Table 5-20 describes the parameters.

Table 5-20 Parameter description

Name	Mandatory	Description
project_id	Yes	Specifies the project ID. For details about how to obtain a project ID, see **Obtaining a Project ID**.

Request Parameters

Table 5-21 Request parameter

Name	Mandatory	Type	Description
subnet	Yes	**subnet** object	Specifies the **subnet objects**.

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Table 5-22 subnet objects

Name	Mandatory	Type	Description
name	Yes	String	• Specifies the subnet name. • The value can contain 1 to 64 characters, including letters, digits, underscores (_), hyphens (-), and periods (.).
description	No	String	• Provides supplementary information about the subnet. • The value can contain no more than 255 characters and cannot contain angle brackets (< or >).
cidr	Yes	String	• Specifies the subnet CIDR block. • The value must be within the VPC CIDR block. • The value must be in CIDR format. The subnet mask cannot be greater than 28.
gateway_ip	Yes	String	• Specifies the gateway of the subnet. • The value must be an IP address in the subnet. • The value must be a valid IP address.
ipv6_enable	No	Boolean	• Specifies whether IPv6 is enabled. If IPv6 is enabled, you can use IPv6 CIDR blocks. • The value can be **true** (enabled) or **false** (disabled). • If this parameter is left blank, the system automatically sets it to **false** by default.
dhcp_enable	No	Boolean	• Specifies whether DHCP is enabled for the subnet. • The value can be **true** (enabled) or **false** (disabled). • If this parameter is left blank, the value is set to **true** by default. If this parameter is set to **false**, newly created ECSs cannot obtain IP addresses, and usernames and passwords cannot be injected using Cloud-init.

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Name	Mandatory	Type	Description
primary_dns	No	String	• Specifies the IP address of DNS server 1 on the subnet. • The value must be an IP address. IPv6 addresses are not supported. If the value is not specified, the default value will be left blank.
secondary_dns	No	String	• Specifies the IP address of DNS server 2 on the subnet. • The value must be an IP address. IPv6 addresses are not supported. If the value is not specified, the default value will be left blank. If only **secondary_dns** is specified and **primary_dns** is not specified, **primary_dns** will automatically use the value of **secondary_dns**. If there is only one DNS server address, only **primary_dns** is displayed.
dnsList	No	Array of strings	• Specifies the DNS server address list of a subnet. This field is required if you need to use more than two DNS servers. • This parameter value is the superset of both DNS server address 1 and DNS server address 2. If the value is not specified, the default value will be left blank.
availability_zone	No	String	• Specifies the AZ to which the subnet belongs, which can be obtained from endpoints. For details, see **Endpoints**. • The value must be an existing AZ in the system. If the value is not specified, the default value will be left blank.
vpc_id	Yes	String	Specifies the ID of the VPC to which the subnet belongs.

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Name	Mandatory	Type	Description
extra_dhcp_opts	No	Array of **extra_dhcp_opt** objects	Specifies the NTP server address configured for the subnet. For details, see **Table 5-23**.

Table 5-23 extra_dhcp_opt object

Name	Mandatory	Type	Description
opt_value	No	String	• Specifies the NTP server address configured for the subnet. • Constraints: The option **ntp** for **opt_name** indicates the NTP server configured for the subnet. Currently, only IPv4 addresses are supported. A maximum of four IP addresses can be configured, and each address must be unique. Multiple IP addresses must be separated using commas (,). The option **null** for **opt_name** indicates that no NTP server is configured for the subnet. The parameter value cannot be an empty string. The option **ipv6_addresstime** for **opt_name** indicates the DHCP lease expiration time of the IPv6 subnet. The value can be **-1**, which indicates unlimited lease time, or *Number***+h**. The number ranges from 1 to 175,200. For example, the value can be **5h**. The default value is **2h**.
opt_name	Yes	String	• Specifies the NTP server address name configured for the subnet. • Currently, the value can only be set to **ntp**.

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Example Request

- Create a subnet with name set to **subnet**, CIDR block set to 192.168.20.0/24, and gateway IP address set to 192.168.20.1 in the VPC with ID of 3ec3b33f-ac1c-4630-ad1c-7dba1ed79d85.

```
POST https://{Endpoint}/v1/{project_id}/subnets

{
    "subnet": {
        "name": "subnet",
        "description": "",
        "cidr": "192.168.20.0/24",
        "gateway_ip": "192.168.20.1",
        "ipv6_enable": true,
        "dhcp_enable": true,
        "primary_dns": "114.xx.xx.114",
        "secondary_dns": "114.xx.xx.115",
        "dnsList": [
            "114.xx.xx.114",
            "114.xx.xx.115"
        ],
        "availability_zone": "aa-bb-cc",
        "vpc_id": "3ec3b33f-ac1c-4630-ad1c-7dba1ed79d85"
    }
}
```

Response Parameters

Table 5-24 Response parameter

Name	Type	Description
subnet	**subnet** object	Specifies the **subnet objects**.

Table 5-25 subnet objects

Name	Type	Description
id	String	Specifies the resource identifier in the form of UUID.
name	String	• Specifies the subnet name. • The value can contain 1 to 64 characters, including letters, digits, underscores (_), hyphens (-), and periods (.).
description	String	• Provides supplementary information about the subnet. • The value can contain no more than 255 characters and cannot contain angle brackets (< or >).

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Name	Type	Description
cidr	String	• Specifies the subnet CIDR block. • The value must be within the VPC CIDR block. • The value must be in CIDR format. The subnet mask cannot be greater than 28.
gateway_ip	String	• Specifies the gateway of the subnet. • The value must be an IP address in the subnet. • The value must be a valid IP address.
ipv6_enable	Boolean	Specifies whether an IPv6 subnet can be created.
cidr_v6	String	Specifies the IPv6 subnet CIDR block. If the subnet is an IPv4 subnet, this parameter is not returned.
gateway_ip_v6	String	Specifies the IPv6 subnet gateway. If the subnet is an IPv4 subnet, this parameter is not returned.
dhcp_enable	Boolean	Specifies whether DHCP is enabled for the subnet.
primary_dns	String	• Specifies the IP address of DNS server 1 on the subnet. • The value must be an IP address. IPv6 addresses are not supported. If the value is not specified, the default value will be left blank.
secondary_dns	String	• Specifies the IP address of DNS server 2 on the subnet. • The value must be an IP address. IPv6 addresses are not supported. If the value is not specified, the default value will be left blank. If only **secondary_dns** is specified and **primary_dns** is not specified, **primary_dns** will automatically use the value of **secondary_dns**. If there is only one DNS server address, only **primary_dns** is displayed.

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Name	Type	Description
dnsList	Array of strings	• Specifies the DNS server address list of a subnet. This field is required if you need to use more than two DNS servers. • This parameter value is the superset of both DNS server address 1 and DNS server address 2. If the value is not specified, the default value will be left blank.
availability_zone	String	• Specifies the AZ to which the subnet belongs, which can be obtained from endpoints. For details, see **Endpoints**. • The value must be an existing AZ in the system. If the value is not specified, the default value will be left blank.
vpc_id	String	Specifies the ID of the VPC to which the subnet belongs.
status	String	• Specifies the status of the subnet. • The value can be **ACTIVE**, **UNKNOWN**, or **ERROR**. – **ACTIVE**: indicates that the subnet has been associated with a VPC. – **UNKNOWN**: indicates that the subnet has not been associated with a VPC. – **ERROR**: indicates that the subnet is abnormal. • The system creates a subnet and then associates the subnet with a VPC in the threads. In the concurrent scenario, if the CIDR block of the created subnet is the same as that of an existing subnet, the created subnet fails to associate with a VPC after underlying system verification. As a result, the subnet creation fails. In this scenario, the returned value of **status** is **UNKNOWN**.
neutron_network_id	String	Specifies the ID of the corresponding network (OpenStack Neutron API).

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Name	Type	Description
neutron_subnet_id	String	Specifies the ID of the corresponding subnet (OpenStack Neutron API).
neutron_subnet_id_v6	String	Specifies the ID of the IPv6 subnet (OpenStack Neutron API). If the subnet is an IPv4 subnet, this parameter is not returned.
extra_dhcp_opts	Array of **extra_dhcp_opt** objects	Specifies the NTP server address configured for the subnet. For details, see **Table 5-26**.

Table 5-26 extra_dhcp_opt object

Name	Mandatory	Type	Description
opt_value	No	String	• Specifies the NTP server address configured for the subnet. • Constraints: The option **ntp** for **opt_name** indicates the NTP server configured for the subnet. Currently, only IPv4 addresses are supported. A maximum of four IP addresses can be configured, and each address must be unique. Multiple IP addresses must be separated using commas (,). The option **null** for **opt_name** indicates that no NTP server is configured for the subnet. The parameter value cannot be an empty string. The option **ipv6_addresstime** for **opt_name** indicates the DHCP lease expiration time of the IPv6 subnet. The value can be **-1**, which indicates unlimited lease time, or *Number*+**h**. The number ranges from 1 to 175,200. For example, the value can be **5h**. The default value is **2h**.

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Name	Mandatory	Type	Description
opt_name	Yes	String	• Specifies the NTP server address name configured for the subnet. • Currently, the value can only be set to **ntp**.

Example Response

```
{
   "subnet": {
      "id": "4779ab1c-7c1a-44b1-a02e-93dfc361b32d",
      "name": "subnet",
      "description": "",
      "cidr": "192.168.20.0/24",
      "dnsList": [
         "114.xx.xx.114",
         "114.xx.xx.115"
      ],
      "status": "UNKNOWN",
      "vpc_id": "3ec3b33f-ac1c-4630-ad1c-7dba1ed79d85",
      "gateway_ip": "192.168.20.1",
      "ipv6_enable": true,
      "cidr_v6": "2001:db8:a583::/64",
      "gateway_ip_v6": "2001:db8:a583::1",
      "dhcp_enable": true,
      "primary_dns": "114.xx.xx.114",
      "secondary_dns": "114.xx.xx.115",
      "availability_zone": "aa-bb-cc",
      "neutron_network_id": "4779ab1c-7c1a-44b1-a02e-93dfc361b32d",
      "neutron_subnet_id": "213cb9d-3122-2ac1-1a29-91ffc1231a12",
      "neutron_subnet_id_v6": "e0fa7de1-a6e2-44c9-b052-b9d8cebe93c4",
   }
}
```

Status Code

See **Status Codes**.

Error Code

See **Error Codes**.

5.2.2 Querying Subnet Details

Function

This API is used to query details about a subnet.

URI

GET /v1/{project_id}/subnets/{subnet_id}

Table 5-27 describes the parameters.

Table 5-27 Parameter description

Name	Mandatory	Description
project_id	Yes	Specifies the project ID. For details about how to obtain a project ID, see **Obtaining a Project ID**.
subnet_id	Yes	Specifies the subnet ID, which uniquely identifies the subnet. If you use the management console, the value of this parameter is the **Network ID** value.

Request Parameters

None

Example Request

```
GET https://{Endpoint}/v1/{project_id}/subnets/4779ab1c-7c1a-44b1-a02e-93dfc361b32d
```

Response Parameters

Table 5-28 Response parameter

Name	Type	Description
subnet	**subnet** object	Specifies the **subnet objects**.

Table 5-29 subnet objects

Name	Type	Description
id	String	Specifies a resource ID in UUID format.
name	String	• Specifies the subnet name. • The value can contain 1 to 64 characters, including letters, digits, underscores (_), hyphens (-), and periods (.).

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Name	Type	Description
description	String	• Provides supplementary information about the subnet. • The value can contain no more than 255 characters and cannot contain angle brackets (< or >).
cidr	String	Specifies the subnet CIDR block.
gateway_ip	String	Specifies the subnet gateway address.
ipv6_enable	Boolean	Specifies whether an IPv6 subnet can be created.
cidr_v6	String	Specifies the IPv6 subnet CIDR block. If the subnet is an IPv4 subnet, this parameter is not returned.
gateway_ip_v6	String	Specifies the IPv6 subnet gateway. If the subnet is an IPv4 subnet, this parameter is not returned.
dhcp_enable	Boolean	Specifies whether DHCP is enabled for the subnet.
primary_dns	String	Specifies the IP address of DNS server 1 on the subnet.
secondary_dns	String	Specifies the IP address of DNS server 2 on the subnet.
dnsList	Array of strings	Specifies the IP address list of DNS servers on the subnet.
availability_zone	String	Identifies the AZ to which the subnet belongs.
vpc_id	String	Specifies the ID of the VPC to which the subnet belongs.
status	String	• Specifies the status of the subnet. • The value can be **ACTIVE**, **UNKNOWN**, or **ERROR**. – **ACTIVE**: indicates that the subnet has been associated with a VPC. – **UNKNOWN**: indicates that the subnet has not been associated with a VPC. – **ERROR**: indicates that the subnet is abnormal.
neutron_network_id	String	Specifies the ID of the corresponding network (OpenStack Neutron API).

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Name	Type	Description
neutron_subnet_id	String	Specifies the ID of the corresponding subnet (OpenStack Neutron API).
neutron_subnet_id_v6	String	Specifies the ID of the IPv6 subnet (OpenStack Neutron API). If the subnet is an IPv4 subnet, this parameter is not returned.

Example Response

```
{
   "subnet": {
      "id": "4779ab1c-7c1a-44b1-a02e-93dfc361b32d",
      "name": "subnet",
      "description": "",
      "cidr": "192.168.20.0/24",
      "dnsList": [
         "114.xx.xx.114",
         "114.xx.xx.115"
      ],
      "status": "ACTIVE",
      "vpc_id": "3ec3b33f-ac1c-4630-ad1c-7dba1ed79d85",
      "gateway_ip": "192.168.20.1",
      "ipv6_enable": false,
      "dhcp_enable": true,
      "primary_dns": "114.xx.xx.114",
      "secondary_dns": "114.xx.xx.115",
      "availability_zone": "aa-bb-cc",
      "neutron_network_id": "4779ab1c-7c1a-44b1-a02e-93dfc361b32d",
      "neutron_subnet_id": "213cb9d-3122-2ac1-1a29-91ffc1231a12"
   }
}
```

Status Code

See **Status Codes**.

Error Code

See **Error Codes**.

5.2.3 Querying Subnets

Function

This API is used to query subnets using search criteria and to display the subnets in a list.

URI

GET /v1/{project_id}/subnets

Example:

```
GET https://{Endpoint}/v1/{project_id}/subnets?limit=10&marker=4779ab1c-7c1a-44b1-a02e-93dfc361b32d&vpc_id=3ec3b33f-ac1c-4630-ad1c-7dba1ed79d85
```

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Table 5-30 Parameter description

Name	Mandatory	Type	Description
project_id	Yes	String	Specifies the project ID. For details about how to obtain a project ID, see **Obtaining a Project ID**.
marker	No	String	Specifies a resource ID for pagination query, indicating that the query starts from the next record of the specified resource ID. This parameter can work together with the parameter **limit**. • If parameters **marker** and **limit** are not passed, resource records on the first page will be returned. • If the parameter **marker** is not passed and the value of parameter **limit** is set to **10**, the first 10 resource records will be returned. • If the value of the parameter **marker** is set to the resource ID of the 10th record and the value of parameter **limit** is set to **10**, the 11th to 20th resource records will be returned. • If the value of the parameter **marker** is set to the resource ID of the 10th record and the parameter **limit** is not passed, resource records starting from the 11th records (including 11th) will be returned.
limit	No	Integer	Specifies the number of records that will be returned on each page. The value is from 0 to intmax (2^31-1). The default value is 2000. **limit** can be used together with **marker**. For details, see the parameter description of **marker**.
vpc_id	No	String	Specifies that the VPC ID is used as the filtering condition.

Request Parameters

None

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Example Request

```
GET https://{Endpoint}/v1/{project_id}/subnets
```

Response Parameters

Table 5-31 Response parameter

Name	Type	Description
subnets	Array of **subnet** objects	Specifies the subnets.

Table 5-32 subnet objects

Name	Type	Description
id	String	Specifies a resource ID in UUID format.
name	String	• Specifies the subnet name. • The value can contain 1 to 64 characters, including letters, digits, underscores (_), hyphens (-), and periods (.).
description	String	• Provides supplementary information about the subnet. • The value can contain no more than 255 characters and cannot contain angle brackets (< or >).
cidr	String	Specifies the subnet CIDR block.
gateway_ip	String	Specifies the subnet gateway address.
ipv6_enable	Boolean	Specifies whether an IPv6 subnet can be created.
cidr_v6	String	Specifies the IPv6 subnet CIDR block. If the subnet is an IPv4 subnet, this parameter is not returned.
gateway_ip_v6	String	Specifies the IPv6 subnet gateway. If the subnet is an IPv4 subnet, this parameter is not returned.
dhcp_enable	Boolean	Specifies whether the DHCP function is enabled for the subnet.
primary_dns	String	Specifies the IP address of DNS server 1 on the subnet.
secondary_dns	String	Specifies the IP address of DNS server 2 on the subnet.

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Name	Type	Description
dnsList	Array of strings	Specifies the IP address list of DNS servers on the subnet.
availability_zone	String	Identifies the AZ to which the subnet belongs.
vpc_id	String	Specifies the ID of the VPC to which the subnet belongs.
status	String	• Specifies the status of the subnet. • The value can be **ACTIVE**, **UNKNOWN**, or **ERROR**. – **ACTIVE**: indicates that the subnet has been associated with a VPC. – **UNKNOWN**: indicates that the subnet has not been associated with a VPC. – **ERROR**: indicates that the subnet is abnormal.
neutron_network_id	String	Specifies the ID of the corresponding network (OpenStack Neutron API).
neutron_subnet_id	String	Specifies the ID of the corresponding subnet (OpenStack Neutron API).
neutron_subnet_id_v6	String	Specifies the ID of the IPv6 subnet (OpenStack Neutron API). If the subnet is an IPv4 subnet, this parameter is not returned.

Example Response


```
{
   "subnets": [
      {
         "id": "4779ab1c-7c1a-44b1-a02e-93dfc361b32d",
         "name": "subnet",
         "description": "",
         "cidr": "192.168.20.0/24",
         "dnsList": [
            "114.xx.xx.114",
            "114.xx.xx.115"
         ],
         "status": "ACTIVE",
         "vpc_id": "3ec3b33f-ac1c-4630-ad1c-7dba1ed79d85",
         "gateway_ip": "192.168.20.1",
         "ipv6_enable": true,
         "cidr_v6": "2001:db8:a583::/64",
         "gateway_ip_v6": "2001:db8:a583::1",
         "dhcp_enable": true,
         "primary_dns": "114.xx.xx.114",
         "secondary_dns": "114.xx.xx.115",
         "availability_zone": "aa-bb-cc",
         "neutron_network_id": "4779ab1c-7c1a-44b1-a02e-93dfc361b32d",
         "neutron_subnet_id": "213cb9d-3122-2ac1-1a29-91ffc1231a12",
```


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```
            "neutron_subnet_id_v6": "e0fa7de1-a6e2-44c9-b052-b9d8cebe93c4",
        },
        {
            "id": "531dec0f-3116-411b-a21b-e612e42349fd",
            "name": "Subnet1",
            "description": "",
            "cidr": "192.168.1.0/24",
            "dnsList": [
                "114.xx.xx.114",
                "114.xx.xx.115"
            ],
            "status": "ACTIVE",
            "vpc_id": "3ec3b33f-ac1c-4630-ad1c-7dba1ed79d85",
            "gateway_ip": "192.168.1.1",
            "ipv6_enable": false,
            "dhcp_enable": true,
            "primary_dns": "114.xx.xx.114",
            "secondary_dns": "114.xx.xx.115",
            "availability_zone": "aa-bb-cc",
            "neutron_network_id": "531dec0f-3116-411b-a21b-e612e42349fd",
            "neutron_subnet_id": "1aac193-a2ad-f153-d122-12d64c2c1d78"
,
        }
    ]
}
```


Status Code

See **Status Codes**.

Error Code

See **Error Codes**.

5.2.4 Updating Subnet Information

Function

This API is used to update information about a subnet.

URI

PUT /v1/{project_id}/vpcs/{vpc_id}/subnets/{subnet_id}

Table 5-33 describes the parameters.

Table 5-33 Parameter description

Name	Mandatory	Description
project_id	Yes	Specifies the project ID. For details about how to obtain a project ID, see **Obtaining a Project ID**.
vpc_id	Yes	Specifies the VPC ID of the subnet.

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Name	Mandatory	Description
subnet_id	Yes	Specifies the subnet ID, which uniquely identifies the subnet. If you use the management console, the value of this parameter is the **Network ID** value.

Request Parameters

Table 5-34 Request parameter

Name	Mandatory	Type	Description
subnet	Yes	**subnet** object	Specifies the **subnet objects**.

Table 5-35 subnet objects

Name	Mandatory	Type	Description
name	Yes	String	• Specifies the subnet name. • The value can contain 1 to 64 characters, including letters, digits, underscores (_), hyphens (-), and periods (.).
description	No	String	• Provides supplementary information about the subnet. • The value can contain no more than 255 characters and cannot contain angle brackets (< or >).
ipv6_enable	No	Boolean	• Specifies whether an IPv6 subnet can be created. • The value can be **true** (enabled) or **false** (disabled).

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Name	Mandatory	Type	Description
dhcp_enable	No	Boolean	• Specifies whether DHCP is enabled for the subnet. • The value can be **true** (enabled) or **false** (disabled). • If this parameter is left blank, the system automatically sets it to **true** by default. If this parameter is set to **false**, newly created ECSs cannot obtain IP addresses, and usernames and passwords cannot be injected using Cloud-init. Exercise caution when performing this operation.
primary_dns	No	String	• Specifies the IP address of DNS server 1 on the subnet. • The value must be a valid IP address.
secondary_dns	No	String	• Specifies the IP address of DNS server 2 on the subnet. • The value must be a valid IP address. The value of **secondary_dns** must be different from that of **primary_dns**. If there is only one DNS server address, only **primary_dns** is displayed.
dnsList	No	Array of strings	• Specifies the DNS server address list of a subnet. This field is required if you need to use more than two DNS servers. • This parameter value is the superset of both DNS server address 1 and DNS server address 2.

Example Request

- Change the name of the subnet whose ID is 4779ab1c-7c1a-44b1-a02e-93dfc361b32d to **subnet02**, and also change its DNS and DHCP configurations.

```
PUT https://{Endpoint}/v1/{project_id}/vpcs/{vpc_id}/subnets/4779ab1c-7c1a-44b1-a02e-93dfc361b32d

{
   "subnet": {
```

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```
        "name": "subnet02",
        "ipv6_enable": true,
        "dhcp_enable": false,
        "primary_dns": "114.xx.xx.115",
        "secondary_dns": "114.xx.xx.116"
    }
}
```

Response Parameters

Table 5-36 Response parameter

Name	Type	Description
subnet	**subnet** object	Specifies the **subnet** objects.

Table 5-37 subnet objects

Name	Type	Description
id	String	Specifies a resource ID in UUID format.
status	String	• Specifies the status of the subnet. • The value can be **ACTIVE**, **UNKNOWN**, or **ERROR**. – **ACTIVE**: indicates that the subnet has been associated with a VPC. – **UNKNOWN**: indicates that the subnet has not been associated with a VPC. – **ERROR**: indicates that the subnet is abnormal.

Example Response

```
{
    "subnet": {
        "id": "4779ab1c-7c1a-44b1-a02e-93dfc361b32d",
        "status": "ACTIVE"
    }
}
```

Status Code

See **Status Codes**.

Error Code

See **Error Codes**.

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5.2.5 Deleting a Subnet

Function

This API is used to delete a subnet.

URI

DELETE /v1/{project_id}/vpcs/{vpc_id}/subnets/{subnet_id}

Table 5-38 describes the parameters.

Table 5-38 Parameter description

Name	Mandatory	Description
project_id	Yes	Specifies the project ID. For details about how to obtain a project ID, see **Obtaining a Project ID**.
vpc_id	Yes	Specifies the ID of the subnet VPC.
subnet_id	Yes	Specifies the subnet ID, which uniquely identifies the subnet. If you use the management console, the value of this parameter is the **Network ID** value.

Request Parameters

None

Example Request

```
DELETE https://{Endpoint}/v1/{project_id}/vpcs/{vpc_id}/subnets/4779ab1c-7c1a-44b1-a02e-93dfc361b32d
```

Response Parameters

None

Example Response

None

Status Code

See **Status Codes**.

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Error Code

See **Error Codes**.

5.3 EIP

5.3.1 Assigning an EIP

Function

This API is used to assign an EIP.

The EIP service provides independent public IP addresses and bandwidth for Internet access. EIPs can be bound to or unbound from ECSs, BMSs, virtual IP addresses, NAT gateways, or load balancers.

URI

POST /v1/{project_id}/publicips

Table 5-39 describes the parameters.

Table 5-39 Parameter description

Name	Mandatory	Description
project_id	Yes	Specifies the project ID. For details about how to obtain a project ID, see **Obtaining a Project ID**.

Request Parameters

Table 5-40 Request body parameter

Name	Mandatory	Type	Description
publicip	Yes	**publicip** object	Specifies the EIP object. For details, see **Table 5-41**.
bandwidth	Yes	**bandwidth** object	Specifies the bandwidth object. For details, see **Table 5-42**.

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Table 5-41 Description of the **publicip** field

Name	Mandatory	Type	Description
type	Yes	String	• Specifies the EIP type. • Constraints: – The configured value must be supported by the system. – **publicip_id** is an IPv4 port. If **publicip_type** is not specified, the default value is **5_bgp**.
alias	No	String	• Specifies the EIP name. • The value can contain 1 to 64 characters, including letters, digits, underscores (_), hyphens (-), and periods (.).

Table 5-42 Description of the **bandwidth** field

Name	Mandatory	Type	Description
name	Yes	String	• Specifies the bandwidth name. • The value can contain 1 to 64 characters, including letters, digits, underscores (_), hyphens (-), and periods (.). • This parameter is mandatory when **share_type** is set to **PER**. This parameter will be ignored when **share_type** is set to **WHOLE** with an ID specified.

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Name	Mandatory	Type	Description
size	Yes	Integer	• Specifies the bandwidth size. • The value ranges from 1 Mbit/s to 1000 Mbit/s by default. (The specific range may vary depending on the configuration in each region. You can see the bandwidth range of each region on the management console.) • This parameter is mandatory when **share_type** is set to **PER**. This parameter will be ignored when **share_type** is set to **WHOLE** with an ID specified. • The minimum increment for bandwidth adjustment varies depending on the bandwidth range. The details are as follows: – The minimum increment is 1 Mbit/s if the allowed bandwidth ranges from 0 Mbit/s to 300 Mbit/s (with 300 Mbit/s included). – The minimum increment is 50 Mbit/s if the allowed bandwidth ranges from 300 Mbit/s to 1000 Mbit/s (with

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Name	Mandatory	Type	Description
			1000 Mbit/s included). – The minimum increment is 500 Mbit/s if the allowed bandwidth is greater than 1000 Mbit/s.
share_type	Yes	String	• Specifies the bandwidth type. • The value is **PER**, indicating that the bandwidth is dedicated.
charge_mode	No	String	• Specifies whether the bandwidth is billed by traffic or by bandwidth size. • Possible values can be **bandwidth** (billed by bandwidth) and **traffic** (billed by traffic). If the value is left blank, value **traffic** is used.

Example Request

Example request (IPv4 EIP with dedicated bandwidth)

```
POST https://{Endpoint}/v1/{project_id}/publicips

{
    "publicip": {
        "type": "5_bgp",
        "ip_version": 4
    },
    "bandwidth": {
        "name": "bandwidth123",
        "size": 10,
        "share_type": "PER"
    }
}
```

Response Message

- Response parameter

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Table 5-43 Response parameter

Name	Type	Description
publicip	**publicip** object	Specifies the EIP object. For details, see **Table 5-44**.

Table 5-44 Description of the **publicip** field

Name	Type	Description
id	String	Specifies the unique identifier of an EIP.
status	String	• Specifies the EIP status. • Possible values are as follows: – **FREEZED** (Frozen) – **BIND_ERROR** (Binding failed) – **BINDING** (Binding) – **PENDING_DELETE** (Releasing) – **PENDING_CREATE** (Assigning) – **PENDING_UPDATE** (Updating) – **NOTIFYING** (Assigning) – **NOTIFY_DELETE** (Release) – **DOWN** (Unbound) – **ACTIVE** (Bound) – **ELB** (Bound to a load balancer) – **VPN** (Bound to a VPN) – **ERROR** (Exceptions)

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Name	Type	Description
type	String	• Specifies the EIP type. • Constraints: – The configured value must be supported by the system. – **publicip_id** is an IPv4 port. If **publicip_type** is not specified, the default value is **5_bgp**.
public_ip_address	String	Specifies the obtained EIP if only IPv4 EIPs are available.
tenant_id	String	Specifies the project ID.
create_time	String	Specifies the time (UTC) when the EIP is assigned. Format: *yyyy-MM-dd HH:mm:ss*
bandwidth_size	Integer	Specifies the bandwidth (Mbit/s).
alias	String	Specifies the EIP name.

Example Response

Example response (IPv4 EIP with dedicated bandwidth)

```
{
   "publicip": {
      "id": "f588ccfa-8750-4d7c-bf5d-2ede24414706",
      "alias": "tom",
      "public_border_group": "center",
      "status": "PENDING_CREATE",
      "type": "5_bgp",
      "public_ip_address": "161.xx.xx.7",
      "tenant_id": "8b7e35ad379141fc9df3e178bd64f55c",
      "ip_version": 4,
      "create_time": "2015-07-16 04:10:52",
      "bandwidth_size": 0

   }
}
```

Status Code

See **Status Codes**.

Error Code

See **Error Codes**.

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5.3.2 Querying an EIP

Function

This API is used to query a specific EIP.

URI

GET /v1/{project_id}/publicips/{publicip_id}

Table 5-45 describes the parameters.

Table 5-45 Parameter description

Name	Mandatory	Description
project_id	Yes	Specifies the project ID. For details about how to obtain a project ID, see **Obtaining a Project ID**.
publicip_id	Yes	Specifies the unique identifier of an EIP.

Request Message

- Request parameter

  None

- Example request

```
Get https://{Endpoint}/v1/{project_id}/publicips/{publicip_id}
```

Response Message

- Response parameter

Table 5-46 Response parameter

Name	Type	Description
publicip	**publicip** object	Specifies the EIP object. For details, see Table 5-47.

Table 5-47 Description of the **publicip** field

Name	Type	Description
id	String	Specifies the unique identifier of an EIP.

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Name	Type	Description
status	String	• Specifies the EIP status. • Possible values are as follows: – **FREEZED** (Frozen) – **BIND_ERROR** (Binding failed) – **BINDING** (Binding) – **PENDING_DELETE** (Releasing) – **PENDING_CREATE** (Assigning) – **PENDING_UPDATE** (Updating) – **NOTIFYING** (Assigning) – **NOTIFY_DELETE** (Releasing) – **DOWN** (Unbound) – **ACTIVE** (Bound) – **ELB** (Bound to a load balancer) – **VPN** (Bound to a VPN) – **ERROR** (Exceptions)
type	String	• Specifies the EIP type. • Constraints: – The configured value must be supported by the system. – **publicip_id** is an IPv4 port. If **publicip_type** is not specified, the default value is **5_bgp**.

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Name	Type	Description
private_ip_address	String	• Specifies the private IP address bound to the EIP. • This parameter is returned only if the private IP address is bound to the EIP.
port_id	String	• Specifies the port ID. • This parameter is returned only when a port is associated with the EIP.
tenant_id	String	Specifies the project ID.
create_time	String	Specifies the time (UTC) when the EIP is assigned. Format: *yyyy-MM-dd HH:mm:ss*
bandwidth_id	String	Specifies the ID of the EIP bandwidth.
bandwidth_size	Integer	Specifies the bandwidth (Mbit/s).
bandwidth_share_type	String	• Specifies the EIP bandwidth type. • The value can be **PER** or **WHOLE**. – **PER**: Dedicated bandwidth – **WHOLE**: Shared bandwidth
alias	String	Specifies the EIP name.
public_border_group	String	Specifies whether it is in a central site or an edge site. The value can be: • center • *Edge site name* An EIP can only be bound to a resource of the same region.

- Example response

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```
{
   "publicip": {
      "id": "2ec9b78d-9368-46f3-8f29-d1a95622a568",
      "status": "DOWN",
      "alias": "tom",
      "type": "5_bgp",
      "public_ip_address": "161.xx.xx.12",
      "tenant_id": "8b7e35ad379141fc9df3e178bd64f55c",
      "private_ip_address": "192.168.10.5",
      "create_time": "2015-07-16 04:32:50",
      "bandwidth_id": "49c8825b-bed9-46ff-9416-704b96d876a2",
      "bandwidth_share_type": "PER",
"bandwidth_size": 10,    //The EIP bandwidth size is 10 Mbit/s.
      "ip_version": 4
   }
}
```

Status Code

See **Status Codes**.

Error Code

See **Error Codes**.

5.3.3 Querying EIPs

Function

This API is used to query EIPs.

URI

GET /v1/{project_id}/publicips

Table 5-48 describes the parameters.

Table 5-48 Parameter description

Name	Mandatory	Type	Description
project_id	Yes	String	Specifies the project ID. For details about how to obtain a project ID, see **Obtaining a Project ID**.

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Name	Mandatory	Type	Description
marker	No	String	Specifies a resource ID for pagination query, indicating that the query starts from the next record of the specified resource ID. This parameter can work together with the parameter **limit**. • If parameters **marker** and **limit** are not passed, resource records on the first page will be returned. • If the parameter **marker** is not passed and the value of parameter **limit** is set to **10**, the first 10 resource records will be returned. • If the value of the parameter **marker** is set to the resource ID of the 10th record and the value of parameter **limit** is set to **10**, the 11th to 20th resource records will be returned. • If the value of the parameter **marker** is set to the resource ID of the 10th record and the parameter **limit** is not passed, resource records starting from the 11th records (including 11th) will be returned.

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Name	Mandatory	Type	Description
limit	No	Integer	Specifies the number of records that will be returned on each page. The value is from 0 to intmax (2^31-1). The default value is 2000. **limit** can be used together with **marker**. For details, see the parameter description of **marker**.

Request Message

- Request parameter

  None

- Example request

```
GET https://{Endpoint}/v1/{project_id}/publicips?limit={limit}&marker={marker}
```

Response Message

- Response parameter

Table 5-49 Response parameter

Name	Type	Description
publicips	Array of **publicips** objects	Specifies the EIP object. For details, see **Table 5-50**.

Table 5-50 Description of the **publicips** field

Name	Type	Description
id	String	Specifies the unique identifier of an EIP.

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Name	Type	Description
status	String	• Specifies the EIP status. • Possible values are as follows: – **FREEZED** (Frozen) – **BIND_ERROR** (Binding failed) – **BINDING** (Binding) – **PENDING_DELETE** (Releasing) – **PENDING_CREATE** (Assigning) – **PENDING_UPDATE** (Updating) – **DOWN** (Unbound) – **ACTIVE** (Bound) – **ELB** (Bound to a load balancer) – **ERROR** (Exceptions)
type	String	• Specifies the EIP type. • Constraints: – The configured value must be supported by the system. – **publicip_id** is an IPv4 port. If **publicip_type** is not specified, the default value is **5_bgp**.
public_ip_address	String	Specifies the obtained EIP if only IPv4 EIPs are available.
private_ip_address	String	• Specifies the private IP address bound to the EIP. • This parameter is returned only if the private IP address is bound to the EIP.

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Name	Type	Description
port_id	String	• Specifies the port ID. • This parameter is returned only when a port is associated with the EIP.
tenant_id	String	Specifies the project ID.
create_time	String	Specifies the time (UTC) when the EIP is assigned. Format: *yyyy-MM-dd HH:mm:ss*
bandwidth_id	String	Specifies the ID of the EIP bandwidth.
bandwidth_size	Integer	Specifies the bandwidth (Mbit/s).
bandwidth_share_type	String	• Specifies the EIP bandwidth type. • The value can be **PER** or **WHOLE**. – **PER**: Dedicated bandwidth – **WHOLE**: Shared bandwidth
alias	String	Specifies the EIP name.
public_border_group	String	Specifies whether it is in a central site or an edge site. The value can be: • center • *Edge site name* An EIP can only be bound to a resource of the same region.

- Example response

```
{
   "publicips": [
      {
         "id": "6285e7be-fd9f-497c-bc2d-dd0bdea6efe0",
         "status": "DOWN",
         "alias": "tom",
         "type": "5_bgp",
         "public_ip_address": "161.xx.xx.9",
         "private_ip_address": "192.168.10.5",
         "tenant_id": "8b7e35ad379141fc9df3e178bd64f55c",
         "create_time": "2015-07-16 04:22:32",
```

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```
        "bandwidth_id": "3fa5b383-5a73-4dcb-a314-c6128546d855",
        "bandwidth_share_type": "PER",
        "bandwidth_size": 5,
        "ip_version": 4
    },
    {
        "id": "80d5b82e-43b9-4f82-809a-37bec5793bd4",
        "status": "DOWN",
        "type": "5_bgp",
        "public_ip_address": "161.xx.xx.10",
        "private_ip_address": "192.168.10.6",
        "tenant_id": "8b7e35ad379141fc9df3e178bd64f55c",
        "create_time": "2015-07-16 04:23:03",
        "bandwidth_id": "a79fd11a-047b-4f5b-8f12-99c178cc780a",
        "bandwidth_share_type": "PER",
        "bandwidth_size": 5,
        "ip_version": 4
    }
  ]
}
```


Status Code

See **Status Codes**.

Error Code

See **Error Codes**.

5.3.4 Updating an EIP

Function

This API is used to convert the EIP version, bind an EIP to a NIC, or unbind an EIP from a NIC.

URI

PUT /v1/{project_id}/publicips/{publicip_id}

Table 5-51 describes the parameters.

Table 5-51 Parameter description

Name	Mandatory	Description
project_id	Yes	Specifies the project ID. For details about how to obtain a project ID, see **Obtaining a Project ID**.
publicip_id	Yes	Specifies the unique identifier of an EIP.

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Request Message

- Request parameter

Table 5-52 Request parameter

Name	Mandatory	Type	Description
publicip	Yes	**publicip** object	Specifies the EIP object. For details, see **Table 5-53**.

Table 5-53 Description of the **publicip** field

Name	Mandatory	Type	Description
port_id	No	String	• Specifies the port ID. • The value must be an existing port ID. If this parameter is not included or the parameter value is left blank, the EIP is unbound. If the specified port ID does not exist or has already been bound with an EIP, an error message will be displayed.
alias	No	String	• Specifies the EIP name. • The value can contain 1 to 64 characters, including letters, digits, underscores (_), hyphens (-), and periods (.).

- Example request 1 (Binding an EIP to a NIC)

```
PUT https://{Endpoint}/v1/{project_id}/publicips/{publicip_id}

{
    "publicip": {
        "port_id": "f588ccfa-8750-4d7c-bf5d-2ede24414706"
    }
}
```

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Response Message

- Response parameter

Table 5-54 Response parameter

Name	Type	Description
publicip	**publicip** object	Specifies the EIP object. For details, see **Table 5-55**.

Table 5-55 Description of the **publicips** field

Name	Type	Description
id	String	Specifies the unique identifier of an EIP.
status	String	• Specifies the EIP status. • Possible values are as follows: – **FREEZED** (Frozen) – **BIND_ERROR** (Binding failed) – **BINDING** (Binding) – **PENDING_DELETE** (Releasing) – **PENDING_CREATE** (Assigning) – **PENDING_UPDATE** (Updating) – **NOTIFYING** (Assigning) – **NOTIFY_DELETE** (Releasing) – **DOWN** (Unbound) – **ACTIVE** (Bound) – **ELB** (Bound to a load balancer) – **VPN** (Bound to a VPN) – **ERROR** (Exceptions)

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Name	Type	Description
type	String	• Specifies the EIP type. • Constraints: – The configured value must be supported by the system. – **publicip_id** is an IPv4 port. If **publicip_type** is not specified, the default value is **5_bgp**.
public_ip_address	String	Specifies the obtained EIP if only IPv4 EIPs are available.
private_ip_address	String	• Specifies the private IP address bound to the EIP. • This parameter is returned only when a port is associated with the EIP.
port_id	String	• Specifies the port ID. • This parameter is returned only when a port is associated with the EIP.
tenant_id	String	Specifies the project ID.
create_time	String	Specifies the time (UTC) when the EIP is assigned. Format: *yyyy-MM-dd HH:mm:ss*
bandwidth_id	String	Specifies the ID of the EIP bandwidth.
bandwidth_size	Integer	Specifies the bandwidth (Mbit/s).

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Name	Type	Description
bandwidth_share_type	String	• Specifies the EIP bandwidth type. • The value can be **PER** or **WHOLE**. – **PER**: Dedicated bandwidth – **WHOLE**: Shared bandwidth
alias	String	Specifies the EIP name.

- Example response (Binding an EIP to a NIC)

```
{
  "publicip": {
    "id": "f6318bef-6508-4ea5-a48f-6152b6b1a8fb",
    "status": "ACTIVE",
    "alias": "tom",
    "type": "5_bgp",
    "port_id": "a135e9b8-1630-40d2-a6c5-eb534a61efbe",
    "public_ip_address": "10.xx.xx.162",
    "private_ip_address": "192.168.1.131",
    "tenant_id": "26ae5181a416420998eb2093aaed84d9",
    "create_time": "2019-03-27 01:33:18",
    "bandwidth_size": 7,
    "ip_version": 4,
    "bandwidth_name": "bandwidth-2aef",
    "enterprise_project_id": "0",
    "bandwidth_share_type": "PER",
    "bandwidth_id": "7a258fff-10d8-44b8-8124-c59079eb8f4c"
  }
}
```

Status Code

See **Status Codes**.

Error Code

See **Error Codes**.

5.3.5 Releasing an EIP

Function

This API is used to release an EIP.

URI

DELETE /v1/{project_id}/publicips/{publicip_id}

Table 5-56 describes the parameters.

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Table 5-56 Parameter description

Name	Mandatory	Description
project_id	Yes	Specifies the project ID. For details about how to obtain a project ID, see **Obtaining a Project ID**.
publicip_id	Yes	Specifies the unique identifier of an EIP.

Request Message

- Request parameter

  None

- Example request

```
DELETE https://{Endpoint}/v1/{project_id}/publicips/{publicip_id}
```

Response Message

- Response parameter

  None

- Example response

  None

  Or

```
{
    "code":"xxx",
    "message":"xxxxx"
}
```

Status Code

See **Status Codes**.

Error Code

See **Error Codes**.

5.4 Bandwidth

5.4.1 Querying a Bandwidth

Function

This API is used to query details about a bandwidth.

URI

GET /v1/{project_id}/bandwidths/{bandwidth_id}

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Table 5-57 describes the parameters.

Table 5-57 Parameter description

Name	Mandatory	Description
project_id	Yes	Specifies the project ID. For details about how to obtain a project ID, see **Obtaining a Project ID**.
bandwidth_id	Yes	Specifies the bandwidth ID, which uniquely identifies the bandwidth.

Request Message

- Request parameter

  None

- Example request

```
Get https://{Endpoint}//v1/{project_id}/bandwidths/{bandwidth_id}
```

Response Message

- Response parameter

Table 5-58 Response parameter

Name	Type	Description
bandwidth	**bandwidth** object	Specifies the bandwidth object.

Table 5-59 Description of the **bandwidth** field

Name	Type	Description
name	String	• Specifies the bandwidth name. • The value can contain 1 to 64 characters, including letters, digits, underscores (_), hyphens (-), and periods (.).

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Name	Type	Description
size	Integer	• Specifies the bandwidth size. • The value ranges from 1 Mbit/s to 1000 Mbit/s by default. (The specific range may vary depending on the configuration in each region. You can see the bandwidth range of each region on the management console.)
id	String	Specifies the bandwidth ID, which uniquely identifies the bandwidth.
share_type	String	• The value is **PER**, indicating that the bandwidth is dedicated.
publicip_info	Array of **publicip_info** objects	• Specifies information about the EIP that uses the bandwidth. For details, see **Table 5-60**.
tenant_id	String	Specifies the project ID.
bandwidth_type	String	• Specifies the bandwidth type. • The value is **bgp**.
charge_mode	String	• Specifies whether the billing is based on traffic or bandwidth. • Possible values can be **bandwidth** (billed by bandwidth) and **traffic** (billed by traffic). If the value is an empty character string or no value is specified, value **traffic** is used.
status	String	• Specifies the bandwidth status. • Possible values are as follows: – **FREEZED** (Frozen) – **NORMAL** (Normal)

Table 5-60 publicip_info object

Name	Type	Description
publicip_id	String	Specifies the ID of the EIP that uses the bandwidth.
publicip_address	String	Specifies the obtained EIP if only IPv4 EIPs are available.

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Name	Type	Description
publicip_type	String	• Specifies the EIP type. • Constraints: – The configured value must be supported by the system. – **publicip_id** is an IPv4 port. If **publicip_type** is not specified, the default value is **5_bgp**.

- Example response

```
{
  "bandwidth": {
    "id": "3cbd5ae9-368f-4bc8-8841-f2ecc322c64a",
    "name": "EIPResourceSetup_1553594229",
    "size": 5,
    "share_type": "PER",
    "publicip_info": [
      {
        "publicip_id": "22b02f40-b95f-465a-ae9b-7c8b0f042a41",
        "publicip_address": "10.xx.xx.62",
        "ip_version": 4,
        "publicip_type": "5_bgp",
      }
    ],
    "tenant_id": "26ae5181a416420998eb2093aaed84d9",
    "bandwidth_type": "bgp",
    "charge_mode": "bandwidth",
    "status": "NORMAL",
    "created_at": "2020-04-21T07:58:02Z",
    "updated_at": "2020-04-21T07:58:02Z"
  }
}
```

Status Code

See **Status Codes**.

Error Code

See **Error Codes**.

5.4.2 Querying Bandwidths

Function

This API is used to query bandwidths using search criteria.

URI

GET /v1/{project_id}/bandwidths

Table 5-61 describes the parameters.

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Table 5-61 Parameter description

Name	Mandatory	Type	Description
project_id	Yes	String	Specifies the project ID. For details about how to obtain a project ID, see **Obtaining a Project ID**.
marker	No	String	Specifies a resource ID for pagination query, indicating that the query starts from the next record of the specified resource ID. This parameter can work together with the parameter **limit**. • If parameters **marker** and **limit** are not passed, resource records on the first page will be returned. • If the parameter **marker** is not passed and the value of parameter **limit** is set to **10**, the first 10 resource records will be returned. • If the value of the parameter **marker** is set to the resource ID of the 10th record and the value of parameter **limit** is set to **10**, the 11th to 20th resource records will be returned. • If the value of the parameter **marker** is set to the resource ID of the 10th record and the parameter **limit** is not passed, resource records starting from the 11th records (including 11th) will be returned.
limit	No	Integer	Specifies the number of records that will be returned on each page. The value is from 0 to intmax (2^31-1). The default value is 2000. **limit** can be used together with **marker**. For details, see the parameter description of **marker**.

- Example request
  GET https://{Endpoint}/v1/{project_id}/bandwidths?limit={limit}&marker={marker}

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Response Message

- Response parameter

Table 5-62 Response parameter

Name	Type	Description
bandwidths	Array of **bandwidths** objects	Specifies the bandwidth objects. For details, see **Table 5-63**.

Table 5-63 Description of the **bandwidths** field

Name	Type	Description
name	String	• Specifies the bandwidth name. • The value can contain 1 to 64 characters, including letters, digits, underscores (_), hyphens (-), and periods (.).
size	Integer	• Specifies the bandwidth size in Mbit/s. • The value ranges from 1 Mbit/s to 1000 Mbit/s by default. (The specific range may vary depending on the configuration in each region. You can see the bandwidth range of each region on the management console.)
id	String	Specifies the bandwidth ID, which uniquely identifies the bandwidth.
share_type	String	• The value is **PER**, indicating that the bandwidth is dedicated. If this parameter is not set, the list of all bandwidths will be returned by default.
publicip_info	Array of **publicip_info** objects	• Specifies the information about the EIP that uses the bandwidth. For details, see **Table 5-64**.
tenant_id	String	Specifies the project ID.
bandwidth_type	String	• Specifies the bandwidth type. • The value is **bgp**.

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Name	Type	Description
charge_mode	String	• Specifies whether the bandwidth is billed by traffic or by bandwidth size. • Possible values can be **bandwidth** (billed by bandwidth) and **traffic** (billed by traffic). If the value is an empty character string or no value is specified, value **traffic** is used.
status	String	• Specifies the bandwidth status. • Possible values are as follows: – **FREEZED** (Frozen) – **NORMAL** (Normal)

Table 5-64 publicip_info object

Name	Type	Description
publicip_id	String	Specifies the ID of the EIP that uses the bandwidth.
publicip_address	String	Specifies the obtained EIP if only IPv4 EIPs are available.
publicip_type	String	• Specifies the EIP type. • Constraints: – The configured value must be supported by the system. – **publicip_id** is an IPv4 port. If **publicip_type** is not specified, the default value is **5_bgp**.

- Example response

```
{
 "bandwidths": [
  {
   "id": "09b99c91-da7c-449f-94e2-f4934c5b2a71",
   "name": "vpngw-f632a7b0-ef50-4ac5-97e9-ddc56b3d5977",
   "size": 200,
   "share_type": "PER",
   "publicip_info": [
    {
     "publicip_id": "2a65923c-7133-415d-ae3b-cf9635a942c5",
     "publicip_address": "10.xx.xx.3",
     "ip_version": 4,
     "publicip_type": "5_bgp"
    }
   ],
   "tenant_id": "26ae5181a416420998eb2093aaed84d9",
```

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```
    "bandwidth_type": "bgp",
    "charge_mode": "bandwidth",
    "status": "NORMAL"
  },
  {
    "id": "0a583ff1-b43e-4000-ade3-e7af0097f832",
    "name": "vpngw-7e880d5b-f458-40ad-a7e5-735c44cd8b7d",
    "size": 300,
    "share_type": "PER",
    "publicip_info": [
      {
        "publicip_id": "c754bc9a-16d5-4763-9674-d7561917aa80",
        "publicip_address": "10.xx.xx.9",
        "ip_version": 4,
        "publicip_type": "5_bgp"
      }
    ],
    "tenant_id": "26ae5181a416420998eb2093aaed84d9",
    "bandwidth_type": "bgp",
    "charge_mode": "bandwidth",
    "status": "NORMAL"
  },
  {
    "id": "0a673f00-3640-4a13-949e-7049b2916baf",
    "name": "bandwidth123",
    "size": 10,
    "share_type": "PER",
    "publicip_info": [
      {
        "publicip_id": "cec7fb70-2f82-4561-bd83-2121fb642fdc",
        "publicip_address": "10.xx.xx.184",
        "ip_version": 4,
        "publicip_type": "5_bgp"
      }
    ],
    "tenant_id": "26ae5181a416420998eb2093aaed84d9",
    "bandwidth_type": "bgp",
    "charge_mode": "bandwidth",
    "status": "NORMAL"
  },
  {
    "id": "0dde1eae-1783-46dc-998c-930fbe261ff9",
    "name": "bandwidth123",
    "size": 100,
    "share_type": "PER",
    "publicip_info": [
      {
        "publicip_id": "24232038-e178-40ad-80e4-5abb75db84be",
        "publicip_address": "10.xx.xx.101",
        "ip_version": 4,
        "publicip_type": "5_bgp"
      }
    ],
    "tenant_id": "26ae5181a416420998eb2093aaed84d9",
    "bandwidth_type": "bgp",
    "charge_mode": "bandwidth",
    "status": "NORMAL"
  }
 ]
}
```


Status Code

See **Status Codes**.

Error Code

See **Error Codes**.

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5.4.3 Updating a Bandwidth

Function

This API is used to update information about a bandwidth.

URI

PUT /v1/{project_id}/bandwidths/{bandwidth_id}

Table 5-65 describes the parameters.

Table 5-65 Parameter description

Name	Mandatory	Description
project_id	Yes	Specifies the project ID. For details about how to obtain a project ID, see **Obtaining a Project ID**.
bandwidth_id	Yes	Specifies the bandwidth ID, which uniquely identifies the bandwidth.

Request Message

- Request parameter

Table 5-66 Request parameter

Name	Mandatory	Type	Description
bandwidth	Yes	**bandwidth** object	Specifies the bandwidth objects. For details, see **Table 5-67**.

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Table 5-67 Description of the **bandwidth** field

Name	Mandatory	Type	Description
name	No	String	• Specifies the bandwidth name. • The value can contain 1 to 64 characters, including letters, digits, underscores (_), hyphens (-), and periods (.). If the value is left blank, the name of the bandwidth is not changed. • Either parameter **name** or **size** must be specified.
size	No	Integer	• Specifies the bandwidth size in Mbit/s. • The value ranges from 1 Mbit/s to 1000 Mbit/s by default. (The specific range may vary depending on the configuration in each region. You can see the available bandwidth range on the management console.) If the parameter is not included, the bandwidth size is not changed. • Either parameter **name** or **size** must be specified. • If a decimal fraction (for example **10.2**) or a character string (for example **"10"**) is specified, the specified value will be automatically converted to an integer. • The minimum increment for bandwidth adjustment varies depending on the bandwidth range. The details are as follows: – The minimum increment is 1 Mbit/s if the allowed bandwidth ranges from 0 Mbit/s to 300 Mbit/s (with 300 Mbit/s included). – The minimum increment is 50 Mbit/s if the allowed bandwidth ranges from 300 Mbit/s to 1000 Mbit/s (with 1000 Mbit/s included). – The minimum increment is 500 Mbit/s if the allowed bandwidth is greater than 1000 Mbit/s.

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Name	Mandatory	Type	Description
charge_mode	No	String	• Specifies whether the bandwidth is billed by traffic or by bandwidth size. • The value **bandwidth** indicates that you will be billed by bandwidth, and the value **traffic** indicates that you will be billed by traffic.

- Example request

```
PUT https://{Endpoint}/v1/{project_id}/bandwidths/{bandwidth_id}

{
   "bandwidth":
      {"name": "bandwidth123",
       "size": 10
       "charge_mode": "traffic"
      }
}
```

Response Message

- Response parameter

Table 5-68 Response parameter

Name	Type	Description
bandwidth	**bandwidth** object	Specifies the bandwidth objects. For details, see **Table 5-69**.

Table 5-69 Description of the **bandwidth** field

Name	Type	Description
name	String	• Specifies the bandwidth name. • The value can contain 1 to 64 characters, including letters, digits, underscores (_), hyphens (-), and periods (.).
size	Integer	• Specifies the bandwidth size in Mbit/s. • The value ranges from 1 Mbit/s to 1000 Mbit/s by default. (The specific range may vary depending on the configuration in each region. You can see the bandwidth range of each region on the management console.)

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Name	Type	Description
id	String	Specifies the bandwidth ID, which uniquely identifies the bandwidth.
share_type	String	• The value is **PER**, indicating that the bandwidth is dedicated.
publicip_info	Array of **publicip_info** objects	• Specifies the information about the EIP that uses the bandwidth. For details, see **Table 5-70**.
tenant_id	String	Specifies the project ID.
bandwidth_type	String	• Specifies the bandwidth type. • The value is **bgp**.
charge_mode	String	• Specifies whether the bandwidth is billed by traffic or by bandwidth size. • Possible values can be **bandwidth** (billed by bandwidth) and **traffic** (billed by traffic). If the value is an empty character string or no value is specified, value **traffic** is used.

Table 5-70 publicip_info objects

Name	Type	Description
publicip_id	String	Specifies the ID of the EIP that uses the bandwidth.
publicip_address	String	Specifies the obtained EIP if only IPv4 EIPs are available.
publicip_type	String	• Specifies the EIP type. • Constraints: – The configured value must be supported by the system. – **publicip_id** is an IPv4 port. If **publicip_type** is not specified, the default value is **5_bgp**.

- Example response

```
{
    "bandwidth": {
        "id": "3fa5b383-5a73-4dcb-a314-c6128546d855",
        "name": "bandwidth123",
        "size": 10,
        "share_type": "PER",
        "publicip_info": [
```

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```
            {
                "publicip_id": "6285e7be-fd9f-497c-bc2d-dd0bdea6efe0",
                "publicip_address": "161.xx.xx.9",
                "publicip_type": "5_bgp",
                "ip_version": 4
            }
        ],
        "tenant_id": "8b7e35ad379141fc9df3e178bd64f55c",
        "bandwidth_type": "bgp",
        "charge_mode": "bandwidth",
        "status": "NORMAL"
    }
}
```


Status Code

See **Status Codes**.

Error Code

See **Error Codes**.

5.5 Bandwidth (V2.0)

5.5.1 Assigning a Shared Bandwidth

Function

This API is used to assign a shared bandwidth.

URI

POST /v2.0/{project_id}/bandwidths

Table 5-71 describes the parameters.

Table 5-71 Parameter description

Name	Mandatory	Description
project_id	Yes	Specifies the project ID. For details about how to obtain a project ID, see **Obtaining a Project ID**.

Request Message

- Request parameter

Table 5-72 Request parameter

Name	Mandatory	Type	Description
bandwidth	Yes	**bandwidth** object	Specifies the bandwidth objects. For details, see **Table 5-73**.

Table 5-73 Description of the **bandwidth** field

Name	Mandatory	Type	Description
name	Yes	String	• Specifies the bandwidth name. • The value can contain 1 to 64 characters, including letters, digits, underscores (_), hyphens (-), and periods (.).

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Name	Mandatory	Type	Description
size	Yes	Integer	• Specifies the bandwidth size. The shared bandwidth has a minimum limit, which may vary depending on sites. The default minimum value is 5 Mbit/s. • The value ranges from 1 Mbit/s to 1000 Mbit/s by default. (The specific range may vary depending on the configuration in each region. You can see the available bandwidth range on the management console.) • If a decimal fraction (for example **10.2**) or a character string (for example **"10"**) is specified, the specified value will be automatically converted to an integer. • The minimum increment for bandwidth adjustment varies depending on the bandwidth range. The details are as follows: – The minimum increment is 1 Mbit/s if the allowed bandwidth ranges from 0 Mbit/s to 300 Mbit/s (with 300 Mbit/s included). – The minimum increment is 50 Mbit/s if the allowed bandwidth ranges from 300 Mbit/s to 1000 Mbit/s (with 1000 Mbit/s included). – The minimum increment is 500 Mbit/s if the allowed bandwidth is greater than 1000 Mbit/s.
charge_mode	No	String	• Specifies whether the bandwidth is billed by traffic or by bandwidth size. • Possible values can be **bandwidth** (billed by bandwidth) and **traffic** (billed by traffic). If the value is left blank, value **traffic** is used.

- Example request

```
POST https://{Endpoint}/v2.0/{project_id}/bandwidths

{
```

```
  "bandwidth": {
     "name": "bandwidth123",
     "size": 10
  }
}
```

Response Message

- Response parameter

Table 5-74 Response parameter

Name	Type	Description
bandwidth	**bandwidth** object	Specifies the bandwidth objects. For details, see **Table 5-75**.

Table 5-75 Description of the **bandwidth** field

Name	Type	Description
name	String	• Specifies the bandwidth name. • The value can contain 1 to 64 characters, including letters, digits, underscores (_), hyphens (-), and periods (.).
size	Integer	• Specifies the bandwidth size. • The value ranges from 1 Mbit/s to 1000 Mbit/s by default. (The specific range may vary depending on the configuration in each region. You can see the available bandwidth range on the management console.)
id	String	Specifies the bandwidth ID, which uniquely identifies the bandwidth.
share_type	String	• Specifies whether the bandwidth is shared or dedicated. • The value can be **PER** or **WHOLE**. – **WHOLE**: Shared bandwidth – **PER**: Dedicated bandwidth

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Name	Type	Description
publicip_info	Array of **publicip_info** objects	• Specifies information about the EIP that uses the bandwidth. For details, see **Table 5-76**. • The bandwidth, whose type is **WHOLE**, can be used by multiple EIPs. The bandwidth, whose type is **PER**, can be used by only one EIP.
tenant_id	String	Specifies the project ID.
bandwidth_type	String	• Specifies the bandwidth type. The default value for the shared bandwidth is **share**.
charge_mode	String	• Specifies whether the bandwidth is billed by traffic or by bandwidth size. • Possible values can be **bandwidth** (billed by bandwidth) and **traffic** (billed by traffic). If the value is an empty character string or no value is specified, value **traffic** is used.
status	String	• Specifies the bandwidth status. • Possible values are as follows: – **FREEZED** (Frozen) – **NORMAL** (Normal)

Table 5-76 publicip_info object

Name	Type	Description
publicip_id	String	Specifies the ID of the EIP that uses the bandwidth.
publicip_address	String	Specifies the obtained EIP if only IPv4 EIPs are available.
publicip_type	String	• Specifies the EIP type. • Constraints: – The configured value must be supported by the system. – **publicip_id** is an IPv4 port. If **publicip_type** is not specified, the default value is **5_bgp**.

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- Example response

```
{
  "bandwidth": {
    "id": "1bffc5f2-ff19-45a6-96d2-dfdca49cc387",
    "name": "bandwidth123",
    "size": 10,
    "share_type": "WHOLE",
    "publicip_info": [],
    "tenant_id": "26ae5181a416420998eb2093aaed84d9",
    "bandwidth_type": "share",
    "charge_mode": "bandwidth",
    "status": "NORMAL",
    "created_at": "2020-04-21T07:58:02Z",
    "updated_at": "2020-04-21T07:58:02Z"
  }
}
```

Status Code

See **Status Codes**.

Error Code

See **Error Codes**.

5.5.2 Deleting a Shared Bandwidth

Function

This API is used to delete a shared bandwidth.

URI

DELETE /v2.0/{project_id}/bandwidths/{bandwidth_id}

Table 5-77 describes the parameters.

Table 5-77 Parameter description

Name	Mandatory	Description
project_id	Yes	Specifies the project ID. For details about how to obtain a project ID, see **Obtaining a Project ID**.
bandwidth_id	Yes	Specifies the bandwidth ID, which uniquely identifies the bandwidth. Currently, only the shared bandwidth can be deleted.

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Request Message

- Request parameter

  None

- Example request

```
DELETE https://{Endpoint}/v2.0/{project_id}/bandwidths/{bandwidth_id}
```

Response Message

- Response parameter

  None

- Example response

  Or

```
{
    "code":"xxx",
    "message":"xxxxx"
}
```

Status Code

See **Status Codes**.

Error Code

See **Error Codes**.

5.5.3 Adding an EIP to a Shared Bandwidth

Function

This API is used to add an EIP to a shared bandwidth.

URI

POST /v2.0/{project_id}/bandwidths/{bandwidth_id}/insert

Table 5-78 describes the parameters.

Table 5-78 Parameter description

Name	Mandatory	Description
project_id	Yes	Specifies the project ID. For details about how to obtain a project ID, see **Obtaining a Project ID**.
bandwidth_id	Yes	Specifies the bandwidth ID, which uniquely identifies the bandwidth.

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Request Message

- Request parameter

Table 5-79 Request parameter

Name	Mandatory	Type	Description
bandwidth	Yes	**bandwidth** object	Specifies the bandwidth objects. For details, see **Table 5-80**.

Table 5-80 Description of the **bandwidth** field

Name	Mandatory	Type	Description
publicip_info	Yes	Array of **publicip_info** objects	• Specifies information about the EIP to be added to the shared bandwidth. For details, see **Table 5-81**. • The bandwidth, whose type is **WHOLE**, can be used by multiple EIPs. The number of EIPs varies depending on the tenant quota. By default, a shared bandwidth can be used by up to 20 EIPs.

Table 5-81 publicip_info object

Name	Mandatory	Type	Description
publicip_id	Yes	String	Specifies the ID of the EIP that uses the bandwidth.
publicip_type	No	String	• Specifies the EIP type. • Constraints: – The configured value must be supported by the system. – **publicip_id** is an IPv4 port. If **publicip_type** is not specified, the default value is **5_bgp**.

- Example request

```
POST https://{Endpoint}/v2.0/{project_id}/bandwidths/{bandwidth_id}/insert

{
  "bandwidth": {
    "publicip_info": [
      {
        "publicip_id": "29b114d1-2d41-4741-a1f0-b6f80aabceff",
        "publicip_type": "5_bgp",
```

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```
    }
  ]
 }
}
```

Response Message

- Response parameter

Table 5-82 Response parameter

Name	Type	Description
bandwidth	**bandwidth** object	Specifies the bandwidth objects. For details, see **Table 5-83**.

Table 5-83 Description of the **bandwidth** field

Name	Type	Description
name	String	• Specifies the bandwidth name. • The value can contain 1 to 64 characters, including letters, digits, underscores (_), hyphens (-), and periods (.).
size	Integer	• Specifies the bandwidth size. • The value ranges from 1 Mbit/s to 1000 Mbit/s by default. (The specific range may vary depending on the configuration in each region. You can see the available bandwidth range on the management console.)
id	String	Specifies the bandwidth ID, which uniquely identifies the bandwidth.
share_type	String	• Specifies whether the bandwidth is shared or dedicated. • The value can be **PER** or **WHOLE**. – **WHOLE**: Shared bandwidth – **PER**: Dedicated bandwidth
publicip_info	Array of **publicip_info** objects	• Specifies information about the EIP that uses the bandwidth. For details, see **Table 5-84**. • The bandwidth, whose type is **WHOLE**, can be used by multiple EIPs. The bandwidth, whose type is **PER**, can be used by only one EIP.

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Name	Type	Description
tenant_id	String	Specifies the project ID.
bandwidth_type	String	• Specifies the bandwidth type. The default value for the shared bandwidth is **share**.
charge_mode	String	• Specifies whether the bandwidth is billed by traffic or by bandwidth size. • Possible values can be **bandwidth** (billed by bandwidth) and **traffic** (billed by traffic). If the value is an empty character string or no value is specified, value **traffic** is used.
status	String	• Specifies the bandwidth status. • Possible values are as follows: – **FREEZED** (Frozen) – **NORMAL** (Normal)

Table 5-84 publicip_info objects

Name	Type	Description
publicip_id	String	Specifies the ID of the EIP that uses the bandwidth.
publicip_address	String	Specifies the obtained EIP if only IPv4 EIPs are available.
publicip_type	String	• Specifies the EIP type. • Constraints: – The configured value must be supported by the system. – **publicip_id** is an IPv4 port. If **publicip_type** is not specified, the default value is **5_bgp**.

- Example response

```
{
    "bandwidth": {
        "id": "3fa5b383-5a73-4dcb-a314-c6128546d855",
        "name": "bandwidth123",
        "size": 10,
        "share_type": "WHOLE",
        "publicip_info": [
            {
                "publicip_id": "1d184b2c-4ec9-49b5-a3f9-27600a76ba3f",
                "publicip_address": "99.xx.xx.82",
                "publicip_type": "5_bgp",
                "ip_version": 4
```

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```
        }
      ],
      "tenant_id": "8b7e35ad379141fc9df3e178bd64f55c",
      "charge_mode": "traffic",
      "bandwidth_type": "share",
      "status": "NORMAL"
    }
}
```

Status Code

See **Status Codes**.

Error Code

See **Error Codes**.

5.5.4 Removing an EIP from a Shared Bandwidth

Function

This API is used to remove an EIP from a shared bandwidth.

URI

POST /v2.0/{project_id}/bandwidths/{bandwidth_id}/remove

Table 5-85 describes the parameters.

Table 5-85 Parameter description

Name	Mandatory	Description
project_id	Yes	Specifies the project ID. For details about how to obtain a project ID, see **Obtaining a Project ID**.
bandwidth_id	Yes	Specifies the bandwidth ID, which uniquely identifies the bandwidth.

Request Message

- Request parameter

Table 5-86 Request parameter

Name	Mandatory	Type	Description
bandwidth	Yes	**bandwidth** object	Specifies the bandwidth objects. For details, see **Table 5-87**.

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Table 5-87 Description of the **bandwidth** field

Name	Mandatory	Type	Description
publicip_info	Yes	Array of **publicip_info** objects	• Specifies information about the EIP to be removed from the bandwidth. For details, see **Table 5-88**. • The bandwidth, whose type is **WHOLE**, can be used by multiple EIPs. The number of EIPs varies depending on the tenant quota. By default, a shared bandwidth can be used by up to 20 EIPs.
charge_mode	Yes	String	After an EIP is removed from a shared bandwidth, a dedicated bandwidth will be allocated to the EIP, and you will be billed for the dedicated bandwidth. Specifies whether the dedicated bandwidth used by the EIP that has been removed from a shared bandwidth is billed by traffic or by bandwidth. The value can be **bandwidth** or **traffic**.
size	Yes	Integer	After an EIP is removed from a shared bandwidth, a dedicated bandwidth will be allocated to the EIP, and you will be billed for the dedicated bandwidth. Specifies the size (Mbit/s) of the dedicated bandwidth used by the EIP that has been removed from a shared bandwidth. The value ranges from 1 Mbit/s to 1000 Mbit/s by default. (The specific range may vary depending on the configuration in each region. You can see the bandwidth range of each region on the management console.)

Table 5-88 publicip_info object

Name	Mandatory	Type	Description
publicip_id	Yes	String	Specifies the ID of the EIP that uses the bandwidth.

- Example request

```
POST https://{Endpoint}/v2.0/{project_id}/bandwidths/{bandwidth_id}/remove

{
   "bandwidth": {
      "publicip_info": [
         {
```

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```
            "publicip_id": "d91b0028-6f6b-4478-808a-297b75b6812a"

        },
        {
            "publicip_id": "1d184b2c-4ec9-49b5-a3f9-27600a76ba3f"
        }
    ],
    "charge_mode": "traffic",
    "size": 22
  }
}
```

Response Message

- Response parameter

  None

- Example response

  None

  Or

```
{
    "code":"xxx",
    "message":"xxxxx"
}
```

Status Code

See **Status Codes**.

Error Code

See **Error Codes**.

5.6 Quota

5.6.1 Querying Quotas

Function

This API is used to query network resource quotas of a tenant. The network resources include VPCs, subnets, security groups, security group rules, EIPs, and VPNs.

URI

GET /v1/{project_id}/quotas

Example:

```
GET https://{Endpoint}/v1/{project_id}/quotas?type={type}
```

Table 5-89 describes the parameters.

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Table 5-89 Parameter description

Name	Mandatory	Type	Description
project_id	Yes	String	Specifies the project ID. For details about how to obtain a project ID, see **Obtaining a Project ID**.
type	No	String	• Specifies the resource type. • Values: – **vpc**: VPC – **subnet**: Subnet – **securityGroup**: Security group – **securityGroupRule**: Security group rule – **publicIp**: EIP – **vpn**: VPN – **vpngw**: VPN gateway – **vpcPeer**: VPC peering connection – **loadbalancer**: Load balancer – **listener**: Load balancer listener – **physicalConnect**: Direct Connect connection – **virtualInterface**: Virtual interface – **firewall**: Firewall – **shareBandwidthIP**: IP address added to a shared bandwidth – **shareBandwidth**: Shared bandwidth – **address_group**: IP address group – **flow_log**: VPC fow log – **vpcContainRoutetable**: Number of route tables associated with a VPC – **routetableContainRoutes**: Number of routes in a route table

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Request Parameters

None

Example Request

```
GET https://{Endpoint}/v1/{project_id}/quotas
```

Response Parameters

Table 5-90 Response parameter

Name	Type	Description
quotas	**quotas** object	Specifies the quota object. For details, see **Table 5-91**.

Table 5-91 Description of the **quotas** field

Name	Type	Description
resources	Array of **resource** objects	Specifies the resource objects. For details, see **Table 5-92**.

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Table 5-92 Description of the **resource** field

Name	Type	Description
type	String	• Specifies the resource type. • Values: – **vpc**: VPC – **subnet**: Subnet – **securityGroup**: Security group – **securityGroupRule**: Security group rule – **publicIp**: EIP – **vpn**: VPN – **vpngw**: VPN gateway – **vpcPeer**: VPC peering connection – **loadbalancer**: Load balancer – **listener**: Load balancer listener – **physicalConnect**: Direct Connect connection – **virtualInterface**: Virtual interface – **firewall**: Firewall – **shareBandwidthIP**: IP address added to a shared bandwidth – **shareBandwidth**: Shared bandwidth – **address_group**: IP address group – **flow_log**: VPC fow log – **vpcContainRoutetable**: Number of route tables associated with a VPC – **routetableContainRoutes**: Number of routes in a route table
used	Integer	• Specifies the number of created network resources. • The value ranges from **0** to the value of **quota**.
quota	Integer	• Specifies the maximum quota values for the resources. • The value ranges from the default quota value to the maximum quota value.
min	Integer	Specifies the minimum quota value allowed.

NOTE

If value **-1** is returned when you use an API to query your VPC quota, this indicates that the VPC quota is not limited.

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Example Response


```
{
   "quotas": {
      "resources": [
         {
            "type": "vpc",
            "used": 4,
            "quota": 150,
            "min": 0
         },
         {
            "type": "subnet",
            "used": 5,
            "quota": 400,
            "min": 0
         },
         {
            "type": "securityGroup",
            "used": 1,
            "quota": 100,
            "min": 0
         },
         {
            "type": "securityGroupRule",
            "used": 6,
            "quota": 5000,
            "min": 0
         },
         {
            "type": "publicIp",
            "used": 2,
            "quota": 10,
            "min": 0
         },
         {
            "type": "vpn",
            "used": 0,
            "quota": 5,
            "min": 0
         },
         {
            "type": "vpngw",
            "used": 0,
            "quota": 2,
            "min": 0
         },
         {
            "type": "vpcPeer",
            "used": 0,
            "quota": 50,
            "min": 0
         },
         {
            "type":"physicalConnect",
            "used":0,
            "quota":10,
            "min":0
         },
         {
            "type":"virtualInterface",
            "used":0,
            "quota":50,
            "min":0
         },
         {
            "type": "firewall",
            "used": 0,
            "quota": 200,
            "min": 0
```


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```
        },
        {
            "type": "shareBandwidth",
            "used": 0,
            "quota": 5,
            "min": 0
        },
        {
            "type": "shareBandwidthIP",
            "used": 0,
            "quota": 20,
            "min": 0
        },
        {
            "type": "loadbalancer",
            "used": 0,
            "quota": 10,
            "min": 0
        },
        {
            "type": "listener",
            "used": 0,
            "quota": 10,
            "min": 0
        },
        {
            "type": "vpcContainRoutetable",
            "used": 0,
            "quota": 1,
            "min": 0
        },
        {
            "type": "routetableContainRoutes",
            "used": 0,
            "quota": 200,
            "min": 0
        },
        {
            "type": "address_group",
            "used": 0,
            "quota": 50,
            "min": 0
        }
    ]
  }
}
```


Status Code

See **Status Codes**.

Error Code

See **Error Codes**.

5.7 Private IP Address

5.7.1 Assigning a Private IP Address

Function

This API is used to assign a private IP address.

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URI

POST /v1/{project_id}/privateips

Table 5-93 describes the parameters.

Table 5-93 Parameter description

Name	Mandatory	Description
project_id	Yes	Specifies the project ID. For details about how to obtain a project ID, see **Obtaining a Project ID**.

Request Parameters

Table 5-94 Request parameter

Name	Mandatory	Type	Description
privateips	Yes	Array of **privateip** objects	Specifies the private IP address objects. For details, see **Table 5-95**.

Table 5-95 Description of the **privateip** field

Name	Mandatory	Type	Description
subnet_id	Yes	String	Specifies the ID of the subnet from which IP addresses are assigned. If you use the management console, the value of this parameter is the **Network ID** value.
ip_address	No	String	• Specifies the target IP address. • The value can be an available IP address in the subnet. If it is not specified, the system automatically assigns an IP address.

Example Request

- Assign two private IP addresses from the subnet whose ID is 531dec0f-3116-411b-a21b-e612e42349fd. One IP address is automatically assigned, and the other is specified to 192.168.1.17.

```
POST https://{Endpoint}/v1/{project_id}/privateips
```

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```
{
  "privateips":
   [
    {
        "subnet_id": "531dec0f-3116-411b-a21b-e612e42349fd"
    },
    {
        "subnet_id": "531dec0f-3116-411b-a21b-e612e42349fd",
         "ip_address": "192.168.1.17"
    }
   ]
}
```

Response Parameters

Table 5-96 Response parameter

Name	Type	Description
privateips	Array of **privateip** objects	Specifies the private IP address objects. For details, see **Table 5-97**.

Table 5-97 Description of the **privateip** field

Name	Type	Description
status	String	• Specifies the status of the private IP address. • Possible values are as follows: – **ACTIVE** – **DOWN**
id	String	Specifies the ID of the private IP address, which uniquely identifies the private IP address.
subnet_id	String	Specifies the ID of the subnet from which IP addresses are assigned. If you use the management console, the value of this parameter is the **Network ID** value.
tenant_id	String	Specifies the project ID.

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Name	Type	Description
device_owner	String	• Specifies the resource using the private IP address. The parameter is left blank if it is not used. • The value can be: **network:dhcp**: DHCP service IP address **network:router_interface_distributed**: Gateway IP address **compute:*xxx*** (*xxx* indicates the AZ name. For example, **compute:aa-bb-cc** indicates that the IP address is used by an ECS in the AZ aa-bb-cc.): IP address of an ECS NIC **neutron:VIP_PORT**: Virtual IP address **neutron:LOADBALANCERV2**: IP address of a shared load balancer **neutron:LOADBALANCERV3**: IP address of a dedicated load balancer **network:endpoint_interface**: IP address of a VPC endpoint **network:nat_gateway**: IP address used by a NAT gateway • The value range specifies only the type of private IP addresses supported by the current service.
ip_address	String	Specifies the assigned private IP address.

Example Response

```
{
   "privateips": [
      {
         "status": "DOWN",
         "id": "c60c2ce1-1e73-44bd-bf48-fd688448ff7b",
         "subnet_id": "531dec0f-3116-411b-a21b-e612e42349fd",
         "tenant_id": "8b7e35ad379141fc9df3e178bd64f55c",
         "device_owner": "",
         "ip_address": "192.168.1.10"
      },
      {
         "status": "DOWN",
         "id": "4b123c18-ae92-4dfa-92cd-d44002359aa1",
         "subnet_id": "531dec0f-3116-411b-a21b-e612e42349fd",
         "tenant_id": "8b7e35ad379141fc9df3e178bd64f55c",
         "device_owner": "",
         "ip_address": "192.168.1.17"
      }
```

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```
  ]
}
```

Status Code

See **Status Codes**.

Error Code

See **Error Codes**.

5.7.2 Querying Private IP Address Details

Function

This API is used to query details about a private IP address using the specified ID.

URI

GET /v1/{project_id}/privateips/{privateip_id}

Table 5-98 describes the parameters.

Table 5-98 Parameter description

Name	Mandatory	Description
project_id	Yes	Specifies the project ID. For details about how to obtain a project ID, see **Obtaining a Project ID**.
privateip_id	Yes	Specifies the ID of the private IP address, which uniquely identifies the private IP address.

Request Parameters

None

Example Request

```
GET https://{Endpoint}/v1/{project_id}/privateips/d600542a-b231-45ed-af05-e9930cb14f78
```

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Response Parameters

Table 5-99 Response parameter

Name	Type	Description
privateip	**privateip** object	Specifies the private IP address objects. For details, see **Table 5-100**.

Table 5-100 Description of the **privateip** field

Name	Type	Description
status	String	• Specifies the status of the private IP address. • Possible values are as follows: – **ACTIVE** – **DOWN**
id	String	Specifies the ID of the private IP address, which uniquely identifies the private IP address.
subnet_id	String	Specifies the ID of the subnet from which IP addresses are assigned. If you use the management console, the value of this parameter is the **Network ID** value.
tenant_id	String	Specifies the project ID.

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Name	Type	Description
device_owner	String	• Specifies the resource using the private IP address. The parameter is left blank if it is not used. • The value can be: **network:dhcp**: DHCP service IP address **network:router_interface_distributed**: Gateway IP address **compute:*xxx*** (*xxx* indicates the AZ name. For example, **compute:aa-bb-cc** indicates that the IP address is used by an ECS in the AZ aa-bb-cc.): IP address of an ECS NIC **neutron:VIP_PORT**: Virtual IP address **neutron:LOADBALANCERV2**: IP address of a shared load balancer **neutron:LOADBALANCERV3**: IP address of a dedicated load balancer **network:endpoint_interface**: IP address of a VPC endpoint **network:nat_gateway**: IP address used by a NAT gateway • The value range specifies only the type of private IP addresses supported by the current service.
ip_address	String	Specifies the assigned private IP address.

Example Response

```
{
   "privateip":
      {
         "status": "DOWN",
         "id": "d600542a-b231-45ed-af05-e9930cb14f78",
         "subnet_id": "531dec0f-3116-411b-a21b-e612e42349fd",
         "tenant_id": "8b7e35ad379141fc9df3e178bd64f55c",
         "device_owner": "",
         "ip_address": "192.168.1.11"
      }
}
```

Status Code

See **Status Codes**.

Error Code

See **Error Codes**.

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5.7.3 Querying Private IP Addresses

Function

This API is used to query private IP addresses using search criteria and to display the private IP addresses in a list.

URI

GET /v1/{project_id}/subnets/{subnet_id}/privateips

Example:

```
GET https://{Endpoint}/v1/{project_id}/subnets/{subnet_id}/privateips?
limit=10&marker=4779ab1c-7c1a-44b1-a02e-93dfc361b32d
```

Table 5-101 describes the parameters.

Table 5-101 Parameter description

Name	Mandatory	Type	Description
project_id	Yes	String	Specifies the project ID. For details about how to obtain a project ID, see **Obtaining a Project ID**.
subnet_id	Yes	String	Specifies the unique ID of the subnet to which the private IP address belongs. If you use the management console, the value of this parameter is the **Network ID** value.

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Name	Mandatory	Type	Description
marker	No	String	Specifies a resource ID for pagination query, indicating that the query starts from the next record of the specified resource ID. This parameter can work together with the parameter **limit**. • If parameters **marker** and **limit** are not passed, resource records on the first page will be returned. • If the parameter **marker** is not passed and the value of parameter **limit** is set to **10**, the first 10 resource records will be returned. • If the value of the parameter **marker** is set to the resource ID of the 10th record and the value of parameter **limit** is set to **10**, the 11th to 20th resource records will be returned. • If the value of the parameter **marker** is set to the resource ID of the 10th record and the parameter **limit** is not passed, resource records starting from the 11th records (including 11th) will be returned.
limit	No	Integer	Specifies the number of records that will be returned on each page. The value is from 0 to intmax (2^31-1). The default value is 2000. **limit** can be used together with **marker**. For details, see the parameter description of **marker**.

Request Parameters

None

Example Request

```
GET https://{Endpoint}/v1/{project_id}/subnets/{subnet_id}/privateips
```

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Response Parameters

Table 5-102 Request parameter

Name	Type	Description
privateips	Array of **privateip** objects	Specifies the private IP address objects. For details, see **Table 5-103**.

Table 5-103 Description of the **privateip** field

Name	Type	Description
status	String	• Specifies the status of the private IP address. • Possible values are as follows: – **ACTIVE** – **DOWN**
id	String	Specifies the ID of the private IP address, which uniquely identifies the private IP address.
subnet_id	String	Specifies the ID of the subnet from which IP addresses are assigned. If you use the management console, the value of this parameter is the **Network ID** value.
tenant_id	String	Specifies the project ID.

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Name	Type	Description
device_owner	String	• Specifies the resource using the private IP address. The parameter is left blank if it is not used. • The value can be: **network:dhcp**: DHCP service IP address **network:router_interface_distributed**: Gateway IP address **compute:*xxx*** (*xxx* indicates the AZ name. For example, **compute:aa-bb-cc** indicates that the IP address is used by an ECS in the AZ aa-bb-cc.): IP address of an ECS NIC **neutron:VIP_PORT**: Virtual IP address **neutron:LOADBALANCERV2**: IP address of a shared load balancer **neutron:LOADBALANCERV3**: IP address of a dedicated load balancer **network:endpoint_interface**: IP address of a VPC endpoint **network:nat_gateway**: IP address used by a NAT gateway • The value range specifies only the type of private IP addresses supported by the current service.
ip_address	String	Specifies the assigned private IP address.

Example Response

```
{
   "privateips": [
      {
         "status": "DOWN",
         "id": "d600542a-b231-45ed-af05-e9930cb14f78",
         "subnet_id": "531dec0f-3116-411b-a21b-e612e42349fd",
         "tenant_id": "8b7e35ad379141fc9df3e178bd64f55c",
         "device_owner": "",
         "ip_address": "192.168.1.11"
      },
      {
         "status": "DOWN",
         "id": "d600542a-b231-45ed-af05-e9930cb14f79",
         "subnet_id": "531dec0f-3116-411b-a21b-e612e42349fd",
         "tenant_id": "8b7e35ad379141fc9df3e178bd64f55c",
         "device_owner": "",
         "ip_address": "192.168.1.12"
      }
   ]
}
```

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Status Code

See **Status Codes**.

Error Code

See **Error Codes**.

5.7.4 Deleting a Private IP Address

Function

This API is used to delete a private IP address.

URI

DELETE /v1/{project_id}/privateips/{privateip_id}

Table 5-104 describes the parameters.

Table 5-104 Parameter description

Name	Mandatory	Description
project_id	Yes	Specifies the project ID. For details about how to obtain a project ID, see **Obtaining a Project ID**.
privateip_id	Yes	Specifies the ID of the private IP address, which uniquely identifies the private IP address.

Request Parameters

None

Example Request

```
DELETE https://{Endpoint}/v1/{project_id}/privateips/4779ab1c-7c1a-44b1-a02e-93dfc361b32d
```

Response Parameters

None

Example Response

None

Status Code

See **Status Codes**.

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Error Code

See **Error Codes**.

5.8 Security Group

5.8.1 Creating a Security Group

Function

This API is used to create a security group.

URI

POST /v1/{project_id}/security-groups

Table 5-105 describes the parameters.

Table 5-105 Parameter description

Name	Mandatory	Description
project_id	Yes	Specifies the project ID. For details about how to obtain a project ID, see **Obtaining a Project ID**.

Request Parameters

Table 5-106 Request parameter

Name	Mandatory	Type	Description
security_group	Yes	**security_group** object	Specifies the security group objects. For details, see **Table 5-107**.

Table 5-107 Description of **security_group** fields

Name	Mandatory	Type	Description
name	Yes	String	• Specifies the security group name. • The value can contain 1 to 64 characters, including letters, digits, underscores (_), hyphens (-), and periods (.).

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Name	Mandatory	Type	Description
vpc_id	No	String	Specifies the ID of the VPC that the security group is associated with. **NOTE** Currently, this parameter is not recommended because it is only used as a prompt and does not restrict that the security group must be associated with the VPC.

Example Request

- Create a security group named **sg-01** in the VPC with ID of 3ec3b33f-ac1c-4630-ad1c-7dba1ed79d85.

```
POST https://{Endpoint}/v1/{project_id}/security-groups

{
   "security_group": {
      "name": "sg-01",
      "vpc_id": "3ec3b33f-ac1c-4630-ad1c-7dba1ed79d85"
   }
}
```

Response Parameters

Table 5-108 Response parameter

Name	Type	Description
security_group	**security_group** object	Specifies the security group objects. For details, see **Table 5-109**.

Table 5-109 Description of **security_group** fields

Name	Type	Description
name	String	Specifies the security group name.
description	String	Provides supplementary information about the security group.
id	String	Specifies the security group ID, which uniquely identifies the security group.

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Name	Type	Description
vpc_id	String	Specifies the ID of the VPC that the security group is associated with. **NOTE** Currently, this parameter is not recommended because it is only used as a prompt and does not restrict that the security group must be associated with the VPC.
security_group_rules	Array of **security_group_rule** objects	Specifies the default security group rules, which ensure that resources in the security group can communicate with one another.

Table 5-110 security_group_rule objects

Name	Type	Description
id	String	Specifies the security group rule ID, which uniquely identifies the security group rule.
description	String	• Provides supplementary information about the security group rule. • The value can contain no more than 255 characters, including letters and digits.
security_group_id	String	Specifies the security group rule ID, which uniquely identifies the security group rule.
direction	String	• Specifies the direction of access control. • Possible values are as follows: – **egress** – **ingress**
ethertype	String	• Specifies the IP protocol version. • The value can be **IPv4** or **IPv6**.

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Name	Type	Description
protocol	String	• Specifies the protocol type. • The value can be **icmp**, **tcp**, **udp**, or an IP protocol number (0 to 255, for example, 47 for GRE) • If the parameter is left blank, all protocols are supported.
port_range_min	Integer	• Specifies the start port number. • The value ranges from 1 to 65535. • The value cannot be greater than the **port_range_max** value. An empty value indicates all ports. If the protocol is **icmp**, the value range is shown in **ICMP-Port Range Relationship Table**.
port_range_max	Integer	• Specifies the end port number. • The value ranges from 1 to 65535. • If the protocol is not **icmp**, the value cannot be smaller than the **port_range_min** value. An empty value indicates all ports. If the protocol is **icmp**, the value range is shown in **ICMP-Port Range Relationship Table**.
remote_ip_prefix	String	• Specifies the remote IP address. If the access control direction is set to **egress**, the parameter specifies the source IP address. If the access control direction is set to **ingress**, the parameter specifies the destination IP address. • The value can be in the CIDR format or IP addresses. • The parameter is mutually exclusive with parameter **remote_group_id**.

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Name	Type	Description
remote_group_id	String	• Specifies the ID of the peer security group. • The value is mutually exclusive with parameter **remote_ip_prefix**.
tenant_id	String	• Specifies the ID of the project to which the security group rule belongs.

Example Response


```
{
   "security_group": {
      "id": "16b6e77a-08fa-42c7-aa8b-106c048884e6",
      "name": "qq",
      "description": "",
      "vpc_id": "3ec3b33f-ac1c-4630-ad1c-7dba1ed79d85",
      "security_group_rules": [
        {
            "id": "f11a3824-ac19-4fad-b4f1-c5f4a6dd0a80",
            "tenant_id": "060576782980d5762f9ec014dd2f1148",
            "security_group_id": "69c999ad-d9ef-4d79-94fd-35e6ceb75325",
            "remote_group_id": "69c999ad-d9ef-4d79-94fd-35e6ceb75325",
            "direction": "ingress",
            "protocol": null,
            "description": "",
            "ethertype": "IPv6",
            "remote_ip_prefix": null,
            "port_range_max": null,
            "port_range_min": null
        },
        {
            "id": "3d6480e8-9ea4-46dc-bb1b-8db190cd5677",
            "tenant_id": "060576782980d5762f9ec014dd2f1148",
            "security_group_id": "69c999ad-d9ef-4d79-94fd-35e6ceb75325",
            "remote_group_id": null,
            "direction": "egress",
            "protocol": null,
            "description": "",
            "ethertype": "IPv6",
            "remote_ip_prefix": null,
            "port_range_max": null,
            "port_range_min": null
        },
        {
            "id": "9581f18c-1fdd-43da-ace9-7758a56ef28a",
            "tenant_id": "060576782980d5762f9ec014dd2f1148",
            "security_group_id": "69c999ad-d9ef-4d79-94fd-35e6ceb75325",
            "remote_group_id": null,
            "direction": "egress",
            "protocol": null,
            "description": "",
            "ethertype": "IPv4",
            "remote_ip_prefix": null,
            "port_range_max": null,
            "port_range_min": null
        },
        {
            "id": "a3ba270e-e58b-432d-a912-aeb7eace9fb8",
            "tenant_id": "060576782980d5762f9ec014dd2f1148",
            "security_group_id": "69c999ad-d9ef-4d79-94fd-35e6ceb75325",
```


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```
            "remote_group_id": "69c999ad-d9ef-4d79-94fd-35e6ceb75325",
            "direction": "ingress",
            "protocol": null,
            "description": "",
            "ethertype": "IPv4",
            "remote_ip_prefix": null,
            "port_range_max": null,
            "port_range_min": null
        }
    ]
  }
}
```

Status Codes

See **Status Codes**.

Error Codes

See **Error Codes**.

5.8.2 Querying Security Group Details

Function

This API is used to query details about a security group.

URI

GET /v1/{project_id}/security-groups/{security_group_id}

Table 5-111 describes the parameters.

Table 5-111 Parameter description

Name	Mandatory	Description
project_id	Yes	Specifies the project ID. For details about how to obtain a project ID, see **Obtaining a Project ID**.
security_group_id	Yes	Specifies the security group ID, which uniquely identifies the security group.

Request Parameters

None

Example Request

```
GET https://{Endpoint}/v1/{project_id}/security-groups/16b6e77a-08fa-42c7-aa8b-106c048884e6
```

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Response Parameters

Table 5-112 Response parameter

Name	Type	Description
security_group	**security_group** object	Specifies the security group object.

Table 5-113 Description of **security_group** fields

Name	Type	Description
name	String	Specifies the security group name.
description	String	Provides supplementary information about the security group.
id	String	Specifies the security group ID, which uniquely identifies the security group.
vpc_id	String	Specifies the resource ID of the VPC to which the security group belongs. **NOTE** Currently, this parameter is not recommended because it is only used as a prompt and does not restrict that the security group must be associated with the VPC.
security_group_rules	Array of **security_group_rule** objects	Specifies the default security group rules, which ensure that resources in the security group can communicate with one another.

Table 5-114 security_group_rule objects

Name	Type	Description
id	String	Specifies the security group rule ID, which uniquely identifies the security group rule.

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Name	Type	Description
description	String	• Provides supplementary information about the security group rule. • The value can contain no more than 255 characters, including letters and digits.
security_group_id	String	Specifies the security group rule ID, which uniquely identifies the security group rule.
direction	String	• Specifies the direction of access control. • Possible values are as follows: – **egress** – **ingress**
ethertype	String	• Specifies the IP protocol version. • The value can be **IPv4** or **IPv6**.
protocol	String	• Specifies the protocol type. • The value can be **icmp**, **tcp**, **udp**, or an IP protocol number (0 to 255, for example, 47 for GRE) • If the parameter is left blank, all protocols are supported.
port_range_min	Integer	• Specifies the start port number. • The value ranges from 1 to 65535. • The value cannot be greater than the **port_range_max** value. An empty value indicates all ports. If the protocol is **icmp**, the value range is shown in **ICMP-Port Range Relationship Table**.

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Name	Type	Description
port_range_max	Integer	• Specifies the end port number. • The value ranges from 1 to 65535. • If the protocol is not **icmp**, the value cannot be smaller than the **port_range_min** value. An empty value indicates all ports. If the protocol is **icmp**, the value range is shown in **ICMP-Port Range Relationship Table**.
remote_ip_prefix	String	• Specifies the remote IP address. If the access control direction is set to **egress**, the parameter specifies the source IP address. If the access control direction is set to **ingress**, the parameter specifies the destination IP address. • The value can be in the CIDR format or IP addresses. • The parameter is mutually exclusive with parameter **remote_group_id**.
remote_group_id	String	• Specifies the ID of the peer security group. • The value is mutually exclusive with parameter **remote_ip_prefix**.
tenant_id	String	• Specifies the ID of the project to which the security group rule belongs.

Example Response

```
{
   "security_group": {
      "id": "16b6e77a-08fa-42c7-aa8b-106c048884e6",
      "name": "qq",
      "description": "qq",
      "vpc_id": "3ec3b33f-ac1c-4630-ad1c-7dba1ed79d85",

      "security_group_rules": [
        {
            "id": "f11a3824-ac19-4fad-b4f1-c5f4a6dd0a80",
            "tenant_id": "060576782980d5762f9ec014dd2f1148",
            "security_group_id": "69c999ad-d9ef-4d79-94fd-35e6ceb75325",
            "remote_group_id": "69c999ad-d9ef-4d79-94fd-35e6ceb75325",
            "direction": "ingress",
            "protocol": null,
```

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```
            "description": "",
            "ethertype": "IPv6",
            "remote_ip_prefix": null,
            "port_range_max": null,
            "port_range_min": null
        },
        {
            "id": "3d6480e8-9ea4-46dc-bb1b-8db190cd5677",
            "tenant_id": "060576782980d5762f9ec014dd2f1148",
            "security_group_id": "69c999ad-d9ef-4d79-94fd-35e6ceb75325",
            "remote_group_id": null,
            "direction": "egress",
            "protocol": null,
            "description": "",
            "ethertype": "IPv6",
            "remote_ip_prefix": null,
            "port_range_max": null,
            "port_range_min": null
        },
        {
            "id": "9581f18c-1fdd-43da-ace9-7758a56ef28a",
            "tenant_id": "060576782980d5762f9ec014dd2f1148",
            "security_group_id": "69c999ad-d9ef-4d79-94fd-35e6ceb75325",
            "remote_group_id": null,
            "direction": "egress",
            "protocol": null,
            "description": "",
            "ethertype": "IPv4",
            "remote_ip_prefix": null,
            "port_range_max": null,
            "port_range_min": null
        },
        {
            "id": "a3ba270e-e58b-432d-a912-aeb7eace9fb8",
            "tenant_id": "060576782980d5762f9ec014dd2f1148",
            "security_group_id": "69c999ad-d9ef-4d79-94fd-35e6ceb75325",
            "remote_group_id": "69c999ad-d9ef-4d79-94fd-35e6ceb75325",
            "direction": "ingress",
            "protocol": null,
            "description": "",
            "ethertype": "IPv4",
            "remote_ip_prefix": null,
            "port_range_max": null,
            "port_range_min": null
        }
    ]
  }
}
```


Status Code

See **Status Codes**.

Error Code

See **Error Codes**.

5.8.3 Querying Security Groups

Function

This API is used to query security groups using search criteria and to display the security groups in a list.

URI

GET /v1/{project_id}/security-groups

Example:

```
GET https://{Endpoint}/v1/{project_id}/security-groups?limit=10&marker=4779ab1c-7c1a-44b1-a02e-93dfc361b32d&vpc_id=3ec3b33f-ac1c-4630-ad1c-7dba1ed79d85
```

Table 5-115 describes the parameters.

Table 5-115 Parameter description

Name	Mandatory	Type	Description
project_id	Yes	String	Specifies the project ID. For details about how to obtain a project ID, see **Obtaining a Project ID**.

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Name	Mandatory	Type	Description
marker	No	String	Specifies a resource ID for pagination query, indicating that the query starts from the next record of the specified resource ID. This parameter can work together with the parameter **limit**. ● If parameters **marker** and **limit** are not passed, resource records on the first page will be returned. ● If the parameter **marker** is not passed and the value of parameter **limit** is set to **10**, the first 10 resource records will be returned. ● If the value of the parameter **marker** is set to the resource ID of the 10th record and the value of parameter **limit** is set to **10**, the 11th to 20th resource records will be returned. ● If the value of the parameter **marker** is set to the resource ID of the 10th record and the parameter **limit** is not passed, resource records starting from the 11th records (including 11th) will be returned.

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Name	Mandatory	Type	Description
limit	No	Integer	Specifies the number of records that will be returned on each page. The value is from 0 to intmax (2^31-1). The default value is 2000. **limit** can be used together with **marker**. For details, see the parameter description of **marker**.
vpc_id	No	String	Specifies that the VPC ID is used as the filtering condition.

Request Parameters

None

Example Request

```
GET https://{Endpoint}/v1/{project_id}/security-groups
```

Response Parameters

Table 5-116 Response parameter

Name	Type	Description
security_groups	Array of **security_group** objects	Specifies the security group objects. For details, see **Table 5-117**.

Table 5-117 Description of **security_group** fields

Name	Type	Description
name	String	Specifies the security group name.
description	String	Provides supplementary information about the security group.
id	String	Specifies the security group ID, which uniquely identifies the security group.

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Name	Type	Description
vpc_id	String	Specifies the resource ID of the VPC to which the security group belongs. **NOTE** Currently, this parameter is not recommended because it is only used as a prompt and does not restrict that the security group must be associated with the VPC.
security_group_rules	Array of **security_group_rule** objects	Specifies the default security group rules, which ensure that resources in the security group can communicate with one another.

Table 5-118 security_group_rule objects

Name	Type	Description
id	String	Specifies the security group rule ID, which uniquely identifies the security group rule.
description	String	• Provides supplementary information about the security group rule. • The value can contain no more than 255 characters, including letters and digits.
security_group_id	String	Specifies the security group rule ID, which uniquely identifies the security group rule.
direction	String	• Specifies the direction of access control. • Possible values are as follows: – **egress** – **ingress**
ethertype	String	• Specifies the IP protocol version. • The value can be **IPv4** or **IPv6**.

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Name	Type	Description
protocol	String	• Specifies the protocol type. • The value can be **icmp**, **tcp**, **udp**, or an IP protocol number (0 to 255, for example, 47 for GRE) • If the parameter is left blank, all protocols are supported.
port_range_min	Integer	• Specifies the start port number. • The value ranges from 1 to 65535. • The value cannot be greater than the **port_range_max** value. An empty value indicates all ports. If the protocol is **icmp**, the value range is shown in **ICMP-Port Range Relationship Table**.
port_range_max	Integer	• Specifies the end port number. • The value ranges from 1 to 65535. • If the protocol is not **icmp**, the value cannot be smaller than the **port_range_min** value. An empty value indicates all ports. If the protocol is **icmp**, the value range is shown in **ICMP-Port Range Relationship Table**.
remote_ip_prefix	String	• Specifies the remote IP address. If the access control direction is set to **egress**, the parameter specifies the source IP address. If the access control direction is set to **ingress**, the parameter specifies the destination IP address. • The value can be in the CIDR format or IP addresses. • The parameter is mutually exclusive with parameter **remote_group_id**.

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Name	Type	Description
remote_group_id	String	• Specifies the ID of the peer security group. • The value is mutually exclusive with parameter **remote_ip_prefix**.
tenant_id	String	• Specifies the ID of the project to which the security group rule belongs.

Example Response


```
{
   "security_groups": [
      {
         "id": "16b6e77a-08fa-42c7-aa8b-106c048884e6",
         "name": "qq",
         "description": "qq",
         "vpc_id": "3ec3b33f-ac1c-4630-ad1c-7dba1ed79d85",

         "security_group_rules": [
        {
            "id": "f11a3824-ac19-4fad-b4f1-c5f4a6dd0a80",
            "tenant_id": "060576782980d5762f9ec014dd2f1148",
            "security_group_id": "69c999ad-d9ef-4d79-94fd-35e6ceb75325",
            "remote_group_id": "69c999ad-d9ef-4d79-94fd-35e6ceb75325",
            "direction": "ingress",
            "protocol": null,
            "description": "",
            "ethertype": "IPv6",
            "remote_ip_prefix": null,
            "port_range_max": null,
            "port_range_min": null
         },
         {
            "id": "3d6480e8-9ea4-46dc-bb1b-8db190cd5677",
            "tenant_id": "060576782980d5762f9ec014dd2f1148",
            "security_group_id": "69c999ad-d9ef-4d79-94fd-35e6ceb75325",
            "remote_group_id": null,
            "direction": "egress",
            "protocol": null,
            "description": "",
            "ethertype": "IPv6",
            "remote_ip_prefix": null,
            "port_range_max": null,
            "port_range_min": null
         },
         {
            "id": "9581f18c-1fdd-43da-ace9-7758a56ef28a",
            "tenant_id": "060576782980d5762f9ec014dd2f1148",
            "security_group_id": "69c999ad-d9ef-4d79-94fd-35e6ceb75325",
            "remote_group_id": null,
            "direction": "egress",
            "protocol": null,
            "description": "",
            "ethertype": "IPv4",
            "remote_ip_prefix": null,
            "port_range_max": null,
            "port_range_min": null
         },
         {
            "id": "a3ba270e-e58b-432d-a912-aeb7eace9fb8",
```


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```
            "tenant_id": "060576782980d5762f9ec014dd2f1148",
            "security_group_id": "69c999ad-d9ef-4d79-94fd-35e6ceb75325",
            "remote_group_id": "69c999ad-d9ef-4d79-94fd-35e6ceb75325",
            "direction": "ingress",
            "protocol": null,
            "description": "",
            "ethertype": "IPv4",
            "remote_ip_prefix": null,
            "port_range_max": null,
            "port_range_min": null
        }
    ]
    },
    {
        "id": "9c0f56be-a9ac-438c-8c57-fce62de19419",
        "name": "default",
        "description": "qq",
        "vpc_id": "13551d6b-755d-4757-b956-536f674975c0",

        "security_group_rules": [
            {
                "direction": "egress",
                "ethertype": "IPv4",
                "id": "95479e0a-e312-4844-b53d-a5e4541b783f",
                "description": "",
                "security_group_id": "9c0f56be-a9ac-438c-8c57-fce62de19419"
            },
            {
                "direction": "ingress",
                "ethertype": "IPv4",
                "id": "0c4a2336-b036-4fa2-bc3c-1a291ed4c431",
                "description": "",
                "remote_group_id": "9c0f56be-a9ac-438c-8c57-fce62de19419",
                "security_group_id": "9c0f56be-a9ac-438c-8c57-fce62de19419"
            }
        ]
    }
  ]
}
```


Status Code

See **Status Codes**.

Error Code

See **Error Codes**.

5.8.4 Deleting a Security Group

Function

This API is used to delete a security group.

URI

DELETE /v1/{project_id}/security-groups/{security_group_id}

Table 5-119 describes the parameters.

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Table 5-119 Parameter description

Name	Mandatory	Description
security_group_id	Yes	Specifies the security group ID, which uniquely identifies the security group.
project_id	No	Specifies the project ID. For details about how to obtain a project ID, see **Obtaining a Project ID**.

Request Parameters

None

Example Request

```
DELETE https://{Endpoint}/v1/{project_id}/security-groups/0c4a2336-b036-4fa2-bc3c-1a291ed4c431
```

Response Parameters

None

Example Response

None

Status Code

See **Status Codes**.

Error Code

See **Error Codes**.

5.8.5 Creating a Security Group Rule

Function

This API is used to create a security group rule.

URI

POST /v1/{project_id}/security-group-rules

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Request Parameters

Table 5-120 Request parameter

Name	Mandatory	Type	Description
security_group_rule	Yes	**security_group_rule** object	Specifies the security group rule objects. For details, see **Table 5-121**.

Table 5-121 Description of the **security_group_rule** field

Name	Mandatory	Type	Description
security_group_id	Yes	String	Specifies the security group ID.
description	No	String	• Provides supplementary information about the security group rule. • The value can contain no more than 255 characters, including letters and digits.
direction	Yes	String	• Access control direction specified in a security group rule. • The value can be: – **egress** – **ingress**
ethertype	No	String	• Specifies the IP protocol version. • The value can be **IPv4** or **IPv6**. • If you do not set this parameter, **IPv4** is used by default.
protocol	No	String	• Specifies the protocol type. • The value can be **icmp**, **tcp**, **udp**, or an IP protocol number (0 to 255, for example, 47 for GRE) • If the parameter is left blank, all protocols are supported.

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Name	Mandatory	Type	Description
port_range_min	No	Integer	• Specifies the start port number. • The value ranges from 1 to 65535. • The value cannot be greater than the **port_range_max** value. An empty value indicates all ports. If the protocol is **icmp**, the value range is shown in **ICMP-Port Range Relationship Table**.
port_range_max	No	Integer	• Specifies the end port number. • The value ranges from 1 to 65535. • If the protocol is not **icmp**, the value cannot be smaller than the **port_range_min** value. An empty value indicates all ports. If the protocol is **icmp**, the value range is shown in **ICMP-Port Range Relationship Table**.
remote_ip_prefix	No	String	• Specifies the remote IP address. If the access control direction is set to **egress**, the parameter specifies the source IP address. If the access control direction is set to **ingress**, the parameter specifies the destination IP address. • The value can be in the CIDR format or IP addresses. • The parameter is mutually exclusive with parameter **remote_group_id**.

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Name	Mandatory	Type	Description
remote_group_id	No	String	• Specifies the ID of the peer security group. • This parameter is mutually exclusive with parameter **remote_ip_prefix**.

Example Request

- Create an inbound rule in the security group whose ID is a7734e61-b545-452d-a3cd-0189cbd9747a.

```
POST https://{Endpoint}/v1/{project_id}/security-group-rules

{
    "security_group_rule": {
        "direction": "ingress",
        "port_range_min": "80",
        "ethertype": "IPv4",
        "port_range_max": "80",
        "protocol": "tcp",
        "remote_group_id": "85cc3048-abc3-43cc-89b3-377341426ac5",
        "security_group_id": "a7734e61-b545-452d-a3cd-0189cbd9747a"
    }
}
POST https://{Endpoint}/v1/{project_id}/security-group-rules

{
    "security_group_rule": {
        "direction": "ingress",
        "port_range_min": "80",
        "ethertype": "IPv6",
        "port_range_max": "90",
        "protocol": "tcp",
        "security_group_id": "a7734e61-b545-452d-a3cd-0189cbd9747a"
    }
}
```

Response Parameters

Table 5-122 Response parameter

Name	Type	Description
security_group_rule	**security_group_rule** object	Specifies the security group rule objects. For details, see **Table 5-123**.

Table 5-123 security_group_rule objects

Name	Type	Description
id	String	Specifies the security group rule ID, which uniquely identifies the security group rule.

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Name	Type	Description
description	String	• Provides supplementary information about the security group rule. • The value can contain no more than 255 characters, including letters and digits.
security_group_id	String	Specifies the security group rule ID, which uniquely identifies the security group rule.
direction	String	• Specifies the direction of access control. • Possible values are as follows: – **egress** – **ingress**
ethertype	String	• Specifies the IP protocol version. • The value can be **IPv4** or **IPv6**.
protocol	String	• Specifies the protocol type. • The value can be **icmp**, **tcp**, **udp**, or an IP protocol number (0 to 255, for example, 47 for GRE) • If the parameter is left blank, all protocols are supported.
port_range_min	Integer	• Specifies the start port number. • The value ranges from 1 to 65535. • The value cannot be greater than the **port_range_max** value. An empty value indicates all ports. If the protocol is **icmp**, the value range is shown in **ICMP-Port Range Relationship Table**.

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Name	Type	Description
port_range_max	Integer	• Specifies the end port number. • The value ranges from 1 to 65535. • If the protocol is not **icmp**, the value cannot be smaller than the **port_range_min** value. An empty value indicates all ports. If the protocol is **icmp**, the value range is shown in **ICMP-Port Range Relationship Table**.
remote_ip_prefix	String	• Specifies the remote IP address. If the access control direction is set to **egress**, the parameter specifies the source IP address. If the access control direction is set to **ingress**, the parameter specifies the destination IP address. • The value can be in the CIDR format or IP addresses. • The parameter is mutually exclusive with parameter **remote_group_id**.
remote_group_id	String	• Specifies the ID of the peer security group. • The value is mutually exclusive with parameter **remote_ip_prefix**.
tenant_id	String	• Specifies the ID of the project to which the security group rule belongs.

Example Response

```
{
   "security_group_rule": {
      "direction": "ingress",
      "ethertype": "IPv4",
      "id": "2bc0accf-312e-429a-956e-e4407625eb62",
      "description": "",
      "port_range_max": 80,
      "port_range_min": 80,
      "protocol": "tcp",
      "remote_group_id": "85cc3048-abc3-43cc-89b3-377341426ac5",
      "remote_ip_prefix": null,
      "security_group_id": "a7734e61-b545-452d-a3cd-0189cbd9747a",
      "tenant_id": "e4f50856753b4dc6afee5fa6b9b6c550"
   }
}
```

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Status Code

See **Status Codes**.

Error Code

See **Error Codes**.

5.8.6 Querying Security Group Rule Details

Function

This API is used to query details about a security group rule.

URI

GET /v1/{project_id}/security-group-rules/{security_group_rule_id}

Table 5-124 describes the parameters.

Table 5-124 Parameter description

Name	Mandatory	Description
project_id	Yes	Specifies the project ID. For details about how to obtain a project ID, see **Obtaining a Project ID**.
security_group_rule_id	Yes	Specifies the security group rule ID, which uniquely identifies the security group rule.

Request Parameters

None

Example Request

```
GET https://{Endpoint}/v1/{project_id}/security-group-rules/2bc0accf-312e-429a-956e-e4407625eb62
```

Response Parameters

Table 5-125 Response parameter

Name	Type	Description
security_group_rule	**security_group_rule** object	Specifies the security group rule objects. For details, see **Table 5-126**.

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Table 5-126 security_group_rule objects

Name	Type	Description
id	String	Specifies the security group rule ID, which uniquely identifies the security group rule.
description	String	• Provides supplementary information about the security group rule. • The value can contain no more than 255 characters, including letters and digits.
security_group_id	String	Specifies the security group rule ID, which uniquely identifies the security group rule.
direction	String	• Specifies the direction of access control. • Possible values are as follows: – **egress** – **ingress**
ethertype	String	• Specifies the IP protocol version. • The value can be **IPv4** or **IPv6**.
protocol	String	• Specifies the protocol type. • The value can be **icmp**, **tcp**, **udp**, or an IP protocol number (0 to 255, for example, 47 for GRE) • If the parameter is left blank, all protocols are supported.
port_range_min	Integer	• Specifies the start port number. • The value ranges from 1 to 65535. • The value cannot be greater than the **port_range_max** value. An empty value indicates all ports. If the protocol is **icmp**, the value range is shown in **ICMP-Port Range Relationship Table**.

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Name	Type	Description
port_range_max	Integer	• Specifies the end port number. • The value ranges from 1 to 65535. • If the protocol is not **icmp**, the value cannot be smaller than the **port_range_min** value. An empty value indicates all ports. If the protocol is **icmp**, the value range is shown in **ICMP-Port Range Relationship Table**.
remote_ip_prefix	String	• Specifies the remote IP address. If the access control direction is set to **egress**, the parameter specifies the source IP address. If the access control direction is set to **ingress**, the parameter specifies the destination IP address. • The value can be in the CIDR format or IP addresses. • The parameter is mutually exclusive with parameter **remote_group_id**.
remote_group_id	String	• Specifies the ID of the peer security group. • The value is mutually exclusive with parameter **remote_ip_prefix**.
tenant_id	String	• Specifies the ID of the project to which the security group rule belongs.

Example Response

```
{
   "security_group_rule": {
      "direction": "ingress",
      "ethertype": "IPv4",
      "id": "2bc0accf-312e-429a-956e-e4407625eb62",
      "description":"",
      "port_range_max": 80,
      "port_range_min": 80,
      "protocol": "tcp",
      "remote_group_id": "85cc3048-abc3-43cc-89b3-377341426ac5",
      "remote_ip_prefix": null,
      "security_group_id": "a7734e61-b545-452d-a3cd-0189cbd9747a",
      "tenant_id": "e4f50856753b4dc6afee5fa6b9b6c550"
   }
}
```

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Status Code

See **Status Codes**.

Error Code

See **Error Codes**.

5.8.7 Querying Security Group Rules

Function

This API is used to query security group rules using search criteria and to display the security group rules in a list.

URI

GET /v1/{project_id}/security-group-rules

Example:

```
GET https://{Endpoint}/v1/{project_id}/security-group-rules?security_group_id=a7734e61-b545-452da3cd-0189cbd9747a&limit=10&marker=4779ab1c-7c1a-44b1-a02e-93dfc361b32d
```

Table 5-127 describes the parameters.

Table 5-127 Parameter description

Name	Mandatory	Type	Description
project_id	Yes	String	Specifies the project ID. For details about how to obtain a project ID, see **Obtaining a Project ID**.

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Name	Mandatory	Type	Description
marker	No	String	Specifies a resource ID for pagination query, indicating that the query starts from the next record of the specified resource ID. This parameter can work together with the parameter **limit**. ● If parameters **marker** and **limit** are not passed, resource records on the first page will be returned. ● If the parameter **marker** is not passed and the value of parameter **limit** is set to **10**, the first 10 resource records will be returned. ● If the value of the parameter **marker** is set to the resource ID of the 10th record and the value of parameter **limit** is set to **10**, the 11th to 20th resource records will be returned. ● If the value of the parameter **marker** is set to the resource ID of the 10th record and the parameter **limit** is not passed, resource records starting from the 11th records (including 11th) will be returned.

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Name	Mandatory	Type	Description
limit	No	Integer	Specifies the number of records that will be returned on each page. The value is from 0 to intmax (2^31-1). The default value is 2000. **limit** can be used together with **marker**. For details, see the parameter description of **marker**.
security_group_id	No	String	Specifies the security group ID.

Request Parameters

None

Example Request

```
GET https://{Endpoint}/v1/{project_id}/security-group-rules
```

Response Parameters

Name	Type	Description
security_group_rules	Array of **security_group_rule** objects	Specifies the security group rule objects. For details, see **Table 5-128**.

Table 5-128 security_group_rule objects

Name	Type	Description
id	String	Specifies the security group rule ID, which uniquely identifies the security group rule.
description	String	• Provides supplementary information about the security group rule. • The value can contain no more than 255 characters, including letters and digits.

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Name	Type	Description
security_group_id	String	Specifies the security group rule ID, which uniquely identifies the security group rule.
direction	String	• Specifies the direction of access control. • Possible values are as follows: – **egress** – **ingress**
ethertype	String	• Specifies the IP protocol version. • The value can be **IPv4** or **IPv6**.
protocol	String	• Specifies the protocol type. • The value can be **icmp**, **tcp**, **udp**, or an IP protocol number (0 to 255, for example, 47 for GRE) • If the parameter is left blank, all protocols are supported.
port_range_min	Integer	• Specifies the start port number. • The value ranges from 1 to 65535. • The value cannot be greater than the **port_range_max** value. An empty value indicates all ports. If the protocol is **icmp**, the value range is shown in **ICMP-Port Range Relationship Table**.
port_range_max	Integer	• Specifies the end port number. • The value ranges from 1 to 65535. • If the protocol is not **icmp**, the value cannot be smaller than the **port_range_min** value. An empty value indicates all ports. If the protocol is **icmp**, the value range is shown in **ICMP-Port Range Relationship Table**.

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Name	Type	Description
remote_ip_prefix	String	• Specifies the remote IP address. If the access control direction is set to **egress**, the parameter specifies the source IP address. If the access control direction is set to **ingress**, the parameter specifies the destination IP address. • The value can be in the CIDR format or IP addresses. • The parameter is mutually exclusive with parameter **remote_group_id**.
remote_group_id	String	• Specifies the ID of the peer security group. • The value is mutually exclusive with parameter **remote_ip_prefix**.
tenant_id	String	• Specifies the ID of the project to which the security group rule belongs.

Example Response


```
{
   "security_group_rules": [
      {
         "direction": "egress",
         "ethertype": "IPv6",
         "id": "3c0e45ff-adaf-4124-b083-bf390e5482ff",
         "description": "",
         "port_range_max": null,
         "port_range_min": null,
         "protocol": null,
         "remote_group_id": null,
         "remote_ip_prefix": null,
         "security_group_id": "85cc3048-abc3-43cc-89b3-377341426ac5",
         "tenant_id": "e4f50856753b4dc6afee5fa6b9b6c550"
      },
      {
         "direction": "egress",
         "ethertype": "IPv4",
         "id": "93aa42e5-80db-4581-9391-3a608bd0e448",
         "description": "",
         "port_range_max": null,
         "port_range_min": null,
         "protocol": null,
         "remote_group_id": null,
         "remote_ip_prefix": null,
         "security_group_id": "85cc3048-abc3-43cc-89b3-377341426ac5",
         "tenant_id": "e4f50856753b4dc6afee5fa6b9b6c550"
      },
      {
         "direction": "ingress",
         "ethertype": "IPv6",
```


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```
            "id": "c0b09f00-1d49-4e64-a0a7-8a186d928138",
            "description": "",
            "port_range_max": null,
            "port_range_min": null,
            "protocol": null,
            "remote_group_id": "85cc3048-abc3-43cc-89b3-377341426ac5",
            "remote_ip_prefix": null,
            "security_group_id": "85cc3048-abc3-43cc-89b3-377341426ac5",
            "tenant_id": "e4f50856753b4dc6afee5fa6b9b6c550"
        },
        {
            "direction": "ingress",
            "ethertype": "IPv4",
            "id": "f7d45c89-008e-4bab-88ad-d6811724c51c",
            "description": "",
            "port_range_max": null,
            "port_range_min": null,
            "protocol": null,
            "remote_group_id": "85cc3048-abc3-43cc-89b3-377341426ac5",
            "remote_ip_prefix": null,
            "security_group_id": "85cc3048-abc3-43cc-89b3-377341426ac5",
            "tenant_id": "e4f50856753b4dc6afee5fa6b9b6c550"
        }
    ]
}
```


Status Code

See **Status Codes**.

Error Code

See **Error Codes**.

5.8.8 Deleting a Security Group Rule

Function

This API is used to delete a security group rule.

URI

DELETE /v1/{project_id}/security-group-rules/{security_group_rule_id}

Table 5-129 describes the parameters.

Table 5-129 Parameter description

Name	Mandatory	Description
security_group_rule_id	Yes	Specifies the security group rule ID, which uniquely identifies the security group rule.
project_id	Yes	Specifies the project ID. For details about how to obtain a project ID, see **Obtaining a Project ID**.

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Request Parameters

None

Example Request

```
DELETE https://{Endpoint}/v1/{project_id}/security-group-rules/2bc0accf-312e-429a-956e-e4407625eb62
```

Response Parameters

None

Example Response

None

Status Code

See **Status Codes**.

Error Code

See **Error Codes**.

5.9 VPC Peering Connection

5.9.1 Querying VPC Peering Connections

Function

This API is used to query all VPC peering connections accessible to the tenant submitting the request. The connections are filtered based on the filtering condition. For details about pagination query, see section **Pagination**.

URI

GET /v2.0/vpc/peerings

Example:

```
GET https://{Endpoint}/v2.0/vpc/peerings?
id={id}&name={name}&status={status}&tenant_id={tenant_id}&vpc_id={vpc_id}&limit={limit}&marker={marker}
```

Table 5-130 describes the parameters.

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Table 5-130 Parameter description

Name	Mandatory	Type	Description
id	No	String	Specifies that the VPC peering connection ID is used as the filtering condition.
name	No	String	• Specifies that the peering connection name is used as the filter. • The value can contain no more than 64 characters.
status	No	String	Specifies that the VPC peering connection status is used as the filtering condition.
tenant_id	No	String	Specifies that the tenant ID is used as the filtering condition.
vpc_id	No	String	Specifies that the VPC ID is used as the filtering condition.

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Name	Mandatory	Type	Description
marker	No	String	Specifies a resource ID for pagination query, indicating that the query starts from the next record of the specified resource ID. This parameter can work together with the parameter **limit**. • If parameters **marker** and **limit** are not passed, resource records on the first page will be returned. • If the parameter **marker** is not passed and the value of parameter **limit** is set to **10**, the first 10 resource records will be returned. • If the value of the parameter **marker** is set to the resource ID of the 10th record and the value of parameter **limit** is set to **10**, the 11th to 20th resource records will be returned. • If the value of the parameter **marker** is set to the resource ID of the 10th record and the parameter **limit** is not passed, resource records starting from the 11th records (including 11th) will be returned.
limit	No	Integer	Specifies the number of records that will be returned on each page. The value is from 0 to intmax (2^31-1). The default value is 2000. **limit** can be used together with **marker**. For details, see the parameter description of **marker**. The default value is **2000**.

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Request Parameters

None

Example Request

```
GET https://{Endpoint}/v2.0/vpc/peerings
```

Response Parameters

Table 5-131 Response parameter

Parameter	Type	Description
peerings	Array of **peering** objects	Specifies the VPC peering connection object list. For details, see **Table 5-132**.
peerings_links	Array of **peerings_link** objects	Specifies the VPC peering connection object list. For details, see **Table 5-134**. Only when **limit** is used for filtering and the number of resources exceeds the value of **limit** or 2000 (default value of **limit**), value **next** will be returned for **rel** and a link for **href**.

Table 5-132 peering objects

Attribute	Type	Description
id	String	Specifies the VPC peering connection ID.
name	String	Specifies the VPC peering connection name.
status	String	Specifies the VPC peering connection status. Possible values are as follows: • **PENDING_ACCEPTANCE** • **REJECTED** • **EXPIRED** • **DELETED** • **ACTIVE**
request_vpc_info	**vpc_info** object	Specifies information about the local VPC. For details, see **Table 5-133**.

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Attribute	Type	Description
accept_vpc_info	**vpc_info** object	Specifies information about the peer VPC. For details, see **Table 5-133**.
description	String	Provides supplementary information about the VPC peering connection.
created_at	String	Specifies the time (UTC) when the VPC peering connection is created. Format: *yyyy-MM-ddTHH:mm:ss*
updated_at	String	Specifies the time (UTC) when the VPC peering connection is updated. Format: *yyyy-MM-ddTHH:mm:ss*

Table 5-133 vpc_info objects

Attribute	Type	Description
vpc_id	String	Specifies the ID of a VPC involved in a VPC peering connection.
tenant_id	String	Specifies the ID of the project to which a VPC involved in the VPC peering connection belongs.

Table 5-134 peerings_link object

Name	Type	Description
href	String	Specifies the API link.
rel	String	Specifies the relationship between the API link and the API version.

Example Response

```
{
   "peerings": [
      {
         "request_vpc_info": {
            "vpc_id": "9daeac7c-a98f-430f-8e38-67f9c044e299",
            "tenant_id": "f65e9ebc-ed5d-418b-a931-9a723718ba4e"
         },
         "accept_vpc_info": {
            "vpc_id": "f583c072-0bb8-4e19-afb2-afb7c1693be5",
            "tenant_id": "f65e9ebc-ed5d-418b-a931-9a723718ba4e"
```

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```
        },
        "name": "test",
        "id": "b147a74b-39bb-4c7a-aed5-19cac4c2df13",
        "status": "ACTIVE"
    }
  ]
}
```

Status Code

See **Status Codes**.

Error Code

See **Error Codes**.

5.9.2 Querying a VPC Peering Connection

Function

This API is used to query details about a VPC peering connection.

URI

GET /v2.0/vpc/peerings/{peering_id}

Table 5-135 describes the parameters.

Table 5-135 Parameter description

Name	Mandatory	Type	Description
peering_id	Yes	String	Specifies the VPC peering connection ID, which uniquely identifies the VPC peering connection. The **peering_id** value is used as the filter.

Request Parameters

None

Example Request

```
GET https://{Endpoint}/v2.0/vpc/peerings/22b76469-08e3-4937-8c1d-7aad34892be1
```

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Response Parameters

Table 5-136 Response parameter

Parameter	Type	Description
peering	**peering** object	Specifies the VPC peering connection object list. For details, see **Table 5-137**.

Table 5-137 peering objects

Attribute	Type	Description
id	String	Specifies the VPC peering connection ID.
name	String	Specifies the VPC peering connection name.
status	String	Specifies the VPC peering connection status. Possible values are as follows: • **PENDING_ACCEPTANCE** • **REJECTED** • **EXPIRED** • **DELETED** • **ACTIVE**
request_vpc_info	**vpc_info** object	Specifies information about the local VPC. For details, see **Table 5-138**.
accept_vpc_info	**vpc_info** object	Specifies information about the peer VPC. For details, see **Table 5-138**.
description	String	Provides supplementary information about the VPC peering connection.
created_at	String	Specifies the time (UTC) when the VPC peering connection is created. Format: *yyyy-MM-ddTHH:mm:ss*
updated_at	String	Specifies the time (UTC) when the VPC peering connection is updated. Format: *yyyy-MM-ddTHH:mm:ss*

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Table 5-138 vpc_info objects

Attribute	Type	Description
vpc_id	String	Specifies the ID of a VPC involved in a VPC peering connection.
tenant_id	String	Specifies the ID of the project to which a VPC involved in the VPC peering connection belongs.

Example Response

```
{
   "peering": {
      "name": "test",
      "id": "22b76469-08e3-4937-8c1d-7aad34892be1",
      "request_vpc_info": {
         "vpc_id": "9daeac7c-a98f-430f-8e38-67f9c044e299",
         "tenant_id": "f65e9ebc-ed5d-418b-a931-9a723718ba4e"
      },
      "accept_vpc_info": {
         "vpc_id": "f583c072-0bb8-4e19-afb2-afb7c1693be5",
         "tenant_id": "f65e9ebc-ed5d-418b-a931-9a723718ba4e"
      },
      "status": "ACTIVE"
   }
}
```

Status Code

See **Status Codes**.

Error Code

See **Error Codes**.

5.9.3 Creating a VPC Peering Connection

Function

This API is used to create a VPC peering connection.

If you create a VPC peering connection with another VPC of your own, the connection is created without the need for you to accept the connection.

If you create a VPC peering connection with a VPC of another tenant, the peer tenant must accept the connection so that the connection can be created. If the peer tenant refuses the connection, it cannot be created.

URI

POST /v2.0/vpc/peerings

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Request Parameters

Table 5-139 Request parameter

Parameter	Mandatory	Type	Description
peering	Yes	**peering** object	Specifies the VPC peering connection. For details, see **Table 5-140**.

Table 5-140 Description of the **peering** field

Attribute	Mandatory	Type	Description
name	Yes	String	Specifies the name of the VPC peering connection. The value can contain 1 to 64 characters.
description	No	String	Provides supplementary information about the VPC peering connection. The value can contain no more than 255 characters and cannot contain angle brackets (< or >).
request_vpc_info	Yes	**vpc_info** object	Specifies information about the local VPC. For details, see **Table 5-141**.
accept_vpc_info	Yes	**vpc_info** object	Specifies information about the peer VPC. For details, see **Table 5-141**.

Table 5-141 Description of the **vpc_info** field

Attribute	Mandatory	Type	Description
vpc_id	Yes	String	Specifies the ID of a VPC involved in a VPC peering connection.

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Attribute	Mandatory	Type	Description
tenant_id	No	String	Specifies the ID of the project to which a VPC involved in the VPC peering connection belongs. This parameter is mandatory if the VPC peering connection is created between VPCs in different accounts.

Example Request

- Create a VPC peering connection. The VPC ID of the requester is 9daeac7c-a98f-430f-8e38-67f9c044e299, the VPC ID of the receiver is f583c072-0bb8-4e19-afb2-afb7c1693be5, and the VPC peering connection is named **test**.

```
POST https://{Endpoint}/v2.0/vpc/peerings

{
    "peering": {
        "name": "test",
        "request_vpc_info": {
            "vpc_id": "9daeac7c-a98f-430f-8e38-67f9c044e299"
        },
        "accept_vpc_info": {
            "vpc_id": "f583c072-0bb8-4e19-afb2-afb7c1693be5"
        }
    }
}
```

Response Parameters

Table 5-142 Response parameter

Parameter	Type	Description
peering	peering object	Specifies the VPC peering connection. For details, see Table 5-143.

Table 5-143 peering objects

Attribute	Type	Description
id	String	Specifies the VPC peering connection ID.
name	String	Specifies the VPC peering connection name.

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Attribute	Type	Description
status	String	Specifies the VPC peering connection status. Possible values are as follows: • **PENDING_ACCEPTANCE** • **REJECTED** • **EXPIRED** • **DELETED** • **ACTIVE**
request_vpc_info	**vpc_info** object	Specifies information about the local VPC. For details, see **Table 5-144**.
accept_vpc_info	**vpc_info** object	Specifies information about the peer VPC. For details, see **Table 5-144**.
description	String	Provides supplementary information about the VPC peering connection.
created_at	String	Specifies the time (UTC) when the VPC peering connection is created. Format: *yyyy-MM-ddTHH:mm:ss*
updated_at	String	Specifies the time (UTC) when the VPC peering connection is updated. Format: *yyyy-MM-ddTHH:mm:ss*

Table 5-144 vpc_info objects

Attribute	Type	Description
vpc_id	String	Specifies the ID of a VPC involved in a VPC peering connection.
tenant_id	String	Specifies the ID of the project to which a VPC involved in the VPC peering connection belongs.

Example Response

```
{
    "peering": {
        "name": "test",
        "id": "22b76469-08e3-4937-8c1d-7aad34892be1",
        "request_vpc_info": {
```

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```
        "vpc_id": "9daeac7c-a98f-430f-8e38-67f9c044e299",
        "tenant_id": "f65e9ebc-ed5d-418b-a931-9a723718ba4e"
      },
      "accept_vpc_info": {
        "vpc_id": "f583c072-0bb8-4e19-afb2-afb7c1693be5",
        "tenant_id": "f65e9ebc-ed5d-418b-a931-9a723718ba4e"
      },
      "status": "ACTIVE"
    }
}
```


Status Code

See **Status Codes**.

Error Code

See **Error Codes**.

5.9.4 Accepting a VPC Peering Connection

Function

After tenant A requests to create a VPC peering connection with a VPC of tenant B, the VPC peering connection takes effect only after tenant B accepts the request. This API is used by a tenant to accept a VPC peering connection request initiated by another tenant.

URI

PUT /v2.0/vpc/peerings/{peering_id}/accept

Table 5-145 describes the parameters.

Table 5-145 Parameter description

Name	Mandatory	Type	Description
peering_id	Yes	String	Specifies the VPC peering connection ID, which uniquely identifies the VPC peering connection.

Request Parameters

None

Example Request

- Accept the VPC peering connection request from 22b76469-08e3-4937-8c1d-7aad34892be1.

```
PUT https://{Endpoint}/v2.0/vpc/peerings/22b76469-08e3-4937-8c1d-7aad34892be1/accept
```

Response Parameters

Table 5-146 Response parameter

Attribute	Type	Description
id	String	Specifies the VPC peering connection ID.
name	String	Specifies the VPC peering connection name.
status	String	Specifies the VPC peering connection status. Possible values are as follows: • **PENDING_ACCEPTANCE** • **REJECTED** • **EXPIRED** • **DELETED** • **ACTIVE**
request_vpc_info	**vpc_info** object	Specifies information about the local VPC. For details, see **Table 5-147**.
accept_vpc_info	**vpc_info** object	Specifies information about the peer VPC. For details, see **Table 5-147**.
description	String	Provides supplementary information about the VPC peering connection.
created_at	String	Specifies the time (UTC) when the VPC peering connection is created. Format: *yyyy-MM-ddTHH:mm:ss*
updated_at	String	Specifies the time (UTC) when the VPC peering connection is updated. Format: *yyyy-MM-ddTHH:mm:ss*

Table 5-147 vpc_info objects

Attribute	Type	Description
vpc_id	String	Specifies the ID of a VPC involved in a VPC peering connection.

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Attribute	Type	Description
tenant_id	String	Specifies the ID of the project that a VPC involved in the VPC peering connection belongs to.

Example Response

```
{
   "name": "test",
   "id": "22b76469-08e3-4937-8c1d-7aad34892be1",
   "request_vpc_info": {
      "vpc_id": "9daeac7c-a98f-430f-8e38-67f9c044e299",
      "tenant_id": "f65e9ebc-ed5d-418b-a931-9a723718ba4e"
   },
   "accept_vpc_info": {
      "vpc_id": "f583c072-0bb8-4e19-afb2-afb7c1693be5",
      "tenant_id": "059a737356594b41b447b557bf0aae56"
   },
   "status": "ACTIVE"
}
```

Status Code

See **Status Codes**.

Error Code

See **Error Codes**.

5.9.5 Refusing a VPC Peering Connection

Function

After tenant A requests to create a VPC peering connection with a VPC of tenant B, the VPC peering connection takes effect only after tenant B accepts the request. However, tenant can refuse the VPC peering connection request. This API is used by a tenant to refuse a VPC peering connection request initiated by another tenant.

URI

PUT /v2.0/vpc/peerings/{peering_id}/reject

Table 5-148 describes the parameters.

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Table 5-148 Parameter description

Name	Mandatory	Type	Description
peering_id	Yes	String	Specifies the VPC peering connection ID, which uniquely identifies the VPC peering connection.

Request Parameters

None

Example Request

- Reject the VPC peering connection request from 22b76469-08e3-4937-8c1d-7aad34892be1.
  ```
  PUT https://{Endpoint}/v2.0/vpc/peerings/22b76469-08e3-4937-8c1d-7aad34892be1/reject
  ```

Response Parameters

Table 5-149 Response parameter

Attribute	Type	Description
id	String	Specifies the VPC peering connection ID.
name	String	Specifies the VPC peering connection name.
status	String	Specifies the VPC peering connection status. Possible values are as follows: • **PENDING_ACCEPTANCE** • **REJECTED** • **EXPIRED** • **DELETED** • **ACTIVE**
request_vpc_info	**vpc_info** object	Specifies information about the local VPC. For details, see **Table 5-150**.
accept_vpc_info	**vpc_info** object	Specifies information about the peer VPC. For details, see **Table 5-150**.

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Attribute	Type	Description
description	String	Provides supplementary information about the VPC peering connection.
created_at	String	Specifies the time (UTC) when the VPC peering connection is created. Format: *yyyy-MM-ddTHH:mm:ss*
updated_at	String	Specifies the time (UTC) when the VPC peering connection is updated. Format: *yyyy-MM-ddTHH:mm:ss*

Table 5-150 vpc_info objects

Attribute	Type	Description
vpc_id	String	Specifies the ID of a VPC involved in a VPC peering connection.
tenant_id	String	Specifies the ID of the project that a VPC involved in the VPC peering connection belongs to.

Example Response

```
{
    "name": "test",
    "id": "22b76469-08e3-4937-8c1d-7aad34892be1",
    "request_vpc_info": {
        "vpc_id": "9daeac7c-a98f-430f-8e38-67f9c044e299",
        "tenant_id": "f65e9ebc-ed5d-418b-a931-9a723718ba4e"
    },
    "accept_vpc_info": {
        "vpc_id": "f583c072-0bb8-4e19-afb2-afb7c1693be5",
        "tenant_id": "f65e9ebc-ed5d-418b-a931-9a723718ba4e"
    },
    "status": "REJECTED"
}
```

Status Code

See **Status Codes**.

Error Code

See **Error Codes**.

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5.9.6 Updating a VPC Peering Connection

Function

Updates a VPC peering connection.

URI

PUT /v2.0/vpc/peerings/{peering_id}

Table 5-151 describes the parameters.

Table 5-151 Parameter description

Name	Mandatory	Type	Description
peering_id	Yes	String	Specifies the VPC peering connection ID, which uniquely identifies the VPC peering connection.

Request Parameters

Table 5-152 Request parameter

Parameter	Mandatory	Type	Description
peering	Yes	peering object	Updates a VPC peering connection. For details, see Table 5-153. When updating a VPC peering connection, you must specify at least one attribute. Currently, only the VPC peering connection name and description can be updated.

Table 5-153 Description of the **peering** field

Parameter	Mandatory	Type	Description
name	No	String	Specifies the name of the VPC peering connection. The value can contain 1 to 64 characters.
description	No	String	Provides supplementary information about the VPC peering connection. The value can contain no more than 255 characters, including letters and digits.

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Example Request

- Change the name of the VPC peering connection whose ID is 7a9a954a-eb41-4954-a300-11ab17a361a2 to **test2**.

```
PUT https://{Endpoint}/v2.0/vpc/peerings/7a9a954a-eb41-4954-a300-11ab17a361a2

{
    "peering": {
        "name": "test2"
    }
}
```

Response Parameters

Table 5-154 Response parameter

Parameter	Type	Description
peering	**peering** object	Specifies the VPC peering connection. For details, see **Table 5-155**.

Table 5-155 peering objects

Attribute	Type	Description
id	String	Specifies the VPC peering connection ID.
name	String	Specifies the VPC peering connection name.
status	String	Specifies the VPC peering connection status. Possible values are as follows: • **PENDING_ACCEPTANCE** • **REJECTED** • **EXPIRED** • **DELETED** • **ACTIVE**
request_vpc_info	**vpc_info** object	Specifies information about the local VPC. For details, see **Table 5-156**.
accept_vpc_info	**vpc_info** object	Specifies information about the peer VPC. For details, see **Table 5-156**.

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Attribute	Type	Description
description	String	Provides supplementary information about the VPC peering connection.
created_at	String	Specifies the time (UTC) when the VPC peering connection is created. Format: *yyyy-MM-ddTHH:mm:ss*
updated_at	String	Specifies the time (UTC) when the VPC peering connection is updated. Format: *yyyy-MM-ddTHH:mm:ss*

Table 5-156 vpc_info objects

Attribute	Type	Description
vpc_id	String	Specifies the ID of a VPC involved in a VPC peering connection.
tenant_id	String	Specifies the ID of the project that a VPC involved in the VPC peering connection belongs to.

Example Response

```
{
    "peering": {
        "name": "test2",
        "id": "22b76469-08e3-4937-8c1d-7aad34892be1",
        "request_vpc_info": {
            "vpc_id": "9daeac7c-a98f-430f-8e38-67f9c044e299",
            "tenant_id": "f65e9ebc-ed5d-418b-a931-9a723718ba4e"
        },
        "accept_vpc_info": {
            "vpc_id": "f583c072-0bb8-4e19-afb2-afb7c1693be5",
            "tenant_id": "059a737356594b41b447b557bf0aae56"
        },
        "status": "ACTIVE"
    }
}
```

Status Code

See **Status Codes**.

Error Code

See **Error Codes**.

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5.9.7 Deleting a VPC Peering Connection

Function

This API is used to delete a VPC peering connection.

A VPC peering connection can be deleted either by the local or peer tenant.

URI

DELETE /v2.0/vpc/peerings/{peering_id}

Table 5-157 describes the parameters.

Table 5-157 Parameter description

Name	Mandatory	Type	Description
peering_id	Yes	String	Specifies the VPC peering connection ID, which uniquely identifies the VPC peering connection.

Request Parameters

None

Example Request

```
DELETE https://{Endpoint}/v2.0/vpc/peerings/2b098395-046a-4071-b009-312bcee665cb
```

Response Parameters

None

Example Response

None

Status Code

See **Status Codes**.

Error Code

See **Error Codes**.

5.10 VPC Route

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5.10.1 Querying VPC Routes

Function

This API is used to query all routes of the tenant submitting the request. The routes are filtered based on the filtering condition. For details about the response format of pagination query, see section **Pagination**.

URI

GET /v2.0/vpc/routes

Example:

```
Example:
GET https://{Endpoint}/v2.0/vpc/routes?
id={id}&vpc_id={vpc_id}&tenant_id={tenant_id}&destination={destination}&type={type}&limit={limit}&marke
r={marker}
```

Table 5-158 describes the parameters.

Table 5-158 Parameter description

Name	Mandatory	Type	Description
id	No	String	Specifies that the route ID is used as the filtering condition.
tenant_id	No	String	Specifies that the tenant ID is used as the filtering condition.
vpc_id	No	String	Specifies that the VPC ID is used as the filtering condition.
destination	No	String	Specifies that the route destination address (CIDR) is used as the filtering condition.
type	No	String	Specifies that the type is used as the filtering condition. Currently, the value can only be **peering**.

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Name	Mandatory	Type	Description
marker	No	String	Specifies a resource ID for pagination query, indicating that the query starts from the next record of the specified resource ID. This parameter can work together with the parameter **limit**. • If parameters **marker** and **limit** are not passed, resource records on the first page will be returned. • If the parameter **marker** is not passed and the value of parameter **limit** is set to **10**, the first 10 resource records will be returned. • If the value of the parameter **marker** is set to the resource ID of the 10th record and the value of parameter **limit** is set to **10**, the 11th to 20th resource records will be returned. • If the value of the parameter **marker** is set to the resource ID of the 10th record and the parameter **limit** is not passed, resource records starting from the 11th records (including 11th) will be returned.
limit	No	Integer	Specifies the number of records that will be returned on each page. The value is from 0 to intmax (2^31-1). The default value is 2000. **limit** can be used together with **marker**. For details, see the parameter description of **marker**. The default value is **2000**.

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Request Parameters

None

Example Request

```
GET https://{Endpoint}/v2.0/vpc/routes?vpc_id=ab78be2d-782f-42a5-aa72-35879f6890ff
```

Response Parameters

Table 5-159 Response parameter

Parameter	Type	Description
routes	Array of **route** objects	Specifies the route object list. For details, see **Table 5-160**.
routes_links	Array of **routes_link** objects	Specifies the route object list. For details, see **Table 5-161**. The value of **rel** will be **next** and that of **href** will be a link only when **limit** is used for filtering and the number of resources exceeds the value of **limit** or 2000 (default value of **limit**).

Table 5-160 route objects

Attribute	Type	Description
id	String	Specifies the route ID.
destination	String	Specifies the destination address in the CIDR notation format, for example, 192.168.200.0/24.
nexthop	String	Specifies the next hop. If the route type is **peering**, enter the VPC peering connection ID.
type	String	Specifies the route type. Currently, the value can only be **peering**.
vpc_id	String	Specifies the VPC of the route. Set this parameter to the existing VPC ID.
tenant_id	String	Specifies the project ID.

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Table 5-161 routes_link object

Name	Type	Description
href	String	Specifies the API link.
rel	String	Specifies the relationship between the API link and the API version.

Example Response

```
{
  "routes": [
    {
      "type": "peering",
      "nexthop": "60c809cb-6731-45d0-ace8-3bf5626421a9",
      "destination": "192.168.200.0/24",
      "vpc_id": "ab78be2d-782f-42a5-aa72-35879f6890ff",
      "tenant_id": "6fbe9263116a4b68818cf1edce16bc4f",
      "id": "3d42a0d4-a980-4613-ae76-a2cddecff054"
    }
  ]
}
```

Status Code

See **Status Codes**.

Error Code

See **Error Codes**.

5.10.2 Querying a VPC Route

Function

This API is used to query details about a route.

URI

GET /v2.0/vpc/routes/{route_id}

Table 5-162 describes the parameters.

Table 5-162 Parameter description

Name	Mandatory	Type	Description
route_id	Yes	String	Specifies the route ID, which uniquely identifies the route.

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Request Parameters

None

Example Request

```
GET https://{Endpoint}/v2.0/vpc/routes/60c809cb-6731-45d0-ace8-3bf5626421a9
```

Response Parameters

Table 5-163 Response parameter

Parameter	Type	Description
route	**route** object	Specifies the route. For details, see **Table 5-164**.

Table 5-164 route objects

Attribute	Type	Description
id	String	Specifies the route ID.
destination	String	Specifies the destination address in the CIDR notation format, for example, 192.168.200.0/24.
nexthop	String	Specifies the next hop. If the route type is **peering**, enter the VPC peering connection ID.
type	String	Specifies the route type. Currently, the value can only be **peering**.
vpc_id	String	Specifies the VPC of the route. Set this parameter to the existing VPC ID.
tenant_id	String	Specifies the project ID.

Example Response

```
{
    "route": {
        "type": "peering",
        "nexthop": "60c809cb-6731-45d0-ace8-3bf5626421a9",
        "destination": "192.168.200.0/24",
        "vpc_id": "ab78be2d-782f-42a5-aa72-35879f6890ff",
        "tenant_id": "6fbe9263116a4b68818cf1edce16bc4f",
        "id": "3d42a0d4-a980-4613-ae76-a2cddecff054"
    }
}
```

Status Code

See **Status Codes**.

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Error Code

See **Error Codes**.

5.10.3 Creating a VPC Route

Function

This API is used to create a route.

URI

POST /v2.0/vpc/routes

Request Parameters

Table 5-165 Request parameter

Parameter	Type	Mandatory	Description
route	**route** object	Yes	Specifies the route. For details, see **Table 5-166**.

Table 5-166 route objects

Attribute	Type	Mandatory	Description
destination	String	Yes	Specifies the destination address in the CIDR notation format, for example, 192.168.200.0/24.
nexthop	String	Yes	Specifies the next hop. If the route type is **peering**, enter the VPC peering connection ID.
type	String	Yes	Specifies the route type. Currently, only the **peering** type is supported, that is, the next hop is a VPC peering connection.
vpc_id	String	Yes	Specifies the ID of the VPC ID requesting for creating a route.

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Example Request

- Create a route in the route table of the VPC whose ID is ab78be2d-782f-42a5-aa72-35879f6890ff for the VPC peering connection. The next hop is the peering connection whose ID is 60c809cb-6731-45d0-ace8-3bf5626421a9, and the destination is 192.168.200.0/24.

```
POST https://{Endpoint}/v2.0/vpc/routes

{
    "route": {
        "type": "peering",
        "nexthop": "60c809cb-6731-45d0-ace8-3bf5626421a9",
        "destination": "192.168.200.0/24",
        "vpc_id": "ab78be2d-782f-42a5-aa72-35879f6890ff"
    }
}
```

Response Parameters

Table 5-167 Response parameter

Parameter	Type	Description
route	**route** object	Specifies the route. For details, see **Table 5-168**.

Table 5-168 route objects

Attribute	Type	Description
id	String	Specifies the route ID.
destination	String	Specifies the destination address in the CIDR notation format, for example, 192.168.200.0/24.
nexthop	String	Specifies the next hop. If the route type is **peering**, enter the VPC peering connection ID.
type	String	Specifies the route type. Currently, the value can only be **peering**.
vpc_id	String	Specifies the VPC of the route. Set this parameter to the existing VPC ID.
tenant_id	String	Specifies the project ID.

Example Response

```
{
    "route": {
        "type": "peering",
        "nexthop": "60c809cb-6731-45d0-ace8-3bf5626421a9",
        "destination": "192.168.200.0/24",
        "vpc_id": "ab78be2d-782f-42a5-aa72-35879f6890ff",
```

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```
    "tenant_id": "6fbe9263116a4b68818cf1edce16bc4f",
    "id": "3d42a0d4-a980-4613-ae76-a2cddecff054"
  }
}
```

Status Code

See **Status Codes**.

Error Code

See **Error Codes**.

5.10.4 Deleting a VPC Route

Function

This API is used to delete a route.

URI

DELETE /v2.0/vpc/routes/{route_id}

Table 5-169 describes the parameters.

Table 5-169 Parameter description

Name	Mandatory	Type	Description
route_id	Yes	String	Specifies the route ID, which uniquely identifies the route.

Request Parameters

None

Example Request

```
DELETE https://{Endpoint}/v2.0/vpc/routes/60c809cb-6731-45d0-ace8-3bf5626421a9
```

Response Parameters

None

Example Response

None

Status Code

See **Status Codes**.

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Error Code

See **Error Codes**.

5.11 Route Table

5.11.1 Querying Route Tables

Function

This API is used to query all route tables of the tenant submitting the request. The route tables are filtered based on the filtering condition.

URI

GET /v1/{project_id}/routetables

Example:

```
GET https://{Endpoint}/v1/{project_id}/routetables?limit=10&marker=4779ab1c-7c1a-44b1-a02e-93dfc361b32d&vpc_id=3ec3b33f-ac1c-4630-ad1c-7dba1ed79d85&subnet_id=9873b33f-ac1c-4630-ad1c-7dba1ed79r78
```

Table 5-170 describes the parameters.

Table 5-170 Parameter description

Name	Mandatory	Type	Description
project_id	Yes	String	Specifies the project ID. For details about how to obtain a project ID, see **Obtaining a Project ID**.
limit	No	Integer	Specifies the number of records that will be returned on each page. The value is from 0 to intmax (2^31-1). The default value is 2000. **limit** can be used together with **marker**. For details, see the parameter description of **marker**.

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Name	Mandatory	Type	Description
marker	No	String	Specifies a resource ID for pagination query, indicating that the query starts from the next record of the specified resource ID. This parameter can work together with the parameter **limit**. • If parameters **marker** and **limit** are not passed, resource records on the first page will be returned. • If the parameter **marker** is not passed and the value of parameter **limit** is set to **10**, the first 10 resource records will be returned. • If the value of the parameter **marker** is set to the resource ID of the 10th record and the value of parameter **limit** is set to **10**, the 11th to 20th resource records will be returned. • If the value of the parameter **marker** is set to the resource ID of the 10th record and the parameter **limit** is not passed, resource records starting from the 11th records (including 11th) will be returned.
id	No	String	Specifies the route table ID, which can be used to filter the route table with the corresponding ID.
vpc_id	No	String	Specifies the VPC UUID.
subnet_id	No	String	Specifies the subnet ID. If you use the management console, the value of this parameter is the **Network ID** value.

Request Parameters

None

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Example Request

```
GET https://{Endpoint}/v1/{project_id}/routetables?limit=10&marker=4779ab1c-7c1a-44b1-a02e-93dfc361b32d&vpc_id=3ec3b33f-ac1c-4630-ad1c-7dba1ed79d85&subnet_id=9873b33f-ac1c-4630-ad1c-7dba1ed79r78
```

Response Parameters

Table 5-171 Response parameter

Name	Type	Description
routetables	Array of **routetable** objects	Specifies the route table list. For details, see **Table 5-172**.

Table 5-172 Description of the **routetable** field

Name	Type	Description
id	String	• Specifies the route table ID, which uniquely identifies the route table. • The value must be in standard UUID format.
name	String	• Specifies the route table name. • The value can contain no more than 64 characters, including letters, digits, underscores (_), hyphens (-), and periods (.).
default	Boolean	• Specifies whether the route table is the default one. • The value can be **true** (default route table) or **false** (custom route table).
subnets	Array of **subnet** objects	• Specifies the subnets associated with the route table. For details, see **Table 5-173**. • Only subnets in the VPC to which the route table belongs can be associated with the route table.
tenant_id	String	• Specifies the project ID.
vpc_id	String	• Specifies the ID of the VPC associated with the route table.
description	String	• Provides supplementary information about the route table. • The value can contain no more than 255 characters and cannot contain angle brackets (< or >).

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Name	Type	Description
created_at	String	• Specifies the time (UTC) when the route table is created. • Format: *yyyy-MM-ddTHH:mm:ss*
updated_at	String	• Specifies the time (UTC) when the route table is updated. • Format: *yyyy-MM-ddTHH:mm:ss*

Table 5-173 Description of the **subnet** field

Name	Type	Description
id	String	Specifies the ID of the subnet associated with the route table.

Example Response

```
{
   "routetables": [
      {
         "id": "3d42a0d4-a980-4613-ae76-a2cddecff054",
         "name": "routetable-1234",
         "vpc_id": "ab78be2d-782f-42a5-aa72-35879f6890ff",
         "subnets": [
            {
               "id": "8d4ce32f-d68a-4c4c-9f18-c68d8a5c7f2f"
            }
         ],
         "tenant_id": "6fbe9263116a4b68818cf1edce16bc4f",
         "description": "abc",
         "created_at": "2022-12-15T02:56:40",
         "updated_at": "2022-12-15T02:56:40"
      },
      {
         "id": "3d42a0d4-a980-4613-ae76-a2cddecfff89",
         "name": "routetable-5678",
         "vpc_id": "ab78be2d-782f-42a5-aa72-35879f667809",
         "subnets": [
            {
               "id": "8d4ce32f-d68a-4c4c-9f18-c68d8a5c7f2f"
            }
         ],
         "tenant_id": "6fbe9263116a4b68818cf1edce16bc4f",
         "description": "abc",
         "created_at": "2022-12-15T02:59:03",
         "updated_at": "2022-12-15T02:59:03"
      }
   ]
}
```

Status Code

See **Status Codes**.

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Error Code

See **Error Codes**.

5.11.2 Querying a Route Table

Function

This API is used to query details about a route table.

URI

GET /v1/{project_id}/routetables/{routetable_id}

Table 5-174 describes the parameters.

Table 5-174 Parameter description

Name	Mandatory	Type	Description
project_id	Yes	String	Specifies the project ID. For details about how to obtain a project ID, see **Obtaining a Project ID**.
routetable_id	Yes	String	Specifies the route table ID, which uniquely identifies a route table.

Request Parameters

None

Example Request

```
GET https://{Endpoint}/v1/26ae5181a416420998eb2093aaed84d9/routetables/66df8c1f-d4f6-4a63-9abb-09701fe27b39
```

Response Parameters

Table 5-175 Response parameter

Name	Type	Description
routetable	**routetable** object	Specifies the route table. For details, see **Table 5-176**.

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Table 5-176 Description of the **routetable** field

Name	Type	Description
id	String	• Specifies the route table ID, which uniquely identifies the route table. • The value must be in standard UUID format.
name	String	• Specifies the route table name. • The value can contain no more than 64 characters, including letters, digits, underscores (_), hyphens (-), and periods (.).
default	Boolean	• Specifies whether the route table is the default one. • The value can be **true** (default route table) or **false** (custom route table).
routes	Array of **route** objects	• Specifies the route list. For details, see **Table 5-177**. • Each route table can have a maximum of 200 routes.
subnets	Array of **subnet** objects	• Specifies the subnets associated with the route table. For details, see **Table 5-178**. • Only subnets in the VPC to which the route table belongs can be associated with the route table.
tenant_id	String	• Specifies the project ID.
vpc_id	String	• Specifies the ID of the VPC associated with the route table.
description	String	• Provides supplementary information about the route table. • The value can contain no more than 255 characters and cannot contain angle brackets (< or >).
created_at	String	• Specifies the time (UTC) when the route table is created. • Format: *yyyy-MM-ddTHH:mm:ss*
updated_at	String	• Specifies the time (UTC) when the route table is updated. • Format: *yyyy-MM-ddTHH:mm:ss*

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Table 5-177 Description of the **route** field

Name	Type	Description
type	String	• Specifies the route type. • Values: – **ecs** (ECS) – **eni** (NIC) – **vip** (Virtual IP address) – **nat** (NAT gateway) – **peering** (VPC peering connection) – **vpn** (VPN) – **dc** (Direct Connect connection) – **cc** (Cloud Connect connection) – **egw**: VPC endpoint node – **er**: enterprise router
destination	String	• Specifies the destination CIDR block of a route. • The value must be in the valid CIDR format.
nexthop	String	• Specifies the ID of the next hop in the route. • Values: – When **type** is **ecs**, the value is the ECS ID. – When **type** is **eni**, the value is the extension NIC ID. – When **type** is **vip**, the value is the virtual IP address. – When **type** is **nat**, the value is NAT gateway ID. – When **type** is **peering**, the value is the VPC peering connection ID. – When **type** is **vpn**, the value is the VPN ID. – When **type** is **dc**, the value is the Direct Connect connection ID. – When **type** is **cc**, the value is the Cloud Connect connection ID. – When **type** is set to **egw**, the value is the VPC endpoint ID. – When **type** is set to **er**, the value is the ID of the enterprise router.

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Name	Type	Description
description	String	• Provides supplementary information about the route. • The value can contain no more than 255 characters and cannot contain angle brackets (< or >).

Table 5-178 Description of the **subnet** field

Name	Type	Description
id	String	Specifies the ID of the subnet associated with the route table.

Example Response


```
{
 "routetable": {
  "id": "05250d7e-0396-4fc9-9c9c-e4d5594784e4",
  "name": "rtb-vpc-l2cg-1",
  "routes": [
   {
    "type": "local",
    "destination": "192.168.4.0/24",
    "nexthop": "-"
   },
   {
    "type": "local",
    "destination": "192.168.1.0/24",
    "nexthop": "-"
   },
   {
    "type": "local",
    "destination": "198.19.128.0/20",
    "nexthop": "-"
   },
   {
    "type": "local",
    "destination": "127.0.0.0/8",
    "nexthop": "-"
   },
   {
    "type": "local",
    "destination": "100.64.0.0/10",
    "nexthop": "-"
   }
  ],
  "subnets": [
   {
    "id": "0e0faa8f-ea73-47aa-b919-8c133e98d5ac"
   },
   {
    "id": "e007e005-10aa-4614-b439-c9a14e55130e"
   }
  ],
  "vpc_id": "7978e43c-f892-49d8-9fab-9bb90a51709b",
  "default": true,
  "tenant_id": "05e369f07a800f802f41c002632ba5f9",
  "created_at": "2022-12-15T02:56:40",
```

```
  "updated_at": "2022-12-15T02:56:40"
 }
}
```

Status Code

See **Status Codes**.

Error Code

See **Error Codes**.

5.11.3 Creating a Route Table

Function

This API is used to create a route table.

Notes and Constraints

- The destination CIDR block of a custom route table cannot be included in the CIDR blocks of the local route.
- Each destination CIDR block of a route in the same route table must be unique.
- No more than five routes can be created at a time.

URI

POST /v1/{project_id}/routetables

Table 5-179 describes the parameters.

Table 5-179 Parameter description

Name	Mandatory	Type	Description
project_id	Yes	String	Specifies the project ID. For details about how to obtain a project ID, see **Obtaining a Project ID**.

Request Parameters

Table 5-180 Request parameter

Name	Mandatory	Type	Description
routetable	Yes	**routetable** object	Specifies the route table. For details, see **Table 5-181**.

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Table 5-181 Description of the **routetable** field

Name	Mandatory	Type	Description
name	No	String	• Specifies the route table name. • The value can contain no more than 64 characters, including letters, digits, underscores (_), hyphens (-), and periods (.).
routes	No	Array of **route** objects	• Specifies the route list. For details, see **Table 5-182**. • Each route table can have a maximum of 200 routes.
vpc_id	Yes	String	• Specifies the ID of the VPC associated with the route table.
description	No	String	• Provides supplementary information about the route table. • The value can contain no more than 255 characters and cannot contain angle brackets (< or >).

Table 5-182 Description of the **route** field

Name	Mandatory	Type	Description
type	Yes	String	• Specifies the route type. • Values: – **ecs** (ECS) – **eni** (NIC) – **vip** (Virtual IP address) – **nat** (NAT gateway) – **peering** (VPC peering connection) – **vpn** (VPN) – **dc** (Direct Connect connection) – **cc** (Cloud Connect connection) – **egw**: VPC endpoint node – **er**: enterprise router

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Name	Mandatory	Type	Description
destination	Yes	String	• Specifies the destination CIDR block of a route. • The value must be in the valid CIDR format.
nexthop	Yes	String	• Specifies the ID of the next hop in the route. • Values: – When **type** is **ecs**, the value is the ECS ID. – When **type** is **eni**, the value is the extension NIC ID. – When **type** is **vip**, the value is the virtual IP address. – When **type** is **nat**, the value is NAT gateway ID. – When **type** is **peering**, the value is the VPC peering connection ID. – When **type** is **vpn**, the value is the VPN ID. – When **type** is **dc**, the value is the Direct Connect connection ID. – When **type** is **cc**, the value is the Cloud Connect connection ID. – When **type** is set to **egw**, the value is the VPC endpoint ID. – When **type** is set to **er**, the value is the ID of the enterprise router.
description	No	String	• Provides supplementary information about the route. • The value can contain no more than 255 characters and cannot contain angle brackets (< or >).

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Example Request

- Create a route table named **routetable-1234** for the VPC whose ID is 60c809cb-6731-45d0-ace8-3bf5626421a9 and create a route with next hop type of ECS.

```
POST https://{Endpoint}/v1/6fbe9263116a4b68818cf1edce16bc4f/routetables

{
   "routetable": {
      "name": "routetable-1234",
      "vpc_id": "60c809cb-6731-45d0-ace8-3bf5626421a9",
      "routes":[
        {
          "type": "ecs",
          "destination": "10.10.10.0/24",
          "nexthop":"7c50463d-d36c-4417-aa85-cc11fa10f341"
        }
      ],
       "description":"abc"
   }
}
```

Response Parameters

Table 5-183 Response parameter

Name	Type	Description
routetable	**routetable** object	Specifies the route table. For details, see **Table 5-184**.

Table 5-184 Description of the **routetable** field

Name	Type	Description
id	String	• Specifies the route table ID, which uniquely identifies the route table. • The value must be in standard UUID format.
name	String	• Specifies the route table name. • The value can contain no more than 64 characters, including letters, digits, underscores (_), hyphens (-), and periods (.).
default	Boolean	• Specifies whether the route table is the default one. • The value can be **true** (default route table) or **false** (custom route table).
routes	Array of **route** objects	• Specifies the route list. For details, see **Table 5-177**. • Each route table can have a maximum of 200 routes.

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Name	Type	Description
subnets	Array of **subnet** objects	• Specifies the subnets associated with the route table. For details, see **Table 5-178**. • Only subnets in the VPC to which the route table belongs can be associated with the route table.
tenant_id	String	• Specifies the project ID.
vpc_id	String	• Specifies the ID of the VPC associated with the route table.
description	String	• Provides supplementary information about the route table. • The value can contain no more than 255 characters and cannot contain angle brackets (< or >).
created_at	String	• Specifies the time (UTC) when the route table is created. • Format: *yyyy-MM-ddTHH:mm:ss*
updated_at	String	• Specifies the time (UTC) when the route table is updated. • Format: *yyyy-MM-ddTHH:mm:ss*

Table 5-185 Description of the **route** field

Name	Type	Description
type	String	• Specifies the route type. • Values: – **ecs** (ECS) – **eni** (NIC) – **vip** (Virtual IP address) – **nat** (NAT gateway) – **peering** (VPC peering connection) – **vpn** (VPN) – **dc** (Direct Connect connection) – **cc** (Cloud Connect connection) – **egw**: VPC endpoint node – **er**: enterprise router

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Name	Type	Description
destination	String	• Specifies the destination CIDR block of a route. • The value must be in the valid CIDR format.
nexthop	String	• Specifies the ID of the next hop in the route. • Values: – When **type** is **ecs**, the value is the ECS ID. – When **type** is **eni**, the value is the extension NIC ID. – When **type** is **vip**, the value is the virtual IP address. – When **type** is **nat**, the value is NAT gateway ID. – When **type** is **peering**, the value is the VPC peering connection ID. – When **type** is **vpn**, the value is the VPN ID. – When **type** is **dc**, the value is the Direct Connect connection ID. – When **type** is **cc**, the value is the Cloud Connect connection ID. – When **type** is set to **egw**, the value is the VPC endpoint ID. – When **type** is set to **er**, the value is the ID of the enterprise router.
description	String	• Provides supplementary information about the route. • The value can contain no more than 255 characters and cannot contain angle brackets (< or >).

Table 5-186 Description of the **subnet** field

Name	Type	Description
id	String	Specifies the ID of the subnet associated with the route table.

Example Response

```
{
  "routetable": {
```

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```
    "id": "3d42a0d4-a980-4613-ae76-a2cddecff054",
    "vpc_id": "ab78be2d-782f-42a5-aa72-35879f6890ff",
    "description": "abc",
    "routes": [
      {
        "type": "ecs",
        "destination": "10.10.10.0/24",
        "nexthop": "7c50463d-d36c-4417-aa85-cc11fa10f341",
        "description": "abc"
      }
    ],
    "subnets": [
      {
        "id": "8d4ce32f-d68a-4c4c-9f18-c68d8a5c7f2f"
      }
    ],
    "tenant_id": "6fbe9263116a4b68818cf1edce16bc4f"
  }
}
```

Status Code

See **Status Codes**.

Error Code

See **Error Codes**.

5.11.4 Updating a Route Table

Function

This API is used to update a route table.

URI

PUT /v1/{project_id}/routetables/{routetable_id}

Table 5-187 describes the parameters.

Table 5-187 Parameter description

Name	Mandatory	Type	Description
project_id	Yes	String	Specifies the project ID. For details about how to obtain a project ID, see **Obtaining a Project ID**.
routetable_id	Yes	String	Specifies the route table ID, which uniquely identifies a route table.

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Request Parameters

Table 5-188 Request parameter

Name	Mandatory	Type	Description
routetable	Yes	**routetable** object	Specifies the route table. For details, see **Table 5-189**.

Table 5-189 Description of the **routetable** field

Name	Mandatory	Type	Description
name	No	String	• Specifies the route table name. • The value can contain 1 to 64 characters, including letters, digits, underscores (_), hyphens (-), and periods (.).
description	No	String	• Provides supplementary information about the route. • The value can contain no more than 255 characters and cannot contain angle brackets (< or >).

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Name	Mandatory	Type	Description
routes	No	RouteTableRouteAction object	• Specifies the route list. For details, see Table 5-190. • Constraints: – Each route table can have a maximum of 200 routes. – The destination cannot be modified directly. To modify the destination, run the **del** command to delete the corresponding route, and then run the **add** command to add a route. • Specifies the operation to perform. Possible values are as follows: – **add**: Adds a route. Parameters **type**, **destination**, and **nexthop** are mandatory. – **mod**: Modifies a route. Parameters **type**, **destination**, and **nexthop** are mandatory. – **del**: Deletes a route. Parameter **destination** is mandatory.

Table 5-190 Description of the **route** field

Parameter	Mandatory	Type	Description
add	No	Array of AddRouteTableRoute objects	Add a route. For details, see Table 5-191. Parameters **type**, **destination**, and **nexthop** are mandatory.
mod	No	Array of ModRouteTableRoute objects	Modify a route. For details, see Table 5-192. Parameters **type**, **destination**, and **nexthop** are mandatory.

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Parameter	Mandatory	Type	Description
del	No	Array of **DelRouteTableRoute** objects	Delete a route. For details, see **Table 5-193**. Parameter **destination** is mandatory.

Table 5-191 Field description of adding a route

Parameter	Mandatory	Type	Description
type	Yes	String	• Specifies the route type. • Values: – **ecs** (ECS) – **eni** (NIC) – **vip** (Virtual IP address) – **nat** (NAT gateway) – **peering** (VPC peering connection) – **vpn** (VPN) – **dc** (Direct Connect connection) – **cc** (Cloud Connect connection) – **egw**: VPC endpoint node – **er**: enterprise router
destination	Yes	String	• Specifies the destination CIDR block of a route. • The value must be in the valid CIDR format.

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Parameter	Mandatory	Type	Description
nexthop	Yes	String	• Specifies the ID of the next hop in the route. • Values: – When **type** is **ecs**, the value is the ECS ID. – When **type** is **eni**, the value is the extension NIC ID. – When **type** is **vip**, the value is the virtual IP address. – When **type** is **nat**, the value is NAT gateway ID. – When **type** is **peering**, the value is the VPC peering connection ID. – When **type** is **vpn**, the value is the VPN ID. – When **type** is **dc**, the value is the Direct Connect connection ID. – When **type** is **cc**, the value is the Cloud Connect connection ID. – When **type** is set to **egw**, the value is the VPC endpoint ID. – When **type** is set to **er**, the value is the ID of the enterprise router.
description	No	String	• Provides supplementary information about the route. • The value can contain no more than 255 characters and cannot contain angle brackets (< or >).

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Table 5-192 Field description of modifying a route

Parameter	Mandatory	Type	Description
type	Yes	String	• Specifies the route type. • Values: – **ecs** (ECS) – **eni** (NIC) – **vip** (Virtual IP address) – **nat** (NAT gateway) – **peering** (VPC peering connection) – **vpn** (VPN) – **dc** (Direct Connect connection) – **cc** (Cloud Connect connection) – **egw**: VPC endpoint node – **er**: enterprise router
destination	Yes	String	• Specifies the destination CIDR block of a route. • The value must be in the valid CIDR format.

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Parameter	Mandatory	Type	Description
nexthop	Yes	String	• Specifies the ID of the next hop in the route. • Values: – When **type** is **ecs**, the value is the ECS ID. – When **type** is **eni**, the value is the extension NIC ID. – When **type** is **vip**, the value is the virtual IP address. – When **type** is **nat**, the value is NAT gateway ID. – When **type** is **peering**, the value is the VPC peering connection ID. – When **type** is **vpn**, the value is the VPN ID. – When **type** is **dc**, the value is the Direct Connect connection ID. – When **type** is **cc**, the value is the Cloud Connect connection ID. – When **type** is set to **egw**, the value is the VPC endpoint ID. – When **type** is set to **er**, the value is the ID of the enterprise router.
description	No	String	• Provides supplementary information about the route. • The value can contain no more than 255 characters and cannot contain angle brackets (< or >).

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Table 5-193 Field description of deleting a route

Parameter	Mandatory	Type	Description
type	No	String	• Specifies the route type. • Values: – **ecs** (ECS) – **eni** (NIC) – **vip** (Virtual IP address) – **nat** (NAT gateway) – **peering** (VPC peering connection) – **vpn** (VPN) – **dc** (Direct Connect connection) – **cc** (Cloud Connect connection) – **egw**: VPC endpoint node – **er**: enterprise router
destination	Yes	String	• Specifies the destination CIDR block of a route. • The value must be in the valid CIDR format.

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Parameter	Mandatory	Type	Description
nexthop	No	String	• Specifies the ID of the next hop in the route. • Values: – When **type** is **ecs**, the value is the ECS ID. – When **type** is **eni**, the value is the extension NIC ID. – When **type** is **vip**, the value is the virtual IP address. – When **type** is **nat**, the value is NAT gateway ID. – When **type** is **peering**, the value is the VPC peering connection ID. – When **type** is **vpn**, the value is the VPN ID. – When **type** is **dc**, the value is the Direct Connect connection ID. – When **type** is **cc**, the value is the Cloud Connect connection ID. – When **type** is set to **egw**, the value is the VPC endpoint ID. – When **type** is set to **er**, the value is the ID of the enterprise router.
description	No	String	• Provides supplementary information about the route. • The value can contain no more than 255 characters and cannot contain angle brackets (< or >).

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Example Request

- Change the route table whose ID is 3d42a0d4-a980-4613-ae76-a2cddecff054, add a route with next hop type of ECS, modify the route with next hop type of ECS, and delete the route whose destination is 20.20.10.0/24.

```
PUT https://{Endpoint}/v1/6fbe9263116a4b68818cf1edce16bc4f/routetables/3d42a0d4-a980-4613-ae76-a2cddecff054

{
   "routetable": {
      "name": "routertable-789",
      "description": "abc",
      "routes": {
         "add": [
            {
               "type": "ecs",
               "destination": "10.10.10.0/24",
               "nexthop": "7c50463d-d36c-4417-aa85-cc11fa10f341",
               "description": "abc"
            }
         ],
         "mod": [
            {
               "type": "ecs",
               "destination": "20.10.10.0/24",
               "nexthop": "7c50463d-d36c-4417-aa85-cc11fa10f341",
               "description": "abc"
            }
         ],
         "del": [
            {
               "destination": "20.20.10.0/24"
            }
         ]
      }
   }
}
```

Response Parameters

Table 5-194 Response parameter

Name	Type	Description
routetable	**routetable** object	Specifies the route table. For details, see **Table 5-195**.

Table 5-195 Description of the **routetable** field

Name	Type	Description
id	String	• Specifies the route table ID, which uniquely identifies the route table. • The value must be in standard UUID format.

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Name	Type	Description
name	String	• Specifies the route table name. • The value can contain no more than 64 characters, including letters, digits, underscores (_), hyphens (-), and periods (.).
default	Boolean	• Specifies whether the route table is the default one. • The value can be **true** (default route table) or **false** (custom route table).
routes	Array of **route** objects	• Specifies the route list. For details, see **Table 5-177**. • Each route table can have a maximum of 200 routes.
subnets	Array of **subnet** objects	• Specifies the subnets associated with the route table. For details, see **Table 5-178**. • Only subnets in the VPC to which the route table belongs can be associated with the route table.
tenant_id	String	• Specifies the project ID.
vpc_id	String	• Specifies the ID of the VPC associated with the route table.
description	String	• Provides supplementary information about the route table. • The value can contain no more than 255 characters and cannot contain angle brackets (< or >).
created_at	String	• Specifies the time (UTC) when the route table is created. • Format: *yyyy-MM-ddTHH:mm:ss*
updated_at	String	• Specifies the time (UTC) when the route table is updated. • Format: *yyyy-MM-ddTHH:mm:ss*

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Table 5-196 Description of the **route** field

Name	Type	Description
type	String	• Specifies the route type. • Values: – **ecs** (ECS) – **eni** (NIC) – **vip** (Virtual IP address) – **nat** (NAT gateway) – **peering** (VPC peering connection) – **vpn** (VPN) – **dc** (Direct Connect connection) – **cc** (Cloud Connect connection) – **egw**: VPC endpoint node – **er**: enterprise router
destination	String	• Specifies the destination CIDR block of a route. • The value must be in the valid CIDR format.
nexthop	String	• Specifies the ID of the next hop in the route. • Values: – When **type** is **ecs**, the value is the ECS ID. – When **type** is **eni**, the value is the extension NIC ID. – When **type** is **vip**, the value is the virtual IP address. – When **type** is **nat**, the value is NAT gateway ID. – When **type** is **peering**, the value is the VPC peering connection ID. – When **type** is **vpn**, the value is the VPN ID. – When **type** is **dc**, the value is the Direct Connect connection ID. – When **type** is **cc**, the value is the Cloud Connect connection ID. – When **type** is set to **egw**, the value is the VPC endpoint ID. – When **type** is set to **er**, the value is the ID of the enterprise router.

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Name	Type	Description
description	String	• Provides supplementary information about the route. • The value can contain no more than 255 characters and cannot contain angle brackets (< or >).

Table 5-197 Description of the **subnet** field

Name	Type	Description
id	String	Specifies the ID of the subnet associated with the route table.

Example Response

```
{
   "routetable": {
      "id": "3d42a0d4-a980-4613-ae76-a2cddecff054",
      "vpc_id": "ab78be2d-782f-42a5-aa72-35879f6890ff",
      "description": "abc",
      "default": false,
      "routes": [
         {
            "type": "ecs",
            "destination": "10.10.10.0/24",
            "nexthop": "7c50463d-d36c-4417-aa85-cc11fa10f341",
            "description": "abc"
         }
      ],
      "subnets": [
         {
            "id": "8d4ce32f-d68a-4c4c-9f18-c68d8a5c7f2f"
         }
      ],
      "tenant_id": "6fbe9263116a4b68818cf1edce16bc4f",
      "created_at": "2022-12-15T02:56:40",
      "updated_at": "2022-12-15T03:03:42"
   }
}
```

Status Code

See **Status Codes**.

Error Code

See **Error Codes**.

5.11.5 Associating Subnets with a Route Table

Function

This API is used to associate a subnet with a route table.

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If a subnet has already been associated with route table A, you can associate the subnet with route table B directly without disassociating it from route table A first.

URI

POST /v1/{project_id}/routetables/{routetable_id}/action

Table 5-198 describes the parameters.

Table 5-198 Parameter description

Name	Mandatory	Type	Description
project_id	Yes	String	Specifies the project ID. For details about how to obtain a project ID, see **Obtaining a Project ID**.
routetable_id	Yes	String	Specifies the route table ID, which uniquely identifies a route table.

Request Parameters

Table 5-199 Request parameter

Name	Mandatory	Type	Description
routetable	Yes	**routetable** object	Specifies the route table. For details, see **Table 5-200**.

Table 5-200 Description of the **routetable** field

Name	Mandatory	Type	Description
subnets	Yes	**subnet** object	• Specifies the subnets associated with the route table. • Only subnets in the VPC that the route table belongs to can be associated with the route table.

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Table 5-201 Description of the **subnet** field

Name	Mandatory	Type	Description
associate	No	Array of strings	Specifies a list of IDs of the subnets to be associated with the route table.
disassociate	No	Array of strings	Specifies a list of IDs of the subnets to be disassociated from the route table.

Example Request

- Associate route table 3d42a0d4-a980-4613-ae76-a2cddecff054 with subnet 1a8b8c98-3976-401b-a735-8b058109268c.

```
POST https://{Endpoint}/v1/6fbe9263116a4b68818cf1edce16bc4f/routetables/3d42a0d4-a980-4613-ae76-a2cddecff054/action

{
    "routetable": {
        "subnets": {
            "associate": [
                "1a8b8c98-3976-401b-a735-8b058109268c"
            ]
        }
    }
}
```

Response Parameters

Table 5-202 Response parameter

Name	Type	Description
routetable	**routetable** object	Specifies the route table. For details, see **Table 5-203**.

Table 5-203 Description of the **routetable** field

Parameter	Type	Description
id	String	• Specifies the route table ID, which uniquely identifies the route table. • The value must be in standard UUID format.
name	String	• Specifies the route table name. • The value can contain no more than 64 characters, including letters, digits, underscores (_), hyphens (-), and periods (.).

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Parameter	Type	Description
default	Boolean	• Specifies whether the route table is the default one. • The value can be **true** (default route table) or **false** (custom route table).
routes	Array of **route** objects	• Specifies the route list. For details, see **Table 5-204**. • Each route table can have a maximum of 200 routes.
subnets	Array of **subnet** objects	• Specifies the subnets associated with the route table. For details, see **Table 5-205**. • Only subnets in the VPC to which the route table belongs can be associated with the route table.
tenant_id	String	• Specifies the project ID.
vpc_id	String	• Specifies the ID of the VPC associated with the route table.
description	String	• Provides supplementary information about the route table. • The value can contain no more than 255 characters and cannot contain angle brackets (< or >).

Table 5-204 Description of the **route** field

Name	Type	Description
type	String	• Specifies the route type. • Values: – **ecs** (ECS) – **eni** (NIC) – **vip** (Virtual IP address) – **nat** (NAT gateway) – **peering** (VPC peering connection) – **vpn** (VPN) – **dc** (Direct Connect connection) – **cc** (Cloud Connect connection) – **egw**: VPC endpoint node – **er**: enterprise router

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Name	Type	Description
destination	String	• Specifies the destination CIDR block of a route. • The value must be in the valid CIDR format.
nexthop	String	• Specifies the ID of the next hop in the route. • Values: – When **type** is **ecs**, the value is the ECS ID. – When **type** is **eni**, the value is the extension NIC ID. – When **type** is **vip**, the value is the virtual IP address. – When **type** is **nat**, the value is NAT gateway ID. – When **type** is **peering**, the value is the VPC peering connection ID. – When **type** is **vpn**, the value is the VPN ID. – When **type** is **dc**, the value is the Direct Connect connection ID. – When **type** is **cc**, the value is the Cloud Connect connection ID. – When **type** is set to **egw**, the value is the VPC endpoint ID. – When **type** is set to **er**, the value is the ID of the enterprise router.
description	String	• Provides supplementary information about the route. • The value can contain no more than 255 characters and cannot contain angle brackets (< or >).

Table 5-205 Description of the **subnet** field

Name	Type	Description
id	String	Specifies the ID of the subnet associated with the route table.

Example Response

```
{
  "routetable": {
```

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```
    "id": "3d42a0d4-a980-4613-ae76-a2cddecff054",
    "vpc_id": "ab78be2d-782f-42a5-aa72-35879f6890ff",
    "description": "abc",
    "routes": [
      {
        "type": "ecs",
        "destination": "10.10.10.0/24",
        "nexthop": "7c50463d-d36c-4417-aa85-cc11fa10f341",
        "description": "abc"
      }
    ],
    "subnets": [
      {
        "id": "8d4ce32f-d68a-4c4c-9f18-c68d8a5c7f2f"
      }
    ],
    "tenant_id": "6fbe9263116a4b68818cf1edce16bc4f"
  }
}
```


Status Code

See **Status Codes**.

Error Code

See **Error Codes**.

5.11.6 Disassociating Subnets from a Route Table

Function

This API is used to disassociate subnets from a route table.

URI

POST /v1/{project_id}/routetables/{routetable_id}/action

Table 5-206 describes the parameters.

Table 5-206 Parameter description

Name	Mandatory	Type	Description
project_id	Yes	String	Specifies the project ID. For details about how to obtain a project ID, see **Obtaining a Project ID**.
routetable_id	Yes	String	Specifies the route table ID, which uniquely identifies a route table.

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Request Parameters

Table 5-207 Request parameter

Name	Mandatory	Type	Description
routetable	Yes	**routetable** object	Specifies the route table. For details, see **Table 5-208**.

Table 5-208 Description of the **routetable** field

Name	Mandatory	Type	Description
subnets	Yes	**subnet** object	• Specifies the subnets associated with the route table. • Only subnets in the VPC that the route table belongs to can be associated with the route table.

Table 5-209 Description of the **subnet** field

Name	Mandatory	Type	Description
associate	No	Array of strings	Specifies the IDs of the subnets to be associated with the route table.
disassociate	No	Array of strings	Specifies the IDs of the subnets to be disassociated from the route table.

Example Request

- Disassociate route table 3d42a0d4-a980-4613-ae76-a2cddecff054 from subnet 815a6b9e-f766-48eb-967c-0ada72d85435.

```
POST https://{Endpoint}/v1/6fbe9263116a4b68818cf1edce16bc4f/routetables/3d42a0d4-a980-4613-ae76-a2cddecff054/action

{
    "routetable": {
        "subnets": {
            "disassociate": [
                "815a6b9e-f766-48eb-967c-0ada72d85435"
            ]
        }
    }
}
```

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Response Parameters

Table 5-210 Response parameter

Name	Type	Description
routetable	**routetable** object	Specifies the route table. For details, see **Table 5-211**.

Table 5-211 Description of the **routetable** field

Parameter	Type	Description
id	String	• Specifies the route table ID, which uniquely identifies the route table. • The value must be in standard UUID format.
name	String	• Specifies the route table name. • The value can contain no more than 64 characters, including letters, digits, underscores (_), hyphens (-), and periods (.).
default	Boolean	• Specifies whether the route table is the default one. • The value can be **true** (default route table) or **false** (custom route table).
routes	Array of **route** objects	• Specifies the route list. For details, see **Table 5-212**. • Each route table can have a maximum of 200 routes.
subnets	Array of **subnet** objects	• Specifies the subnets associated with the route table. For details, see **Table 5-213**. • Only subnets in the VPC to which the route table belongs can be associated with the route table.
tenant_id	String	• Specifies the project ID.
vpc_id	String	• Specifies the ID of the VPC associated with the route table.
description	String	• Provides supplementary information about the route table. • The value can contain no more than 255 characters and cannot contain angle brackets (< or >).

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Parameter	Type	Description
created_at	String	• Specifies the time (UTC) when the route table is created. • Format: *yyyy-MM-ddTHH:mm:ss*
updated_at	String	• Specifies the time (UTC) when the route table is updated. • Format: *yyyy-MM-ddTHH:mm:ss*

Table 5-212 Description of the **route** field

Name	Type	Description
type	String	• Specifies the route type. • Values: – **ecs** (ECS) – **eni** (NIC) – **vip** (Virtual IP address) – **nat** (NAT gateway) – **peering** (VPC peering connection) – **vpn** (VPN) – **dc** (Direct Connect connection) – **cc** (Cloud Connect connection) – **egw**: VPC endpoint node – **er**: enterprise router
destination	String	• Specifies the destination CIDR block of a route. • The value must be in the valid CIDR format.

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Name	Type	Description
nexthop	String	• Specifies the ID of the next hop in the route. • Values: – When **type** is **ecs**, the value is the ECS ID. – When **type** is **eni**, the value is the extension NIC ID. – When **type** is **vip**, the value is the virtual IP address. – When **type** is **nat**, the value is NAT gateway ID. – When **type** is **peering**, the value is the VPC peering connection ID. – When **type** is **vpn**, the value is the VPN ID. – When **type** is **dc**, the value is the Direct Connect connection ID. – When **type** is **cc**, the value is the Cloud Connect connection ID. – When **type** is set to **egw**, the value is the VPC endpoint ID. – When **type** is set to **er**, the value is the ID of the enterprise router.
description	String	• Provides supplementary information about the route. • The value can contain no more than 255 characters and cannot contain angle brackets (< or >).

Table 5-213 Description of the **subnet** field

Name	Type	Description
id	String	Specifies the ID of the subnet associated with the route table.

Example Response

```
{
    "routetable": {
        "id": "3d42a0d4-a980-4613-ae76-a2cddecff054",
        "vpc_id": "ab78be2d-782f-42a5-aa72-35879f6890ff",
        "description": "abc",
        "routes": [
            {
```

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```
            "type": "ecs",
            "destination": "10.10.10.0/24",
            "nexthop": "7c50463d-d36c-4417-aa85-cc11fa10f341",
            "description": "abc"
         }
      ],
      "subnets": [
         {
            "id": "8d4ce32f-d68a-4c4c-9f18-c68d8a5c7f2f"
         }
      ],
      "tenant_id": "6fbe9263116a4b68818cf1edce16bc4f"
   }
}
```

Status Code

See **Status Codes**.

Error Code

See **Error Codes**.

5.11.7 Deleting a Route Table

Function

This API is used to delete a custom route table.

Constraints:

Only custom route tables can be deleted. If a custom route table has subnets associated, disassociate the subnets with the route table and then delete the route table.

URI

DELETE /v1/{project_id}/routetables/{routetable_id}

Table 5-214 describes the parameters.

Table 5-214 Parameter description

Name	Mandatory	Type	Description
project_id	Yes	String	Specifies the project ID. For details about how to obtain a project ID, see **Obtaining a Project ID**.
routetable_id	Yes	String	Specifies the route table ID, which uniquely identifies a route table.

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Request Parameters

None

Example Request

```
DELETE https://{Endpoint}/v1/{project_id}/routetables/3d42a0d4-a980-4613-ae76-a2cddecff054
```

Response Parameters

None

Example Response

None

Status Code

See **Status Codes**.

Error Code

See **Error Codes**.

5.12 VPC Tag Management

5.12.1 Creating a Tag for a VPC

Function

This API is used to create a tag for a VPC.

URI

POST /v2.0/{project_id}/vpcs/{vpc_id}/tags

Table 5-215 describes the parameters.

Table 5-215 Parameter description

Name	Mandatory	Description
project_id	Yes	Specifies the project ID. For details about how to obtain a project ID, see **Obtaining a Project ID**.
vpc_id	Yes	Specifies the VPC ID, which uniquely identifies the VPC.

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Request Parameters

Table 5-216 Request parameter

Parameter	Type	Mandatory	Description
tag	tag object	Yes	Specifies the **tag** objects. For details, see **Table 5-217**.

Table 5-217 tag objects

Attribute	Type	Mandatory	Description
key	String	Yes	• Specifies the tag key. • Cannot be left blank. • Contain up to 128 characters (36 characters on the console). • Can contain letters, digits, underscores (_), and hyphens (-). • The tag key of a VPC must be unique.
value	String	Yes	• Specifies the tag value. • Contain up to 255 characters (43 characters on the console). • Can contain letters, digits, underscores (_), periods (.), and hyphens (-).

Example Request

- Create a tag for a VPC. The key is **key1**, and the value is **value1**.

```
POST https://{Endpoint}/v2.0/{project_id}/vpcs/{vpc_id}/tags

{
    "tag": {
        "key": "key1",
        "value": "value1"
    }
}
```

Response Parameters

None

Example Response

None

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Status Code

See **Status Codes**.

Error Code

See **Error Codes**.

5.12.2 Querying VPC Tags

Function

This API is used to query tags of a specified VPC.

URI

GET /v2.0/{project_id}/vpcs/{vpc_id}/tags

Table 5-218 describes the parameters.

Table 5-218 Parameter description

Name	Mandatory	Description
project_id	Yes	Specifies the project ID. For details about how to obtain a project ID, see **Obtaining a Project ID**.
vpc_id	Yes	Specifies the VPC ID, which uniquely identifies the VPC.

Request Parameters

None

Example Request

```
GET https://{Endpoint}/v2.0/{project_id}/vpcs/{vpc_id}/tags
```

Response Parameters

Table 5-219 Response parameter

Parameter	Type	Description
tags	Array of **tag** objects	Specifies the **tag** object list. For details, see **Table 5-220**.

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Table 5-220 tag objects

Attribute	Type	Description
key	String	• Specifies the tag key. • Cannot be left blank. • Contain up to 128 characters (36 characters on the console). • Can contain letters, digits, underscores (_), and hyphens (-). • The tag key of a VPC must be unique.
value	String	• Specifies the tag value. • Contain up to 255 characters (43 characters on the console). • Can contain letters, digits, underscores (_), periods (.), and hyphens (-).

Example Response

```
{
   "tags": [
      {
         "key": "key1",
         "value": "value1"
      },
      {
         "key": "key2",
         "value": "value3"
      }
   ]
}
```

Status Code

See **Status Codes**.

Error Code

See **Error Codes**.

5.12.3 Deleting a VPC Tag

Function

This API is used to delete a VPC tag.

URI

DELETE /v2.0/{project_id}/vpcs/{vpc_id}/tags/{key}

Table 5-221 describes the parameters.

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Table 5-221 Parameter description

Name	Mandatory	Description
project_id	Yes	Specifies the project ID. For details about how to obtain a project ID, see **Obtaining a Project ID**.
vpc_id	Yes	Specifies the VPC ID, which uniquely identifies the VPC.
key	Yes	Specifies the tag key.

Request Parameters

None

Example Request

```
DELETE https://{Endpoint}/v2.0/{project_id}/vpcs/{vpc_id}/tags/{key}
```

Response Parameters

None

Example Response

None

Status Code

See **Status Codes**.

Error Code

See **Error Codes**.

5.12.4 Batch Creating or Deleting VPC Tags

Function

This API is used to add multiple tags to or delete multiple tags from a VPC at a time.

This API is idempotent.

If there are duplicate keys in the request body when you add tags, an error is reported.

During tag creation, duplicate keys are not allowed. If a key already exists in the database, its value will be overwritten by the new duplicate key.

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During tag deletion, if some tags do not exist, the operation is considered to be successful by default. The character set of the tags will not be checked. When you delete tags, the tag structure cannot be missing, and the key cannot be left blank or be an empty string.

URI

POST /v2.0/{project_id}/vpcs/{vpc_id}/tags/action

Table 5-222 describes the parameters.

Table 5-222 Parameter description

Name	Mandatory	Description
project_id	Yes	Specifies the project ID. For details about how to obtain a project ID, see **Obtaining a Project ID**.
vpc_id	Yes	Specifies the VPC ID, which uniquely identifies the VPC.

Request Parameters

Table 5-223 Request parameter

Parameter	Type	Mandatory	Description
tags	Array of **tag** objects	Yes	Specifies the **tag** objects. For details, see Table 5-224.
action	String	Yes	Specifies the operation. Possible values are as follows: • **create** • **delete**

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Table 5-224 tag objects

Attribute	Type	Mandatory	Description
key	String	Yes	• Specifies the tag key. • Cannot be left blank. • Contain up to 128 characters (36 characters on the console). • Can contain letters, digits, underscores (_), and hyphens (-). • The tag key of a VPC must be unique.
value	String	Yes	• Specifies the tag value. • Contain up to 255 characters (43 characters on the console). • Can contain letters, digits, underscores (_), periods (.), and hyphens (-).

Example Request

- Batch create two tags for a VPC.

```
POST https://{Endpoint}/v2.0/{project_id}/vpcs/{vpc_id}/tags/action

{
   "action": "create",
   "tags": [
      {
         "key": "key1",
         "value": "value1"
      },
      {
         "key": "key2",
         "value": "value3"
      }
   ]
}
```

- Batch delete two tags for a VPC.

```
POST https://{Endpoint}/v2.0/{project_id}/vpcs/{vpc_id}/tags/action

{
   "action": "delete",
   "tags": [
      {
         "key": "key1",
         "value": "value1"
      },
      {
         "key": "key2",
         "value": "value3"
      }
   ]
}
```

Response Parameters

None

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Example Response

None

Status Code

See **Status Codes**.

Error Code

See **Error Codes**.

5.12.5 Querying VPCs by Tag

Function

This API is used to query VPCs by tag.

URI

POST /v2.0/{project_id}/vpcs/resource_instances/action

Table 5-225 describes the parameters.

Table 5-225 Parameter description

Name	Mandatory	Description
project_id	Yes	Specifies the project ID. For details about how to obtain a project ID, see **Obtaining a Project ID**.

Request Parameters

Table 5-226 Request parameter

Parameter	Type	Mandatory	Description
tags	Array of **tag** objects	No	Specifies the included tags. A maximum of 10 tag keys are allowed for each query operation. Each tag key can have up to 10 tag values. The structure body must be included. The tag key cannot be left blank or set to an empty string. Each tag key must be unique, and each tag value in a tag must be unique.

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Parameter	Type	Mandatory	Description
limit	Integer	No	Sets the page size. This parameter is not available when **action** is set to **count**. The default value is **1000** when **action** is set to **filter**. The maximum value is **1000**, and the minimum value is **1**. The value cannot be a negative number.
offset	Integer	No	Specifies the index position. The query starts from the next piece of data indexed by this parameter. This parameter is not required when you query data on the first page. The value in the response returned for querying data on the previous page will be included in this parameter for querying data on subsequent pages. This parameter is not available when **action** is set to **count**. If **action** is set to **filter**, the value must be a number, and the default value is **0**. The value cannot be a negative number.
action	String	Yes	Specifies the operation to perform. The value can only be **filter** (filtering) or **count** (querying the total number). The value **filter** indicates pagination query. The value **count** indicates that the total number of query results meeting the search criteria will be returned.
matches	Array of **match** objects	No	Specifies the search criteria. The tag key is the field to match. Currently, only **resource_name** is supported. The tag value indicates the matched value. This field is a fixed dictionary value.

Table 5-227 Description of the **tag** field

Name	Mandatory	Type	Description
key	Yes	String	Specifies the tag key. The value can contain a maximum of 128 Unicode characters. The tag key cannot be left blank. (This parameter is not verified during the search process.)

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Name	Mandatory	Type	Description
values	Yes	Array of strings	Specifies the tag values. Each value can contain a maximum of 255 Unicode characters. An empty list for **values** indicates any value. The values are in the OR relationship. Resources that match any value can be found. For example, if resource A has a tag value of **val1** and resource B has a tag value of **val2**, resources A and B can be found by using **values={val1,val2}**.

Table 5-228 Description of the **match** field

Name	Mandatory	Type	Description
key	Yes	String	Specifies the tag key. Currently, the tag key can only be the resource name.
value	Yes	String	Specifies the tag value. Each value can contain a maximum of 255 Unicode characters.

Example Request

- Filter VPCs by setting **action** to **filter**. The query starts from the first record. A maximum of 100 records can be returned for each query. You can use **matches** and **tags** to filter VPCs.

```
POST https://{Endpoint}/v2.0/{project_id}/vpcs/resource_instances/action

{
   "offset": "0",
   "limit": "100",
   "action": "filter",
   "matches": [
      {
         "key": "resource_name",
         "value": "resource1"
      }
   ],
   "tags": [
      {
         "key": "key1",
         "values": [
            "*value1",
```

```
            "value2"
        ]
    }
  ]
}
```

- Count VPCs by setting **action** to **count**. Use **matches** and **tags** to filter and count VPCs.

```
POST https://{Endpoint}/v2.0/{project_id}/vpcs/resource_instances/action

{
  "action": "count",
  "tags": [
    {
      "key": "key1",
      "values": [
        "value1",
        "value2"
      ]
    },
    {
      "key": "key2",
      "values": [
        "value1",
        "value2"
      ]
    }
  ],
  "matches": [
    {
      "key": "resource_name",
      "value": "resource1"
    }
  ]
}
```

Response Parameters

Table 5-229 Response parameter

Name	Type	Description
resources	Array of **resource** objects	Specifies the **resource** object list. For details, see **Table 5-230**.
total_count	Integer	Specifies the total number of query records.

Table 5-230 resource objects

Name	Type	Description
resource_id	String	Specifies the resource ID.
resource_detail	Object	Specifies the resource details. Resource details are used for extension. This parameter is left blank by default.

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Name	Type	Description
tags	Array of **tag** objects	Specifies the tag list. This parameter is an empty array by default if there is no tag. For details, see **Table 5-231**.
resource_name	String	Specifies the resource name. This parameter is an empty string by default if there is no resource name.

Table 5-231 Description of the **tag** field

Name	Mandatory	Type	Description
key	Yes	String	Specifies the tag key. The value can contain a maximum of 128 Unicode characters. The tag key cannot be left blank. (This parameter is not verified during the search process.)
values	Yes	Array of strings	Specifies the tag value list. Each value can contain a maximum of 255 Unicode characters. An empty list for **values** indicates any value. The values are in the OR relationship. Resources that match any value can be found. For example, if resource A has a tag value of **val1** and resource B has a tag value of **val2**, resources A and B can be found by using **values={val1,val2}**.

Example Response

- When **action** is set to **filter**:

```
{
    "resources": [
      {
        "resource_detail": null,
        "resource_id": "cdfs_cefs_wesas_12_dsad",
```

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```
            "resource_name": "resouece1",
            "tags": [
               {
                  "key": "key1",
                  "value": "value1"
               },
               {
                  "key": "key2",
                  "value": "value1"
               }
            ]
         }
      ],
      "total_count": 1000
}
```

- When **action** is set to **count**:

```
{
     "total_count": 1000
}
```

Status Code

See **Status Codes**.

Error Code

See **Error Codes**.

5.12.6 Querying VPC Tags in a Specified Project

Function

This API is used to query all VPC tags of a tenant in a specified region.

URI

GET /v2.0/{project_id}/vpcs/tags

Table 5-232 describes the parameters.

Table 5-232 Parameter description

Name	Mandatory	Description
project_id	Yes	Specifies the project ID. For details about how to obtain a project ID, see **Obtaining a Project ID**.

Request Parameters

None

Example Request

```
GET https://{Endpoint}/v2.0/{project_id}/vpcs/tags
```

Response Parameters

Table 5-233 Response parameter

Parameter	Type	Description
tags	Array of **tag** objects	Specifies the tag list.

Table 5-234 Description of the **tag** field

Name	Type	Description
key	String	Specifies the tag key. • Cannot be left blank. • Contain up to 128 characters (36 characters on the console). • Can contain letters, digits, underscores (_), and hyphens (-).
values	Array of strings	Specifies the tag value list. • Contain up to 255 characters (43 characters on the console). • Can contain letters, digits, underscores (_), periods (.), and hyphens (-).

Example Response

```
{
  "tags": [
    {
      "key": "key1",
      "values": [
        "value1",
        "value2"
      ]
    },
    {
      "key": "key2",
      "values": [
        "value1",
        "value2"
      ]
    }
  ]
}
```

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Status Code

See **Status Codes**.

Error Code

See **Error Codes**.

5.13 Subnet Tag Management

5.13.1 Creating a Tag for a Subnet

Function

This API is used to create a tag for a subnet.

URI

POST /v2.0/{project_id}/subnets/{subnet_id}/tags

Table 5-235 describes the parameters.

Table 5-235 Parameter description

Name	Mandatory	Description
project_id	Yes	Specifies the project ID. For details about how to obtain a project ID, see **Obtaining a Project ID**.
subnet_id	Yes	Specifies the subnet ID, which uniquely identifies the subnet. If you use the management console, the value of this parameter is the **Network ID** value.

Request Parameters

Table 5-236 Request parameter

Parameter	Type	Mandatory	Description
tag	**tag** object	Yes	Specifies the **tag** objects. For details, see **Table 5-237**.

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Table 5-237 tag objects

Attribute	Type	Mandatory	Description
key	String	Yes	• Specifies the tag key. • Cannot be left blank. • Contain up to 128 characters (36 characters on the console). • Can contain letters, digits, underscores (_), and hyphens (-). • The tag key of a VPC must be unique.
value	String	Yes	• Specifies the tag value. • Contain up to 255 characters (43 characters on the console). • Can contain letters, digits, underscores (_), periods (.), and hyphens (-).

Example Request

- Create a tag for a subnet. The key is **key1**, and the value is **value1**.

```
POST https://{Endpoint}/v2.0/{project_id}/subnets/{subnet_id}/tags

{
   "tag": {
      "key": "key1",
      "value": "value1"
   }
}
```

Response Parameters

None

Example Response

None

Status Code

See **Status Codes**.

Error Code

See **Error Codes**.

5.13.2 Querying Subnet Tags

Function

This API is used to query tags of a specified subnet.

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URI

GET /v2.0/{project_id}/subnets/{subnet_id}/tags

Table 5-238 describes the parameters.

Table 5-238 Parameter description

Name	Mandatory	Description
project_id	Yes	Specifies the project ID. For details about how to obtain a project ID, see **Obtaining a Project ID**.
subnet_id	Yes	Specifies the subnet ID, which uniquely identifies the subnet. If you use the management console, the value of this parameter is the **Network ID** value.

Request Parameters

None

Example Request

```
GET https://{Endpoint}/v2.0/{project_id}/subnets/{subnet_id}/tags
```

Response Parameters

Table 5-239 Response parameter

Parameter	Type	Description
tags	Array of **tag** objects	Specifies the **tag** object list. For details, see **Table 5-240**.

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Table 5-240 tag objects

Attribute	Type	Description
key	String	• Specifies the tag key. • Cannot be left blank. • Contain up to 128 characters (36 characters on the console). • Can contain letters, digits, underscores (_), and hyphens (-). • The tag key of a VPC must be unique.
value	String	• Specifies the tag value. • Contain up to 255 characters (43 characters on the console). • Can contain letters, digits, underscores (_), periods (.), and hyphens (-).

Example Response

```
{
   "tags": [
      {
         "key": "key1",
         "value": "value1"
      },
      {
         "key": "key2",
         "value": "value3"
      }
   ]
}
```

Status Code

See **Status Codes**.

Error Code

See **Error Codes**.

5.13.3 Deleting a Subnet Tag

Function

This API is used to delete a subnet tag.

URI

DELETE /v2.0/{project_id}/subnets/{subnet_id}/tags/{key}

Table 5-241 describes the parameters.

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Table 5-241 Parameter description

Name	Mandatory	Description
project_id	Yes	Specifies the project ID. For details about how to obtain a project ID, see **Obtaining a Project ID**.
subnet_id	Yes	Specifies the subnet ID, which uniquely identifies the subnet. If you use the management console, the value of this parameter is the **Network ID** value.
key	Yes	Specifies the tag key.

Request Parameters

None

Example Request

```
DELETE https://{Endpoint}/v2.0/{project_id}/subnets/{subnet_id}/tags/{key}
```

Response Parameters

None

Example Response

None

Status Code

See **Status Codes**.

Error Code

See **Error Codes**.

5.13.4 Batch Creating or Deleting Subnet Tags

Function

This API is used to add multiple tags to or delete multiple tags from a subnet at a time.

This API is idempotent.

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If there are duplicate keys in the request body when you add tags, an error is reported.

During tag creation, duplicate keys are not allowed. If a key already exists in the database, its value will be overwritten by the new duplicate key.

During tag deletion, if some tags do not exist, the deletion is considered to be successful by default. The character set of the tags will not be checked. When you delete tags, the tag structure cannot be missing, and the key cannot be left blank or be an empty string.

URI

POST /v2.0/{project_id}/subnets/{subnet_id}/tags/action

Table 5-242 describes the parameters.

Table 5-242 Parameter description

Name	Mandatory	Description
project_id	Yes	Specifies the project ID. For details about how to obtain a project ID, see **Obtaining a Project ID**.
subnet_id	Yes	Specifies the subnet ID, which uniquely identifies the subnet. If you use the management console, the value of this parameter is the **Network ID** value.

Request Parameters

Table 5-243 Request parameter

Parameter	Type	Mandatory	Description
tags	Array of **tag** objects	Yes	Specifies the **tag** object list. For details, see **Table 5-244**.

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Parameter	Type	Mandatory	Description
action	String	Yes	Specifies the operation. Possible values are as follows: • **create** • **delete**

Table 5-244 tag objects

Attribute	Type	Mandatory	Description
key	String	Yes	• Specifies the tag key. • Cannot be left blank. • Contain up to 128 characters (36 characters on the console). • Can contain letters, digits, underscores (_), and hyphens (-). • The tag key of a VPC must be unique.
value	String	Yes	• Specifies the tag value. • Contain up to 255 characters (43 characters on the console). • Can contain letters, digits, underscores (_), periods (.), and hyphens (-).

Example Request

- Batch create two tags for a subnet.

```
POST https://{Endpoint}/v2.0/{project_id}/subnets/{subnet_id}/tags/action

{
   "action": "create",
   "tags": [
      {
         "key": "key1",
         "value": "value1"
      },
      {
         "key": "key2",
         "value": "value3"
      }
   ]
}
```

- Batch delete two tags for a subnet.

```
POST https://{Endpoint}/v2.0/{project_id}/subnets/{subnet_id}/tags/action

{
```

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```
  "action": "delete",
  "tags": [
     {
        "key": "key1",
        "value": "value1"
     },
     {
        "key": "key2",
        "value": "value3"
     }
  ]
}
```

Response Parameters

None

Example Response

None

Status Code

See **Status Codes**.

Error Code

See **Error Codes**.

5.13.5 Querying Subnets by Tag

Function

This API is used to query subnets by tag.

URI

POST /v2.0/{project_id}/subnets/resource_instances/action

Table 5-245 describes the parameters.

Table 5-245 Parameter description

Name	Mandatory	Description
project_id	Yes	Specifies the project ID. For details about how to obtain a project ID, see **Obtaining a Project ID**.

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Request Parameters

Table 5-246 Request parameter

Parameter	Type	Mandatory	Description
tags	Array of **tag** objects	No	Specifies the included tags. A maximum of 10 tag keys are allowed for each query operation. Each tag key can have up to 10 tag values. The structure body must be included. The tag key cannot be left blank or set to an empty string. Each tag key must be unique, and each tag value in a tag must be unique.
limit	Integer	No	Sets the page size. This parameter is not available when **action** is set to **count**. The default value is **1000** when **action** is set to **filter**. The maximum value is **1000**, and the minimum value is **1**. The value cannot be a negative number.
offset	Integer	No	Specifies the index position. The query starts from the next piece of data indexed by this parameter. This parameter is not required when you query data on the first page. The value in the response returned for querying data on the previous page will be included in this parameter for querying data on subsequent pages. This parameter is not available when **action** is set to **count**. If **action** is set to **filter**, the value must be a number, and the default value is **0**. The value cannot be a negative number.
action	String	Yes	Specifies the operation to perform. The value can only be **filter** (filtering) or **count** (querying the total number). The value **filter** indicates pagination query. The value **count** indicates that the total number of query results meeting the search criteria will be returned.
matches	Array of **match** objects	No	Specifies the search criteria. The tag key is the field to match. Currently, only **resource_name** is supported. The tag value indicates the matched value. This field is a fixed dictionary value.

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Table 5-247 Description of the **tag** field

Name	Mandatory	Type	Description
key	Yes	String	Specifies the tag key. The value can contain a maximum of 128 Unicode characters. The tag key cannot be left blank. (This parameter is not verified during the search process.)
values	Yes	Array of strings	Specifies the tag value list. Each value can contain a maximum of 255 Unicode characters. An empty list for **values** indicates any value. The values are in the OR relationship.

Table 5-248 Description of the **match** field

Name	Mandatory	Type	Description
key	Yes	String	Specifies the tag key. Currently, the tag key can only be the resource name.
value	Yes	String	Specifies the tag value. Each value can contain a maximum of 255 Unicode characters.

Example Request

- Filter subnets by setting **action** to **filter**. The query starts from the first record. A maximum of 100 records can be returned for each query. You can use **matches** and **tags** to filter subnets.

```
POST https://{Endpoint}/v2.0/{project_id}/subnets/resource_instances/action

{
    "offset": "0",
    "limit": "100",
    "action": "filter",
    "matches": [
        {
            "key": "resource_name",
            "value": "resource1"
        }
    ],
    "tags": [
        {
            "key": "key1",
            "values": [
```

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```
            "*value1",
            "value2"
         ]
      }
   ]
}
```

- Count subnets by setting **action** to **count**. Use **matches** and **tags** to filter and count VPCs.

```
POST https://{Endpoint}/v2.0/{project_id}/subnets/resource_instances/action

{
   "action": "count",
   "tags": [
      {
         "key": "key1",
         "values": [
            "value1",
            "value2"
         ]
      },
      {
         "key": "key2",
         "values": [
            "value1",
            "value2"
         ]
      }
   ],
   "matches": [
      {
         "key": "resource_name",
         "value": "resource1"
      }
   ]
}
```

Response Parameters

Table 5-249 Response parameter

Name	Type	Description
resources	Array of **resource** objects	Specifies the **resource** object list. For details, see **Table 5-250**.
total_count	Integer	Specifies the total number of query records.

Table 5-250 resource objects

Name	Type	Description
resource_id	String	Specifies the resource ID.

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Name	Type	Description
resource_detail	Object	Specifies the resource details. Resource details are used for extension. This parameter is left blank by default.
tags	Array of **tag** objects	Specifies the tag list. This parameter is an empty array by default if there is no tag. For details, see **Table 5-251**.
resource_name	String	Specifies the resource name. This parameter is an empty string by default if there is no resource name.

Table 5-251 Description of the **tag** field

Name	Mandatory	Type	Description
key	Yes	String	Specifies the tag key. The value can contain a maximum of 128 Unicode characters. The tag key cannot be left blank. (This parameter is not verified during the search process.)
value	Yes	String	Specifies the tag value list. Each value can contain a maximum of 255 Unicode characters. An empty list for **values** indicates any value. The values are in the OR relationship.

Example Response

- When **action** is set to **filter**:

```
{
    "resources": [
      {
        "resource_detail": null,
        "resource_id": "cdfs_cefs_wesas_12_dsad",
        "resource_name": "resouece1",
        "tags": [
          {
            "key": "key1",
```

```
            "value": "value1"
          },
          {
            "key": "key2",
            "value": "value1"
          }
        ]
      }
    ],
    "total_count": 1000
}
```

- When **action** is set to **count**:

```
{
    "total_count": 1000
}
```

Status Code

See **Status Codes**.

Error Code

See **Error Codes**.

5.13.6 Querying Subnet Tags in a Specified Project

Function

This API is used to query all subnet tags of a tenant in a specified region.

URI

GET /v2.0/{project_id}/subnets/tags

Table 5-252 describes the parameters.

Table 5-252 Parameter description

Name	Mandatory	Description
project_id	Yes	Specifies the project ID. For details about how to obtain a project ID, see **Obtaining a Project ID**.

Request Parameters

None

Example Request

```
GET https://{Endpoint}/v2.0/{project_id}/subnets/tags
```

Response Parameters

Table 5-253 Response parameter

Parameter	Type	Description
tags	Array of **tag** objects	Specifies the **tag** object list. For details, see **Table 5-254**.

Table 5-254 Description of the **tag** field

Name	Type	Description
key	String	Specifies the tag key. • Cannot be left blank. • Contain up to 128 characters (36 characters on the console). • Can contain letters, digits, underscores (_), and hyphens (-).
values	Array of strings	Specifies the tag value list. • Contain up to 255 characters (43 characters on the console). • Can contain letters, digits, underscores (_), periods (.), and hyphens (-).

Example Response

```
{
  "tags": [
    {
      "key": "key1",
      "values": [
        "value1",
        "value2"
      ]
    },
    {
      "key": "key2",
      "values": [
        "value1",
        "value2"
      ]
    }
  ]
}
```

Status Code

See **Status Codes**.

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Error Code

See **Error Codes**.

5.14 EIP Tag Management

5.14.1 Creating a Tag for an EIP

Function

This API is used to create a tag for an EIP.

URI

POST /v2.0/{project_id}/publicips/{publicip_id}/tags

Table 5-255 describes the parameters.

Table 5-255 Parameter description

Name	Mandatory	Description
project_id	Yes	Specifies the project ID. For details about how to obtain a project ID, see **Obtaining a Project ID**.
publicip_id	Yes	Specifies the unique identifier of an EIP.

Request Message

- Request parameter

  Table 5-256 Request parameter

Parameter	Type	Mandatory	Description
tag	**tag** object	Yes	Specifies the **tag** objects. For details, see **Table 5-257**.

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Table 5-257 tag objects

Attribute	Type	Mandatory	Description
key	String	Yes	• Specifies the tag key. • Cannot be left blank. • Can contain a maximum of 36 characters. • Can contain letters, digits, underscores (_), and hyphens (-). • The tag key of a VPC must be unique.
value	String	Yes	• Specifies the tag value. • Can contain a maximum of 43 characters. • Can contain letters, digits, underscores (_), periods (.), and hyphens (-).

- Example request

```
POST https://{Endpoint}/v2.0/{project_id}/publicips/{publicip_id}/tags

{
   "tag": {
      "key": "key1",
      "value": "value1"
   }
}
```

Response Message

- Response parameter

  None

- Example response

  None

  Or

```
{
    "code":"xxx",
    "message":"xxxxx"
}
```

Status Code

See **Status Codes**.

Error Code

See **Error Codes**.

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5.14.2 Querying EIP Tags

Function

This API is used to query tags of a specified EIP.

URI

GET /v2.0/{project_id}/publicips/{publicip_id}/tags

Table 5-258 describes the parameters.

Table 5-258 Parameter description

Name	Mandatory	Description
project_id	Yes	Specifies the project ID. For details about how to obtain a project ID, see **Obtaining a Project ID**.
publicip_id	Yes	Specifies the unique identifier of an EIP.

Request Message

- Request parameter

  None

- Example request

  ```
  GET https://{Endpoint}/v2.0/{project_id}/publicips/{publicip_id}/tags
  ```

Response Message

- Response parameter

  Table 5-259 Response parameter

Parameter	Type	Description
tags	Array of **tag** objects	Specifies the **tag** object list. For details, see Table 5-260.

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Table 5-260 tag objects

Attribute	Type	Description
key	String	• Specifies the tag key. • Cannot be left blank. • Can contain a maximum of 36 characters. • Can contain letters, digits, underscores (_), and hyphens (-). • The tag key of a VPC must be unique.
value	String	• Specifies the tag value. • Can contain a maximum of 43 characters. • Can contain letters, digits, underscores (_), periods (.), and hyphens (-).

- Example response

```
{
   "tags": [
      {
         "key": "key1",
         "value": "value1"
      },
      {
         "key": "key2",
         "value": "value3"
      }
   ]
}
```

Status Code

See **Status Codes**.

Error Code

See **Error Codes**.

5.14.3 Deleting an EIP Tag

Function

This API is used to delete an EIP tag.

URI

DELETE /v2.0/{project_id}/publicips/{publicip_id}/tags/{key}

Table 5-261 describes the parameters.

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Table 5-261 Parameter description

Name	Mandatory	Description
project_id	Yes	Specifies the project ID. For details about how to obtain a project ID, see **Obtaining a Project ID**.
publicip_id	Yes	Specifies the unique identifier of an EIP.
key	Yes	Specifies the tag key.

Request Message

- Request parameter

  None

- Example request

  ```
  DELETE https://{Endpoint}/v2.0/{project_id}/publicips/{publicip_id}/tags/{key}
  ```

Response Message

- Response parameter

  None

- Example response

  None

  Or

  ```
  {
      "code":"xxx",
      "message":"xxxxx"
  }
  ```

Status Code

See **Status Codes**.

Error Code

See **Error Codes**.

5.14.4 Batch Creating or Deleting EIP Tags

Function

This API is used to add multiple tags to or delete multiple tags from an EIP at a time.

This API is idempotent.

If there are duplicate keys in the request body when you add tags, an error is reported.

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During tag creation, duplicate keys are not allowed. If a key already exists in the database, its value will be overwritten by the new duplicate key.

During tag deletion, if some tags do not exist, the operation is considered to be successful by default. The character set of the tags will not be checked. When you delete tags, the tag structure cannot be missing, and the key cannot be left blank or be an empty string.

URI

POST /v2.0/{project_id}/publicips/{publicip_id}/tags/action

Table 5-262 describes the parameters.

Table 5-262 Parameter description

Name	Mandatory	Description
project_id	Yes	Specifies the project ID. For details about how to obtain a project ID, see **Obtaining a Project ID**.
publicip_id	Yes	Specifies the unique identifier of an EIP.

Request Message

- Request parameter

Table 5-263 Request parameter

Parameter	Type	Mandatory	Description
tags	Array of **tag** objects	Yes	Specifies the **tag** object list. For details, see Table 5-264.
action	String	Yes	Specifies the operation. Possible values are as follows: • **create** • **delete**

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Table 5-264 tag objects

Attribute	Type	Mandatory	Description
key	String	Yes	• Specifies the tag key. • Cannot be left blank. • Can contain a maximum of 36 characters. • Can contain letters, digits, underscores (_), and hyphens (-). • The tag key of a VPC must be unique.
value	String	Yes	• Specifies the tag value. • Can contain a maximum of 43 characters. • Can contain letters, digits, underscores (_), periods (.), and hyphens (-).

- Request example 1: Creating tags in batches

```
POST https://{Endpoint}/v2.0/{project_id}/publicips/{publicip_id}/tags/action

{
   "action": "create",
   "tags": [
      {
         "key": "key1",
         "value": "value1"
      },
      {
         "key": "key2",
         "value": "value3"
      }
   ]
}
```

- Request example 2: Deleting tags in batches

```
POST https://{Endpoint}/v2.0/{project_id}/publicips/{publicip_id}/tags/action

{
   "action": "delete",
   "tags": [
      {
         "key": "key1",
         "value": "value1"
      },
      {
         "key": "key2",
         "value": "value3"
      }
   ]
}
```

Response Message

- Response parameter

  None

- Example response

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None

Or

```
{
    "code":"xxx",
    "message":"xxxxx"
}
```

Status Code

See **Status Codes**.

Error Code

See **Error Codes**.

5.14.5 Querying EIPs by Tag

Function

This API is used to query EIPs by tag.

URI

POST /v2.0/{project_id}/publicips/resource_instances/action

Table 5-265 describes the parameters.

Table 5-265 Parameter description

Name	Mandatory	Description
project_id	Yes	Specifies the project ID. For details about how to obtain a project ID, see **Obtaining a Project ID**.

Request Message

- Request parameter

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Table 5-266 Request parameter

Parameter	Type	Mandatory	Description
tags	Array of **tags** objects	No	Specifies the included tags. A maximum of 10 tag keys are allowed for each query operation. Each tag key can have up to 10 tag values. The structure body must be included. The tag key cannot be left blank or set to an empty string. Each tag key must be unique, and each tag value in a tag must be unique.
limit	Integer	No	Sets the page size. This parameter is not available when **action** is set to **count**. The default value is **1000** when **action** is set to **filter**. The maximum value is **1000**, and the minimum value is **1**. The value cannot be a negative number.
offset	Integer	No	Specifies the index position. The query starts from the next piece of data indexed by this parameter. This parameter is not required when you query data on the first page. The value in the response returned for querying data on the previous page will be included in this parameter for querying data on subsequent pages. This parameter is not available when **action** is set to **count**. If **action** is set to **filter**, the value must be a number, and the default value is **0**. The value cannot be a negative number.
action	String	Yes	Specifies the operation to perform. The value can only be **filter** (filtering) or **count** (querying the total number). The value **filter** indicates pagination query. The value **count** indicates that the total number of query results meeting the search criteria will be returned.
matches	Array of **match** objects	No	Specifies the search criteria. The tag key is the field to match. Currently, only **resource_name** is supported. The tag value indicates the matched value. This field is a fixed dictionary value.

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Table 5-267 Description of the **tags** field

Name	Mandatory	Type	Description
key	Yes	String	Specifies the tag key. The value can contain a maximum of 127 Unicode characters. The tag key cannot be left blank. (This parameter is not verified during the search process.)
values	Yes	Array of strings	Specifies the tag value list. Each value can contain a maximum of 255 Unicode characters. An empty list for **values** indicates any value. The values are in the OR relationship.

Table 5-268 Description of the **match** field

Name	Mandatory	Type	Description
key	Yes	String	Specifies the tag key. Currently, the tag key can only be the resource name.
value	Yes	String	Specifies the tag value. Each value can contain a maximum of 255 Unicode characters.

- Example request 1: Setting **action** to **filter**

```
POST https://{Endpoint}/v2.0/{project_id}/publicips/resource_instances/action

{
   "offset": "0",
   "limit": "100",
   "action": "filter",
   "matches": [
      {
         "key": "resource_name",
         "value": "resource1"
      }
   ],
   "tags": [
      {
         "key": "key1",
         "values": [
            "*value1",
            "value2"
         ]
      }
```

```
  ]
}
```

- Example request 2: Setting **action** to **count**

```
{
  "action": "count",
  "tags": [
    {
      "key": "key1",
      "values": [
        "value1",
        "value2"
      ]
    },
    {
      "key": "key2",
      "values": [
        "value1",
        "value2"
      ]
    }
  ],
  "matches": [
    {
      "key": "resource_name",
      "value": "resource1"
    }
  ]
}
```

Response Message

- Response parameter

Table 5-269 Response parameter

Name	Type	Description
resources	Array of **resource** objects	Specifies the **resource** object list. For details, see **Table 5-270**.
total_count	Integer	Specifies the total number of query records.

Table 5-270 resource objects

Name	Type	Description
resource_id	String	Specifies the resource ID.
resource_detail	Object	Specifies the resource details. Resource details are used for extension. This parameter is left blank by default.

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Name	Type	Description
tags	Array of **tags** objects	Specifies the tag list. This parameter is an empty array by default if there is no tag. For details, see **Table 5-271**.
resource_name	String	Specifies the resource name. This parameter is an empty string by default if there is no resource name.

Table 5-271 Description of the **tags** field

Name	Mandatory	Type	Description
key	Yes	String	Specifies the tag key. The value can contain a maximum of 127 Unicode characters. The tag key cannot be left blank. (This parameter is not verified during the search process.)
value	Yes	String	Specifies the tag value list. Each value can contain a maximum of 255 Unicode characters. An empty list for **values** indicates any value. The values are in the OR relationship.

- Example response 1: Setting **action** to **filter**

```
{
    "resources": [
      {
        "resource_detail": null,
        "resource_id": "cdfs_cefs_wesas_12_dsad",
        "resource_name": "resouece1",
        "tags": [
          {
            "key": "key1",
            "value": "value1"
          },
          {
            "key": "key2",
            "value": "value1"
          }
        ]
      }
    ],
    "total_count": 1000
}
```

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- Example response 2: Setting **action** to **count**

```
{
    "total_count": 1000
}
```

Status Code

See **Status Codes**.

Error Code

See **Error Codes**.

5.14.6 Querying EIP Tags in a Specified Project

Function

This API is used to query all EIP tags of a tenant in a specified region.

URI

GET /v2.0/{project_id}/publicips/tags

Table 5-272 describes the parameters.

Table 5-272 Parameter description

Name	Mandatory	Description
project_id	Yes	Specifies the project ID. For details about how to obtain a project ID, see **Obtaining a Project ID**.

Request Message

- Request parameter

  None

- Example request

```
GET /v2.0/{project_id}/publicips/tags
```

Response Message

- Response parameter

Table 5-273 Response parameter

Parameter	Type	Description
tags	Array of **tag** objects	Specifies the **tag** object list. For details, see **Table 5-274**.

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Table 5-274 Description of the **tag** field

Name	Type	Description
key	String	Specifies the tag key. • Cannot be left blank. • Contain up to 128 characters (36 characters on the console). • Can contain letters, digits, underscores (_), and hyphens (-).
values	Array of strings	Specifies the tag value list. • Contain up to 255 characters (43 characters on the console). • Can contain letters, digits, underscores (_), periods (.), and hyphens (-).

- Example response

```
{
   "tags": [
      {
         "key": "key1",
         "values": [
            "value1",
            "value2"
         ]
      },
      {
         "key": "key2",
         "values": [
            "value1",
            "value2"
         ]
      }
   ]
}
```

Status Code

See **Status Codes**.

Error Code

See **Error Codes**.

5.15 VPC Flow Log

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5.15.1 Creating a VPC Flow Log

Function

This API is used to create a VPC flow log.

A VPC flow log captures information about the traffic going to and from your VPC. You can use flow logs to monitor network traffic, analyze network attacks, and to determine whether security group and network ACL rules need to be modified.

VPC flow logs must be used together with the Log Tank Service (LTS). You need to create a log group and a log topic in LTS, and then create a VPC flow log.

URI

POST /v1/{project_id}/fl/flow_logs

Table 5-275 describes the parameters.

Table 5-275 Parameter description

Name	Mandatory	Type	Description
project_id	Yes	String	Project ID. For details about how to obtain a project ID, see **Obtaining a Project ID**.

Request Parameters

Table 5-276 Request parameter

Name	Mandatory	Type	Description
flow_log	Yes	**flow_log** object	**FlowLog** objects. For details, see **Table 5-277**.

Table 5-277 Description of the **FlowLog** field

Name	Mandatory	Type	Description
name	No	String	• Flow log name. • The value can contain no more than 64 characters, including letters, digits, underscores (_), hyphens (-), and periods (.).

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Name	Mandatory	Type	Description
description	No	String	• Flow log description • The value can contain no more than 255 characters and cannot contain angle brackets (< or >).
resource_type	Yes	String	• Type of the resource for which that the logs to be collected. • The value can be: – **port**: NIC – **vpc**: All NICs in a VPC – **network**: All NICs in a subnet
resource_id	Yes	String	• ID of the resource for which that the logs to be collected.
traffic_type	Yes	String	• Type of the traffic for which that the logs to be collected. • The value can be: – **all**: specifies that both accepted and rejected traffic of the specified resource will be logged. – **accept**: specifies that only accepted inbound and outbound traffic of the specified resource will be logged. – **reject**: specifies that only rejected inbound and outbound traffic of the specified resource will be logged.
log_group_id	Yes	String	• Log group ID
log_topic_id	Yes	String	• Log topic ID

Example Request

- Create a VPC flow log. Set the resource type to port, resource ID to 05c4052d-8d14-488f-aa00-19fea5a25fde, traffic type to reject, log group ID to 05c4052d-8d14-488f-aa00-19fea5a25fdd, and log topic ID to a9d7dee7-37d2-4cba-a208-a016252aaa63.

```
POST https://{Endpoint}/v1/b2782e6708b8475c993e6064bc456bf8/fl/flow_logs

{
   "flow_log": {
      "name": "flowlog",
      "description": "just a test",
      "resource_type": "port",
```

```
    "resource_id": "05c4052d-8d14-488f-aa00-19fea5a25fde",
    "traffic_type": "reject",
    "log_group_id": "05c4052d-8d14-488f-aa00-19fea5a25fdd",
    "log_topic_id": "a9d7dee7-37d2-4cba-a208-a016252aaa63"
  }
}
```

Response Parameters

Table 5-278 Response parameter

Name	Type	Description
flow_log	**flow_log** object	**FlowLog** objects. For details, see **Table 5-279**.

Table 5-279 Description of the **FlowLog** field

Name	Type	Description
id	String	• Flow log ID
name	String	• Flow log name • The value can contain no more than 64 characters, including letters, digits, underscores (_), hyphens (-), and periods (.).
tenant_id	String	• Project ID
description	String	• Flow log description • The value can contain no more than 255 characters and cannot contain angle brackets (< or >).
resource_type	String	• Type of the resource for which that the logs to be collected. • The value can be: – **port**: NIC – **vpc**: All NICs in a VPC – **network**: All NICs in a subnet
resource_id	String	• ID of the resource for which that the logs to be collected.

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Name	Type	Description
traffic_type	String	• Type of the traffic for which that the logs to be collected. • The value can be: – **all**: specifies that both accepted and rejected traffic of the specified resource will be logged. – **accept**: specifies that only accepted inbound and outbound traffic of the specified resource will be logged. – **reject**: specifies that only rejected inbound and outbound traffic of the specified resource will be logged.
log_group_id	String	• Log group ID
log_topic_id	String	• Log topic ID
created_at	String	• Time when the flow log is created • UTC time in the format of yyyy-MM-ddTHH:mmss
updated_at	String	• Time when the flow log is updated • UTC time in the format of yyyy-MM-ddTHH:mmss

Example Response

```
{
   "flow_log": {
      "id": "f49f00f1-0f15-470a-a8c5-4e879e461c8d",
      "name": "flowlog",
      "description": "just a test",
      "tenant_id": "b2782e6708b8475c993e6064bc456bf8",
      "resource_type": "port",
      "resource_id": "05c4052d-8d14-488f-aa00-19fea5a25fde",
      "traffic_type": "reject",
      "log_group_id": "05c4052d-8d14-488f-aa00-19fea5a25fdd",
      "log_topic_id": "a9d7dee7-37d2-4cba-a208-a016252aaa63",
      "created_at": "2019-01-14T11:03:02",
      "updated_at": "2019-01-14T11:03:02"
   }
}
```

Status Code

See **Status Codes**.

Error Code

See **Error Codes**.

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5.15.2 Querying VPC Flow Logs

Function

This API is used to query all VPC flow logs of the tenant submitting the request. The VPC flow logs are filtered based on the filtering condition.

URI

GET /v1/{project_id}/fl/flow_logs

Example:

```
GET https://{Endpoint}/v1/b2782e6708b8475c993e6064bc456bf8/fl/flow_logs?name=flowlog
```

Table 5-280 describes the parameters.

Table 5-280 Parameter description

Name	Mandatory	Type	Description
project_id	Yes	String	• Project ID. For details, see **Obtaining a Project ID**.
id	No	String	• Flow log ID
name	No	String	• Flow log name • The value can contain no more than 64 characters, including letters, digits, underscores (_), hyphens (-), and periods (.).
tenant_id	No	String	• Project ID
description	No	String	• Flow log description • The value can contain no more than 255 characters and cannot contain angle brackets (< or >).
resource_type	No	String	• Type of the resource for which that the logs to be collected. • The value can be: – **port**: NIC – **vpc**: All NICs in a VPC – **network**: All NICs in a subnet

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Name	Mandatory	Type	Description
resource_id	No	String	• ID of the resource for which that the logs to be collected.
traffic_type	No	String	• Type of the traffic for which that the logs to be collected. • The value can be: – **all**: specifies that both accepted and rejected traffic of the specified resource will be logged. – **accept**: specifies that only accepted inbound and outbound traffic of the specified resource will be logged. – **reject**: specifies that only rejected inbound and outbound traffic of the specified resource will be logged.
log_group_id	No	String	• Log group ID
log_topic_id	No	String	• Log topic ID
limit	No	Integer	Specifies the number of records that will be returned on each page. The value is from 0 to intmax (2^31-1). The default value is 2000. **limit** can be used together with **marker**. For details, see the parameter description of **marker**.

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Name	Mandatory	Type	Description
marker	No	String	Specifies a resource ID for pagination query, indicating that the query starts from the next record of the specified resource ID. This parameter can work together with the parameter **limit**. • If parameters **marker** and **limit** are not passed, resource records on the first page will be returned. • If the parameter **marker** is not passed and the value of parameter **limit** is set to **10**, the first 10 resource records will be returned. • If the value of the parameter **marker** is set to the resource ID of the 10th record and the value of parameter **limit** is set to **10**, the 11th to 20th resource records will be returned. • If the value of the parameter **marker** is set to the resource ID of the 10th record and the parameter **limit** is not passed, resource records starting from the 11th records (including 11th) will be returned.

Request Parameters

None

Example Request

```
GET https://{Endpoint}/v1/b2782e6708b8475c993e6064bc456bf8/fl/flow_logs?name=flowlog
```

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Response Parameters

Table 5-281 Response parameter

Name	Type	Description
flow_logs	Array of **FlowLog** objects	**FlowLog** object list. For details, see **Table 5-282**.

Table 5-282 Description of the **FlowLog** field

Name	Type	Description
id	String	• Flow log ID
name	String	• Flow log name • The value can contain no more than 64 characters, including letters, digits, underscores (_), hyphens (-), and periods (.).
tenant_id	String	• Project ID
description	String	• Flow log description • The value can contain no more than 255 characters and cannot contain angle brackets (< or >).
resource_type	String	• Type of the resource for which that the logs to be collected. • The value can be: – **port**: NIC – **vpc**: All NICs in a VPC – **network**: All NICs in a subnet
resource_id	String	• ID of the resource for which that the logs to be collected.
traffic_type	String	• Type of the traffic for which that the logs to be collected. • The value can be: – **all**: specifies that both accepted and rejected traffic of the specified resource will be logged. – **accept**: specifies that only accepted inbound and outbound traffic of the specified resource will be logged. – **reject**: specifies that only rejected inbound and outbound traffic of the specified resource will be logged.

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Name	Type	Description
log_group_id	String	• Log group ID
log_topic_id	String	• Log topic ID
created_at	String	• Time when the flow log is created • UTC time in the format of yyyy-MM-ddTHH:mmss
updated_at	String	• Time when the flow log is updated • UTC time in the format of yyyy-MM-ddTHH:mmss

Example Response

```
{
   "flow_logs": [
      {
         "id": "35868d55-443e-4d5c-90a4-ac618dc45c1a",
         "name": "flowlog",
         "description": "just a test",
         "tenant_id": "b2782e6708b8475c993e6064bc456bf8",
         "resource_type": "port",
         "resource_id": "05c4052d-8d14-488f-aa00-19fea5a25fde",
         "traffic_type": "reject",
         "log_group_id": "05c4052d-8d14-488f-aa00-19fea5a25fff",
         "log_topic_id": "a9d7dee7-37d2-4cba-a208-a016252aaa63",
         "created_at": "2019-01-14T11:03:02",
         "updated_at": "2019-01-14T11:03:02"
      }
   ]
}
```

Status Code

See **Status Codes**.

Error Code

See **Error Codes**.

5.15.3 Querying a VPC Flow Log

Function

This API is used to query a VPC flow log.

URI

GET /v1/{project_id}/fl/flow_logs/{flowlog_id}

Table 5-283 describes the parameters.

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Table 5-283 Parameter description

Name	Mandatory	Type	Description
project_id	Yes	String	Project ID. For details about how to obtain a project ID, see **Obtaining a Project ID**.
flowlog_id	Yes	String	Flow log ID

Request Parameters

None

Example Request

```
GET https://{Endpoint}/v1/b2782e6708b8475c993e6064bc456bf8/fl/flow_logs/1e10cd9d-742a-4d36-a9fd-aee9784336ff
```

Response Parameters

Table 5-284 Response parameter

Name	Type	Description
flow_log	**flow_log** object	**FlowLog** objects. For details, see **Table 5-285**.

Table 5-285 Description of the **FlowLog** field

Name	Type	Description
id	String	• Flow log ID
name	String	• Flow log name • The value can contain no more than 64 characters, including letters, digits, underscores (_), hyphens (-), and periods (.).
tenant_id	String	• Project ID
description	String	• Flow log description • The value can contain no more than 255 characters and cannot contain angle brackets (< or >).

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Name	Type	Description
resource_type	String	• Type of the resource for which that the logs to be collected. • The value can be: – **port**: NIC – **vpc**: All NICs in a VPC – **network**: All NICs in a subnet
resource_id	String	• ID of the resource for which that the logs to be collected.
traffic_type	String	• Type of the traffic for which that the logs to be collected. • The value can be: – **all**: specifies that both accepted and rejected traffic of the specified resource will be logged. – **accept**: specifies that only accepted inbound and outbound traffic of the specified resource will be logged. – **reject**: specifies that only rejected inbound and outbound traffic of the specified resource will be logged.
log_group_id	String	• Log group ID
log_topic_id	String	• Log topic ID
created_at	String	• Time when the flow log is created • UTC time in the format of yyyy-MM-ddTHH:mmss
updated_at	String	• Time when the flow log is updated • UTC time in the format of yyyy-MM-ddTHH:mmss

Example Response

```
{
   "flow_log": {
      "id": "35868d55-443e-4d5c-90a4-ac618dc45c1a",
      "name": "flow",
      "description": "just a test",
      "tenant_id": "b2782e6708b8475c993e6064bc456bf8",
      "resource_type": "port",
      "resource_id": "05c4052d-8d14-488f-aa00-19fea5a25fde",
      "traffic_type": "reject",
      "log_group_id": "05c4052d-8d14-488f-aa00-19fea5a25fff",
      "log_topic_id": "a9d7dee7-37d2-4cba-a208-a016252aaa63",
      "created_at": "2019-01-14T11:03:02",
      "updated_at": "2019-01-14T11:03:02"
   }
}
```

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Status Code

See **Status Codes**.

Error Code

See **Error Codes**.

5.15.4 Updating a VPC Flow Log

Function

This API is used to update a VPC flow log.

URI

PUT /v1/{project_id}/fl/flow_logs/{flowlog_id}

Table 5-286 describes the parameters.

Table 5-286 Parameter description

Name	Mandatory	Type	Description
project_id	Yes	String	Project ID. For details about how to obtain a project ID, see **Obtaining a Project ID**.
flowlog_id	Yes	String	Flow log ID

Request Parameters

Table 5-287 Request parameter

Name	Mandatory	Type	Description
flow_log	Yes	**flow_log** object	**FlowLog** objects. For details, see **Table 5-288**.

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Table 5-288 Description of the **FlowLog** field

Name	Mandatory	Type	Description
name	No	String	• Flow log name • The value can contain no more than 64 characters, including letters, digits, underscores (_), hyphens (-), and periods (.).
description	No	String	• Flow log description • The value can contain no more than 255 characters and cannot contain angle brackets (< or >).

Example Request

- Change the name of the VPC flow log whose ID is f49f00f1-0f15-470a-a8c5-4e879e461c8d to **flow-log-update**.

```
PUT https://{Endpoint}/v1/b2782e6708b8475c993e6064bc456bf8/fl/flow_logs/f49f00f1-0f15-470a-a8c5-4e879e461c8d

{
    "flow_log": {
        "name": "flow-log-update",
        "description": "update"
    }
}
```

Response Parameters

Table 5-289 Response parameter

Name	Type	Description
flow_log	**flow_log** object	**FlowLog** objects. For details, see **Table 5-290**.

Table 5-290 Description of the **FlowLog** field

Name	Type	Description
id	String	• Flow log ID
name	String	• Flow log name • The value can contain no more than 64 characters, including letters, digits, underscores (_), hyphens (-), and periods (.).
tenant_id	String	• Project ID

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Name	Type	Description
description	String	• Flow log description • The value can contain no more than 255 characters and cannot contain angle brackets (< or >).
resource_type	String	• Type of the resource for which that the logs to be collected. • The value can be: – **port**: NIC – **vpc**: All NICs in a VPC – **network**: All NICs in a subnet
resource_id	String	• ID of the resource for which that the logs to be collected.
traffic_type	String	• Type of the traffic for which that the logs to be collected. • The value can be: – **all**: specifies that both accepted and rejected traffic of the specified resource will be logged. – **accept**: specifies that only accepted inbound and outbound traffic of the specified resource will be logged. – **reject**: specifies that only rejected inbound and outbound traffic of the specified resource will be logged.
log_group_id	String	• Log group ID
log_topic_id	String	• Log topic ID
created_at	String	• Time when the flow log is created • UTC time in the format of yyyy-MM-ddTHH:mmss
updated_at	String	• Time when the flow log is updated • UTC time in the format of yyyy-MM-ddTHH:mmss

Example Response

```
{
   "flow_log": {
      "id": "f49f00f1-0f15-470a-a8c5-4e879e461c8d",
      "name": " flow-log-update",
      "description": "update",
      "tenant_id": "b2782e6708b8475c993e6064bc456bf8",
      "resource_type": "port",
      "resource_id": "05c4052d-8d14-488f-aa00-19fea5a25fde",
```

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```
    "traffic_type": "reject",
    "log_group_id": "05c4052d-8d14-488f-aa00-19fea5a25fdd",
    "log_topic_id": "a9d7dee7-37d2-4cba-a208-a016252aaa63",
    "created_at": "2019-01-14T11:03:02",
    "updated_at": "2019-01-14T12:03:02"
  }
}
```


Status Code

See **Status Codes**.

Error Code

See **Error Codes**.

5.15.5 Deleting a VPC Flow Log

Function

This API is used to delete a flow log.

URI

DELETE /v1/{project_id}/fl/flow_logs/{flowlog_id}

Table 5-291 describes the parameters.

Table 5-291 Parameter description

Name	Mandatory	Type	Description
project_id	Yes	String	Project ID. For details about how to obtain a project ID, see **Obtaining a Project ID**.
flowlog_id	Yes	String	Flow log ID

Request Parameters

None

Example Request

```
DELETE https://{Endpoint}/v1/b2782e6708b8475c993e6064bc456bf8/fl/flow_logs/60c809cb-6731-45d0-ace8-3bf5626421a9
```

Response Parameters

None

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Example Response

None

Status Code

See **Status Codes**.

Error Code

See **Error Codes**.

5.16 Virtual IP Address

5.16.1 Virtual IP Address Overview

What Is a Virtual IP Address?

A virtual IP address can be shared among multiple ECSs. An ECS can have both private and virtual IP addresses, and you can access the ECS through either IP address. A virtual IP address has the same network access capabilities as a private IP address, including layer 2 and layer 3 communication in VPCs, access between VPCs using VPC peering connections, as well as access through EIPs, VPN connections, and Direct Connect connections.

You can bind ECSs deployed in active/standby mode with the same virtual IP address, and then bind an EIP to the virtual IP address. Virtual IP addresses can work together with Keepalived to ensure high availability and disaster recovery. If the active ECS is faulty, the standby ECS automatically takes over services from the active one.

Networking

Virtual IP addresses are used for high availability and can work together with Keepalived to make active/standby ECS switchover possible. This way if one ECS goes down for some reason, the other one can take over and services continue uninterrupted. ECSs can be configured for HA or as load balancing clusters.

- **Networking mode 1**: HA

  If you want to improve service availability and avoid single points of failure, you can deploy ECSs in the active/standby mode or deploy one active ECS and multiple standby ECSs. In this arrangement, the ECSs all use the same virtual IP address. If the active ECS becomes faulty, a standby ECS takes over services from the active ECS and services continue uninterrupted.

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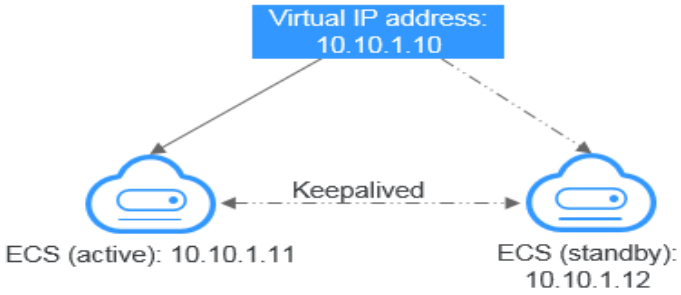
Figure 5-1 Networking diagram of the HA mode

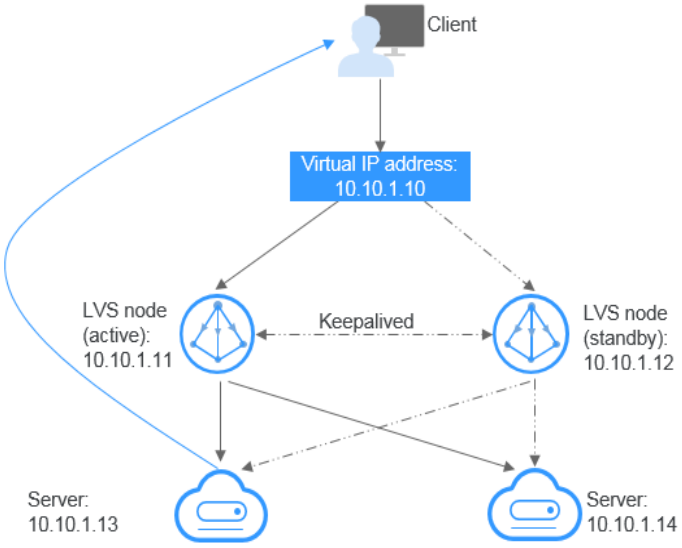


- In this configuration, a single virtual IP address is bound to two ECSs in the same subnet.
- Keepalived is then used to configure the two ECSs to work in the active/standby mode. Follow industry standards for configuring Keepalived. The details are not included here.

- **Networking mode 2**: HA load balancing cluster

  If you want to build a high-availability load balancing cluster, use Keepalived and configure LVS nodes as direct routers.

  Figure 5-2 HA load balancing cluster



  - Bind a single virtual IP address to two ECSs.
  - Configure the two ECSs as LVS nodes working as direct routers and use Keepalived to configure the nodes in the active/standby mode. The two ECSs will evenly forward requests to different backend servers.
  - Configure two more ECSs as backend servers.
  - Disable the source/destination check for the two backend servers.

  Follow industry standards for configuring Keepalived. The details are not included here.

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Application Scenarios

- Accessing the virtual IP address through an EIP

  If your application has high availability requirements and needs to provide services through the Internet, it is recommended that you bind an EIP to a virtual IP address.

- Using a VPN, Direct Connect, or VPC peering connection to access a virtual IP address

  To ensure high availability and access to the Internet, use a VPN for security and Direct Connect for a stable connection. The VPC peering connection is needed so that the VPCs in the same region can communicate with each other.

Precautions

- Virtual IP addresses are not recommended when multiple NICs in the same subnet are configured on an ECS. It is too easy for there to be route conflicts on the ECS, which would cause communication failure using the virtual IP address.
- IP forwarding must be disabled on the standby ECS. Perform the following operations to confirm whether the IP forwarding is disabled on the standby ECS:

  a. Log in to the ECS.

  b. Run the following command to switch to user **root**:

     su root

  c. Check whether IP forwarding is enabled:

     cat /proc/sys/net/ipv4/ip_forward

     In the command output, **1** indicates it is enabled, and **0** indicates it is disabled. The default value is **0**.

     - If **1** is displayed, go to **d**.
     - If **0** is displayed, no further action is required.

  d. Use either of the following methods to modify the configuration file:

     - Method 1: Use the vi editor to open the **/etc/sysctl.conf** file, change the value of **net.ipv4.ip_forward** to **0**, and enter **:wq** to save the change and exit.
     - Method 2: Use the **sed** command. An example command is as follows:

       sed -i '/net.ipv4.ip_forward/s/1/0/g' /etc/sysctl.conf

  e. Make the modification take effect:

     sysctl -p /etc/sysctl.conf

- Do not bind more than eight virtual IP addresses to an ECS.
- A virtual IP address can be bound to a maximum of 10 ECSs.

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NOTE

If a virtual IP address is bound to an ECS, the virtual IP address is also associated with the security group of the ECS. A virtual IP address can be associated with up to 10 security groups.

5.16.2 Binding an ECS to a Virtual IP Address

Required Tools

Postman or JMeter

Involved APIs

The following APIs will be called:

No.	Method	URI	Description
1	POST	/v3/auth/tokens	Obtain a token.
2	POST	/v2.0/ports	Create a virtual IP address port.
3	PUT	/v2.0/ports/{port_id}	Bind an ECS to the virtual IP address.
4	GET	/v2/{project_id}/servers/{server_id}/os-interface	Configure the **allowed-address-pairs** of the ECS NIC bound with the virtual IP address.

Procedure

1. Obtain a token.

Method	POST
URL	IAM address: *Port number*/v3/auth/tokens

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Method	POST

Body (Example)	{
	"auth":{
	"identity":{
	"methods": ["password"],
	"password":{
	"user":{
	"name": "*user_name*",
	"domain":{
	"name":"*domain_name*"
	},
	"password":"*user_password*"
	}
	}
	},
	"scope":{
	"project":{
	"name":"*project_name*"
	}
	}
	}
	}

2. Create a virtual IP address port in the VPC subnet where the ECS resides.

   The virtual IP address port must be in the same subnet as the ECS, and the **device_owner** parameter must be set to **neutron:VIP_PORT**.

Method	POST
URL	VPC address: *Port number*/v2.0/ports

Body (Example)	{
	"port": {
	"network_id": "a54e1b19-ce78-4b7e-b28b-d2d716cdc161",
	"device_owner": "neutron:VIP_PORT",
	"name": "vip_port_test"
	}
	}

Description	**network_id** in the body is the ID of the network where the ECS resides.

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3. Bind an ECS to the virtual IP address.

   Update **allowed-address-pairs** of the virtual IP address port and specify **ip_address** to the IP address to be bound to the ECS NIC.

Method	PUT
URL	VPC address: *Port number*/v2.0/ports/{port_id}

Body (Example)	{
	"port": {
	"allowed_address_pairs": [
	{"ip_address":"192.168.22.221"},
	{"ip_address":"192.168.22.203"}
	]
	}
	}

Description	• In the URL, {port_id} is the ID of the virtual IP address port created in the previous step. • **ip_address** in the body is the IP address to be bound to the ECS NIC.

4. Configure the **allowed-address-pairs** of the ECS NIC bound with the virtual IP address.

   a. Obtain information about the ECS NIC bound with the virtual IP address.

Method	GET
URL	ECS address: *Port number*/v2/{tenant_id}/servers/{server_id}/os-interface
Body	N/A
Description	In the URL, *{tenant_id}* is the project ID, and *{server_id}* is the ECS ID.

   b. Change the **allowed-address-pairs** of the ECS NIC to **1.1.1.1/0** to disable the source/destination check.

Method	PUT
URL	VPC address: *Port number*/v2.0/ports/{port_id}

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Method	PUT

Body	{
	"port": {
	"allowed_address_pairs": [
	{"ip_address":"1.1.1.1/0"}
	]
	}
	}

Description	In the URL, {port_id} is the ID of the ECS NIC bound with the virtual IP address.

5.16.3 Accessing a Virtual IP Address Using an EIP

Required Tools

Postman or JMeter

Prerequisites

You have configured the ECS networking based on **Networking** and ensure that the ECS has been bound with a virtual IP address.

Involved APIs

The following APIs are invoked:

No.	Method	URI	Description
1	POST	/v3/auth/tokens	Obtain a token.
2	POST	/v2.0/floatingips	Assign an EIP.

Procedure

1. Obtain a token.

Method	POST
URL	IAM address: *Port number*/v3/auth/tokens

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Method	POST

Body (Example)	{
	"auth":{
	"identity":{
	"methods": ["password"],
	"password":{
	"user":{
	"name": "*user_name*",
	"domain":{
	"name":"*domain_name*"
	},
	"password":"*user_password*"
	}
	}
	},
	"scope":{
	"project":{
	"name":"*project_name*"
	}
	}
	}
	}

2. Assigns an EIP and binds it to a virtual IP address.

Method	POST
URL	VPC address: *Port number*/v2.0/floatingips

Body (Example)	{
	"floatingip": {
	"floating_network_id": "*${admin_external_net}*",
	"port_id": "4b9246da-aa12-4959-b17e-84038b8a0a96"
	}
	}

Description	The **port_id** parameter in the body is the ID of the virtual IP address port corresponding to the virtual IP address bound to the ECS.

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5.16.4 Using a VPN to Access the Virtual IP Address

Required Tools

Postman or JMeter

Procedure

1. Configure the ECS networking based on **Networking**.
2. Create a VPN.

5.16.5 Using a Direct Connect Connection to Access the Virtual IP Address

Required Tools

Postman or JMeter

Procedure

1. Configure the ECS networking based on **Networking**.
2. Create a Direct Connect connection.

5.16.6 Using a VPC Peering Connection to Access the Virtual IP Address

Required Tools

Postman or JMeter

Procedure

1. Configure the ECS networking based on **Networking**.
2. Create a VPC peering connection.

5.16.7 Disabling Source and Destination Check (HA Load Balancing Cluster Scenario)

Required Tools

Postman or JMeter

Involved APIs

The following APIs are invoked:

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No.	Method	URI	Description
1	POST	/v3/auth/tokens	Obtain a token.
2	PUT	/v2.0/ports/{port_id}	Disable the source/destination check function for the ECS NIC.

Procedure

1. Obtain a token.

Method	POST
URL	IAM address: *Port number*/v3/auth/tokens

Body (Example)	{
	"auth":{
	"identity":{
	"methods": ["password"],
	"password":{
	"user":{
	"name": "*user_name*",
	"domain":{
	"name":"*domain_name*"
	},
	"password":"*user_password*"
	}
	}
	},
	"scope":{
	"project":{
	"name":"*project_name*"
	}
	}
	}
	}

2. Change the **allowed-address-pairs** of the ECS NIC to **1.1.1.1/0** to disable the source/destination check.

Method	PUT
URL	VPC address: *Port number*/v2.0/ports/{port_id}

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Method	PUT

Body	{
	"port": {
	"allowed_address_pairs": [
	{"ip_address":"1.1.1.1/0"}
	]
	}
	}

Description	In the URL, {port_id} is the ID of the ECS NIC bound with the virtual IP address.

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6 API V3

6.1 VPC

6.1.1 Querying VPCs

Function

This API is used to query VPCs.

Constraints

This API is used to query all VPCs accessible to the tenant submitting the request. A maximum of 2000 records can be returned for each query. If the number of records exceeds 2000, the pagination marker will be returned.

URI

GET /v3/{project_id}/vpc/vpcs

Table 6-1 Parameter description

Name	Mandatory	Type	Description
project_id	Yes	String	Project ID. For details about how to obtain the project ID, see **Obtaining a Project ID**.

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Table 6-2 Query parameters

Parameter	Mandatory	Type	Description
limit	No	Integer	Number of records displayed on each page. Value range: 0 to 2000
marker	No	String	Start resource ID of pagination query. If the parameter is left blank, only resources on the first page are queried.
id	No	Array of strings	VPC ID, which can be used to filter VPCs.
name	No	Array of strings	VPC name, which can be used to filter VPCs.
description	No	Array of strings	Supplementary information about the VPC, which can be used to filter VPCs.
cidr	No	Array of strings	VPC CIDR block, which can be used to filter VPCs.

Request Parameter

None

Example Request

- Querying VPCs
  ```
  "GET https://{Endpoint}/v3/{project_id}/vpc/vpcs"
  ```
- Querying VPCs by VPC ID
  ```
  "GET https://{Endpoint}/v3/{project_id}/vpc/vpcs?
  id=01ab4be1-4447-45fb-94be-3ee787ed4ebe&id=02cd5ef2-4447-36fb-75be-3ee787ed6adf"
  ```
- Querying VPCs by VPC name
  ```
  "GET https://{Endpoint}/v3/{project_id}/vpc/vpcs?name=vpc-test"
  ```
- Querying VPCs by page
  ```
  "GET https://{Endpoint}/v3/{project_id}/vpc/vpcs?
  limit=2&marker=01ab4be1-4447-45fb-94be-3ee787ed4ebe"
  ```

Response Parameter

Table 6-3 Response body parameters

Parameter	Type	Description
request_id	String	Request ID
vpcs	Array of **Vpc** objects	Response body of VPCs

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Parameter	Type	Description
page_info	PageInfo object	Pagination information

Table 6-4 Vpc

Parameter	Type	Description
id	String	VPC ID, which uniquely identifies the VPC The value is in UUID format with hyphens (-).
name	String	VPC name The value can contain no more than 64 characters, including letters, digits, underscores (_), hyphens (-), and periods (.).
description	String	Provides supplementary information about the VPC. The value can contain no more than 255 characters and cannot contain angle brackets (< or >).
cidr	String	Available VPC CIDR blocks Value range: • 10.0.0.0/8-10.255.255.240/28 • 172.16.0.0/12-172.31.255.240/28 • 192.168.0.0/16-192.168.255.240/28 If **cidr** is not specified, the default value is **""**. • The value must be in IPv4 CIDR format, for example, **192.168.0.0/16**.
extend_cidrs	Array of strings	Secondary CIDR blocks of VPCs Value range: Currently, only IPv4 CIDR blocks are supported.
status	String	VPC status Value range: • **PENDING**: The VPC is being created. • **ACTIVE**: The VPC is created successfully.
project_id	String	ID of the project to which the VPC belongs

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Parameter	Type	Description
enterprise_project_id	String	ID of the enterprise project that the VPC belongs to The value is **0** or a string that contains a maximum of 36 characters in UUID format with hyphens (-). Value **0** indicates the default enterprise project.
created_at	String	Time when the VPC is created UTC time in the format of yyyy-MM-ddTHH:mmss
updated_at	String	Time when the VPC is updated UTC time in the format of yyyy-MM-ddTHH:mm:ss
cloud_resources	Array of **CloudResource** objects	Type and number of resources associated with the VPC Currently, only route tables and subnets of the VPC are returned. The number of **virsubnets** is the total number of IPv4 and IPv6 subnets.
tags	Array of **Tag** objects	VPC tags. For details, see the tag objects. Value range: 0 to 10 tag key-value pairs

Table 6-5 CloudResource

Parameter	Type	Description
resource_type	String	Resource type
resource_count	Integer	Number of resources

Table 6-6 Tag

Parameter	Type	Description
key	String	Tag key Value range: • A tag key contains a maximum of 36 Unicode characters. • A tag key cannot be left blank. It cannot contain non-printable ASCII characters (0–31) or the following special characters: *,<,>,,=

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Parameter	Type	Description
value	String	Tag value Value range: • A tag value contains a maximum of 43 Unicode characters and can be left blank. • A tag value cannot contain non-printable ASCII characters (0–31) or the following special characters: *,<,>,,=

Table 6-7 PageInfo

Parameter	Type	Description
previous_marker	String	First record on the current page
current_count	Integer	Total number of records on the current page
next_marker	String	Last record on the current page. This parameter does not exist if the page is the last one.

Example Response


```
{
   "request_id": "9c1838ba498249547be43dd618b58d27",
   "vpcs": [
      {
         "id": "01da5a65-0bb9-4638-8ab7-74c64e24a9a7",
         "name": "API-PERF-TEST-14bd44c121",
         "description": "",
         "cidr": "192.168.0.0/16",
         "extend_cidrs": [ ],
         "status": "ACTIVE",
         "project_id": "087679f0aa80d32a2f4ec0172f5e902b",
         "enterprise_project_id": "0",
         "tags": [ ],
         "created_at": "2020-06-16T02:32:18Z",
         "updated_at": "2020-06-16T02:32:18Z",
         "cloud_resources": [
            {
               "resource_type": "routetable",
               "resource_count": 1
            },
            {
               "resource_type": "virsubnet",
               "resource_count": 0
            }
         ]
      },
      {
         "id": "43fd79b0-f7d7-4e9b-828b-2d4d7bfae428",
         "name": "API-PERF-TEST_m2n33",
         "description": "",
         "cidr": "192.168.0.0/16",
         "extend_cidrs": [ ],
         "status": "ACTIVE",
```


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```
            "project_id": "087679f0aa80d32a2f4ec0172f5e902b",
            "enterprise_project_id": "0",
            "tags": [ ],
            "created_at": "2020-06-15T06:29:40Z",
            "updated_at": "2020-06-15T06:29:41Z",
            "cloud_resources": [
               {
                  "resource_type": "routetable",
                  "resource_count": 1
               },
               {
                  "resource_type": "virsubnet",
                  "resource_count": 1
               }
            ]
         },
         {
            "id": "5ed053ba-b46c-4dce-a1ae-e9d8a7015f21",
            "name": "API-PERF-TEST-c34b1c4b12",
            "description": "",
            "cidr": "192.168.0.0/16",
            "extend_cidrs": [ ],
            "status": "ACTIVE",
            "project_id": "087679f0aa80d32a2f4ec0172f5e902b",
            "enterprise_project_id": "0",
            "tags": [ ],
            "created_at": "2020-06-16T02:32:33Z",
            "updated_at": "2020-06-16T02:32:33Z",
            "cloud_resources": [
               {
                  "resource_type": "routetable",
                  "resource_count": 1
               },
               {
                  "resource_type": "virsubnet",
                  "resource_count": 0
               }
            ]
         }
      ],
      "page_info": {
         "previous_marker": "01da5a65-0bb9-4638-8ab7-74c64e24a9a7",
         "current_count": 3
      }
   }
```


Status Code

See **Status Codes**.

Error Code

See **Error Codes**.

6.1.2 Querying Details About a VPC

Function

This API is used to query details about a VPC.

URI

GET /v3/{project_id}/vpc/vpcs/{vpc_id}

Table 6-8 Parameter description

Parameter	Mandatory	Type	Description
project_id	Yes	String	Project ID. For details about how to obtain the project ID, see **Obtaining a Project ID**.
vpc_id	Yes	String	VPC ID

Request Parameter

None

Example Request

- Querying details about a VPC
  ```
  "GET https://{Endpoint}/v3/{project_id}/vpc/vpcs/99d9d709-8478-4b46-9f3f-2206b1023fd3"
  ```

Response Parameter

Table 6-9 Response body parameters

Parameter	Type	Description
request_id	String	Request ID
vpc	**Vpc** object	VPC response body

Table 6-10 Vpc

Parameter	Type	Description
id	String	VPC ID, which uniquely identifies the VPC The value is in UUID format with hyphens (-).
name	String	VPC name The value can contain no more than 64 characters, including letters, digits, underscores (_), hyphens (-), and periods (.).
description	String	Provides supplementary information about the VPC. The value can contain no more than 255 characters and cannot contain angle brackets (< or >).

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Parameter	Type	Description
cidr	String	Available VPC CIDR blocks Value range: • 10.0.0.0/8-10.255.255.240/28 • 172.16.0.0/12-172.31.255.240/28 • 192.168.0.0/16-192.168.255.240/28 If **cidr** is not specified, the default value is **""**. The value must be in IPv4 CIDR format, for example, **192.168.0.0/16**.
extend_cidrs	Array of strings	Secondary CIDR blocks of VPCs Currently, only IPv4 CIDR blocks are supported.
status	String	VPC status Value range: • **PENDING**: The VPC is being created. • **ACTIVE**: The VPC is created successfully.
project_id	String	ID of the project to which the VPC belongs
enterprise_project_id	String	ID of the enterprise project to which the VPC belongs The value is **0** or a string that contains a maximum of 36 characters in UUID format with hyphens (-). Value **0** indicates the default enterprise project.
created_at	String	Time when the VPC is created UTC time in the format of yyyy-MM-ddTHH:mmss
updated_at	String	Time when the VPC is updated UTC time in the format of yyyy-MM-ddTHH:mmss
cloud_resources	Array of **CloudResource** objects	Type and number of resources associated with the VPC Currently, only route tables and subnets of the VPC are returned. The number of **virsubnets** is the total number of IPv4 and IPv6 subnets.
tags	Array of **Tag** objects	VPC tags. For details, see the tag objects. Value range: 0 to 10 tag key-value pairs

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Table 6-11 CloudResource

Parameter	Type	Description
resource_type	String	Resource type
resource_count	Integer	Number of resources

Table 6-12 Tag

Parameter	Type	Description
key	String	Tag key Value range: • A tag key contains a maximum of 36 Unicode characters. • A tag key cannot be left blank. It cannot contain non-printable ASCII characters (0–31) or the following special characters: *,<,>,,=
value	String	Tag value Value range: • A tag value contains a maximum of 43 Unicode characters and can be left blank. • A tag value cannot contain non-printable ASCII characters (0–31) or the following special characters: *,<,>,,=

Example Response


```
{
    "request_id": "84eb4f775d66dd916db121768ec55626",
    "vpc": {
        "id": "0552091e-b83a-49dd-88a7-4a5c86fd9ec3",
        "name": "name-test",
        "description": "description-test",
        "cidr": "192.168.0.0/16",
        "extend_cidrs": [
            "21.8.0.0/16"
        ],
        "enterprise_project_id": "0",
        "tags": [
            {
                "key": "key",
                "value": "value"
            }
        ],
        "cloud_resources": [
            {
                "resource_type": "routetable",
                "resource_count": 1
            }
        ],
```

```
        "status": "ACTIVE",
        "project_id": "060576782980d5762f9ec014dd2f1148",
        "created_at": "2018-03-23T09:26:08",
        "updated_at": "2018-08-24T08:49:53"
    }
}
```

Status Code

See **Status Codes**.

Error Code

See **Error Codes**.

6.1.3 Adding a Secondary CIDR Block to a VPC

Function

This API is used to add a secondary CIDR block to a VPC.

URI

PUT /v3/{project_id}/vpc/vpcs/{vpc_id}/add-extend-cidr

Table 6-13 Parameter description

Parameter	Mandatory	Type	Description
project_id	Yes	String	Project ID. For details about how to obtain the project ID, see **Obtaining a Project ID**.
vpc_id	Yes	String	VPC ID

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Request Parameter

Table 6-14 Request body parameter

Parameter	Mandatory	Type	Description
dry_run	No	Boolean	Whether to only check the request. Value range: • **true**: Only the check request will be sent and no secondary CIDR block will be added. Check items include mandatory parameters, request format, and constraints. If the check fails, an error will be returned. If the check succeeds, response code 202 will be returned. • **false** (default value): A request will be sent and a secondary CIDR block will be added.
vpc	Yes	**AddExtendCidrOption** object	Request body for adding a secondary CIDR block.

Table 6-15 AddExtendCidrOption

Parameter	Mandatory	Type	Description
extend_cidrs	Yes	Array of strings	Secondary CIDR blocks that can be added to VPCs The value cannot contain the following: • 100.64.0.0/10 • 214.0.0.0/7 • 198.18.0.0/15 • 169.254.0.0/16 • 0.0.0.0/8 • 127.0.0.0/8 • 240.0.0.0/4 • 172.31.0.0/16 • 192.168.0.0/16 Currently, only one secondary CIDR block can be added to each VPC.

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Example Request

- Add a secondary CIDR block 23.8.0.0/16 to the VPC whose ID is 99d9d709-8478-4b46-9f3f-2206b1023fd3.

```
PUT https://{Endpoint}/v3/{project_id}/vpc/vpcs/99d9d709-8478-4b46-9f3f-2206b1023fd3/add-extend-cidr

{
    "vpc": {
        "extend_cidrs": [
            "23.8.0.0/16"
        ]
    }
}
```

Response Parameter

Table 6-16 Response body parameters

Parameter	Type	Description
request_id	String	Request ID
vpc	**Vpc** object	Response body of adding a secondary CIDR block

Table 6-17 Vpc

Parameter	Type	Description
id	String	VPC ID, which uniquely identifies the VPC The value is in UUID format with hyphens (-).
name	String	VPC name The value can contain no more than 64 characters, including letters, digits, underscores (_), hyphens (-), and periods (.).
description	String	Provides supplementary information about the VPC. The value can contain no more than 255 characters and cannot contain angle brackets (< or >).
cidr	String	Available VPC CIDR blocks Value range: • 10.0.0.0/8-10.255.255.240/28 • 172.16.0.0/12-172.31.255.240/28 • 192.168.0.0/16-192.168.255.240/28 If **cidr** is not specified, the default value is **""**. The value must be in IPv4 CIDR format, for example, **192.168.0.0/16**.

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Parameter	Type	Description
extend_cidrs	Array of strings	Secondary CIDR blocks of VPCs Currently, only IPv4 CIDR blocks are supported.
status	String	VPC status Value range: • **PENDING**: The VPC is being created. • **ACTIVE**: The VPC is created successfully.
project_id	String	ID of the project to which the VPC belongs
enterprise_project_id	String	ID of the enterprise project to which the VPC belongs The value is **0** or a string that contains a maximum of 36 characters in UUID format with hyphens (-). Value **0** indicates the default enterprise project.
created_at	String	Time when the VPC is created UTC time in the format of yyyy-MM-ddTHH:mmss
updated_at	String	Time when the VPC is updated UTC time in the format of yyyy-MM-ddTHH:mmss
cloud_resources	Array of **CloudResource** objects	Type and number of resources associated with the VPC Currently, only route tables and subnets of the VPC are returned. The number of **virsubnets** is the total number of IPv4 and IPv6 subnets.
tags	Array of **Tag** objects	VPC tags. For details, see the tag objects. Value range: 0 to 10 tag key-value pairs

Table 6-18 CloudResource

Parameter	Type	Description
resource_type	String	Resource type
resource_count	Integer	Number of resources

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Table 6-19 Tag

Parameter	Type	Description
key	String	Tag key Value range: • A tag key contains a maximum of 36 Unicode characters. • A tag key cannot be left blank. It cannot contain non-printable ASCII characters (0–31) or the following special characters: *,<,>,,=
value	String	Tag value Value range: • A tag value contains a maximum of 43 Unicode characters and can be left blank. • A tag value cannot contain non-printable ASCII characters (0–31) or the following special characters: *,<,>,,=

Example Response


```
{
   "request_id": "84eb4f775d66dd916db121768ec55626",
   "vpc": {
      "id": "0552091e-b83a-49dd-88a7-4a5c86fd9ec3",
      "name": "vpc1",
      "description": "test1",
      "cidr": "192.168.0.0/16",
      "extend_cidrs": [
         "23.8.0.0/16"
      ],
      "enterprise_project_id": "0",
      "tags": [
         {
            "key": "key",
            "value": "value"
         }
      ],
      "cloud_resources": [
         {
            "resource_type": "routetable",
            "resource_count": 1
         }
      ],
      "status": "ACTIVE",
      "project_id": "060576782980d5762f9ec014dd2f1148",
      "created_at": "2018-03-23T09:26:08",
      "updated_at": "2018-08-24T08:49:53"
   }
}
```


Status Code

See **Status Codes**.

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Error Code

See **Error Codes**.

6.1.4 Removing a Secondary CIDR Block from a VPC

Function

This API is used to remove a secondary CIDR block from a VPC.

URI

PUT /v3/{project_id}/vpc/vpcs/{vpc_id}/remove-extend-cidr

Table 6-20 Parameter description

Parameter	Mandatory	Type	Description
project_id	Yes	String	Project ID. For details about how to obtain the project ID, see **Obtaining a Project ID**.
vpc_id	Yes	String	VPC ID

Request Parameter

Table 6-21 Request body parameter

Parameter	Mandatory	Type	Description
dry_run	No	Boolean	Whether to only check the request. Value range: • **true**: Only the check request will be sent and no secondary CIDR block will be added. Check items include mandatory parameters, request format, and constraints. If the check fails, an error will be returned. If the check succeeds, response code 202 will be returned. • **false** (default value): A request will be sent and a secondary CIDR block will be added.

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Parameter	Mandatory	Type	Description
vpc	Yes	RemoveExtendCidrOption object	Request body for removing a secondary CIDR block

Table 6-22 RemoveExtendCidrOption

Parameter	Mandatory	Type	Description
extend_cidrs	Yes	Array of strings	Secondary CIDR blocks that can be removed from VPCs VPCs already have secondary CIDR blocks. Constraints: • Before removing a secondary CIDR block, delete the subnets in the CIDR block first. • Currently, secondary CIDR blocks can only be removed one by one.

Example Request

- Remove the secondary CIDR block 23.8.0.0/16 from the VPC whose ID is 99d9d709-8478-4b46-9f3f-2206b1023fd3.

```
PUT https://{Endpoint}/v3/{project_id}/vpc/vpcs/99d9d709-8478-4b46-9f3f-2206b1023fd3/remove-extend-cidr

{
    "vpc": {
        "extend_cidrs": [
            "23.8.0.0/16"
        ]
    }
}
```

Response Parameter

Table 6-23 Response body parameters

Parameter	Type	Description
request_id	String	Request ID
vpc	Vpc object	Response body of removing a secondary CIDR block

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Table 6-24 Vpc

Parameter	Type	Description
id	String	VPC ID, which uniquely identifies the VPC The value is in UUID format with hyphens (-).
name	String	VPC name The value can contain no more than 64 characters, including letters, digits, underscores (_), hyphens (-), and periods (.).
description	String	Provides supplementary information about the VPC. The value can contain no more than 255 characters and cannot contain angle brackets (< or >).
cidr	String	Available VPC CIDR blocks Value range: ● 10.0.0.0/8-10.255.255.240/28 ● 172.16.0.0/12-172.31.255.240/28 ● 192.168.0.0/16-192.168.255.240/28 If **cidr** is not specified, the default value is **""**. ● The value must be in IPv4 CIDR format, for example, **192.168.0.0/16**.
extend_cidrs	Array of strings	Secondary CIDR blocks of VPCs Currently, only IPv4 CIDR blocks are supported.
status	String	VPC status Value range: ● **PENDING**: The VPC is being created. ● **ACTIVE**: The VPC is created successfully.
project_id	String	ID of the project to which the VPC belongs
enterprise_project_id	String	ID of the enterprise project to which the VPC belongs The value is **0** or a string that contains a maximum of 36 characters in UUID format with hyphens (-). Value **0** indicates the default enterprise project.
created_at	String	Time when the VPC is created UTC time in the format of yyyy-MM-ddTHH:mmss
updated_at	String	Time when the VPC is updated UTC time in the format of yyyy-MM-ddTHH:mmss

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Parameter	Type	Description
cloud_resources	Array of **CloudResource** objects	Type and number of resources associated with the VPC Currently, only route tables and subnets of the VPC are returned. The number of **virsubnets** is the total number of IPv4 and IPv6 subnets.
tags	Array of **Tag** objects	VPC tags. For details, see the tag objects. Value range: 0 to 10 tag key-value pairs

Table 6-25 CloudResource

Parameter	Type	Description
resource_type	String	Resource type
resource_count	Integer	Number of resources

Table 6-26 Tag

Parameter	Type	Description
key	String	Tag key Value range: • A tag key contains a maximum of 36 Unicode characters. • A tag key cannot be left blank. It cannot contain non-printable ASCII characters (0–31) or the following special characters: *,<,>,,=
value	String	Tag value Value range: • A tag value contains a maximum of 43 Unicode characters and can be left blank. • A tag value cannot contain non-printable ASCII characters (0–31) or the following special characters: *,<,>,,=

Example Response

```
{
  "request_id": "84eb4f775d66dd916db121768ec55626",
  "vpc": {
    "id": "0552091e-b83a-49dd-88a7-4a5c86fd9ec3",
    "name": "vpc1",
```

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```
    "description": "test1",
    "cidr": "192.168.0.0/16",
    "extend_cidrs": [ ],
    "enterprise_project_id": "0",
    "tags": [
      {
        "key": "key",
        "value": "value"
      }
    ],
    "cloud_resources": [
      {
        "resource_type": "routetable",
        "resource_count": 1
      }
    ],
    "status": "ACTIVE",
    "project_id": "060576782980d5762f9ec014dd2f1148",
    "created_at": "2018-03-23T09:26:08",
    "updated_at": "2018-08-24T08:49:53"
  }
}
```


Status Code

See **Status Codes**.

Error Code

See **Error Codes**.

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7 Native OpenStack Neutron APIs (V2.0)

7.1 API Version Information

7.1.1 Querying API Versions

Function

This API is used to query all available versions of a native OpenStack API.

URI

GET /

Request Parameters

None

Example Request

```
GET https://{Endpoint}/
```

Response Parameters

Table 7-1 Response parameter

Parameter	Type	Description
versions	Array of **version** objects	Specifies the API version list. For details, see **Table 7-2**.

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Table 7-2 version objects

Parameter	Type	Description
status	String	Specifies the API version status. Possible values are as follows: • **CURRENT** • **STABLE** • **DEPRECATED**
id	String	Specifies the API version.
links	Array of **link** objects	Specifies the link list. For details, see **Table 7-3**.

Table 7-3 link objects

Parameter	Type	Description
href	String	Specifies the API link.
rel	String	Specifies the relationship between the API link and the API version.

Example Response

```
{
   "versions": [
      {
         "status": "CURRENT",
         "id": "v2.0",
         "links": [
            {
               "href": "https://{Endpoint}/v2.0",
               "rel": "self"
            }
         ]
      }
   ]
}
```

Status Code

See **Status Codes**.

Error Code

See **Error Codes**.

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7.1.2 Pagination

Function

Neutron APIs v2.0 provides the pagination function. You can set parameters **limit** and **marker** in the URL to enable the desired number of items to be returned. All returned items are displayed in the ascending order of ID.

- To access the next page of the request, perform the following configurations:
  - Replace the value of **marker** in the original access request URL. Replace the value of **marker** to the value of **marker** in the value of **herf** if the value of **rel** in the response is **next**.
  - Set the value of **page_reverse** to **False**.
- To access the previous page of the request, perform the following configurations:
  - Replace the value of **marker** in the original access request URL. Replace the value of **marker** to the value of **marker** in the value of **herf** if the value of **rel** in the response is **previous**.
  - Set the value of **page_reverse** to **True**.

Request Parameters

Table 7-4 Request parameter

Parameter	Type	Mandatory	Description
limit	Integer	No	Specifies the number of items displayed per page.
marker	String	No	Specifies the ID of the last item in the previous list. If the marker value is invalid, error code 400 will be returned.
page_reverse	Boolean	No	Specifies the page direction. The value can be **True** or **False**.

Example Request

- When **page_reverse** is set to **False**:

```
GET https://{Endpoint}/v2.0/networks?limit=2&marker=3d42a0d4-a980-4613-ae76-a2cddecff054&page_reverse=False
```

- When **page_reverse** is set to **True**:

```
GET https://{Endpoint}/v2.0/vpc/peerings?limit=2&marker=e5a0c88e-228e-4e62-a8b0-90825b1b7958&page_reverse=True
```

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Response Parameters

Table 7-5 Response parameter

Parameter	Type	Description
{resources}_links	Array of **{resources}_link** objects	Specifies the pagination information. For details, see **Table 7-6**. ***{resources}*** indicates the resource name, for example, **ports**, **networks**, **subnets**, **routers**, **firewall_rules**, **firewall_policies**, **firewall_groups**, **security_groups**, and **security_group_rules**. Only when **limit** is used for filtering and the number of resources exceeds the value of **limit** or 2000 (default value of **limit**), value **next** will be returned for **rel** and a link for **href**.

Table 7-6 {resources}_link object

Parameter	Type	Description
href	String	Specifies the API link.
rel	String	The API link is used to query the next or previous page. **next**: The next page is queried. **previous**: The previous page is queried.

Example Response

- When **page_reverse** is set to **False**:

```
{
  "networks": [
    {
      "status": "ACTIVE",
      "subnets": [],
      "name": "liudongtest ",
      "admin_state_up": false,
      "tenant_id": "6fbe9263116a4b68818cf1edce16bc4f",
      "id": "60c809cb-6731-45d0-ace8-3bf5626421a9"
    },
    {
      "status": "ACTIVE",
      "subnets": [
        "132dc12d-c02a-4c90-9cd5-c31669aace04"
      ],
      "name": "publicnet",
      "admin_state_up": true,
      "tenant_id": "6fbe9263116a4b68818cf1edce16bc4f",
      "id": "9daeac7c-a98f-430f-8e38-67f9c044e299"
    }
  ],
  "networks_links": [
```

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```
    {
        "href": "http://192.168.82.231:9696/v2.0/networks?limit=2&marker=9daeac7c-
a98f-430f-8e38-67f9c044e299",
        "rel": "next"
    },
    {
        "href": "http://192.168.82.231:9696/v2.0/networks?limit=2&marker=60c809cb-6731-45d0-
ace8-3bf5626421a9&page_reverse=True",
        "rel": "previous"
    }
  ]
}
```


- When **page_reverse** is set to **True**:


```
{
  "peerings_links": [
    {
      "marker": "dd442819-5638-401c-bd48-a82703cf0464",
      "rel": "next"
    },
    {
      "marker": "1e13cbaf-3ce4-413d-941f-66d855dbfa7f",
      "rel": "previous"
    }
  ],
  "peerings": [
    {
      "status": "ACTIVE",
      "accept_vpc_info": {
        "vpc_id": "83a48834-b9bc-4f70-aa46-074568594650",
        "tenant_id": "e41a43bf06e249678413c6d61536eff9"
      },
      "request_vpc_info": {
        "vpc_id": "db8e7687-e43b-4fc1-94cf-16f69f484d6d",
        "tenant_id": "e41a43bf06e249678413c6d61536eff9"
      },
      "name": "peering1",
      "id": "1e13cbaf-3ce4-413d-941f-66d855dbfa7f"
    },
    {
      "status": "ACTIVE",
      "accept_vpc_info": {
        "vpc_id": "83a48834-b9bc-4f70-aa46-074568594650",
        "tenant_id": "e41a43bf06e249678413c6d61536eff9"
      },
      "request_vpc_info": {
        "vpc_id": "bd63cc9e-e7b8-4d4e-a0e9-055031470ffc",
        "tenant_id": "e41a43bf06e249678413c6d61536eff9"
      },
      "name": "peering2",
      "id": "dd442819-5638-401c-bd48-a82703cf0464"
    }
  ]
}
```


Status Code

See **Status Codes**.

Error Code

See **Error Codes**.

7.2 Port

7.2.1 Querying Ports

Function

Queries all networks accessible to the tenant submitting the request.

URI

GET /v2.0/ports

Example:

```
GET https://{Endpoint}/v2.0/ports?
id={port_id}&name={port_name}&admin_state_up={is_admin_status_up}&network_id={network_id}&mac_address={port_mac}&device_id={port_device_id}&device_owner={device_owner}&tenant_id={tenant_id}&status={port_status}&fixed_ips=ip_address={ip_address}&fixed_ips=subnet_id={subnet_id}
```

Example of querying ports by page

```
GET https://{Endpoint}/v2.0/ports?limit=2&marker=791870bd-36a7-4d9b-b015-a78e9b06af08&page_reverse=False
```

Table 7-7 describes the parameters.

Table 7-7 Parameter description

Name	Mandatory	Type	Description
id	No	String	Specifies that the port ID is used as the filtering condition.
name	No	String	Specifies that the port name is used as the filtering condition.
admin_state_up	No	Boolean	Specifies that the admin state is used as the filtering condition. The value can be **true** or **false**.
network_id	No	String	Specifies that the network ID is used as the filtering condition.
mac_address	No	String	Specifies that the MAC address is used as the filtering condition.
device_id	No	String	Specifies that the device ID is used as the filtering condition.
device_owner	No	String	Specifies that the device owner is used as the filtering condition.
status	No	String	Specifies that the port status is used as the filtering condition. The value can be **ACTIVE**, **BUILD**, or **DOWN**.

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Name	Mandatory	Type	Description
security_groups	No	Array of strings	Specifies that the ID of the security group is used as the filtering condition.
fixed_ips	No	Array of strings	Filter by IP address of the port, that is **fixed_ips=ip_address={ip_address}** or **fixed_ips=subnet_id={subnet_id}**. Set *{ip_address}* to an IP address, for example, 192.168.21.22 or 2a07:b980:4030:14::1. Set *{subnet_id}* to the IPv4 or IPv6 subnet ID, for example, 011fc878-5521-4654-a1ad-f5b0b5820302.
tenant_id	No	String	Specifies that the project ID is used as the filtering condition.
marker	No	String	Specifies a resource ID for pagination query, indicating that the query starts from the next record of the specified resource ID. This parameter can work together with the parameter **limit**. ● If parameters **marker** and **limit** are not passed, resource records on the first page will be returned. ● If the parameter **marker** is not passed and the value of parameter **limit** is set to **10**, the first 10 resource records will be returned. ● If the value of the parameter **marker** is set to the resource ID of the 10th record and the value of parameter **limit** is set to **10**, the 11th to 20th resource records will be returned. ● If the value of the parameter **marker** is set to the resource ID of the 10th record and the parameter **limit** is not passed, resource records starting from the 11th records (including 11th) will be returned.

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Name	Mandatory	Type	Description
limit	No	Integer	Specifies the number of records that will be returned on each page. The value is from 0 to intmax (2^31-1). The default value is 2000. **limit** can be used together with **marker**. For details, see the parameter description of **marker**.

Request Message

None

Example Request

Example 1

```
GET https://{Endpoint}/v2.0/ports?limit=1
```

Example 2

```
GET https://{Endpoint}/v2.0/ports?mac_address=fa:16:3e:f1:0b:09
```

Example 3

```
GET https://{Endpoint}/v2.0/ports?admin_state_up=False
```

Example 4

```
GET https://{Endpoint}/v2.0/ports?device_id=e6c05704-c907-4cc1-8106-69b0996c43b9
```

Example 5

```
GET https://{Endpoint}/v2.0/ports?tenant_id=6c9298ec8c874f7f99688489ab65f90e&name=port_vm_50_3
```

Example 6

```
GET https://{Endpoint}/v2.0/ports?name=port_vm_50_3
```

Response Parameter

Table 7-8 Response parameter

Parameter	Type	Description
ports	Array of **port** objects	Specifies the port object list. For details, see **Table 7-9**.

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Parameter	Type	Description
ports_links	Array of **ports_link** objects	Specifies the pagination information. For details, see **Table 7-14**. Only when **limit** is used for filtering and the number of resources exceeds the value of **limit** or 2000 (default value of **limit**), value **next** will be returned for **rel** and a link for **href**.

Table 7-9 port objects

Attribute	Type	Description
id	String	Specifies the port ID. A maximum of 255 characters are allowed. This parameter is not mandatory when you query ports.
name	String	Specifies the port name.
network_id	String	Specifies the ID of the network to which the port belongs.
admin_state_up	Boolean	Specifies the administrative status. The default value is **true**.
mac_address	String	Specifies the port MAC address. For example, **"mac_address": "fa:16:3e:9e:ff:55"**. This value can only be dynamically assigned by the system.
fixed_ips	Array of **fixed_ip** objects	Specifies the port IP address. For details, see **Table 7-10**. For example, the value is **"fixed_ips": [{"subnet_id": "4dc70db6-cb7f-4200-9790-a6a910776bba", "ip_address": "192.169.25.79"}]**. "fixed_ips": [{"subnet_id": "1fd001aa-6946-4168-86d9-924c7d3ef8fb", "ip_address": "2a07:b980:4030:14::1"}]

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Attribute	Type	Description
device_id	String	Specifies the device ID. This value is automatically maintained by the system and cannot be set or updated manually. The port with this field specified cannot be deleted.
device_owner	String	Specifies the DHCP, router or Nova to which a device belongs. The value can be **network:dhcp**, **network:router_interface_distributed**, **compute:xxx**, **neutron:VIP_PORT**, **neutron:LOADBALANCERV2**, **neutron:LOADBALANCERV3**, **network:endpoint_interface**, **network:nat_gateway**, or **network:ucmp**. (In value **compute:xxx**, **xxx** specifies the AZ name, for example, **compute:aa-bb-cc** indicates that the private IP address is used by an ECS in the **aa-bb-cc** AZ). This parameter value cannot be updated. You can only set **device_owner** to **neutron:VIP_PORT** for a virtual IP address port during port creation. If this parameter of a port is not left blank, the port can only be deleted when this parameter value is **neutron:VIP_PORT**. The port with this field specified cannot be deleted.
tenant_id	String	Specifies the project ID.
status	String	Specifies the port status. The value can be **ACTIVE**, **BUILD**, or **DOWN**.
security_groups	Array of strings	Specifies the UUID of the security group, for example, **"security_groups": ["a0608cbf-d047-4f54-8b28-cd7b59853fff"]**. This is an extended attribute. This parameter cannot be left blank.

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Attribute	Type	Description
allowed_address_pairs	Array of **allowed_address_pairs** objects	Specifies the IP address and MAC address pair. This is an extended attribute. For details, see **Table 7-11**. Instructions: • The IP address cannot be **0.0.0.0**. • Configure a dedicated security group for the port if the parameter **allowed_address_pairs** has a large CIDR block (subnet mask less than 24). • If the value of **allowed_address_pairs** is **1.1.1.1/0**, the source/destination check is disabled. • In the hardware SDN networking plan, the **ip_address** attribute value cannot be in CIDR format. • To assign a virtual IP address to an ECS, the IP address configured in **allowed_address_pairs** must be an existing ECS NIC IP address. Otherwise, the virtual IP address cannot be used for communication. • Set **allowed_address_pairs** of the cloud server to **1.1.1.1/0**.
extra_dhcp_opts	Array of **extra_dhcp_opt** objects	Specifies the extended DHCP option. This is an extended attribute. For details, see **Table 7-12**.
binding:vif_details	**binding:vif_details** object	For details, see **Table 7-13**.

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Attribute	Type	Description
binding:profile	Object	Specifies the user-defined settings. This is an extended attribute. Instructions: • The **internal_elb** field is in boolean type and is available to common tenants. Set the value of this parameter to **true** only when you assign a virtual IP address to an internal network load balancer. Common tenants do not have the permission to change the value of this field, which is maintained by the system. Example: {"internal_elb": true} • The **disable_security_groups** field is in boolean type and is available to common tenants. The default value is **false**. In high-performance communication scenarios, you can set the parameter value to **true**, which makes this parameter to be available to common tenants. You can specify this parameter when creating a port. Currently, the value of this parameter can only be set to **true**. Example: {"disable_security_groups": true }, Currently, the value can only be set to **true**. When the value is set to **true**, the FWaaS function does not take effect.
binding:vnic_type	String	Specifies the type of the bound vNIC. **normal**: Softswitch
project_id	String	Specifies the project ID. For details about how to obtain a project ID, see **Obtaining a Project ID**.

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Attribute	Type	Description
created_at	String	Specifies the time (UTC) when the port is created. Format: *yyyy-MM-ddTHH:mm:ss*
updated_at	String	Specifies the time (UTC) when the port is updated. Format: *yyyy-MM-ddTHH:mm:ss*

Table 7-10 fixed_ip objects

Attribute	Type	Description
subnet_id	String	Specifies the ID of the subnet to which the port belongs. This parameter cannot be updated.
ip_address	String	Specifies the port IP address. This parameter cannot be updated.

Table 7-11 allowed_address_pairs objects

Name	Mandatory	Type	Description
ip_address	Yes	String	• Specifies the IP address. • You cannot set it to **0.0.0.0/0**. • Configure a dedicated security group for the port if the parameter **allowed_address_pairs** has a large CIDR block (subnet mask less than 24). • If the value of **allowed_address_pairs** is **1.1.1.1/0**, the source/destination check is disabled. • Set **allowed_address_pairs** of the cloud server to **1.1.1.1/0**. • If the value of parameter **allowed_address_pairs** is specified, parameter **ip_address** is mandatory.
mac_address	No	String	Specifies the MAC address.

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Table 7-12 extra_dhcp_opt objects

Attribute	Type	Description
opt_name	String	Specifies the option name.
opt_value	String	Specifies the option value.

Table 7-13 binding:vif_details object

Name	Type	Description
primary_interface	Boolean	If the value is true, this is the primary NIC.
port_filter	Boolean	Specifies the port used for filtering in security groups to protect against MAC or IP spoofing.
ovs_hybrid_plug	Boolean	Specifies that OVS hybrid plug should be used by Nova APIs.

Table 7-14 ports_link object

Name	Type	Description
href	String	Specifies the API link.
rel	String	Specifies the relationship between the API link and the API version.

Example Response

Example 1

```
{
 "ports": [{
      "id": "791870bd-36a7-4d9b-b015-a78e9b06af08",
      "name": "port-test",
      "status": "DOWN",
      "admin_state_up": true,
      "fixed_ips": [],
      "mac_address": "fa:16:3e:01:e0:b2",
      "network_id": "00ae08c5-f727-49ab-ad4b-b069398aa171",
      "tenant_id": "db82c9e1415a464ea68048baa8acc6b8",
      "project_id": "db82c9e1415a464ea68048baa8acc6b8",
      "device_id": "",
      "device_owner": "",
      "security_groups": ["d0d58aa9-cda9-414c-9c52-6c3daf8534e6"],
      "extra_dhcp_opts": [],
      "allowed_address_pairs": [],
      "binding:vnic_type": "normal",
      "binding:vif_details": {},
      "binding:profile": {},
      "port_security_enabled": true,
      "created_at": "2018-09-13T01:43:41",
      "updated_at": "2018-09-13T01:43:41"
```

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```
 },
{
   "id": "7a8c720d-32b7-47cc-a943-23e48d69e30a",
   "name": "a8d001aa-6946-4168-86d9-924c7d3ef8fb",
   "status": "DOWN",
   "admin_state_up": true,
   "fixed_ips": [
      {
         "subnet_id": "a8d001aa-6946-4168-86d9-924c7d3ef8fb",
         "ip_address": "2a07:b980:4030:14::1"
      }
   ],
   "mac_address": "fa:16:3e:57:39:c3",
   "network_id": "26cf88ff-1a8c-4233-a8e6-183e1e299357",
   "tenant_id": "db82c9e1415a464ea68048baa8acc6b8",
   "project_id": "db82c9e1415a464ea68048baa8acc6b8",
   "device_id": "6c2fcea1-b785-4253-b84e-3d887e1c67e1",
   "device_owner": "network:router_interface_distributed",
   "security_groups": ["34acbeed-8f65-4875-86ca-66417b1733fd"],
   "extra_dhcp_opts": [],
   "allowed_address_pairs": [],
   "binding:vnic_type": "normal",
   "binding:vif_details": {},
   "binding:profile": {},
   "port_security_enabled": true,
      "created_at": "2018-09-13T01:43:41",
      "updated_at": "2018-09-13T01:43:41"
}
],
   "ports_links": [
     {
         "rel": "next",
         "href": "https://{Endpoint}/v2.0/ports?limit=1&marker=7a8c720d-32b7-47cc-a943-23e48d69e30a"
      },
     {    "rel": "previous",
         "href": "https://{Endpoint}/v2.0/ports?limit=1&marker=7a8c720d-32b7-47cc-
a943-23e48d69e30a&page_reverse=True"
      }
   ]
}
```

Example 2

```
{
   "ports": [
      {
         "admin_state_up": true,
         "allowed_address_pairs": [],
         "binding:vnic_type": "normal",
         "device_id": "e6c05704-c907-4cc1-8106-69b0996c43b9",
         "device_owner": "compute:az3.dc1",
         "extra_dhcp_opts": [],
         "fixed_ips": [
            {
               "ip_address": "172.16.0.37",
               "subnet_id": "b3ac1347-63f2-4e82-b853-3d86416a0db5"
            }
         ],
         "id": "7bb64706-6e46-4f94-a28a-4bc7caaab87d",
         "mac_address": "fa:16:3e:f1:0b:09",
         "name": "port_vm_50_3",
         "network_id": "a54e1b19-ce78-4b7e-b28b-d2d716cdc161",
         "security_groups": [
            "ef69bc60-2f4b-4f97-b95b-e3b68df0c0b2"
         ],
         "status": "ACTIVE",
         "tenant_id": "6c9298ec8c874f7f99688489ab65f90e",
         "project_id": "6c9298ec8c874f7f99688489ab65f90e",
         "created_at": "2018-09-13T01:43:41",
         "updated_at": "2018-09-13T01:43:41"
```

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```
    }
  ],
  "ports_links": [
    {    "rel": "previous",
         "href": "https://{Endpoint}/v2.0/ports?mac_address=fa%3A16%3A3e%3Af1%3A0b
%3A09&marker=7bb64706-6e46-4f94-a28a-4bc7caaab87d&page_reverse=True"
    }
  ]
}
```

Example 3

```
{
  "ports": [

    {
       "admin_state_up": false,
       "allowed_address_pairs": [],
       "binding:vnic_type": "normal",
       "device_id": "",
       "device_owner": "",
       "extra_dhcp_opts": [],
       "fixed_ips": [
          {
             "ip_address": "10.100.100.62",
             "subnet_id": "9b28f20c-0234-419f-a0b4-4a84f182f64b"
          }
       ],
       "id": "ffc0bdee-8413-4fa2-bd82-fa8efe5b3a87",
       "mac_address": "fa:16:3e:2b:bc:57",
       "name": "small_net_port",
       "network_id": "b299b151-7a66-4c6f-a313-cdd3b5724296",
       "security_groups": [
          "ef69bc60-2f4b-4f97-b95b-e3b68df0c0b2"
       ],
       "status": "DOWN",
       "tenant_id": "6c9298ec8c874f7f99688489ab65f90e",
       "project_id": "6c9298ec8c874f7f99688489ab65f90e",
       "created_at": "2018-09-13T01:43:41",
       "updated_at": "2018-09-13T01:43:41"
    }
  ],
  "ports_links": [
    {    "rel": "previous",
         "href": "https://{Endpoint}/v2.0/ports?admin_state_up=False&marker=ffc0bdee-8413-4fa2-bd82-
fa8efe5b3a87&page_reverse=True"
    }
  ]
}
```

Example 4

```
{
  "ports": [
    {
       "admin_state_up": true,
       "allowed_address_pairs": [],
       "binding:vnic_type": "normal",
       "device_id": "e6c05704-c907-4cc1-8106-69b0996c43b9",
       "device_owner": "compute:az3.dc1",
       "extra_dhcp_opts": [],
       "fixed_ips": [
          {
             "ip_address": "10.1.0.37",
             "subnet_id": "b3ac1347-63f2-4e82-b853-3d86416a0db5"
          }
       ],
       "id": "7bb64706-6e46-4f94-a28a-4bc7caaab87d",
       "mac_address": "fa:16:3e:f1:0b:09",
       "name": "port_vm_50_3",
```

```
            "network_id": "a54e1b19-ce78-4b7e-b28b-d2d716cdc161",
            "security_groups": [
                "ef69bc60-2f4b-4f97-b95b-e3b68df0c0b2"
            ],
            "status": "ACTIVE",
            "tenant_id": "6c9298ec8c874f7f99688489ab65f90e",
            "project_id": "6c9298ec8c874f7f99688489ab65f90e" ,
            "created_at": "2018-09-13T01:43:41",
            "updated_at": "2018-09-13T01:43:41"
        }
    ],
    "ports_links": [
      {    "rel": "previous",
           "href": "https://{Endpoint}/v2.0/ports?device_id=77307088-
ae60-49fb-9146-924dcf1d1402&marker=7bb64706-6e46-4f94-a28a-4bc7caaab87d&page_reverse=True"
        }
    ]
}
```


Example 5


```
{
    "ports": [
        {
            "admin_state_up": true,
            "allowed_address_pairs": [],
            "binding:vnic_type": "normal",
            "device_id": "e6c05704-c907-4cc1-8106-69b0996c43b9",
            "device_owner": "compute:az3.dc1",
            "extra_dhcp_opts": [],
            "fixed_ips": [
                {
                    "ip_address": "10.1.0.37",
                    "subnet_id": "b3ac1347-63f2-4e82-b853-3d86416a0db5"
                }
            ],
            "id": "7bb64706-6e46-4f94-a28a-4bc7caaab87d",
            "mac_address": "fa:16:3e:f1:0b:09",
            "name": "port_vm_50_3",
            "network_id": "a54e1b19-ce78-4b7e-b28b-d2d716cdc161",
            "security_groups": [
                "ef69bc60-2f4b-4f97-b95b-e3b68df0c0b2"
            ],
            "status": "ACTIVE",
            "tenant_id": "6c9298ec8c874f7f99688489ab65f90e",
            "project_id": "6c9298ec8c874f7f99688489ab65f90e" ,
            "created_at": "2018-09-13T01:43:41",
            "updated_at": "2018-09-13T01:43:41"
        }
    ],
    "ports_links": [
      {    "rel": "previous",
           "href": "https://{Endpoint}/v2.0/ports?
tenant_id=6c9298ec8c874f7f99688489ab65f90e&name=port_vm_50_3&marker=7bb64706-6e46-4f94-
a28a-4bc7caaab87d&page_reverse=True"
        }
    ]
}
```


Example 6


```
{
    "ports": [
        {
            "status": "DOWN",
            "allowed_address_pairs": [],
            "extra_dhcp_opts": [],
            "device_owner": "",
            "fixed_ips": [
                {
```

```
                "subnet_id": "391c74f7-e3b1-405c-8473-2f71a0aec7dc",
                "ip_address": "10.1.0.33"
            }
        ],
        "id": "0f405555-739f-4a19-abb7-ec11d005b3a9",
        "security_groups": [
            "043548bc-1020-4be0-885a-caac8530e8f6"
        ],
        "device_id": "",
        "port_security_enabled":true,
        "name": "port_vm_50_3",
        "admin_state_up": true,
        "network_id": "9898a82d-7795-4ad5-bf2c-0ed8b822be4f",
        "tenant_id": "3e4a1816927f405cacbc3dca1e05111e",
        "project_id": "3e4a1816927f405cacbc3dca1e05111e",
        "created_at": "2018-09-13T01:43:41",
        "updated_at": "2018-09-13T01:43:41",
        "binding:vnic_type": "normal",
        "mac_address": "fa:16:3e:b0:d9:cf"
    },
    {
        "status": "ACTIVE",
        "allowed_address_pairs": [],
        "extra_dhcp_opts": [],
        "device_owner": "compute:az3.dc1",
        "fixed_ips": [
            {
                "subnet_id": "b3ac1347-63f2-4e82-b853-3d86416a0db5",
                "ip_address": "10.1.0.37"
            }
        ],
        "id": "7bb64706-6e46-4f94-a28a-4bc7caaab87d",
        "security_groups": [
            "ef69bc60-2f4b-4f97-b95b-e3b68df0c0b2"
        ],
        "device_id": "e6c05704-c907-4cc1-8106-69b0996c43b9",
        "name": "port_vm_50_3",
        "admin_state_up": true,
        "network_id": "a54e1b19-ce78-4b7e-b28b-d2d716cdc161",
        "tenant_id": "6c9298ec8c874f7f99688489ab65f90e",
        "project_id": "3e4a1816927f405cacbc3dca1e05111e",
        "created_at": "2018-09-13T01:43:41",
        "updated_at": "2018-09-13T01:43:41",
         "binding:vnic_type": "normal",
        "binding:vnic_type": "normal",
        "mac_address": "fa:16:3e:f1:0b:09"
    }
  ],
  "ports_links": [
    {    "rel": "previous",
        "href": "https://{Endpoint}/v2.0/ports?name=port_vm_50_3&marker=0f405555-739f-4a19-abb7-
ec11d005b3a9&page_reverse=True"
    }
  ]
}
```


Status Code

See **Status Codes**.

Error Code

See **Error Codes**.

7.2.2 Querying a Port

Function

This API is used to query details about a specified port.

URI

GET /v2.0/ports/{port_id}

Table 7-15 describes the parameters.

Table 7-15 Parameter description

Name	Mandatory	Description
port_id	Yes	Specifies the port ID, which uniquely identifies the port.

Request Parameters

None

Example Request

```
GET https://{Endpoint}/v2.0/ports/791870bd-36a7-4d9b-b015-a78e9b06af08
```

Response Parameters

Table 7-16 Response parameter

Parameter	Type	Description
port	**port** object	Specifies the port object list. For details, see **Table 7-17**.

Table 7-17 port objects

Attribute	Type	Description
id	String	Specifies the port ID. A maximum of 255 characters are allowed. This parameter is not mandatory when you query ports.
name	String	Specifies the port name.

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Attribute	Type	Description
network_id	String	Specifies the ID of the network to which the port belongs.
admin_state_up	Boolean	Specifies the administrative status. The default value is **true**.
mac_address	String	Specifies the port MAC address. For example, **"mac_address": "fa:16:3e:9e:ff:55"**. This value can only be dynamically assigned by the system.
fixed_ips	Array of **fixed_ip** objects	Specifies the port IP address. For details, see **Table 7-18**. For example, the value is **"fixed_ips": [{"subnet_id": "4dc70db6-cb7f-4200-9790-a6a910776bba", "ip_address": "192.169.25.79"}]**. "fixed_ips": [{"subnet_id": "1fd001aa-6946-4168-86d9-924c7d3ef8fb", "ip_address": "2a07:b980:4030:14::1"}]
device_id	String	Specifies the device ID. This value is automatically maintained by the system and cannot be set or updated manually. The port with this field specified cannot be deleted.

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Attribute	Type	Description
device_owner	String	Specifies the DHCP, router or Nova to which a device belongs. The value can be **network:dhcp**, **network:router_interface_distributed**, **compute:xxx**, **neutron:VIP_PORT**, **neutron:LOADBALANCERV2**, **neutron:LOADBALANCERV3**, **network:endpoint_interface**, **network:nat_gateway**, or **network:ucmp**. (In value **compute:xxx**, **xxx** specifies the AZ name, for example, **compute:aa-bb-cc** indicates that the private IP address is used by an ECS in the **aa-bb-cc** AZ). This parameter value cannot be updated. You can only set **device_owner** to **neutron:VIP_PORT** for a virtual IP address port during port creation. If this parameter of a port is not left blank, the port can only be deleted when this parameter value is **neutron:VIP_PORT**. The port with this field specified cannot be deleted.
tenant_id	String	Specifies the project ID.
status	String	Specifies the port status. The value can be **ACTIVE**, **BUILD**, or **DOWN**. The status of a HANA SR-IOV VM port is always **DOWN**.
security_groups	Array of strings	Specifies the UUID of the security group, for example, **"security_groups": ["a0608cbf-d047-4f54-8b28-cd7b59853fff"]**. This is an extended attribute. This parameter cannot be left blank.

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Attribute	Type	Description
allowed_address_pairs	Array of **allowed_address_pairs** objects	Specifies the IP address and MAC address pair. This is an extended attribute. For details, see **Table 7-19**. Instructions: • The IP address cannot be **0.0.0.0**. • Configure a dedicated security group for the port if the parameter **allowed_address_pairs** has a large CIDR block (subnet mask less than 24). • If the value of **allowed_address_pairs** is **1.1.1.1/0**, the source/destination check is disabled. • In the hardware SDN networking plan, the **ip_address** attribute value cannot be in CIDR format. • To assign a virtual IP address to an ECS, the IP address configured in **allowed_address_pairs** must be an existing ECS NIC IP address. Otherwise, the virtual IP address cannot be used for communication. • Set **allowed_address_pairs** of the cloud server to **1.1.1.1/0**.
extra_dhcp_opts	Array of **extra_dhcp_opt** objects	Specifies the extended DHCP option. This is an extended attribute. For details, see **Table 7-20**.
binding:vif_details	**binding:vif_details** object	For details, see **Table 7-21**.

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Attribute	Type	Description
binding:profile	binding:profile object	Specifies the user-defined settings. This is an extended attribute. Instructions: • The **internal_elb** field is in boolean type and is available to common tenants. Set the value of this parameter to **true** only when you assign a virtual IP address to an internal network load balancer. Common tenants do not have the permission to change the value of this field, which is maintained by the system. Example: {"internal_elb": true} • The **disable_security_groups** field is in boolean type and is available to common tenants. The default value is **false**. In high-performance communication scenarios, you can set the parameter value to **true**, which makes this parameter to be available to common tenants. You can specify this parameter when creating a port. Currently, the value of this parameter can only be set to **true**. Example: {"disable_security_groups": true }, Currently, the value can only be set to **true**. When the value is set to **true**, the FWaaS function does not take effect.
binding:vnic_type	String	Specifies the type of the bound vNIC. **normal**: Softswitch
project_id	String	Specifies the project ID. For details about how to obtain a project ID, see **Obtaining a Project ID**.

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Attribute	Type	Description
created_at	String	Specifies the time (UTC) when the port is created. Format: *yyyy-MM-ddTHH:mm:ss*
updated_at	String	Specifies the time (UTC) when the port is updated. Format: *yyyy-MM-ddTHH:mm:ss*

Table 7-18 fixed_ip objects

Attribute	Type	Description
subnet_id	String	Specifies the ID of the subnet to which the port belongs. This parameter cannot be updated.
ip_address	String	Specifies the port IP address. This parameter cannot be updated.

Table 7-19 allowed_address_pairs objects

Name	Mandatory	Type	Description
ip_address	Yes	String	• Specifies the IP address. • You cannot set it to **0.0.0.0/0**. • Configure a dedicated security group for the port if the parameter **allowed_address_pairs** has a large CIDR block (subnet mask less than 24). • If the value of **allowed_address_pairs** is **1.1.1.1/0**, the source/destination check is disabled. • Set **allowed_address_pairs** of the cloud server to **1.1.1.1/0**. • If the value of parameter **allowed_address_pairs** is specified, parameter **ip_address** is mandatory.
mac_address	No	String	Specifies the MAC address.

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Table 7-20 extra_dhcp_opt objects

Attribute	Type	Description
opt_name	String	Specifies the option name.
opt_value	String	Specifies the option value.

Table 7-21 binding:vif_details object

Name	Type	Description
primary_interface	Boolean	If the value is true, this is the primary NIC.
port_filter	Boolean	Specifies the port used for filtering in security groups to protect against MAC or IP spoofing.
ovs_hybrid_plug	Boolean	Specifies that OVS hybrid plug should be used by Nova APIs.

Example Response

```
{
    "port": {
        "id": "791870bd-36a7-4d9b-b015-a78e9b06af08",
        "name": "port-test",
        "status": "DOWN",
        "admin_state_up": true,
        "fixed_ips": [],
        "mac_address": "fa:16:3e:01:e0:b2",
        "network_id": "00ae08c5-f727-49ab-ad4b-b069398aa171",
        "tenant_id": "db82c9e1415a464ea68048baa8acc6b8",
        "project_id": "db82c9e1415a464ea68048baa8acc6b8",
        "device_id": "",
        "device_owner": "",
        "security_groups": [
            "d0d58aa9-cda9-414c-9c52-6c3daf8534e6"
        ],
        "extra_dhcp_opts": [],
        "allowed_address_pairs": [],
        "binding:vnic_type": "normal",
        "binding:vif_details": {},
        "binding:profile": {},
        "port_security_enabled": true,
        "created_at": "2018-09-13T01:43:41",
        "updated_at": "2018-09-13T01:43:41"
    }
}
```

Status Code

See **Status Codes**.

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Error Code

See **Error Codes**.

7.2.3 Creating a Port

Function

This API is used to create a port.

URI

POST /v2.0/ports

Request Parameters

Table 7-22 Request parameter

Parameter	Type	Mandatory	Description
port	**port** object	Yes	Specifies the port object list. For details, see **Table 7-23**.

Table 7-23 port objects

Attribute	Mandatory	Type	Description
name	No	String	Specifies the port name.
network_id	Yes	String	• Specifies the ID of the network to which the port belongs. • The network ID must be a real one in the network environment.
admin_state_up	No	Boolean	Specifies the administrative status. The default value is **true**.

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Attribute	Mandatory	Type	Description
fixed_ips	No	Array of **fixed_ip** objects	Specifies the port IP address. For details, see **Table 7-24**. For example, the value is **"fixed_ips": [{"subnet_id": "4dc70db6-cb7f-4200-9790-a6a910776bba", "ip_address": "192.169.25.79"}]**. "fixed_ips": [{"subnet_id": "1fd001aa-6946-4168-86d9-924c7d3ef8fb", "ip_address": "2a07:b980:4030:14::1"}]
security_groups	No	Array of strings	Specifies the UUID of the security group, for example, **"security_groups": ["a0608cbf-d047-4f54-8b28-cd7b59853fff"]**. This is an extended attribute. This parameter cannot be left blank.

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Attribute	Mandatory	Type	Description
allowed_address_pairs	No	Array of **allowed_address_pairs** objects	Specifies the IP address and MAC address pair. This is an extended attribute. For details, see **Table 7-25**. Instructions: • The IP address cannot be **0.0.0.0**. • Configure a dedicated security group for the port if the parameter **allowed_address_pairs** has a large CIDR block (subnet mask less than 24). • If the value of **allowed_address_pairs** is **1.1.1.1/0**, the source/destination check is disabled. • In the hardware SDN networking plan, the **ip_address** attribute value cannot be in CIDR format. • To assign a virtual IP address to an ECS, the IP address configured in **allowed_address_pairs** must be an existing ECS NIC IP address. Otherwise, the virtual IP address cannot be used for communication. • Set **allowed_address_pairs** of the cloud server to **1.1.1.1/0**.
extra_dhcp_opts	No	Array of **extra_dhcp_opt** objects	Specifies the extended DHCP option. This is an extended attribute. For details, see **Table 7-26**.

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Attribute	Mandatory	Type	Description
binding:profile	No	Object	Specifies the user-defined settings. This is an extended attribute. Instructions: • The **internal_elb** field is in boolean type and is available to common tenants. Set the value of this parameter to **true** only when you assign a virtual IP address to an internal network load balancer. Common tenants do not have the permission to change the value of this field, which is maintained by the system. Example: {"internal_elb": true} • The **disable_security_groups** field is in boolean type and is available to common tenants. The default value is **false**. In high-performance communication scenarios, you can set the parameter value to **true**, which makes this parameter to be available to common tenants. You can specify this parameter when creating a port. Currently, the value of this parameter can only be set to **true**. Example: {"disable_security_groups": true }, Currently, the value can only be set to **true**. When the value is set to **true**, the FWaaS function does not take effect.
binding:vnic_type	No	String	Specifies the type of the bound vNIC. **normal**: Softswitch

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Attribute	Mandatory	Type	Description
device_owner	No	String	Specifies the device that the port belongs to. Currently, only **""** and **neutron:VIP_PORT** are supported. **neutron:VIP_PORT** indicates the port of a virtual IP address.

Table 7-24 fixed_ip objects

Attribute	Mandatory	Type	Description
subnet_id	No	String	Specifies the ID of the subnet to which the port belongs. This parameter cannot be updated.
ip_address	No	String	Specifies the port IP address. This parameter cannot be updated.

Table 7-25 allowed_address_pairs objects

Name	Mandatory	Type	Description
ip_address	Yes	String	• Specifies the IP address. • You cannot set it to **0.0.0.0/0**. • Configure a dedicated security group for the port if the parameter **allowed_address_pairs** has a large CIDR block (subnet mask less than 24). • If the value of **allowed_address_pairs** is **1.1.1.1/0**, the source/destination check is disabled. • Set **allowed_address_pairs** of the cloud server to **1.1.1.1/0**. • If the value of parameter **allowed_address_pairs** is specified, parameter **ip_address** is mandatory.

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Name	Mandatory	Type	Description
mac_address	No	String	Specifies the MAC address.

Table 7-26 extra_dhcp_opt objects

Attribute	Mandatory	Type	Description
opt_name	No	String	Specifies the option name.
opt_value	No	String	Specifies the option value.

Example Request

Create a port named **port-test** on network whose ID is 00ae08c5-f727-49ab-ad4b-b069398aa171.

```
POST https://{Endpoint}/v2.0/ports

{
    "port": {
      "admin_state_up": true,
      "network_id": "00ae08c5-f727-49ab-ad4b-b069398aa171",
      "name": "port-test"
    }
}
```

Response Parameters

Table 7-27 Response parameter

Parameter	Type	Description
port	**port** object	Specifies the port information. For details, see **Table 7-28**.

Table 7-28 port objects

Attribute	Type	Description
id	String	Specifies the port ID. A maximum of 255 characters are allowed. This parameter is not mandatory when you query ports.
name	String	Specifies the port name.

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Attribute	Type	Description
network_id	String	Specifies the ID of the network to which the port belongs.
admin_state_up	Boolean	Specifies the administrative status. The default value is **true**.
mac_address	String	Specifies the port MAC address. For example, **"mac_address": "fa:16:3e:9e:ff:55"**. This value can only be dynamically assigned by the system.
fixed_ips	Array of **fixed_ip** objects	Specifies the port IP address. For details, see **Table 7-29**. For example, the value is **"fixed_ips": [{"subnet_id": "4dc70db6-cb7f-4200-9790-a6a910776bba", "ip_address": "192.169.25.79"}]**. "fixed_ips": [{"subnet_id": "1fd001aa-6946-4168-86d9-924c7d3ef8fb", "ip_address": "2a07:b980:4030:14::1"}]
device_id	String	Specifies the device ID. This value is automatically maintained by the system and cannot be set or updated manually. The port with this field specified cannot be deleted.

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Attribute	Type	Description
device_owner	String	Specifies the DHCP, router or Nova to which a device belongs. The value can be **network:dhcp**, **network:router_interface_distributed**, **compute:xxx**, **neutron:VIP_PORT**, **neutron:LOADBALANCERV2**, **neutron:LOADBALANCERV3**, **network:endpoint_interface**, **network:nat_gateway**, or **network:ucmp**. (In value **compute:xxx**, **xxx** specifies the AZ name, for example, **compute:aa-bb-cc** indicates that the private IP address is used by an ECS in the **aa-bb-cc** AZ). This parameter value cannot be updated. You can only set **device_owner** to **neutron:VIP_PORT** for a virtual IP address port during port creation. If this parameter of a port is not left blank, the port can only be deleted when this parameter value is **neutron:VIP_PORT**. The port with this field specified cannot be deleted.
tenant_id	String	Specifies the project ID.
status	String	Specifies the port status. The value can be **ACTIVE**, **BUILD**, or **DOWN**. The status of a HANA SR-IOV VM port is always **DOWN**.
security_groups	Array of strings	Specifies the UUID of the security group, for example, **"security_groups": ["a0608cbf-d047-4f54-8b28-cd7b59853fff"]**. This is an extended attribute. This parameter cannot be left blank.

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Attribute	Type	Description
allowed_address_pairs	Array of **allowed_address_pairs** objects	Specifies the IP address and MAC address pair. This is an extended attribute. For details, see **Table 7-30**. Instructions: • The IP address cannot be **0.0.0.0**. • Configure a dedicated security group for the port if the parameter **allowed_address_pairs** has a large CIDR block (subnet mask less than 24). • If the value of **allowed_address_pairs** is **1.1.1.1/0**, the source/destination check is disabled. • In the hardware SDN networking plan, the **ip_address** attribute value cannot be in CIDR format. • To assign a virtual IP address to an ECS, the IP address configured in **allowed_address_pairs** must be an existing ECS NIC IP address. Otherwise, the virtual IP address cannot be used for communication. • Set **allowed_address_pairs** of the cloud server to **1.1.1.1/0**.
extra_dhcp_opts	Array of **extra_dhcp_opt** objects	Specifies the extended DHCP option. This is an extended attribute. For details, see **Table 7-31**.
binding:vif_details	**binding:vif_details** object	For details, see **Table 7-32**.

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Attribute	Type	Description
binding:profile	Object	Specifies the user-defined settings. This is an extended attribute. Instructions: • The **internal_elb** field is in boolean type and is available to common tenants. Set the value of this parameter to **true** only when you assign a virtual IP address to an internal network load balancer. Common tenants do not have the permission to change the value of this field, which is maintained by the system. Example: {"internal_elb": true} • The **disable_security_groups** field is in boolean type and is available to common tenants. The default value is **false**. In high-performance communication scenarios, you can set the parameter value to **true**, which makes this parameter to be available to common tenants. You can specify this parameter when creating a port. Currently, the value of this parameter can only be set to **true**. Example: {"disable_security_groups": true }, Currently, the value can only be set to **true**. When the value is set to **true**, the FWaaS function does not take effect.
binding:vnic_type	String	Specifies the type of the bound vNIC. **normal**: Softswitch
project_id	String	Specifies the project ID. For details about how to obtain a project ID, see **Obtaining a Project ID**.

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Attribute	Type	Description
created_at	String	Specifies the time (UTC) when the port is created. Format: *yyyy-MM-ddTHH:mm:ss*
updated_at	String	Specifies the time (UTC) when the port is updated. Format: *yyyy-MM-ddTHH:mm:ss*

Table 7-29 fixed_ip objects

Attribute	Type	Description
subnet_id	String	Specifies the ID of the subnet to which the port belongs. This parameter cannot be updated.
ip_address	String	Specifies the port IP address. This parameter cannot be updated.

Table 7-30 allowed_address_pairs objects

Attribute	Type	Description
ip_address	String	Specifies the IP address. This parameter cannot be **0.0.0.0**.
mac_address	String	Specifies the MAC address.

Table 7-31 extra_dhcp_opt objects

Attribute	Type	Description
opt_name	String	Specifies the option name.
opt_value	String	Specifies the option value.

Table 7-32 binding:vif_details object

Name	Type	Description
primary_interface	Boolean	If the value is true, this is the primary NIC.

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Name	Type	Description
port_filter	Boolean	Specifies the port used for filtering in security groups to protect against MAC or IP spoofing.
ovs_hybrid_plug	Boolean	Specifies that OVS hybrid plug should be used by Nova APIs.

Example Response

```
{
    "port": {
        "id": "a7d98f3c-b42f-460b-96a1-07601e145961",
        "name": "port-test",
        "status": "DOWN",
        "admin_state_up": true,
        "fixed_ips": [],
        "mac_address": "fa:16:3e:01:f7:90",
        "network_id": "00ae08c5-f727-49ab-ad4b-b069398aa171",
        "tenant_id": "db82c9e1415a464ea68048baa8acc6b8",
        "project_id": "db82c9e1415a464ea68048baa8acc6b8",
        "device_id": "",
        "device_owner": "",
        "security_groups": [
            "d0d58aa9-cda9-414c-9c52-6c3daf8534e6"
        ],
        "extra_dhcp_opts": [],
        "allowed_address_pairs": [],
        "binding:vnic_type": "normal",
        "binding:vif_details": {},
        "binding:profile": {},
        "port_security_enabled": true,
        "created_at": "2018-09-20T01:45:26",
        "updated_at": "2018-09-20T01:45:26"
    }
}
```

Status Code

See **Status Codes**.

Error Code

See **Error Codes**.

7.2.4 Updating a Port

Function

This API is used to update a port.

URI

PUT /v2.0/ports/{port_id}

Table 7-33 describes the parameters.

Table 7-33 Parameter description

Name	Mandatory	Description
port_id	Yes	Specifies the port ID, which uniquely identifies the port.

Request Parameters

Table 7-34 Request parameter

Parameter	Type	Mandatory	Description
port	**port** object	Yes	Specifies the port object list. For details, see **Table 7-35**. You must specify at least one attribute when updating a port.

Table 7-35 port objects

Attribute	Mandatory	Type	Description
name	No	String	Specifies the port name.
security_groups	No	Array of strings	Specifies the UUID of the security group, for example, **"security_groups": ["a0608cbf-d047-4f54-8b28-cd7b59853fff"]**. This is an extended attribute. This parameter cannot be left blank.

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Attribute	Mandatory	Type	Description
allowed_address_pairs	No	Array of **allowed_address_pairs** objects	Specifies the IP address and MAC address pair. This is an extended attribute. For details, see **Table 7-36**. Instructions: • The IP address cannot be **0.0.0.0**. • Configure a dedicated security group for the port if the parameter **allowed_address_pairs** has a large CIDR block (subnet mask less than 24). • If the value of **allowed_address_pairs** is **1.1.1.1/0**, the source/destination check is disabled. • In the hardware SDN networking plan, the **ip_address** attribute value cannot be in CIDR format. • To assign a virtual IP address to an ECS, the IP address configured in **allowed_address_pairs** must be an existing ECS NIC IP address. Otherwise, the virtual IP address cannot be used for communication. • Set **allowed_address_pairs** of the cloud server to **1.1.1.1/0**.
extra_dhcp_opts	No	Array of **extra_dhcp_opt** objects	Specifies the extended DHCP option. This is an extended attribute. For details, see **Table 7-37**.

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Attribute	Mandatory	Type	Description
binding:profile	No	Object	Specifies the user-defined settings. This is an extended attribute. Instructions: • The **internal_elb** field is in boolean type and is available to common tenants. Set the value of this parameter to **true** only when you assign a virtual IP address to an internal network load balancer. Common tenants do not have the permission to change the value of this field, which is maintained by the system. Example: {"internal_elb": true} • The **disable_security_groups** field is in boolean type and is available to common tenants. The default value is **false**. In high-performance communication scenarios, you can set the parameter value to **true**, which makes this parameter to be available to common tenants. You can specify this parameter when creating a port. Currently, the value of this parameter can only be set to **true**. Example: {"disable_security_groups": true }, Currently, the value can only be set to **true**. When the value is set to **true**, the FWaaS function does not take effect.
binding:vnic_type	No	String	Specifies the type of the bound vNIC. **normal**: Softswitch

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Table 7-36 allowed_address_pairs objects

Name	Mandatory	Type	Description
ip_address	Yes	String	• Specifies the IP address. • You cannot set it to **0.0.0.0/0**. • Configure a dedicated security group for the port if the parameter **allowed_address_pairs** has a large CIDR block (subnet mask less than 24). • If the value of **allowed_address_pairs** is **1.1.1.1/0**, the source/destination check is disabled. • Set **allowed_address_pairs** of the cloud server to **1.1.1.1/0**. • If the value of parameter **allowed_address_pairs** is specified, parameter **ip_address** is mandatory.
mac_address	No	String	Specifies the MAC address.

Table 7-37 extra_dhcp_opt objects

Attribute	Mandatory	Type	Description
opt_name	No	String	Specifies the option name.
opt_value	No	String	Specifies the option value.

Example Request

Change the name of the port whose ID is 7a9a954a-eb41-4954-a300-11ab17a361a2 to **port-test02**.

```
PUT https://{Endpoint}/v2.0/ports/7a9a954a-eb41-4954-a300-11ab17a361a2

{
   "port": {
         "name": "port-test02"
   }
}
```

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Response Parameters

Table 7-38 Response parameter

Parameter	Type	Description
port	**port** object	Specifies the port object list. For details, see **Table 7-39**.

Table 7-39 port objects

Attribute	Type	Description
id	String	Specifies the port ID. A maximum of 255 characters are allowed. This parameter is not mandatory when you query ports.
name	String	Specifies the port name.
network_id	String	Specifies the ID of the network to which the port belongs.
admin_state_up	Boolean	Specifies the administrative status. The default value is **true**.
mac_address	String	Specifies the port MAC address. For example, **"mac_address": "fa:16:3e:9e:ff:55"**. This value can only be dynamically assigned by the system.
fixed_ips	Array of **fixed_ip** objects	Specifies the port IP address. For details, see **Table 7-40**. For example, the value is **"fixed_ips": [{"subnet_id": "4dc70db6-cb7f-4200-9790-a6a910776bba", "ip_address": "192.169.25.79"}]**. "fixed_ips": [{"subnet_id": "1fd001aa-6946-4168-86d9-924c7d3ef8fb", "ip_address": "2a07:b980:4030:14::1"}]

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Attribute	Type	Description
device_id	String	Specifies the device ID. This value is automatically maintained by the system and cannot be set or updated manually. The port with this field specified cannot be deleted.
device_owner	String	Specifies the DHCP, router or Nova to which a device belongs. The value can be **network:dhcp**, **network:router_interface_distributed**, **compute:xxx**, **neutron:VIP_PORT**, **neutron:LOADBALANCERV2**, **neutron:LOADBALANCERV3**, **network:endpoint_interface**, **network:nat_gateway**, or **network:ucmp**. (In value **compute:xxx**, **xxx** specifies the AZ name, for example, **compute:aa-bb-cc** indicates that the private IP address is used by an ECS in the **aa-bb-cc** AZ). This parameter value cannot be updated. You can only set **device_owner** to **neutron:VIP_PORT** for a virtual IP address port during port creation. If this parameter of a port is not left blank, the port can only be deleted when this parameter value is **neutron:VIP_PORT**. The port with this field specified cannot be deleted.
tenant_id	String	Specifies the project ID.
status	String	Specifies the port status. The value can be **ACTIVE**, **BUILD**, or **DOWN**. The status of a HANA SR-IOV VM port is always **DOWN**.

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Attribute	Type	Description
security_groups	Array of strings	Specifies the UUID of the security group, for example, **"security_groups": ["a0608cbf-d047-4f54-8b28-cd7b59853fff"]**. This is an extended attribute. This parameter cannot be left blank.
allowed_address_pairs	Array of **allowed_address_pairs** objects	Specifies the IP address and MAC address pair. This is an extended attribute. For details, see **Table 7-41**. Instructions: • The IP address cannot be **0.0.0.0**. • Configure a dedicated security group for the port if the parameter **allowed_address_pairs** has a large CIDR block (subnet mask less than 24). • If the value of **allowed_address_pairs** is **1.1.1.1/0**, the source/destination check is disabled. • In the hardware SDN networking plan, the **ip_address** attribute value cannot be in CIDR format. • To assign a virtual IP address to an ECS, the IP address configured in **allowed_address_pairs** must be an existing ECS NIC IP address. Otherwise, the virtual IP address cannot be used for communication. • Set **allowed_address_pairs** of the cloud server to **1.1.1.1/0**.
extra_dhcp_opts	Array of **extra_dhcp_opt** objects	Specifies the extended DHCP option. This is an extended attribute. For details, see **Table 7-42**.
binding:vif_details	**binding:vif_details** object	For details, see **Table 7-43**.

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Attribute	Type	Description
binding:profile	Object	Specifies the user-defined settings. This is an extended attribute. Instructions: • The **internal_elb** field is in boolean type and is available to common tenants. Set the value of this parameter to **true** only when you assign a virtual IP address to an internal network load balancer. Common tenants do not have the permission to change the value of this field, which is maintained by the system. Example: {"internal_elb": true} • The **disable_security_groups** field is in boolean type and is available to common tenants. The default value is **false**. In high-performance communication scenarios, you can set the parameter value to **true**, which makes this parameter to be available to common tenants. You can specify this parameter when creating a port. Currently, the value of this parameter can only be set to **true**. Example: {"disable_security_groups": true }, Currently, the value can only be set to **true**. When the value is set to **true**, the FWaaS function does not take effect.
binding:vnic_type	String	Specifies the type of the bound vNIC. **normal**: Softswitch
project_id	String	Specifies the project ID. For details about how to obtain a project ID, see **Obtaining a Project ID**.

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Attribute	Type	Description
created_at	String	Specifies the time (UTC) when the port is created. Format: *yyyy-MM-ddTHH:mm:ss*
updated_at	String	Specifies the time (UTC) when the port is updated. Format: *yyyy-MM-ddTHH:mm:ss*

Table 7-40 fixed_ip objects

Attribute	Type	Description
subnet_id	String	Specifies the ID of the subnet to which the port belongs. This parameter cannot be updated.
ip_address	String	Specifies the port IP address. This parameter cannot be updated.

Table 7-41 allowed_address_pairs objects

Attribute	Type	Description
ip_address	String	Specifies the IP address. This parameter cannot be **0.0.0.0**.
mac_address	String	Specifies the MAC address.

Table 7-42 extra_dhcp_opt objects

Attribute	Type	Description
opt_name	String	Specifies the option name.
opt_value	String	Specifies the option value.

Table 7-43 binding:vif_details object

Name	Type	Description
primary_interface	Boolean	If the value is true, this is the primary NIC.

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Name	Type	Description
port_filter	Boolean	Specifies the port used for filtering in security groups to protect against MAC or IP spoofing.
ovs_hybrid_plug	Boolean	Specifies that OVS hybrid plug should be used by Nova APIs.

Example Response

```
{
    "port": {
        "id": "a7d98f3c-b42f-460b-96a1-07601e145961",
        "name": "port-test02",
        "status": "DOWN",
        "admin_state_up": true,
        "fixed_ips": [],
        "mac_address": "fa:16:3e:01:f7:90",
        "network_id": "00ae08c5-f727-49ab-ad4b-b069398aa171",
        "tenant_id": "db82c9e1415a464ea68048baa8acc6b8",
        "project_id": "db82c9e1415a464ea68048baa8acc6b8",
        "device_id": "",
        "device_owner": "",
        "security_groups": [
            "d0d58aa9-cda9-414c-9c52-6c3daf8534e6"
        ],
        "extra_dhcp_opts": [],
        "allowed_address_pairs": [],
        "binding:vnic_type": "normal",
        "binding:vif_details": {},
        "binding:profile": {},
        "port_security_enabled": true,
        "created_at": "2018-09-20T01:45:26",
        "updated_at": "2018-09-20T01:48:56"
    }
}
```

Status Code

See **Status Codes**.

Error Code

See **Error Codes**.

7.2.5 Deleting a Port

Function

This API is used to delete a port.

Restrictions

- A port with **device_owner** set to a value other than **neutron:VIP_PORT** cannot be deleted.
- A port with **device_id** specified cannot be deleted.

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URI

DELETE /v2.0/ports/{port_id}

Table 7-44 describes the parameters.

Table 7-44 Parameter description

Name	Mandatory	Description
port_id	Yes	Specifies the port ID, which uniquely identifies the port.

Request Parameters

None

Response Parameters

None

Example Request

```
DELETE https://{Endpoint}/v2.0/ports/2b098395-046a-4071-b009-312bcee665cb
```

Example Response

None

Status Code

See **Status Codes**.

Error Code

See **Error Codes**.

7.3 Network

7.3.1 Querying Networks

Function

This API is used to query all networks accessible to the tenant submitting the request.

URI

GET /v2.0/networks

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Example:

```
GET https://{Endpoint}/v2.0/networks?
id={network_id}&status={network_status}&name={network_name}&admin_state_up=$
{admin_state_up}&tenant_id={tenant_id}&shared={is_shared}&provider:network_type={geneve}
```

Example of querying ports by page

```
GET https://{Endpoint}/v2.0/networks?limit=2&marker=0133cd73-34d4-4d4c-bf1f-
e65b24603206&page_reverse=False
```

Table 7-45 describes the parameters.

Table 7-45 Parameter description

Name	Mandatory	Type	Description
id	No	String	Specifies that the network ID is used as the filtering condition.
name	No	String	Specifies that the network name is used as the filtering condition.
admin_state_up	No	Boolean	Specifies that the admin state is used as the filtering condition. The value can be **true** or **false**.
provider:network_type	No	String	Specifies that the network type is used as the filtering condition.
shared	No	Boolean	Specifies that whether the network can be shared by multiple tenants is used as the filtering condition. The value can be **true** or **false**.
status	No	String	Specifies that the network status is used as the filtering condition. The value can be **ACTIVE**, **BUILD**, or **DOWN**.
router:external	No	Boolean	Specifies whether the network is an external network is used as the filtering condition. The value can be **true** or **false**.
tenant_id	No	String	Specifies that the project ID is used as the filtering condition.

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Name	Mandatory	Type	Description
marker	No	String	Specifies a resource ID for pagination query, indicating that the query starts from the next record of the specified resource ID. This parameter can work together with the parameter **limit**. • If parameters **marker** and **limit** are not passed, resource records on the first page will be returned. • If the parameter **marker** is not passed and the value of parameter **limit** is set to **10**, the first 10 resource records will be returned. • If the value of the parameter **marker** is set to the resource ID of the 10th record and the value of parameter **limit** is set to **10**, the 11th to 20th resource records will be returned. • If the value of the parameter **marker** is set to the resource ID of the 10th record and the parameter **limit** is not passed, resource records starting from the 11th records (including 11th) will be returned.
limit	No	Integer	Specifies the number of records that will be returned on each page. The value is from 0 to intmax (2^31-1). The default value is 2000. **limit** can be used together with **marker**. For details, see the parameter description of **marker**.

Request Parameters

None

Example Request

```
GET https://{Endpoint}/v2.0/networks?limit=1
```

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Response Parameters

Table 7-46 Response parameter

Parameter	Type	Description
networks	Array of **network** objects	Specifies the network list. For details, see **Table 7-47**.
networks_links	Array of **networks_link** objects	Specifies the pagination information. For details, see **Table 7-48**. Only when **limit** is used for filtering and the number of resources exceeds the value of **limit** or 2000 (default value of **limit**), value **next** will be returned for **rel** and a link for **href**.

Table 7-47 network object

Attribute	Type	Description
status	String	Specifies the network status. The value can be **ACTIVE**, **BUILD**, **DOWN**, or **ERROR**.
subnets	Array of strings	Specifies ID of the subnet associated with this network. Only one subnet can be associated with each network.
name	String	Specifies the network name. The name cannot be the same as the **admin_external_net** value (preset network name and cannot be used).
router:external	Boolean	Specifies whether the network is an external network. The default value is **false**. This is an extended attribute.
admin_state_up	Boolean	Specifies the administrative status. The value can only be **true**.
tenant_id	String	Specifies the project ID.
shared	Boolean	Specifies whether the network can be shared by different tenants.
id	String	Specifies the network ID.

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Attribute	Type	Description
provider:network_type	String	Specifies the network type. Only the VXLAN and GENEVE networks are supported. Tenants can only set this parameter to **geneve**. If this parameter is not specified, the network type is automatically set to VXLAN. If the network is **admin_external_net**, set this parameter to **vlan**. Note: • Set this parameter to **geneve** if you want to create GENEVE networks. • Do not specify this parameter if you want to create VXLAN networks.
availability_zone_hints	Array of strings	Specifies the availability zones available to this network. The current version does not support cross-availability-zone network scheduling.
availability_zones	Array of strings	Specifies the availability zone of this network.
port_security_enabled	Boolean	Specifies whether the security option is enabled for the port. If the option is not enabled, the security group and DHCP snooping settings of all VMs in the network do not take effect.
dns_domain	String	Specifies the default private network DNS domain address. The system automatically sets this parameter, and you are not allowed to configure or change the parameter value.
project_id	String	Specifies the project ID. For details about how to obtain a project ID, see **Obtaining a Project ID**.
created_at	String	Specifies the time (UTC) when the network is created. Format: *yyyy-MM-ddTHH:mm:ss*
updated_at	String	Specifies the time (UTC) when the network is updated. Format: *yyyy-MM-ddTHH:mm:ss*

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Table 7-48 networks_link object

Parameter	Type	Description
href	String	Specifies the API link.
rel	String	Specifies the relationship between the API link and the API version.

Example Response

```
{
   "networks": [
      {
         "id": "0133cd73-34d4-4d4c-bf1f-e65b24603206",
         "name": "3804f26c-7862-43b6-ad3c-48445f42de89",
         "status": "ACTIVE",
         "shared": false,
         "subnets": [
            "423796f5-e02f-476f-bf02-2b88c8ddac8b"
         ],
         "availability_zone_hints": [],
         "availability_zones": [
            "az2.dc2",
            "az5.dc5"
         ],
         "admin_state_up": true,
         "tenant_id": "bbfe8c41dd034a07bebd592bf03b4b0c",
         "project_id": "bbfe8c41dd034a07bebd592bf03b4b0c",
         "provider:network_type": "vxlan",
         "router:external": false,
         "port_security_enabled": true,
         "created_at": "2018-03-23T03:51:58",
         "updated_at": "2018-03-23T03:51:58"
      }
   ],
   "networks_links": [
      {
         "rel": "next",
         "href": "https://{Endpoint}/v2.0/networks?limit=1&marker=0133cd73-34d4-4d4c-bf1f-
e65b24603206"
      },
      {    "rel": "previous",
         "href": "https://{Endpoint}/v2.0/subnets?limit=1&marker=0133cd73-34d4-4d4c-bf1f-
e65b24603206&page_reverse=True"
      }
   ]
}
```

Status Code

See **Status Codes**.

Error Code

See **Error Codes**.

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7.3.2 Querying Network Details

Function

This API is used to query details about a network.

URI

GET /v2.0/networks/{network_id}

Table 7-49 describes the parameters.

Table 7-49 Parameter description

Name	Mandatory	Description
network_id	Yes	Specifies the network ID.

Request Parameters

None

Example Request

```
GET https://{Endpoint}/v2.0/networks/0133cd73-34d4-4d4c-bf1f-e65b24603206
```

Response Parameters

Table 7-50 Response parameter

Parameter	Type	Description
network	network object	Specifies the network. For details, see Table 7-51.

Table 7-51 network objects

Attribute	Type	Description
status	String	Specifies the network status. The value can be **ACTIVE**, **BUILD**, **DOWN**, or **ERROR**.
subnets	Array of strings	Specifies IDs of the subnets associated with this network. The IDs are in a list. Only one subnet can be associated with each network.

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Attribute	Type	Description
name	String	Specifies the network name. The name cannot be the same as the **admin_external_net** value (preset network name and cannot be used).
router:external	Boolean	Specifies whether the network is an external network. The default value is **false**. This is an extended attribute.
admin_state_up	Boolean	Specifies the administrative status. The value can only be **true**.
tenant_id	String	Specifies the project ID.
shared	Boolean	Specifies whether the network can be shared by different tenants.
id	String	Specifies the network ID. This parameter is not mandatory when you query networks.
provider:network_type	String	Specifies the network type. Only the VXLAN and GENEVE networks are supported. Tenants can only set this parameter to **geneve**. If this parameter is not specified, the network type is automatically set to VXLAN. If the network is **admin_external_net**, set this parameter to **vlan**. Note: ● Set this parameter to **geneve** if you want to create GENEVE networks. ● Do not specify this parameter if you want to create VXLAN networks.
availability_zone_hints	Array of strings	Specifies the availability zones available to this network. The current version does not support cross-availability-zone network scheduling.
availability_zones	Array of strings	Specifies the availability zone of this network.
port_security_enabled	Boolean	Specifies whether the security option is enabled for the port. If the option is not enabled, the security group and DHCP snooping settings of all VMs in the network do not take effect.

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Attribute	Type	Description
dns_domain	String	Specifies the default private network DNS domain address. The system automatically sets this parameter, and you are not allowed to configure or change the parameter value.
project_id	String	Specifies the project ID. For details about how to obtain a project ID, see **Obtaining a Project ID**.
created_at	String	Specifies the time (UTC) when the network is created. Format: *yyyy-MM-ddTHH:mm:ss*
updated_at	String	Specifies the time (UTC) when the network is updated. Format: *yyyy-MM-ddTHH:mm:ss*

Example Response

```
{
    "network": {
        "id": "0133cd73-34d4-4d4c-bf1f-e65b24603206",
        "name": "3804f26c-7862-43b6-ad3c-48445f42de89",
        "status": "ACTIVE",
        "shared": false,
        "subnets": [
            "423796f5-e02f-476f-bf02-2b88c8ddac8b"
        ],
        "availability_zone_hints": [],
        "availability_zones": [
            "az2.dc2",
            "az5.dc5"
        ],
        "admin_state_up": true,
        "tenant_id": "bbfe8c41dd034a07bebd592bf03b4b0c",
        "project_id": "bbfe8c41dd034a07bebd592bf03b4b0c",
        "provider:network_type": "vxlan",
        "router:external": false,
        "port_security_enabled": true,
        "created_at": "2018-03-23T03:51:58",
        "updated_at": "2018-03-23T03:51:58"
    }
}
```

Status Code

See **Status Codes**.

Error Code

See **Error Codes**.

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7.3.3 Creating a Network

Function

This API is used to create a network.

URI

POST /v2.0/networks

Request Parameters

Table 7-52 Request parameter

Parameter	Type	Mandatory	Description
network	**network** object	Yes	Specifies the network. For details, see **Table 7-53**.

Table 7-53 network objects

Attribute	Mandatory	Type	Description
name	No	String	Specifies the network name. The name cannot be the same as the **admin_external_net** value (preset network name and cannot be used).
admin_state_up	No	Boolean	Specifies the administrative status. The value can only be **true**.
shared	No	Boolean	Specifies whether the network can be shared by different tenants.

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Attribute	Mandatory	Type	Description
provider:network_type	No	String	Specifies the network type. Only the VXLAN and GENEVE networks are supported. Tenants can only set this parameter to **geneve**. If this parameter is not specified, the network type is automatically set to VXLAN. If the network is **admin_external_net**, set this parameter to **vlan**. Note: • Set this parameter to **geneve** if you want to create GENEVE networks. • Do not specify this parameter if you want to create VXLAN networks.
port_security_enabled	No	Boolean	Specifies whether the security option is enabled for the port. If the option is not enabled, the security group and DHCP snooping settings of all VMs in the network do not take effect.

Example Request

Create a network named **network-test**.

```
POST https://{Endpoint}/v2.0/networks

{
    "network": {
        "name": "network-test",
        "shared": false,
        "admin_state_up": true
    }
}
```

Response Parameters

Table 7-54 Response parameter

Parameter	Type	Description
network	**network** object	Specifies the network. For details, see **Table 7-55**.

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Table 7-55 network objects

Attribute	Type	Description
status	String	Specifies the network status. The value can be **ACTIVE**, **BUILD**, **DOWN**, or **ERROR**.
subnets	Array of strings	Specifies IDs of the subnets associated with this network. The IDs are in a list. Only one subnet can be associated with each network.
name	String	Specifies the network name. The name cannot be the same as the **admin_external_net** value (preset network name and cannot be used).
router:external	Boolean	Specifies whether the network is an external network. The default value is **false**. This is an extended attribute.
admin_state_up	Boolean	Specifies the administrative status. The value can only be **true**.
tenant_id	String	Specifies the project ID.
shared	Boolean	Specifies whether the network can be shared by different tenants.
id	String	Specifies the network ID. This parameter is not mandatory when you query networks.
provider:network_type	String	Specifies the network type. Only the VXLAN and GENEVE networks are supported. Tenants can only set this parameter to **geneve**. If this parameter is not specified, the network type is automatically set to VXLAN. If the network is **admin_external_net**, set this parameter to **vlan**. Note: ● Set this parameter to **geneve** if you want to create GENEVE networks. ● Do not specify this parameter if you want to create VXLAN networks.
availability_zone_hints	Array of strings	Specifies the availability zones available to this network. The current version does not support cross-availability-zone network scheduling.

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Attribute	Type	Description
availability_zones	Array of strings	Specifies the availability zone of this network.
port_security_enabled	Boolean	Specifies whether the security option is enabled for the port. If the option is not enabled, the security group and DHCP snooping settings of all VMs in the network do not take effect.
dns_domain	String	Specifies the default private network DNS domain address. The system automatically sets this parameter, and you are not allowed to configure or change the parameter value.
project_id	String	Specifies the project ID. For details about how to obtain a project ID, see **Obtaining a Project ID**.
created_at	String	Specifies the time (UTC) when the network is created. Format: *yyyy-MM-ddTHH:mm:ss*
updated_at	String	Specifies the time (UTC) when the network is updated. Format: *yyyy-MM-ddTHH:mm:ss*

Example Response

```
{
    "network": {
        "id": "c360322d-5315-45d7-b7d2-481f98c56edb",
        "name": "network-test",
        "status": "ACTIVE",
        "shared": false,
        "subnets": [],
        "availability_zone_hints": [],
        "availability_zones": [
            "az2.dc2",
            "az5.dc5"
        ],
        "admin_state_up": true,
        "tenant_id": "bbfe8c41dd034a07bebd592bf03b4b0c",
        "project_id": "bbfe8c41dd034a07bebd592bf03b4b0c",
        "provider:network_type": "vxlan",
        "router:external": false,
        "port_security_enabled": true,
        "created_at": "2018-09-20T01:53:18",
        "updated_at": "2018-09-20T01:53:20"
    }
}
```

Status Code

See **Status Codes**.

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Error Code

See **Error Codes**.

7.3.4 Updating a Network

Function

This API is used to update a network.

URI

PUT /v2.0/networks/{network_id}

Table 7-56 describes the parameters.

Table 7-56 Parameter description

Name	Mandatory	Description
network_id	Yes	Specifies the network ID.

Request Parameters

Table 7-57 Request parameter

Parameter	Type	Mandatory	Description
network	**network** object	Yes	Specifies the network. For details, see **Table 7-58**. You must specify at least one attribute when updating a network.

Table 7-58 network objects

Attribute	Mandatory	Type	Description
name	No	String	Specifies the network name. The name cannot be the same as the **admin_external_net** value (preset network name and cannot be used).
admin_state_up	No	Boolean	Specifies the administrative status. The value can only be **true**.

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Attribute	Mandatory	Type	Description
port_security_enabled	No	Boolean	Specifies whether the security option is enabled for the port. If the option is not enabled, the security group and DHCP snooping settings of all VMs in the network do not take effect.

Example Request

Change the name of the network whose ID is c360322d-5315-45d7-b7d2-481f98c56edb to **network-test02**.

```
PUT https://{Endpoint}/v2.0/networks/c360322d-5315-45d7-b7d2-481f98c56edb

{
  "network": {
    "name": "network-test02"
  }
}
```

Response Parameters

Table 7-59 Response parameter

Parameter	Type	Description
network	network object	Specifies the network. For details, see **Table 7-60**.

Table 7-60 network objects

Attribute	Type	Description
status	String	Specifies the network status. The value can be **ACTIVE**, **BUILD**, **DOWN**, or **ERROR**.
subnets	Array of strings	Specifies IDs of the subnets associated with this network. The IDs are in a list. Only one subnet can be associated with each network.
name	String	Specifies the network name. The name cannot be the same as the **admin_external_net** value (preset network name and cannot be used).

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Attribute	Type	Description
router:external	Boolean	Specifies whether the network is an external network. The default value is **false**. This is an extended attribute.
admin_state_up	Boolean	Specifies the administrative status. The value can only be **true**.
tenant_id	String	Specifies the project ID.
shared	Boolean	Specifies whether the network can be shared by different tenants.
id	String	Specifies the network ID. This parameter is not mandatory when you query networks.
provider:network_type	String	Specifies the network type. Only the VXLAN and GENEVE networks are supported. Tenants can only set this parameter to **geneve**. If this parameter is not specified, the network type is automatically set to VXLAN. If the network is **admin_external_net**, set this parameter to **vlan**. Note: ● Set this parameter to **geneve** if you want to create GENEVE networks. ● Do not specify this parameter if you want to create VXLAN networks.
availability_zone_hints	Array of strings	Specifies the availability zones available to this network. The current version does not support cross-availability-zone network scheduling.
availability_zones	Array of strings	Specifies the availability zone of this network.
port_security_enabled	Boolean	Specifies whether the security option is enabled for the port. If the option is not enabled, the security group and DHCP snooping settings of all VMs in the network do not take effect.
dns_domain	String	Specifies the default private network DNS domain address. The system automatically sets this parameter, and you are not allowed to configure or change the parameter value.

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Attribute	Type	Description
project_id	String	Specifies the project ID. For details about how to obtain a project ID, see **Obtaining a Project ID**.
created_at	String	Specifies the time (UTC) when the network is created. Format: *yyyy-MM-ddTHH:mm:ss*
updated_at	String	Specifies the time (UTC) when the network is updated. Format: *yyyy-MM-ddTHH:mm:ss*

Example Response

```
{
    "network": {
        "id": "c360322d-5315-45d7-b7d2-481f98c56edb",
        "name": "network-test02",
        "status": "ACTIVE",
        "shared": false,
        "subnets": [],
        "availability_zone_hints": [],
        "availability_zones": [
            "az2.dc2",
            "az5.dc5"
        ],
        "admin_state_up": true,
        "tenant_id": "bbfe8c41dd034a07bebd592bf03b4b0c",
        "project_id": "bbfe8c41dd034a07bebd592bf03b4b0c",
        "provider:network_type": "vxlan",
        "router:external": false,
        "port_security_enabled": true,
        "created_at": "2018-09-20T01:53:18",
        "updated_at": "2018-09-20T01:55:47"
    }
}
```

Status Code

See **Status Codes**.

Error Code

See **Error Codes**.

7.3.5 Deleting a Network

Function

This API is used to delete a network.

URI

DELETE /v2.0/networks/{network_id}

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Table 7-61 describes the parameters.

Table 7-61 Parameter description

Name	Mandatory	Description
network_id	Yes	Specifies the network ID.

Request Parameters

None

Response Parameters

None

Example Request

```
DELETE https://{Endpoint}/v2.0/networks/60c809cb-6731-45d0-ace8-3bf5626421a9
```

Example Response

None

Status Code

See **Status Codes**.

Error Code

See **Error Codes**.

7.4 Subnet

7.4.1 Querying Subnets

Function

This API is used to query all subnets accessible to the tenant submitting the request.

URI

GET /v2.0/subnets

Example:

```
GET https://{Endpoint}/v2.0/subnets?
name={subnet_name}&ip_version={ip_version}&network_id={network_id}&cidr={subnet_cidr_address}&gateway_ip={subnet_gateway}&tenant_id={tenant_id}&enable_dhcp={is_enable_dhcp}
```

Example of querying networks by page

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```
GET https://{Endpoint}/v2.0/subnets?limit=2&marker=011fc878-5521-4654-a1ad-
f5b0b5820302&page_reverse=False
```

Table 7-62 describes the parameters.

Table 7-62 Parameter description

Name	Mandatory	Type	Description
id	No	String	Specifies that the ID is used as the filtering condition.
name	No	String	Specifies that the subnet name is used as the filtering condition.
enable_dhcp	No	Boolean	Specifies whether DHCP is enabled for the subnet is used as the filtering condition. The value can be **true** or **false**.
cidr	No	String	Specifies that the CIDR block is used as the filtering condition.
network_id	No	String	Specifies that the network ID is used as the filtering condition.
ip_version	No	String	Specifies that the IP address version is used as the filtering condition.
gateway_ip	No	String	Specifies that the gateway IP address is used as the filtering condition.
tenant_id	No	String	Specifies that the project ID is used as the filtering condition.

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Name	Mandatory	Type	Description
marker	No	String	Specifies a resource ID for pagination query, indicating that the query starts from the next record of the specified resource ID. This parameter can work together with the parameter **limit**. • If parameters **marker** and **limit** are not passed, resource records on the first page will be returned. • If the parameter **marker** is not passed and the value of parameter **limit** is set to **10**, the first 10 resource records will be returned. • If the value of the parameter **marker** is set to the resource ID of the 10th record and the value of parameter **limit** is set to **10**, the 11th to 20th resource records will be returned. • If the value of the parameter **marker** is set to the resource ID of the 10th record and the parameter **limit** is not passed, resource records starting from the 11th records (including 11th) will be returned.
limit	No	Integer	Specifies the number of records that will be returned on each page. The value is from 0 to intmax (2^31-1). The default value is 2000. **limit** can be used together with **marker**. For details, see the parameter description of **marker**.

Request Parameters

None

Example Request

Example 1

```
GET https://{Endpoint}/v2.0/subnets?limit=1
```

Example 2

```
GET https://{Endpoint}/v2.0/subnets?id=011fc878-5521-4654-a1ad-f5b0b5820322
```

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Response Parameters

Table 7-63 Response parameter

Parameter	Type	Description
subnets	Array of **subnet** objects	Specifies the subnet list. For details, see **Table 7-64**.
subnets_links	Array of **subnets_link** objects	Specifies the pagination information. For details, see **Table 7-67**. Only when **limit** is used for filtering and the number of resources exceeds the value of **limit** or 2000 (default value of **limit**), value **next** will be returned for **rel** and a link for **href**.

Table 7-64 subnet objects

Attribute	Type	Description
id	String	Specifies the subnet ID. This parameter is not mandatory when you query subnets.
name	String	Specifies the subnet name.
ip_version	Integer	Specifies the IP address version. The value can be **4** (IPv4) or **6** (IPv6).
ipv6_address_mode	String	Specifies the IPv6 addressing mode. Only **dhcpv6-stateful** is supported.
ipv6_ra_mode	String	Specifies the IPv6 route broadcast mode. Only **dhcpv6-stateful** is supported.
network_id	String	Specifies the ID of the network to which the subnet belongs.

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Attribute	Type	Description
cidr	String	Specifies the CIDR format. Only the IPv4 addresses in the 10.0.0.0/8, 172.16.0.0/12, and 192.168.0.0/16 ranges are supported. The subnet mask cannot be greater than 28. This parameter cannot be set if the value of **ip_version** is **6**.
gateway_ip	String	The gateway IP address cannot conflict with IP addresses configured for **allocation_pools**. This attribute cannot be modified.
allocation_pools	Array of **allocation_pool** objects	Specifies available IP address pools. For details, see **Table 7-65**. Example: [{ "start": "10.0.0.2", "end": "10.0.0.251"}] The last three and the first IP addresses in each subnet are the ones reserved by the system. For example, in IPv4 subnet 192.168.1.0/24, IP addresses 192.168.1.0, 192.168.1.253, 192.168.1.254, and 192.168.1.255 are reserved by the system. [{"start": "2001:db8:a583:9::2", "end": "2001:db8:a583:9:ffff:ffff:ffff:fffc"}] In IPv6 subnet 2001:db8:a583:9::/64, IP addresses 2001:db8:a583:9::1, 2001:db8:a583:9:ffff:ffff:ffff:fffd, 2001:db8:a583:9:ffff:ffff:ffff:fffe, and 2001:db8:a583:9:ffff:ffff:ffff:ffff are reserved by the system. By default, the IP addresses reserved by the system are not in the IP address pool specified by **allocation_pool**. When updating an IP address pool, the **allocation_pool** value can contain neither gateway nor broadcast IP addresses.

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Attribute	Type	Description
dns_nameservers	Array of strings	Specifies the DNS server address. Example: "dns_nameservers": ["8.xx.xx.8","8.xx.xx.4"]
host_routes	Array of **host_route** objects	Specifies the static VM routes. For details, see **Table 7-66**. Static routes are not supported, and entered information will be ignored.
tenant_id	String	Specifies the project ID.
enable_dhcp	Boolean	Specifies whether to enable the DHCP function. Value **false** indicates that the DHCP function is not enabled. The value can only be **true**.
subnetpool_id	String	Specifies the subnet pool ID. Currently, only IPv6 is supported.
project_id	String	Specifies the project ID. For details about how to obtain a project ID, see **Obtaining a Project ID**.
created_at	String	Specifies the time (UTC) when the subnet is created. Format: *yyyy-MM-ddTHH:mm:ss*
updated_at	String	Specifies the time (UTC) when the subnet is updated. Format: *yyyy-MM-ddTHH:mm:ss*

Table 7-65 allocation_pool objects

Parameter	Type	Description
start	String	Specifies the start IP address of a network pool.
end	String	Specifies the end IP address of a network pool.

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Table 7-66 host_route objects

Parameter	Type	Description
destination	String	Specifies the destination subnet of a route.
nexthop	String	Specifies the next-hop IP address of a route.

Table 7-67 subnets_link object

Parameter	Type	Description
href	String	Specifies the API link.
rel	String	Specifies the relationship between the API link and the API version.

Example Response

Example 1

```
{
   "subnets": [
      {
          "name": "kesmdemeet",
          "cidr": "172.16.236.0/24",
          "id": "011fc878-5521-4654-a1ad-f5b0b5820302",
          "enable_dhcp": true,
          "network_id": "48efad0c-079d-4cc8-ace0-dce35d584124",
          "tenant_id": "bbfe8c41dd034a07bebd592bf03b4b0c",
          "project_id": "bbfe8c41dd034a07bebd592bf03b4b0c",
          "dns_nameservers": [],
          "allocation_pools": [
             {
                "start": "172.16.236.2",
                "end": "172.16.236.251"
             }
          ],
          "host_routes": [],
          "ip_version": 4,
          "gateway_ip": "172.16.236.1",
          "created_at": "2018-03-26T08:23:43",
          "updated_at": "2018-03-26T08:23:44"
      }
   ],
   "subnets_links": [
      {
          "rel": "next",
          "href": "https://{Endpoint}/v2.0/subnets?limit=1&marker=011fc878-5521-4654-a1ad-f5b0b5820302"
      },
      {    "rel": "previous",
          "href": "https://{Endpoint}/v2.0/subnets?limit=1&marker=011fc878-5521-4654-a1ad-
f5b0b5820302&page_reverse=True"
      }
   ]
}
```

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Example 2


```
{
   "subnets": [
      {
      "id": "011fc878-5521-4654-a1ad-f5b0b5820322",
      "name": "elb_alpha_vpc0_subnet0_172_16_0_0_24",
      "tenant_id": "0c55e5b2b100d5202ff6c01a2fac4580",
      "network_id": "3053b502-11b2-4599-bcf4-d9d06b6118b2",
          "ip_version": 6,
      "cidr": "2001:db8:a583:a0::/64",
          "subnetpool_id": "cb03d100-8687-4c0a-9441-ea568dcae47d",
      "allocation_pools": [{
          "start": "2001:db8:a583:a0::2",
      "end": "2001:db8:a583:a0:ffff:ffff:ffff:fffc"
      }],
      "gateway_ip": "2001:db8:a583:a0::1",
      "enable_dhcp": true,
      "ipv6_ra_mode": "dhcpv6-stateful",
      "ipv6_address_mode": "dhcpv6-stateful",
      "description": "",
      "dns_nameservers": [],
      "host_routes": [],
      "project_id": "0c55e5b2b100d5202ff6c01a2fac4580",
      "created_at": "2021-07-01T07:59:28",
      "updated_at": "2021-07-01T07:59:28"
      }
   ],
   "subnets_links": [
     {    "rel": "previous",
          "href": "https://{Endpoint}/v2.0/subnets?limit=1&id=011fc878-5521-4654-a1ad-
f5b0b5820322&marker=011fc878-5521-4654-a1ad-f5b0b5820302&page_reverse=True"
      }
   ]
}
```


Status Code

See **Status Codes**.

Error Code

See **Error Codes**.

7.4.2 Querying a Subnet

Function

This API is used to query details about a subnet.

URI

GET /v2.0/subnets/{subnet_id}

Request Parameters

None

Example Request

```
GET https://{Endpoint}/v2.0/subnets/011fc878-5521-4654-a1ad-f5b0b5820302
```

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Response Parameters

Table 7-68 Response parameter

Parameter	Type	Description
subnet	**subnet** object	Specifies the subnet. For details, see **Table 7-69**.

Table 7-69 subnet objects

Attribute	Type	Description
id	String	Specifies the subnet ID. This parameter is not mandatory when you query subnets.
name	String	Specifies the subnet name.
ip_version	Integer	Specifies the IP address version. The value can be **4** (IPv4) or **6** (IPv6).
ipv6_address_mode	String	Specifies the IPv6 addressing mode. Only **dhcpv6-stateful** is supported.
ipv6_ra_mode	String	Specifies the IPv6 route broadcast mode. Only **dhcpv6-stateful** is supported.
network_id	String	Specifies the ID of the network to which the subnet belongs.
cidr	String	Specifies the CIDR format. Only the IPv4 addresses in the 10.0.0.0/8, 172.16.0.0/12, and 192.168.0.0/16 ranges are supported. The subnet mask cannot be greater than 28. This parameter cannot be set if the value of **ip_version** is **6**.
gateway_ip	String	The gateway IP address cannot conflict with IP addresses configured for **allocation_pools**. This attribute cannot be modified.

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Attribute	Type	Description
allocation_pools	Array of **allocation_pool** objects	Specifies the available IP address pool. For details, see **Table 7-70**. Example: [{ "start": "10.0.0.2", "end": "10.0.0.251"}] The last three and the first IP addresses in each subnet are the ones reserved by the system. For example, in subnet **192.168.1.0/24**, IP addresses 192.168.1.0, 192.168.1.253, 192.168.1.254, and 192.168.1.255 are reserved by the system. [{"start": "2001:db8:a583:9::2", "end": "2001:db8:a583:9:ffff:ffff:ffff:fffc"}] In IPv6 subnet 2001:db8:a583:9::/64, IP addresses 2001:db8:a583:9::1, 2001:db8:a583:9:ffff:ffff:ffff:fffd, 2001:db8:a583:9:ffff:ffff:ffff:fffe, and 2001:db8:a583:9:ffff:ffff:ffff:ffff are reserved by the system. By default, the IP addresses reserved by the system are not in the IP address pool specified by **allocation_pool**. When updating an IP address pool, the **allocation_pool** value can contain neither gateway nor broadcast IP addresses.
dns_nameservers	Array of strings	Specifies the DNS server address. Example: "dns_nameservers": ["8.xx.xx.8","8.xx.xx.4"]
host_routes	Array of **host_route** objects	Specifies the static VM routes. For details, see **Table 7-71**. Static routes are not supported, and entered information will be ignored.
tenant_id	String	Specifies the project ID.

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Attribute	Type	Description
enable_dhcp	Boolean	Specifies whether to enable the DHCP function. Value **false** indicates that the DHCP function is not enabled. The value can only be **true**.
subnetpool_id	String	Specifies the subnet pool ID. Currently, only IPv6 is supported.
project_id	String	Specifies the project ID. For details about how to obtain a project ID, see **Obtaining a Project ID**.
created_at	String	Specifies the time (UTC) when the subnet is created. Format: *yyyy-MM-ddTHH:mm:ss*
updated_at	String	Specifies the time (UTC) when the subnet is updated. Format: *yyyy-MM-ddTHH:mm:ss*

Table 7-70 allocation_pool objects

Parameter	Type	Remarks
start	String	Specifies the start IP address of a network pool.
end	String	Specifies the end IP address of a network pool.

Table 7-71 host_route objects

Parameter	Type	Remarks
destination	String	Specifies the destination subnet of a route.
nexthop	String	Specifies the next-hop IP address of a route.

Example Response

```
{
    "subnet": {
        "name": "kesmdemeet",
        "cidr": "172.16.236.0/24",
```

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```
    "id": "011fc878-5521-4654-a1ad-f5b0b5820302",
    "enable_dhcp": true,
    "project_id": "bbfe8c41dd034a07bebd592bf03b4b0c",
    "dns_nameservers": [],
    "allocation_pools": [
      {
        "start": "172.16.236.2",
        "end": "172.16.236.251"
      }
    ],
    "host_routes": [],
    "ip_version": 4,
    "gateway_ip": "172.16.236.1",
    "created_at": "2018-03-26T08:23:43",
    "updated_at": "2018-03-26T08:23:44"
  }
}
```


Status Code

See **Status Codes**.

Error Code

See **Error Codes**.

7.4.3 Creating a Subnet

Function

This API is used to create a subnet.

Notes and Constraints

- IPv6 subnets can be created only when IPv4 subnets have been created on the network.
- A VXLAN network can have only one IPv4 subnet and one IPv6 subnet.

URI

POST /v2.0/subnets

Request Parameters

Table 7-72 Request parameter

Parameter	Type	Mandatory	Description
subnet	**subnet** object	Yes	Specifies the subnet. For details, see **Table 7-73**.

Table 7-73 subnet objects

Attribute	Mandatory	Type	Description
name	No	String	Specifies the subnet name.
ip_version	No	Integer	Specifies the IP address version. The value can be **4** (IPv4) or **6** (IPv6).
ipv6_address_mode	No	String	Specifies the IPv6 addressing mode. Only **dhcpv6-stateful** is supported.
ipv6_ra_mode	No	String	Specifies the IPv6 route broadcast mode. Only **dhcpv6-stateful** is supported.
network_id	Yes	String	Specifies the ID of the network to which the subnet belongs.
cidr	Yes	String	Specifies the CIDR format. Only the IPv4 addresses in the 10.0.0.0/8, 172.16.0.0/12, and 192.168.0.0/16 ranges are supported. The subnet mask cannot be greater than 28. The IPv6 mask cannot be greater than 128.
gateway_ip	No	String	The gateway IP address cannot conflict with IP addresses configured for **allocation_pools**. This attribute cannot be modified.

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Attribute	Mandatory	Type	Description
allocation_pools	No	Array of **allocation_pool** objects	Specifies the available IP address pool. For details, see **Table 7-74**. Example: [{ "start": "10.0.0.2", "end": "10.0.0.251"}] The last three and the first IP addresses in each subnet are the ones reserved by the system. For example, in subnet 192.168.1.0/24, IP addresses 192.168.1.0, 192.168.1.253, 192.168.1.254, and 192.168.1.255 are reserved by the system. [{"start": "2001:db8:a583:9::2", "end": "2001:db8:a583:9:ffff:ffff:ffff:fffc"}] In IPv6 subnet 2001:db8:a583:9::/64, IP addresses 2001:db8:a583:9::1, 2001:db8:a583:9:ffff:ffff:ffff:fffd, 2001:db8:a583:9:ffff:ffff:ffff:fffe, and 2001:db8:a583:9:ffff:ffff:ffff:ffff are reserved by the system. By default, the IP addresses reserved by the system are not in the IP address pool specified by **allocation_pool**. When updating an IP address pool, the **allocation_pool** value can contain neither gateway nor broadcast IP addresses.
dns_nameservers	No	Array of strings	Specifies the DNS server address. Instructions: Example: "dns_nameservers": ["8.xx.xx.8","8.xx.xx.4"] A maximum of five DNS server addresses are supported.

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Attribute	Mandatory	Type	Description
host_routes	No	Array of **host_route** objects	Specifies the static VM routes. For details, see **Table 7-75**. Static routes are not supported, and entered information will be ignored.
enable_dhcp	No	Boolean	Specifies whether to enable the DHCP function. Value **false** indicates that the DHCP function is not enabled. The value can only be **true**.

Table 7-74 allocation_pool objects

Parameter	Mandatory	Type	Description
start	No	String	Specifies the start IP address of a network pool.
end	No	String	Specifies the end IP address of a network pool.

Table 7-75 host_route objects

Parameter	Mandatory	Type	Description
destination	No	String	Specifies the destination subnet of a route.
nexthop	No	String	Specifies the next-hop IP address of a route.

Example Request

Create an IPv4 subnet named **subnet-test**, set its network ID to 0133cd73-34d4-4d4c-bf1f-e65b24603206, and CIDR block to 172.16.2.0/24.

```
POST https://{Endpoint}/v2.0/subnets

{
    "subnet": {
        "name": "subnet-test",
        "network_id": "0133cd73-34d4-4d4c-bf1f-e65b24603206",
```

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```
        "cidr": "172.16.2.0/24",
        "enable_dhcp": true
    }
}
```

Response Parameters

Table 7-76 Response parameter

Parameter	Type	Description
subnet	**subnet** object	Specifies the subnet. For details, see **Table 7-77**.

Table 7-77 subnet objects

Attribute	Type	Description
id	String	Specifies the subnet ID. This parameter is not mandatory when you query subnets.
name	String	Specifies the subnet name.
ip_version	Integer	Specifies the IP address version. The value can be **4** (IPv4) or **6** (IPv6).
ipv6_address_mode	String	Specifies the IPv6 addressing mode. Only **dhcpv6-stateful** is supported.
ipv6_ra_mode	String	Specifies the IPv6 route broadcast mode. Only **dhcpv6-stateful** is supported.
network_id	String	Specifies the ID of the network to which the subnet belongs.
cidr	String	Specifies the CIDR format. Only the addresses in the 10.0.0.0/8, 172.16.0.0/12, and 192.168.0.0/16 ranges are supported. In addition, the subnet mask cannot be greater than 28.

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Attribute	Type	Description
gateway_ip	String	The gateway IP address cannot conflict with IP addresses configured for **allocation_pools**. This attribute cannot be modified.
allocation_pools	Array of **allocation_pool** objects	Specifies the available IP address pool. For details, see the **allocation_pool** objects. **Table 7-78** Example: [{ "start": "10.0.0.2", "end": "10.0.0.251"}] The last three and the first IP addresses in each subnet are the ones reserved by the system. For example, in subnet **192.168.1.0/24**, IP addresses 192.168.1.0, 192.168.1.253, 192.168.1.254, and 192.168.1.255 are reserved by the system. By default, the IP addresses reserved by the system are not in the IP address pool specified by **allocation_pool**. [{"start": "2001:db8:a583:9::2", "end": "2001:db8:a583:9:ffff:ffff:ffff:fffc"}] In IPv6 subnet 2001:db8:a583:9::/64, IP addresses 2001:db8:a583:9::1, 2001:db8:a583:9:ffff:ffff:ffff:fffd, 2001:db8:a583:9:ffff:ffff:ffff:fffe, and 2001:db8:a583:9:ffff:ffff:ffff:ffff are reserved by the system. When updating an IP address pool, the **allocation_pool** value can contain neither gateway nor broadcast IP addresses.
dns_nameservers	Array of strings	Specifies the DNS server address. Example: "dns_nameservers": ["8.xx.xx.8","8.xx.xx.4"]

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Attribute	Type	Description
host_routes	Array of **host_route** objects	Specifies the static VM routes. For details, see **Table 7-79**. Static routes are not supported, and entered information will be ignored.
tenant_id	String	Specifies the project ID.
enable_dhcp	Boolean	Specifies whether to enable the DHCP function. Value **false** indicates that the DHCP function is not enabled. The value can only be **true**.
subnetpool_id	String	Specifies the subnet pool ID. Currently, only IPv6 is supported.
project_id	String	Specifies the project ID. For details about how to obtain a project ID, see **Obtaining a Project ID**.
created_at	String	Specifies the time (UTC) when the subnet is created. Format: *yyyy-MM-ddTHH:mm:ss*
updated_at	String	Specifies the time (UTC) when the subnet is updated. Format: *yyyy-MM-ddTHH:mm:ss*

Table 7-78 allocation_pool objects

Parameter	Type	Remarks
start	String	Specifies the start IP address of a network pool.
end	String	Specifies the end IP address of a network pool.

Table 7-79 host_route objects

Parameter	Type	Remarks
destination	String	Specifies the destination subnet of a route.

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Parameter	Type	Remarks
nexthop	String	Specifies the next-hop IP address of a route.

Example Response

```
{
    "subnet": {
        "name": "subnet-test",
        "cidr": "172.16.2.0/24",
        "id": "98bac90c-0ba7-4a63-8995-097da9bead1c",
        "enable_dhcp": true,
        "network_id": "0133cd73-34d4-4d4c-bf1f-e65b24603206",
        "tenant_id": "bbfe8c41dd034a07bebd592bf03b4b0c",
        "project_id": "bbfe8c41dd034a07bebd592bf03b4b0c",
        "dns_nameservers": [],
        "allocation_pools": [
            {
                "start": "172.16.2.2",
                "end": "172.16.2.251"
            }
        ],
        "host_routes": [],
        "ip_version": 4,
        "gateway_ip": "172.16.2.1",
        "created_at": "2018-09-20T02:02:16",
        "updated_at": "2018-09-20T02:02:16"
    }
}
```

Status Code

See **Status Codes**.

Error Code

See **Error Codes**.

7.4.4 Updating a Subnet

Function

This API is used to update information about a subnet.

Restrictions

When updating the **allocation_pools** field, neither gateway nor broadcast IP addresses can be included.

URI

PUT /v2.0/subnets/{subnet_id}

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Request Parameters

Table 7-80 Request parameter

Parameter	Type	Mandatory	Description
subnet	**subnet** object	Yes	Specifies the subnet. For details, see **Table 7-81**. You must specify at least one attribute when updating a subnet.

Table 7-81 subnet objects

Attribute	Mandatory	Type	Description
name	No	String	Specifies the subnet name.

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Attribute	Mandatory	Type	Description
allocation_pools	No	Array of **allocation_pool** objects	Specifies the available IP address pool. For details about the **allocation_pool** objects, see **Table 7-82**. Example: [{ "start": "10.0.0.2", "end": "10.0.0.251"}] The last three and the first IP addresses in each subnet are the ones reserved by the system. For example, in subnet **192.168.1.0/24**, IP addresses 192.168.1.0, 192.168.1.253, 192.168.1.254, and 192.168.1.255 are reserved by the system. By default, the IP addresses reserved by the system are not in the IP address pool specified by **allocation_pool**. [{"start": "2001:db8:a583:9::2", "end": "2001:db8:a583:9:ffff:ffff:ffff:fffc"}] In IPv6 subnet 2001:db8:a583:9::/64, IP addresses 2001:db8:a583:9::1, 2001:db8:a583:9:ffff:ffff:ffff:fffd, 2001:db8:a583:9:ffff:ffff:ffff:fffe, and 2001:db8:a583:9:ffff:ffff:ffff:ffff are reserved by the system. When updating an IP address pool, the **allocation_pool** value can contain neither gateway nor broadcast IP addresses.
dns_nameservers	No	Array of strings	Specifies the DNS server address. Instructions: Example: "dns_nameservers": ["8.xx.xx.8","8.xx.xx.4"] A maximum of five DNS server addresses are supported.

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Attribute	Mandatory	Type	Description
host_routes	No	Array of **host_route** objects	Specifies the static VM routes. For details, see **Table 7-83**. Static routes are not supported, and entered information will be ignored.
enable_dhcp	No	Boolean	Specifies whether to enable the DHCP function. Value **false** indicates that the DHCP function is not enabled. The value can only be **true**.

Table 7-82 allocation_pool objects

Parameter	Mandatory	Type	Description
start	No	String	Specifies the start IP address of a network pool.
end	No	String	Specifies the end IP address of a network pool.

Table 7-83 host_route objects

Parameter	Mandatory	Type	Description
destination	No	String	Specifies the destination subnet of a route.
nexthop	No	String	Specifies the next-hop IP address of a route.

Example Request

Change the name of the subnet whose ID is 98bac90c-0ba7-4a63-8995-097da9bead1c to **subnet-test**.

```
PUT https://{Endpoint}/v2.0/subnets/98bac90c-0ba7-4a63-8995-097da9bead1c
{
  "subnet": {
    "name": "subnet-test"
  }
}
```

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Response Parameters

Table 7-84 Response parameter

Parameter	Type	Description
subnet	**subnet** object	Specifies the subnet. For details, see **Table 7-85**.

Table 7-85 subnet objects

Attribute	Type	Description
id	String	Specifies the subnet ID. This parameter is not mandatory when you query subnets.
name	String	Specifies the subnet name.
ip_version	Integer	Specifies the IP address version. The value can be **4** (IPv4) or **6** (IPv6).
ipv6_address_mode	String	Specifies the IPv6 addressing mode. Only **dhcpv6-stateful** is supported.
ipv6_ra_mode	String	Specifies the IPv6 route broadcast mode. Only **dhcpv6-stateful** is supported.
network_id	String	Specifies the ID of the network to which the subnet belongs.
cidr	String	Specifies the CIDR format. Only the IPv4 addresses in the 10.0.0.0/8, 172.16.0.0/12, and 192.168.0.0/16 ranges are supported. The subnet mask cannot be greater than 28. The IPv6 mask cannot be greater than 128.
gateway_ip	String	The gateway IP address cannot conflict with IP addresses configured for **allocation_pools**. This attribute cannot be modified.

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Attribute	Type	Description
allocation_pools	Array of **allocation_pool** objects	Specifies the available IP address pool. For details, see the **allocation_pool** objects. **Table 7-86** Example: [{ "start": "10.0.0.2", "end": "10.0.0.251"}] The last three and the first IP addresses in each subnet are the ones reserved by the system. For example, in IPv4 subnet 192.168.1.0/24, IP addresses 192.168.1.0, 192.168.1.253, 192.168.1.254, and 192.168.1.255 are reserved by the system. [{"start": "2001:db8:a583:9::2", "end": "2001:db8:a583:9:ffff:ffff:ffff:fffc"}] In IPv6 subnet 2001:db8:a583:9::/64, IP addresses 2001:db8:a583:9::1, 2001:db8:a583:9:ffff:ffff:ffff:fffd, 2001:db8:a583:9:ffff:ffff:ffff:fffe, and 2001:db8:a583:9:ffff:ffff:ffff:ffff are reserved by the system. By default, the IP addresses reserved by the system are not in the IP address pool specified by **allocation_pool**. When updating an IP address pool, the **allocation_pool** value can contain neither gateway nor broadcast IP addresses.
dns_nameservers	Array of strings	Specifies the DNS server address. Example: "dns_nameservers": ["8.xx.xx.8","8.xx.xx.4"]
host_routes	Array of **host_route** objects	Specifies the static VM routes. For details, see **Table 7-87**. Static routes are not supported, and entered information will be ignored.
tenant_id	String	Specifies the project ID.

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Attribute	Type	Description
enable_dhcp	Boolean	Specifies whether to enable the DHCP function. Value **false** indicates that the DHCP function is not enabled. The value can only be **true**.
subnetpool_id	String	Specifies the subnet pool ID. Currently, only IPv6 is supported.
project_id	String	Specifies the project ID. For details about how to obtain a project ID, see **Obtaining a Project ID**.
created_at	String	Specifies the time (UTC) when the subnet is created. Format: *yyyy-MM-ddTHH:mm:ss*
updated_at	String	Specifies the time (UTC) when the subnet is updated. Format: *yyyy-MM-ddTHH:mm:ss*

Table 7-86 allocation_pool objects

Parameter	Type	Remarks
start	String	Specifies the start IP address of a network pool.
end	String	Specifies the end IP address of a network pool.

Table 7-87 host_route objects

Parameter	Type	Remarks
destination	String	Specifies the destination subnet of a route.
nexthop	String	Specifies the next-hop IP address of a route.

Example Response

```
{
    "subnet": {
        "name": "subnet-test",
        "cidr": "172.16.2.0/24",
```

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```
    "id": "98bac90c-0ba7-4a63-8995-097da9bead1c",
    "enable_dhcp": true,
    "network_id": "0133cd73-34d4-4d4c-bf1f-e65b24603206",
    "tenant_id": "bbfe8c41dd034a07bebd592bf03b4b0c",
    "project_id": "bbfe8c41dd034a07bebd592bf03b4b0c",
    "dns_nameservers": [],
    "allocation_pools": [
      {
        "start": "172.16.2.2",
        "end": "172.16.2.251"
      }
    ],
    "host_routes": [],
    "ip_version": 4,
    "gateway_ip": "172.16.2.1",
    "created_at": "2018-09-20T02:02:16",
    "updated_at": "2018-09-20T02:03:03"
  }
}
```


Status Code

See **Status Codes**.

Error Code

See **Error Codes**.

7.4.5 Deleting a Subnet

Function

This API is used to delete a subnet.

URI

DELETE /v2.0/subnets/{subnet_id}

Request Parameters

None

Response Parameters

None

Example Request

```
DELETE https://{Endpoint}/v2.0/subnets/74259164-e63a-4ad9-9c77-a1bd2c9aa187
```

Example Response

None

Status Code

See **Status Codes**.

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Error Code

See **Error Codes**.

7.5 Router

7.5.1 Querying Routers

Function

This API is used to query all routers accessible to the tenant submitting the request.

URI

GET /v2.0/routers

Example:

```
GET https://{Endpoint}/v2.0/routers?
id={id}&name={name}&admin_state_up={admin_state_up}&tenant_id={tenant_id}&status={status}
```

Example of querying routers by page

```
GET https://{Endpoint}/v2.0/routers?
limit=2&marker=01ab4be1-4447-45fb-94be-3ee787ed4ebe&page_reverse=False
```

Table 7-88 describes the parameters.

Table 7-88 Parameter description

Name	Mandatory	Type	Description
id	No	String	Specifies that the router ID is used as the filtering condition.
admin_state_up	No	Boolean	Specifies that the admin state is used as the filtering condition. The value can be **true** or **false**.
status	No	String	Specifies that the router status is used as the filtering condition. The value can be **ACTIVE**, **DOWN**, or **ERROE**.
tenant_id	No	String	Specifies that the project ID is used as the filtering condition.

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Name	Mandatory	Type	Description
marker	No	String	Specifies a resource ID for pagination query, indicating that the query starts from the next record of the specified resource ID. This parameter can work together with the parameter **limit**. • If parameters **marker** and **limit** are not passed, resource records on the first page will be returned. • If the parameter **marker** is not passed and the value of parameter **limit** is set to **10**, the first 10 resource records will be returned. • If the value of the parameter **marker** is set to the resource ID of the 10th record and the value of parameter **limit** is set to **10**, the 11th to 20th resource records will be returned. • If the value of the parameter **marker** is set to the resource ID of the 10th record and the parameter **limit** is not passed, resource records starting from the 11th records (including 11th) will be returned.
limit	No	Integer	Specifies the number of records that will be returned on each page. The value is from 0 to intmax (2^31-1). The default value is 2000. **limit** can be used together with **marker**. For details, see the parameter description of **marker**.

Request Parameters

None

Example Request

```
GET https://{Endpoint}/v2.0/routers?limit=1
```

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Response Parameters

Table 7-89 Response parameter

Parameter	Type	Description
routers	Array of **router** objects	Specifies the router list. For details, see **Table 7-90**.
routers_links	Array of **routers_link** objects	Specifies the pagination information. For details, see **Table 7-93**. Only when **limit** is used for filtering and the number of resources exceeds the value of **limit** or 2000 (default value of **limit**), value **next** will be returned for **rel** and a link for **href**.

Table 7-90 router objects

Attribute	Type	Description
id	String	Specifies the router ID. This parameter is not mandatory when you query routers.
name	String	Specifies the router name. The name can contain only letters, digits, underscores (_), hyphens (-), and periods (.).
admin_state_up	Boolean	Specifies the administrative status. The value can only be **true**.
status	String	Specifies the router status. The value can be **ACTIVE**, **DOWN**, or **ERROR**.
tenant_id	String	Specifies the project ID.
external_gateway_info	**external_gateway_info** object	Specifies the external gateway. This is an extended attribute. For details, see the **external_gateway_info** objects.
routes	Array of **route** objects	Specifies a route list. This is an extended attribute. For details, see **Table 7-92**.
project_id	String	Specifies the project ID. For details about how to obtain a project ID, see **Obtaining a Project ID**.

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Attribute	Type	Description
created_at	String	Specifies the time (UTC) when the router is created. Format: *yyyy-MM-ddTHH:mm:ss*
updated_at	String	Specifies the time (UTC) when the router is updated. Format: *yyyy-MM-ddTHH:mm:ss*

Table 7-91 external_gateway_info objects

Attribute	Type	Description
network_id	String	Specifies the UUID of the external network. You can use **GET /v2.0/networks?router:external=True** or run the **neutron net-external-list** command to query information about the external network.
enable_snat	Boolean	Specifies whether the SNAT function is enabled. The default value is **false**.

Table 7-92 route objects

Attribute	Type	Description
destination	String	Specifies the IP address range.
nexthop	String	Specifies the next hop IP address. The IP address can only be one in the subnet associated with the router.

Table 7-93 routers_link object

Name	Type	Description
href	String	Specifies the API link.
rel	String	Specifies the relationship between the API link and the API version.

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Example Response


```
{
   "routers": [
      {
         "id": "01ab4be1-4447-45fb-94be-3ee787ed4ebe",
         "name": "xiaoleizi-tag",
         "status": "ACTIVE",
         "tenant_id": "bbfe8c41dd034a07bebd592bf03b4b0c",
         "project_id": "bbfe8c41dd034a07bebd592bf03b4b0c",
         "admin_state_up": true,
         "external_gateway_info": {
            "network_id": "0a2228f2-7f8a-45f1-8e09-9039e1d09975",
            "enable_snat": false
         },
         "routes": [
            {
               "destination": "0.0.0.0/0",
               "nexthop": "172.16.0.124"
            }
         ],
         "created_at": "2018-03-23T09:26:08",
         "updated_at": "2018-08-24T08:49:53"
      }
   ],
   "routers_links": [
     {
         "rel": "next",
         "href": "https://{Endpoint}/v2.0/routers?limit=1&marker=01ab4be1-4447-45fb-94be-3ee787ed4ebe"
      },
     {    "rel": "previous",
         "href": "https://{Endpoint}/v2.0/routers?
limit=1&marker=01ab4be1-4447-45fb-94be-3ee787ed4ebe&page_reverse=True"
      }
   ]
}
```


Status Code

See **Status Codes**.

Error Code

See **Error Codes**.

7.5.2 Querying a Router

Function

This API is used to query details about a router.

URI

GET /v2.0/routers/{router_id}

Request Parameters

None

Example Request

```
GET https://{Endpoint}/v2.0/routers/01ab4be1-4447-45fb-94be-3ee787ed4ebe
```

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Response Parameters

Table 7-94 Response parameter

Parameter	Type	Description
router	**router** object	Specifies the router. For details, see **Table 7-95**.

Table 7-95 router objects

Attribute	Type	Description
id	String	Specifies the router ID. This parameter is not mandatory when you query routers.
name	String	Specifies the router name. The name can contain only letters, digits, underscores (_), hyphens (-), and periods (.).
admin_state_up	Boolean	Specifies the administrative status. The value can only be **true**.
status	String	Specifies the router status. The value can be **ACTIVE**, **DOWN**, or **ERROR**.
tenant_id	String	Specifies the project ID.
external_gateway_info	**external_gateway_info** object	Specifies the external gateway. This is an extended attribute. For details, see the **external_gateway_info** objects.
routes	Array of **route** objects	Specifies a route list. This is an extended attribute. For details, see **Table 7-97**.
project_id	String	Specifies the project ID. For details about how to obtain a project ID, see **Obtaining a Project ID**.
created_at	String	Specifies the time (UTC) when the router is created. Format: *yyyy-MM-ddTHH:mm:ss*
updated_at	String	Specifies the time (UTC) when the router is updated. Format: *yyyy-MM-ddTHH:mm:ss*

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Table 7-96 external_gateway_info objects

Attribute	Type	Description
network_id	String	Specifies the UUID of the external network. You can use **GET /v2.0/networks?router:external=True** or run the **neutron net-external-list** command to query information about the external network.
enable_snat	Boolean	Specifies whether the SNAT function is enabled. The default value is **false**.

Table 7-97 route objects

Attribute	Type	Description
destination	String	Specifies the IP address range.
nexthop	String	Specifies the next hop IP address. The IP address can only be one in the subnet associated with the router.

Example Response

```
{
    "router": {
        "id": "01ab4be1-4447-45fb-94be-3ee787ed4ebe",
        "name": "xiaoleizi-tag",
        "status": "ACTIVE",
        "tenant_id": "bbfe8c41dd034a07bebd592bf03b4b0c",
        "project_id": "bbfe8c41dd034a07bebd592bf03b4b0c",
        "admin_state_up": true,
        "external_gateway_info": {
            "network_id": "0a2228f2-7f8a-45f1-8e09-9039e1d09975",
            "enable_snat": false
        },
        "routes": [
            {
                "destination": "0.0.0.0/0",
                "nexthop": "172.16.0.124"
            }
        ],
        "created_at": "2018-03-23T09:26:08",
        "updated_at": "2018-08-24T08:49:53"
    }
}
```

Status Code

See **Status Codes**.

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Error Code

See **Error Codes**.

7.5.3 Creating a Router

Function

This API is used to create a router.

URI

POST /v2.0/routers

Request Parameters

Table 7-98 Request parameter

Parameter	Type	Mandatory	Description
router	**router** object	Yes	Specifies the router. For details, see **Table 7-99**.

Table 7-99 router objects

Attribute	Mandatory	Type	Description
name	No	String	Specifies the router name. Instructions: The name can contain only letters, digits, underscores (_), hyphens (-), and periods (.).
admin_state_up	No	Boolean	Specifies the administrative status. The value can only be **true**.
external_gateway_info	No	**external_gateway_info** object	Specifies the external gateway. This is an extended attribute. For details, see the **external_gateway_info** objects.

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Table 7-100 external_gateway_info objects

Attribute	Mandatory	Type	Description
network_id	No	String	Specifies the UUID of the external network. You can use **GET /v2.0/networks?router:external=True** or run the **neutron net-external-list** command to query information about the external network.

Example Request

Create a router named **router-test2**.

```
POST https://{Endpoint}/v2.0/routers

{
    "router": {
        "name": "router-test2",
        "admin_state_up": true
    }
}
```

Response Parameters

Table 7-101 Response parameter

Parameter	Type	Description
router	**router** object	Specifies the router. For details, see **Table 7-102**.

Table 7-102 router objects

Attribute	Type	Description
id	String	Specifies the router ID. This parameter is not mandatory when you query routers.
name	String	Specifies the router name. The name can contain only letters, digits, underscores (_), hyphens (-), and periods (.).
admin_state_up	Boolean	Specifies the administrative status. The value can only be **true**.

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Attribute	Type	Description
status	String	Specifies the router status. The value can be **ACTIVE**, **DOWN**, or **ERROR**.
tenant_id	String	Specifies the project ID.
external_gateway_info	**external_gateway_info** object	Specifies the external gateway. This is an extended attribute. For details, see the **external_gateway_info** objects.
routes	Array of **route** objects	Specifies a route list. This is an extended attribute. For details, see **Table 7-104**.
project_id	String	Specifies the project ID. For details about how to obtain a project ID, see **Obtaining a Project ID**.
created_at	String	Specifies the time (UTC) when the router is created. Format: *yyyy-MM-ddTHH:mm:ss*
updated_at	String	Specifies the time (UTC) when the router is updated. Format: *yyyy-MM-ddTHH:mm:ss*

Table 7-103 external_gateway_info objects

Attribute	Type	Description
network_id	String	Specifies the UUID of the external network. You can use **GET /v2.0/networks?router:external=True** or run the **neutron net-external-list** command to query information about the external network.

Table 7-104 route objects

Attribute	Type	Description
destination	String	Specifies the IP address range.
nexthop	String	Specifies the next hop IP address. The IP address can only be one in the subnet associated with the router.

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Example Response

```
{
    "router": {
        "id": "f5dbdfe0-86f9-4b0a-9a32-6be143f0a076",
        "name": "router-test2",
        "status": "ACTIVE",
        "tenant_id": "bbfe8c41dd034a07bebd592bf03b4b0c",
        "project_id": "bbfe8c41dd034a07bebd592bf03b4b0c",
        "admin_state_up": true,
        "external_gateway_info": {
            "network_id": "0a2228f2-7f8a-45f1-8e09-9039e1d09975",
            "enable_snat": false
        },
        "routes": [],
        "created_at": "2018-09-20T02:06:07",
        "updated_at": "2018-09-20T02:06:09"
    }
}
```

Status Code

See **Status Codes**.

Error Code

See **Error Codes**.

7.5.4 Updating a Router

Function

This API is used to update a router.

URI

PUT /v2.0/routers/{router_id}

Request Parameters

Table 7-105 Request parameter

Parameter	Mandatory	Type	Description
router	Yes	**router** object	Specifies the router. For details, see **Table 7-106**. You must specify at least one attribute when updating a router.

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Table 7-106 router objects

Attribute	Mandatory	Type	Description
name	No	String	Specifies the router name. Instructions: The name can contain only letters, digits, underscores (_), hyphens (-), and periods (.).
admin_state_up	No	Boolean	Specifies the administrative status. The value can only be **true**.
external_gateway_info	No	**external_gateway_info** object	Specifies the external gateway. This is an extended attribute. For details, see the **external_gateway_info** objects.
routes	No	Array of **route** objects	Specifies a route list. This is an extended attribute. For details, see **Table 7-108**.

Table 7-107 external_gateway_info objects

Attribute	Mandatory	Type	Description
network_id	No	String	Specifies the UUID of the external network. You can use **GET /v2.0/networks?router:external=True** or run the **neutron net-external-list** command to query information about the external network.

Table 7-108 route objects

Attribute	Mandatory	Type	Description
destination	No	String	Specifies the IP address range. Instructions: The prefix cannot be the same as that of a direct route.
nexthop	No	String	Specifies the next hop IP address. The IP address can only be one in the subnet associated with the router.

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Example Request

Change the name of the router whose ID is f5dbdfe0-86f9-4b0a-9a32-6be143f0a076 to **router-220**.

```
PUT https://{Endpoint}/v2.0/routers/f5dbdfe0-86f9-4b0a-9a32-6be143f0a076

{
   "router": {
         "name": "router-220"
   }
}
```

Response Parameters

Table 7-109 Response parameter

Parameter	Type	Description
router	**router** object	Specifies the router. For details, see **Table 7-110**.

Table 7-110 router objects

Attribute	Type	Description
id	String	Specifies the router ID. This parameter is not mandatory when you query routers.
name	String	Specifies the router name. The name can contain only letters, digits, underscores (_), hyphens (-), and periods (.).
admin_state_up	Boolean	Specifies the administrative status. The value can only be **true**.
status	String	Specifies the router status. The value can be **ACTIVE**, **DOWN**, or **ERROR**.
tenant_id	String	Specifies the project ID.
external_gateway_info	**external_gateway_info** object	Specifies the external gateway. This is an extended attribute. For details, see the **external_gateway_info** objects.
routes	Array of **route** objects	Specifies a route list. This is an extended attribute. For details, see **Table 7-112**.

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Attribute	Type	Description
project_id	String	Specifies the project ID. For details about how to obtain a project ID, see **Obtaining a Project ID**.
created_at	String	Specifies the time (UTC) when the router is created. Format: *yyyy-MM-ddTHH:mm:ss*
updated_at	String	Specifies the time (UTC) when the router is updated. Format: *yyyy-MM-ddTHH:mm:ss*

Table 7-111 external_gateway_info objects

Attribute	Type	Description
network_id	String	Specifies the UUID of the external network. You can use **GET /v2.0/networks?router:external=True** or run the **neutron net-external-list** command to query information about the external network.
enable_snat	Boolean	Specifies whether the SNAT function is enabled. The default value is **false**.

Table 7-112 route objects

Attribute	Type	Description
destination	String	Specifies the IP address range.
nexthop	String	Specifies the next hop IP address. The IP address can only be one in the subnet associated with the router.

Example Response

```
{
    "router": {
        "id": "f5dbdfe0-86f9-4b0a-9a32-6be143f0a076",
        "name": "router-220",
        "status": "ACTIVE",
        "tenant_id": "bbfe8c41dd034a07bebd592bf03b4b0c",
        "project_id": "bbfe8c41dd034a07bebd592bf03b4b0c",
        "admin_state_up": true,
        "external_gateway_info": {
```

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```
        "network_id": "0a2228f2-7f8a-45f1-8e09-9039e1d09975",
        "enable_snat": false
      },
      "routes": [],
      "created_at": "2018-09-20T02:06:07",
      "updated_at": "2018-09-20T02:06:09"
   }
}
```

Status Code

See **Status Codes**.

Error Code

See **Error Codes**.

7.5.5 Deleting a Router

Function

This API is used to delete a router.

URI

DELETE /v2.0/routers/{router_id}

Request Parameters

None

Response Parameters

None

Example Request

```
DELETE https://{Endpoint}/v2.0/routers/0735a367-2caf-48fb-85aa-6082266f342e
```

Example Response

None

Status Code

See **Status Codes**.

Error Code

See **Error Codes**.

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7.5.6 Adding an Interface to a Router

Function

This API is used to add an interface to a router.

Restrictions

- When a port is used, the port can have only one IP address.
- When a subnet is used, the gateway IP address must be configured for the subnet.
- A router cannot be added to networks whose **provider:network_type** is **geneve**.
- Only one router can be added to a subnet.

URI

PUT /v2.0/routers/{router_id}/add_router_interface

Request Parameters

Table 7-113 Request parameter

Parameter	Type	Mandatory	Description
subnet_id	String	No	Specifies the subnet ID. Either **subnet_id** or **port_id** is used. Use the gateway IP address of the subnet to create a router interface.
port_id	String	No	Specifies the port ID. Either **subnet_id** or **port_id** is used. Use the port IP address to create a router interface.

Example Request

Add an interface to the router. The router ID is i5b8e885c-1347-4ac2-baf9-2249c8ed1270, and the subnet ID is ab78be2d-782f-42a5-aa72-35879f6890ff.

```
PUT https://{Endpoint}/v2.0/routers/5b8e885c-1347-4ac2-baf9-2249c8ed1270/add_router_interface

{"subnet_id": "ab78be2d-782f-42a5-aa72-35879f6890ff"}
```

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Response Parameters

Table 7-114 Response parameter

Parameter	Type	Description
subnet_id	String	Specifies the subnet ID.
tenant_id	String	Specifies the project ID.
project_id	String	Specifies the project ID.
port_id	String	Specifies the port ID.
id	String	Specifies the router ID.

Example Response

```
{
  "subnet_id": "ab78be2d-782f-42a5-aa72-35879f6890ff",
  "tenant_id": "6fbe9263116a4b68818cf1edce16bc4f",
  "project_id": "6fbe9263116a4b68818cf1edce16bc4f",
  "port_id": "40e86635-b2a3-45de-a7c8-3cced5b7e755",
  "id": "5b8e885c-1347-4ac2-baf9-2249c8ed1270"
}
```

Status Code

See **Status Codes**.

Error Code

See **Error Codes**.

7.5.7 Removing an Interface from a Router

Function

Removing an interface from a router will also remove the port.

Restrictions

You are not allowed to remove an interface from a router if there are load balancers in the subnet.

URI

PUT /v2.0/routers/{router_id}/remove_router_interface

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Request Parameters

Table 7-115 Request parameter

Parameter	Type	Mandatory	Description
subnet_id	String	No	Specifies the subnet ID. Either **subnet_id** or **port_id** must be specified. Use the gateway IP address of the subnet to create a router interface.
port_id	String	No	Specifies the port ID. Either **subnet_id** or **port_id** is used. Use the port IP address to create a router interface.

Example Request

Remove an interface from a router. The router ID is b625c58c-0cfe-49e0-acc8-f2374f8187ff, and the subnet ID is 4b910a10-0860-428b-b463-d84dbc5e288e.

```
PUT https://{Endpoint}/v2.0/routers/b625c58c-0cfe-49e0-acc8-f2374f8187ff/remove_router_interface

{"subnet_id": "4b910a10-0860-428b-b463-d84dbc5e288e"}
```

Response Parameters

Table 7-116 Response parameter

Parameter	Type	Description
subnet_id	String	Specifies the subnet ID.
tenant_id	String	Specifies the project ID.
project_id	String	Specifies the project ID.
port_id	String	Specifies the port ID.
id	String	Specifies the router ID.

Example Response

```
{
  "subnet_id": "4b910a10-0860-428b-b463-d84dbc5e288e",
  "tenant_id": "3d72597871904daeb6887f75f848b531",
  "project_id": "3d72597871904daeb6887f75f848b531",
  "port_id": "34d7d063-8f40-4958-b420-096db40d4067",
  "id": "b625c58c-0cfe-49e0-acc8-f2374f8187ff"
}
```

Status Code

See **Status Codes**.

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Error Code

See **Error Codes**.

7.6 Floating IP Address

7.6.1 Querying Floating IP Addresses

Function

This API is used to query all floating IP addresses accessible to the tenant submitting the request.

You can query the detailed information about a specified floating IP address using the API for **Querying a Floating IP Address**.

URI

GET /v2.0/floatingips

Table 7-117 describes the parameters.

Table 7-117 Parameter description

Parameter	Mandatory	Type	Description
id	No	String	Specifies the floating IP address ID.
floating_ip_address	No	String	Specifies the floating IPv4 address.

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Parameter	Mandatory	Type	Description
floating_network_id	No	String	Specifies the external network ID. You can only use fixed external network. You can use **GET /v2.0/networks?router:external=True** or **GET /v2.0/networks?name={floating_network}** or run the **neutron net-external-list** command to obtain information about the external network.
router_id	No	String	Specifies the ID of the belonged router.
port_id	No	String	Specifies the port ID.
fixed_ip_address	No	String	Specifies the private IP address of the associated port.
tenant_id	No	String	Specifies the project ID.

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Parameter	Mandatory	Type	Description
limit	No	Integer	Specifies the number of records that will be returned on each page. The value is from 0 to intmax (2^31-1). The default value is 2000. **limit** can be used together with **marker**. For details, see the parameter description of **marker**.

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Parameter	Mandatory	Type	Description
marker	No	String	Specifies a resource ID for pagination query, indicating that the query starts from the next record of the specified resource ID. This parameter can work together with the parameter **limit**. ● If parameters **marker** and **limit** are not passed, resource records on the first page will be returned. ● If the parameter **marker** is not passed and the value of parameter **limit** is set to **10**, the first 10 resource records will be returned. ● If the value of the parameter **marker** is set to the resource ID of the 10th record and the value of parameter **limit** is set to **10**, the 11th to 20th resource records will be returned. ● If the value of the parameter **marker** is set to the resource

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Parameter	Mandatory	Type	Description
			ID of the 10th record and the parameter **limit** is not passed, resource records starting from the 11th records (including 11th) will be returned.
page_reverse	No	Boolean	Specifies the page direction. The value can be **True** or **False**.

Example:

```
GET https://{Endpoint}/v2.0/floatingips?
id={fip_id}&router_id={router_id}&floating_network_id={net_id}&floating_ip_address={floating_ip}&port_id={
port_id}&fixed_ip_address={fixed_ip}&tenant_id={tenant_id}
```

Request Message

None

Response Message

Table 7-118 Response parameter

Parameter	Type	Description
floatingips	Array of **floatingip** objects	Specifies the floating IP address list. For details, see **Table 7-119**.

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Table 7-119 floatingip objects

Parameter	Type	Description
status	String	Specifies the floating IP address status. The value can be **ACTIVE**, **DOWN**, or **ERROR**. • **DOWN** indicates that the floating IP address has not been bound. • **ACTIVE** indicates that the floating IP address has been bound. • **ERROR** indicates that the floating IP address is abnormal.
id	String	Specifies the floating IP address ID.
project_id	String	Specifies the project ID.
floating_ip_address	String	Specifies the floating IP address.
floating_network_id	String	Specifies the external network ID.
router_id	String	Specifies the ID of the belonged router.
port_id	String	Specifies the port ID.
fixed_ip_address	String	Specifies the private IP address of the associated port.
tenant_id	String	Specifies the project ID.
created_at	String	Specifies the time when the floating IP address was created. UTC time is used. Format: *yyyy-MM-ddTHH:mm:ss*

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Parameter	Type	Description
updated_at	String	Specifies the time when the floating IP address was updated. UTC time is used. Format: *yyyy-MM-ddTHH:mm:ss*

Example Request

```
GET https://{Endpoint}/v2.0/floatingips?limit=1
```

Example Response

Status code: 200

Normal response to the GET operation

```
{
  "floatingips" : [ {
    "id" : "1a3a2818-d9b4-4a9c-8a19-5252c499d1cd",
    "status" : "DOWN",
    "router_id" : null,
    "tenant_id" : "bbfe8c41dd034a07bebd592bf03b4b0c",
    "project_id" : "bbfe8c41dd034a07bebd592bf03b4b0c",
    "floating_network_id" : "0a2228f2-7f8a-45f1-8e09-9039e1d09975",
    "fixed_ip_address" : null,
    "floating_ip_address" : "99.99.99.84",
    "port_id" : null,


    "created_at" : "2017-10-19T12:21:28",
    "updated_at" : "2018-07-30T12:52:13"
  } ],
  "floatingips_links" : [ {
    "href" : "https://network.region.cn-test-2.clouds.com/v2.0/floatingips.json?
limit=2000&marker=000a6144-5010-46f2-bf06-6a1c94477ea3&page_reverse=true",
    "rel" : "previous"
  }, {
    "href" : "https://network.region.cn-test-2.clouds.com/v2.0/floatingips.json?limit=2000&marker=d445e537-
bc81-4039-9c7b-f9c1f5c73c78",
    "rel" : "next"
  } ]
}
```

Status Code

See **Status Codes**.

Error Code

See **Error Codes**.

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7.6.2 Querying a Floating IP Address

Function

This API is used to query details about a specified floating IP address, including the floating IP address status, ID of the router to which the floating IP address belongs, and external network ID of the floating IP address.

URI

GET /v2.0/floatingips/{floatingip_id}

Request Message

None

Response Message

Table 7-120 Response parameter

Parameter	Type	Description
floatingip	**floatingip** object	Specifies the floating IP address list. For details, see **Table 7-121**.

Table 7-121 floatingip objects

Attribute	Type	Description
status	String	Specifies the floating IP address status. The value can be **ACTIVE**, **DOWN**, or **ERROR**. • **DOWN** indicates that the floating IP address has not been bound. • **ACTIVE** indicates that the floating IP address has been bound. • **ERROR** indicates that the floating IP address is abnormal.

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Attribute	Type	Description
id	String	Specifies the floating IP address ID.
project_id	String	Specifies the project ID.
floating_ip_address	String	Specifies the floating IP address.
floating_network_id	String	Specifies the external network ID.
router_id	String	Specifies the ID of the belonged router.
port_id	String	Specifies the port ID.
fixed_ip_address	String	Specifies the private IP address of the associated port.
tenant_id	String	Specifies the project ID.
created_at	String	Specifies the time when the floating IP address was created. UTC time is used. Format: *yyyy-MM-ddTHH:mm:ss*
updated_at	String	Specifies the time when the floating IP address was updated. UTC time is used. Format: *yyyy-MM-ddTHH:mm:ss*

Example Request

```
GET https://{Endpoint}/v2.0/floatingips/1a3a2818-d9b4-4a9c-8a19-5252c499d1cd
```

Example Response

Status code: 200

```
{
    "floatingip": {
        "id": "1a3a2818-d9b4-4a9c-8a19-5252c499d1cd",
        "status": "DOWN",
        "router_id": null,
        "tenant_id": "bbfe8c41dd034a07bebd592bf03b4b0c",
        "project_id": "bbfe8c41dd034a07bebd592bf03b4b0c",
        "floating_network_id": "0a2228f2-7f8a-45f1-8e09-9039e1d09975",
        "fixed_ip_address": null,
        "floating_ip_address": "99.99.99.84",
```

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```
    "port_id": null,
    "created_at": "2017-10-19T12:21:28",
    "updated_at": "2018-07-30T12:52:13"
  }
}
```

Status Code

See **Status Codes**.

Error Code

See **Error Codes**.

7.6.3 Assigning a Floating IP Address

Function

When assigning a floating IP address, you need to obtain the external network ID **floating_network_id** of the floating IP address.

You can use **GET /v2.0/networks?router:external=True** or run the **neutron net-external-list** command to obtain the UUID of the external network required for assigning a floating IP address.

URI

POST /v2.0/floatingips

Request Message

Table 7-122 Request parameter

Parameter	Type	Mandatory	Description
floatingip	**floatingip** object	Yes	Specifies the floating IP address list. For details, see **Table 7-123**.

Table 7-123 floatingip objects

Parameter	Mandatory	Type	Description
floating_ip_address	No	String	Specifies the floating IP address.

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Parameter	Mandatory	Type	Description
floating_network_id	Yes	String	Specifies the external network ID. You can only use fixed external network. You can use **GET /v2.0/networks?router:external=True** or **GET /v2.0/networks?name={floating_network}** or run the **neutron net-external-list mode** command to obtain information about the external network.
port_id	No	String	Specifies the port ID.
fixed_ip_address	No	String	Specifies the private IP address of the associated port.

Response Message

Table 7-124 Response parameter

Parameter	Type	Description
floatingip	**floatingip** object	Specifies the floating IP address list. For details, see **Table 7-125**.

Table 7-125 floatingip objects

Attribute	Type	Description
status	String	Specifies the floating IP address status. The value can be **ACTIVE**, **DOWN**, or **ERROR**. • **DOWN** indicates that the floating IP address has not been bound. • **ACTIVE** indicates that the floating IP address has been bound. • **ERROR** indicates that the floating IP address is abnormal.

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Attribute	Type	Description
id	String	Specifies the floating IP address ID.
floating_ip_address	String	Specifies the floating IP address.
floating_network_id	String	Specifies the external network ID.
router_id	String	Specifies the ID of the belonged router.
port_id	String	Specifies the port ID.
fixed_ip_address	String	Specifies the private IP address of the associated port.
tenant_id	String	Specifies the project ID.

Example Request

Create a floating IP address whose network is **0a2228f2-7f8a-45f1-8e09-9039e1d09975**.

```
POST https://{Endpoint}/v2.0/floatingips

{
   "floatingip": {
         "floating_network_id": "0a2228f2-7f8a-45f1-8e09-9039e1d09975"
   }
}
```

Example Response

Status code: 201

Normal response to POST requests

```
{
   "floatingip": {
      "id": "b997e0d4-3359-4c74-8f88-bc0af81cd5a2",
      "status": "DOWN",
      "router_id": null,
      "tenant_id": "bbfe8c41dd034a07bebd592bf03b4b0c",

      "floating_network_id": "0a2228f2-7f8a-45f1-8e09-9039e1d09975",
      "fixed_ip_address": null,
      "floating_ip_address": "88.88.215.205",
      "port_id": null,
   }
}
```

Status Code

See **Status Codes**.

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Error Code

See **Error Codes**.

7.6.4 Updating a Floating IP Address

Function

This API is used to update a floating IP address.

During the update, the ID of the floating IP address must be provided in the URL.

If **port_id** is left blank, the floating IP address has been unbound from the port.

NOTE

This API has the following constraints:

- If a floating IP address that you are binding is in the **error** state, unbind the IP address first.
- Do not associate a port that has a floating IP address associated to another floating IP address. You must first disassociate the port from the IP address and then associate it with another IP address.

URI

PUT /v2.0/floatingips/{floatingip_id}

Table 7-126 describes the parameters.

Table 7-126 Parameter description

Parameter	Mandatory	Type	Description
floatingip_id	Yes	String	Specifies the floating IP address ID. This parameter is not required when you assign a floating IP address. This parameter is mandatory when you query, update, or delete a floating IP address.

Request Message

Table 7-127 Request parameter

Parameter	Type	Mandatory	Description
floatingip	**floatingip** object	Yes	Specifies the floating IP address list. For details, see **Table 7-128**.

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Table 7-128 floatingip objects

Parameter	Mandatory	Type	Description
port_id	No	String	Specifies the port ID.

Response Message

Table 7-129 Response parameter

Parameter	Type	Description
floatingip	**floatingip** object	Specifies the floating IP address list. For details, see **Table 7-130**.

Table 7-130 floatingip objects

Attribute	Type	Description
status	String	Specifies the floating IP address status. The value can be **ACTIVE**, **DOWN**, or **ERROR**. • **DOWN** indicates that the floating IP address has not been bound. • **ACTIVE** indicates that the floating IP address has been bound. • **ERROR** indicates that the floating IP address is abnormal.
id	String	Specifies the floating IP address ID.
floating_ip_address	String	Specifies the floating IP address.
floating_network_id	String	Specifies the external network ID.
router_id	String	Specifies the ID of the belonged router.
port_id	String	Specifies the port ID.

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Attribute	Type	Description
fixed_ip_address	String	Specifies the private IP address of the associated port.
tenant_id	String	Specifies the project ID.

Example Request

- Unbind a floating IP address from a port.

```
PUT https://{Endpoint}/v2.0/floatingips/b997e0d4-3359-4c74-8f88-bc0af81cd5a2

{
   "floatingip": {
      "port_id": null
   }
}
```

- Bind a floating IP address to a port. The port ID is f91f5763-c5a2-4458-979d-61e48b3c3fac.

```
PUT https://{Endpoint}/v2.0/floatingips/b997e0d4-3359-4c74-8f88-bc0af81cd5a2

{
   "floatingip": {
         "port_id": "f91f5763-c5a2-4458-979d-61e48b3c3fac"
   }
}
```

Example Response

Status code: 200

(The floating IP address is unbound from the port.)

```
{
   "floatingip": {
      "id": "b997e0d4-3359-4c74-8f88-bc0af81cd5a2",
      "status": "DOWN",
      "router_id": null,
      "tenant_id": "bbfe8c41dd034a07bebd592bf03b4b0c",
      "floating_network_id": "0a2228f2-7f8a-45f1-8e09-9039e1d09975",
      "fixed_ip_address": null,
      "floating_ip_address": "88.88.215.205",
      "port_id": null,
   }
}
```

(The floating IP address is bound to the port.)

```
{
   "floatingip": {
      "id": "b997e0d4-3359-4c74-8f88-bc0af81cd5a2",
      "status": "DOWN",
      "router_id": null,
      "tenant_id": "bbfe8c41dd034a07bebd592bf03b4b0c",
      "floating_network_id": "0a2228f2-7f8a-45f1-8e09-9039e1d09975",
      "fixed_ip_address": "192.168.10.3",
      "floating_ip_address": "88.88.215.205",
      "port_id": "f91f5763-c5a2-4458-979d-61e48b3c3fac",
   }
}
```

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Status Code

See **Status Codes**.

Error Code

See **Error Codes**.

7.6.5 Deleting a Floating IP Address

Function

This API is used to delete a floating IP address.

URI

DELETE /v2.0/floatingips/{floatingip_id}

Table 7-131 describes the parameters.

Table 7-131 Parameter description

Parameter	Mandatory	Type	Description
floatingip_id	Yes	String	Specifies the floating IP address ID.

Request Message

None

Response Message

None

Example Request

Delete the floating IP address whose ID is a95ec431-8473-463b-aede-34fb048ee3a7.

```
DELETE https://{Endpoint}/v2.0/floatingips/a95ec431-8473-463b-aede-34fb048ee3a7
```

Example Response

None

Status Code

See **Status Codes**.

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Error Code

See **Error Codes**.

7.7 Network ACL

7.7.1 Querying Network ACL Rules

Function

This API is used to query all network ACL rules accessible to the tenant submitting the request.

URI

GET /v2.0/fwaas/firewall_rules

Example:

```
GET https://{Endpoint}/v2.0/fwaas/firewall_rules?
name={firewall_rule_name}&tenant_id={tenant_id}&public={is_public}&protocol={protocol}&ip_version={ip_version}&action={action}&enabled={is_enabled}
```

Example of querying rules by page

```
GET https://{Endpoint}/v2.0/fwaas/firewall_rules?limit=2&marker=2a193015-4a88-4aa1-84ad-d4955adae707&page_reverse=False
```

Table 7-132 describes the parameters.

Table 7-132 Parameter description

Name	Mandatory	Type	Description
id	No	String	Specifies that the network ACL rule ID is used as the filtering condition.
name	No	String	Specifies that the network ACL rule name is used as the filtering condition.
description	No	String	Specifies that the network ACL rule description is used as the filtering condition.
ip_version	No	Integer	Specifies that the IP address version is used as the filtering condition. The value can be **4** (IPv4) or **6** (IPv6).

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Name	Mandatory	Type	Description
action	No	String	Specifies that the network ACL rule action is used as the filtering condition. The value can be **allow** or **deny**.
enabled	No	Boolean	Specifies that the network ACL rule is enabled is used as the filtering condition. The value can be **true** or **false**.
tenant_id	No	String	Specifies that the project ID is used as the filtering condition.
marker	No	String	Specifies a resource ID for pagination query, indicating that the query starts from the next record of the specified resource ID. This parameter can work together with the parameter **limit**. • If parameters **marker** and **limit** are not passed, resource records on the first page will be returned. • If the parameter **marker** is not passed and the value of parameter **limit** is set to **10**, the first 10 resource records will be returned. • If the value of the parameter **marker** is set to the resource ID of the 10th record and the value of parameter **limit** is set to **10**, the 11th to 20th resource records will be returned. • If the value of the parameter **marker** is set to the resource ID of the 10th record and the parameter **limit** is not passed, resource records starting from the 11th records (including 11th) will be returned.
limit	No	Integer	Specifies the number of records that will be returned on each page. The value is from 0 to intmax (2^31-1). The default value is 2000. **limit** can be used together with **marker**. For details, see the parameter description of **marker**.

Request Parameters

None

Example Request

```
GET https://{Endpoint}/v2.0/fwaas/firewall_rules
```

Response Parameters

Table 7-133 Response parameter

Parameter	Type	Description
firewall_rules	Array of **Firewall Rule** objects	Specifies the firewall rule list. For details, see **Table 7-135**.
firewall_rules_links	Array of **firewall_rules_link** Object	Specifies the pagination information. For details, see **Table 7-134**. Only when **limit** is used for filtering and the number of resources exceeds the value of **limit** or 2000 (default value of **limit**), value **next** will be returned for **rel** and a link for **href**.

Table 7-134 firewall_rules_link object

Parameter	Type	Description
href	String	Specifies the API link.
rel	String	Specifies the relationship between the API link and the API version.

Table 7-135 Firewall Rule objects

Attribute	Type	Description
id	String	Specifies the UUID of the network ACL rule.
name	String	Specifies the network ACL rule name.
description	String	Provides supplementary information about the network ACL rule.

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Attribute	Type	Description
tenant_id	String	Specifies the project ID.
public	Boolean	Specifies whether the firewall rule can be shared by different tenants.
protocol	String	Specifies the IP protocol.
source_port	String	Specifies the source port number or port number range.
destination_port	String	Specifies the destination port number or port number range.
ip_version	Integer	Specifies the IP protocol version.
source_ip_address	String	Specifies the source IP address or CIDR block.
destination_ip_address	String	Specifies the destination IP address or CIDR block.
action	String	Specifies action performed on traffic passing through the network ACL.
enabled	Boolean	Specifies whether the network ACL rule is enabled.
project_id	String	Specifies the project ID. For details about how to obtain a project ID, see **Obtaining a Project ID**.

Example Response


```
{
   "firewall_rules": [
      {
         "protocol": "tcp",
         "description": "update check parameter",
         "source_ip_address": "116.66.184.0/24",
         "destination_ip_address": "0.0.0.0/0",
         "destination_port": null,
         "source_port": null,
         "id": "2a193015-4a88-4aa1-84ad-d4955adae707",
         "name": "crhfwruleupdate",
         "tenant_id": "a1c6f90c94334bd2953d9a61b8031a68",
         "project_id": "a1c6f90c94334bd2953d9a61b8031a68",
         "enabled": true,
         "action": "allow",
         "ip_version": 4,
         "public": false
      },
      {
         "protocol": "tcp",
         "description": "update check parameter",
         "source_ip_address": null,
         "destination_ip_address": null,
         "destination_port": "40:60",
         "source_port": "20:50",
         "id": "db7a204c-9eb1-40a2-9bd6-ed5cfd3cff32",
```


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```
            "name": "update_firewall-role-tommy",
            "tenant_id": "a1c6f90c94334bd2953d9a61b8031a68",
            "project_id": "a1c6f90c94334bd2953d9a61b8031a68",
            "enabled": false,
            "action": "deny",
            "ip_version": 4,
            "public": false
        }
    ],
    "firewall_rules_links": [
        {    "rel": "previous",
            "href": "https://{Endpoint}/v2.0/fwaas/firewall_rules?marker=2a193015-4a88-4aa1-84ad-
d4955adae707&page_reverse=True"
        }
    ]
}
```


Status Code

See **Status Codes**.

Error Code

See **Error Codes**.

7.7.2 Querying a Network ACL Rule

Function

This API is used to query details about a specific network ACL rule.

URI

GET /v2.0/fwaas/firewall_rules/{firewall_rule_id}

Table 7-136 describes the parameters.

Table 7-136 Parameter description

Name	Mandatory	Type	Description
firewall_rule_id	Yes	String	Specifies the network ACL rule ID, which uniquely identifies the network ACL rule. The **firewall_rule_id** value is used as the filter.

Request Parameters

None

Example Request

```
GET https://{Endpoint}/v2.0/fwaas/firewall_rules/514e6776-162a-4b5d-ab8b-aa36b86655ef
```

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Response Parameters

Table 7-137 Response parameter

Parameter	Type	Description
firewall_rule	**firewall_rule** object	Specifies the firewall rule objects. For details, see **Table 7-138**.

Table 7-138 Firewall Rule objects

Attribute	Type	Description
id	String	Specifies the UUID of the network ACL rule.
name	String	Specifies the network ACL rule name.
description	String	Provides supplementary information about the network ACL rule.
tenant_id	String	Specifies the project ID.
public	Boolean	Specifies whether the firewall rule can be shared by different tenants.
protocol	String	Specifies the IP protocol.
source_port	String	Specifies the source port number or port number range.
destination_port	String	Specifies the destination port number or port number range.
ip_version	Integer	Specifies the IP protocol version.
source_ip_address	String	Specifies the source IP address or CIDR block.
destination_ip_address	String	Specifies the destination IP address or CIDR block.
action	String	Specifies action performed on traffic passing through the network ACL.
enabled	Boolean	Specifies whether the network ACL rule is enabled.
project_id	String	Specifies the project ID. For details about how to obtain a project ID, see **Obtaining a Project ID**.

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Example Response

```
{
    "firewall_rule": {
        "protocol": "tcp",
        "description": "update check parameter",
        "source_ip_address": "116.66.184.0/24",
        "destination_ip_address": "0.0.0.0/0",
        "destination_port": null,
        "source_port": null,
        "id": "514e6776-162a-4b5d-ab8b-aa36b86655ef",
        "name": "test",
        "tenant_id": "a1c6f90c94334bd2953d9a61b8031a68",
        "project_id": "a1c6f90c94334bd2953d9a61b8031a68",
        "enabled": true,
        "action": "allow",
        "ip_version": 4,
        "public": false
    }
}
```

Status Code

See **Status Codes**.

Error Code

See **Error Codes**.

7.7.3 Creating a Network ACL Rule

Function

This API is used to create a network ACL rule.

URI

POST /v2.0/fwaas/firewall_rules

Request Parameters

Table 7-139 Request parameter

Parameter	Mandatory	Type	Description
firewall_rule	Yes	**firewall_rule** object	Specifies the firewall rule objects. For details, see **Table 7-140**.

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Table 7-140 Firewall Rule objects

Attribute	Mandatory	Type	Constraint	Description
name	No	String	The value can contain a maximum of 255 characters.	Specifies the network ACL rule name. The value can contain a maximum of 255 characters.
description	No	String	The value can contain a maximum of 255 characters.	Provides supplementary information about the network ACL rule. The value can contain a maximum of 255 characters.
protocol	No	String	The value can be **TCP**, **UDP**, or **ICMP**.	Specifies the IP protocol. The value can be **TCP**, **UDP**, or **ICMP**.
source_port	No	String	The value can be an integer from 1 to 65535 or a port number range in the format of ***a*:*b***.	Specifies the source port number or port number range. The value can be an integer from 1 to 65535 or a port number range in the format of ***a*:*b***.
destination_port	No	String	The value can be an integer from 1 to 65535 or a port number range in the format of ***a*:*b***.	Specifies the destination port number or port number range. The value can be an integer from 1 to 65535 or a port number range in the format of ***a*:*b***.
ip_version	No	Integer	4/6	Specifies the IP protocol version. The value can be **4** and **6**, indicating IPv4 address and IPv6 address, respectively.
source_ip_address	No	String	N/A	Specifies the source IP address or CIDR block.

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Attribute	Mandatory	Type	Constraint	Description
destination_ip_address	No	String	N/A	Specifies the destination IP address or CIDR block.
action	No	String	deny/allow	Specifies action performed on traffic passing through the network ACL. The value can be **deny** or **allow**.
enabled	No	Boolean	The value can be **true** or **false**.	Specifies whether the network ACL rule is enabled. The value can be **true** or **false**.

Example Request

Create an ACL rule with **action** set to **allow**, **protocol** set to **tcp**, and destination port set to 80.

```
POST https://{Endpoint}/v2.0/fwaas/firewall_rules

{
    "firewall_rule": {
        "action": "allow",
        "enabled": true,
        "destination_port": "80",
        "protocol": "tcp",
        "name": "ALLOW_HTTP"
    }
}
```

Response Parameters

Table 7-141 Response parameter

Parameter	Type	Description
firewall_rule	**firewall_rule** object	Specifies the firewall rule objects. For details, see **Table 7-142**.

Table 7-142 Firewall Rule objects

Attribute	Type	Description
id	String	Specifies the UUID of the network ACL rule.

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Attribute	Type	Description
name	String	Specifies the network ACL rule name.
description	String	Provides supplementary information about the network ACL rule.
tenant_id	String	Specifies the project ID.
public	Boolean	Specifies whether the firewall rule can be shared by different tenants.
protocol	String	Specifies the IP protocol.
source_port	String	Specifies the source port number or port number range.
destination_port	String	Specifies the destination port number or port number range.
ip_version	Integer	Specifies the IP protocol version.
source_ip_address	String	Specifies the source IP address or CIDR block.
destination_ip_address	String	Specifies the destination IP address or CIDR block.
action	String	Specifies action performed on traffic passing through the network ACL.
enabled	Boolean	Specifies whether the network ACL rule is enabled.
project_id	String	Specifies the project ID. For details about how to obtain a project ID, see **Obtaining a Project ID**.

Example Response

```
{
    "firewall_rule": {
        "protocol": "tcp",
        "description": "",
        "source_ip_address": null,
        "destination_ip_address": null,
        "source_port": null,
        "destination_port": "80",
        "id": "b94acf06-efc2-485d-ba67-a61acf2a7e28",
        "name": "ALLOW_HTTP",
        "tenant_id": "23c8a121505047b6869edf39f3062712",
        "enabled": true,
        "action": "allow",
        "ip_version": 4,
        "public": false,
        "project_id": "23c8a121505047b6869edf39f3062712"
    }
}
```

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Status Code

See **Status Codes**.

Error Code

See **Error Codes**.

7.7.4 Updating a Network ACL Rule

Function

This API is used to update a network ACL rule.

URI

PUT /v2.0/fwaas/firewall_rules/{firewall_rule_id}

Request Parameters

Table 7-143 Request parameter

Parameter	Type	Mandatory	Description
firewall_rule	**firewall_rule** object	Yes	Specifies the firewall rule objects. For details, see **Table 7-144**.

Table 7-144 Firewall Rule objects

Attribute	Mandatory	Type	Description
name	No	String	Specifies the network ACL rule name. The value can contain a maximum of 255 characters.
description	No	String	Provides supplementary information about the network ACL rule. The value can contain a maximum of 255 characters.
protocol	No	String	Specifies the IP protocol. The value can be **TCP**, **UDP**, **ICMP**, or a value ranging from 0 to 255.

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Attribute	Mandatory	Type	Description
source_port	No	String	Specifies the source port number or port number range. The value can be an integer from 1 to 65535 or a port number range in the format of ***a*:*b***.
destination_port	No	String	Specifies the destination port number or port number range. The value can be an integer from 1 to 65535 or a port number range in the format of ***a*:*b***.
ip_version	No	Integer	Specifies the IP protocol version. The value can be **4** and **6**, indicating IPv4 address and IPv6 address, respectively.
source_ip_address	No	String	Specifies the source IP address or CIDR block.
destination_ip_address	No	String	Specifies the destination IP address or CIDR block.
action	No	String	Specifies action performed on traffic passing through the network ACL. The value can be **deny** or **allow**.
enabled	No	Boolean	Specifies whether the network ACL rule is enabled. The value can be **true** or **false**.

Example Request

Change the **action** of the ACL rule whose ID is b94acf06-efc2-485d-ba67-a61acf2a7e28 to **deny**.

```
PUT https://{Endpoint}/v2.0/fwaas/firewall_rules/b94acf06-efc2-485d-ba67-a61acf2a7e28

{
    "firewall_rule": {
        "action": "deny"
    }
}
```

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Response Parameters

Table 7-145 Response parameter

Parameter	Type	Description
firewall_rule	**firewall_rule** object	Specifies the firewall rule objects. For details, see **Table 7-146**.

Table 7-146 Firewall Rule objects

Attribute	Type	Description
id	String	Specifies the UUID of the network ACL rule.
name	String	Specifies the network ACL rule name.
description	String	Provides supplementary information about the network ACL rule.
tenant_id	String	Specifies the project ID.
public	Boolean	Specifies whether the firewall rule can be shared by different tenants.
protocol	String	Specifies the IP protocol.
source_port	String	Specifies the source port number or port number range.
destination_port	String	Specifies the destination port number or port number range.
ip_version	Integer	Specifies the IP protocol version.
source_ip_address	String	Specifies the source IP address or CIDR block.
destination_ip_address	String	Specifies the destination IP address or CIDR block.
action	String	Specifies action performed on traffic passing through the network ACL.
enabled	Boolean	Specifies whether the network ACL rule is enabled.
project_id	String	Specifies the project ID. For details about how to obtain a project ID, see **Obtaining a Project ID**.

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Example Response

```
{
    "firewall_rule": {
        "protocol": "tcp",
        "description": "",
        "source_ip_address": null,
        "destination_ip_address": null,
        "source_port": null,
        "destination_port": "80",
        "id": "b94acf06-efc2-485d-ba67-a61acf2a7e28",
        "name": "ALLOW_HTTP",
        "tenant_id": "23c8a121505047b6869edf39f3062712",
        "enabled": true,
        "action": "deny",
        "ip_version": 4,
        "public": false,
        "project_id": "23c8a121505047b6869edf39f3062712"
    }
}
```

Status Code

See **Status Codes**.

Error Code

See **Error Codes**.

7.7.5 Deleting a Network ACL Rule

Function

This API is used to delete a network ACL rule.

NOTE

Before deleting a rule, you need to remove the rule from the corresponding policy first. For details, see **Removing a Network ACL Rule**.

URI

DELETE /v2.0/fwaas/firewall_rules/{firewall_rule_id}

Table 7-147 describes the parameters.

Table 7-147 Parameter description

Name	Mandatory	Type	Description
firewall_rule_id	Yes	String	Specifies the network ACL rule ID, which uniquely identifies the network ACL rule.

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Request Parameters

None

Response Parameters

None

Example Request

```
DELETE https://{Endpoint}/v2.0/fwaas/firewall_rules/b94acf06-efc2-485d-ba67-a61acf2a7e28
```

Example Response

None

Status Code

See **Status Codes**.

Error Code

See **Error Codes**.

7.7.6 Querying Network ACL Policies

Function

This API is used to query all network ACL policies accessible to the tenant submitting the request.

URI

GET /v2.0/fwaas/firewall_policies

Example of querying policies by page

```
GET https://{Endpoint}/v2.0/fwaas/firewall_policies?limit=2&marker=6b70e321-0c21-4b83-bb8a-a886d1414a5f&page_reverse=False
```

Table 7-148 describes the parameters.

Table 7-148 Parameter description

Name	Mandatory	Type	Description
id	No	String	Specifies that the network ACL policy ID is used as the filtering condition.
name	No	String	Specifies that the network ACL policy name is used as the filtering condition.

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Name	Mandatory	Type	Description
description	No	String	Specifies that the network ACL policy description is used as the filtering condition.
tenant_id	No	String	Specifies that the project ID of the network ACL policy is used as the filtering condition.
marker	No	String	Specifies a resource ID for pagination query, indicating that the query starts from the next record of the specified resource ID. This parameter can work together with the parameter **limit**. • If parameters **marker** and **limit** are not passed, resource records on the first page will be returned. • If the parameter **marker** is not passed and the value of parameter **limit** is set to **10**, the first 10 resource records will be returned. • If the value of the parameter **marker** is set to the resource ID of the 10th record and the value of parameter **limit** is set to **10**, the 11th to 20th resource records will be returned. • If the value of the parameter **marker** is set to the resource ID of the 10th record and the parameter **limit** is not passed, resource records starting from the 11th records (including 11th) will be returned.

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Name	Mandatory	Type	Description
limit	No	Integer	Specifies the number of records that will be returned on each page. The value is from 0 to intmax (2^31-1). The default value is 2000. **limit** can be used together with **marker**. For details, see the parameter description of **marker**.

Request Parameters

None

Example Request

```
GET https://{Endpoint}/v2.0/fwaas/firewall_policies
```

Response Parameters

Table 7-149 Response parameter

Parameter	Type	Description
firewall_policies	Array of **firewall Policy** object	Specifies the firewall policies. For details, see **Table 7-150**.
firewall_policies_links	Array of **firewall_policies_link** object	**firewall_policies_link** object For details, see **Table 7-151**. Only when **limit** is used for filtering and the number of resources exceeds the value of **limit** or 2000 (default value of **limit**), value **next** will be returned for **rel** and a link for **href**.

Table 7-150 firewall_Policy object

Attribute	Type	Description
id	String	Specifies the UUID of the network ACL policy.

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Attribute	Type	Description
name	String	Specifies the name of the network ACL policy.
description	String	Provides supplementary information about the network ACL policy.
tenant_id	String	Specifies the project ID.
firewall_rules	Array of strings	Specifies the rules referenced by the network ACL policy.
audited	Boolean	Specifies the audit flag.
public	Boolean	Specifies whether the policy can be shared by different tenants.
project_id	String	Specifies the project ID. For details about how to obtain a project ID, see **Obtaining a Project ID**.

Table 7-151 firewall_policies_link object

Name	Type	Description
href	String	Specifies the API link.
rel	String	Specifies the relationship between the API link and the API version.

Example Response

```
{
    "firewall_policies": [
        {
            "description": "",
            "firewall_rules": [
                "6c6803e0-ca8c-4aa9-afb3-4f89275b6c32"
            ],
            "tenant_id": "23c8a121505047b6869edf39f3062712",
            "public": false,
            "id": "6b70e321-0c21-4b83-bb8a-a886d1414a5f",
            "audited": false,
            "name": "fwp1",
            "project_id": "23c8a121505047b6869edf39f3062712"
        },
        {
            "description": "",
            "firewall_rules": [
                "6c6803e0-ca8c-4aa9-afb3-4f89275b6c32"
            ],
            "tenant_id": "23c8a121505047b6869edf39f3062712",
            "public": false,
            "id": "fce92002-5a15-465d-aaca-9b44453bb738",
            "audited": false,
            "name": "fwp2",
```

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```
        "project_id": "23c8a121505047b6869edf39f3062712"
      }
    ],
    "firewall_policies_links": [
      {    "rel": "previous",
           "href": "https://{Endpoint}/v2.0/fwaas/firewall_policies?marker=6b70e321-0c21-4b83-bb8a-
a886d1414a5f&page_reverse=True"
      }
    ]
}
```


Status Code

See **Status Codes**.

Error Code

See **Error Codes**.

7.7.7 Querying a Network ACL Policy

Function

This API is used to query details about a specific network ACL policy.

URI

GET /v2.0/fwaas/firewall_policies/{firewall_policy_id}

Table 7-152 describes the parameters.

Table 7-152 Parameter description

Name	Mandatory	Type	Description
firewall_policy_id	Yes	String	Specifies the network ACL policy ID, which uniquely identifies the network ACL policy. The **firewall_policy_id** value is used as the filter.

Request Parameters

None

Example Request

```
GET https://{Endpoint}/v2.0/fwaas/firewall_policies/fed2d88f-d0e7-4cc5-bd7e-c495f67037b6
```

Response Parameters

Table 7-153 Response parameter

Parameter	Type	Description
firewall_policy	**firewall_policy** object	Specifies the firewall policy. For details, see **Table 7-154**.

Table 7-154 Firewall Policy objects

Attribute	Type	Description
id	String	Specifies the UUID of the network ACL policy.
name	String	Specifies the name of the network ACL policy.
description	String	Provides supplementary information about the network ACL policy.
tenant_id	String	Specifies the project ID.
firewall_rules	Array of strings	Specifies the firewall rules referenced by the network ACL policy.
audited	Boolean	Specifies the audit flag.
public	Boolean	Specifies whether the firewall policy can be shared by different tenants.
project_id	String	Specifies the project ID. For details about how to obtain a project ID, see **Obtaining a Project ID**.

Example Response

```
{
    "firewall_policy": {
        "description": "",
        "firewall_rules": [
            "3c0e6267-73df-4d9a-87a6-e226f2db2036"
        ],
        "tenant_id": "23c8a121505047b6869edf39f3062712",
        "public": false,
        "id": "fed2d88f-d0e7-4cc5-bd7e-c495f67037b6",
        "audited": false,
        "name": "bobby_fwp1",
        "project_id": "23c8a121505047b6869edf39f3062712"
    }
}
```

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Status Code

See **Status Codes**.

Error Code

See **Error Codes**.

7.7.8 Creating a Network ACL Policy

Function

This API is used to create a network ACL policy. A network ACL policy must be associated with a network ACL group. You can learn more about the .

URI

POST /v2.0/fwaas/firewall_policies

Request Parameters

Table 7-155 Request parameter

Parameter	Type	Mandatory	Description
firewall_policy	**firewall_policy** object	Yes	Specifies the firewall policy. For details, see **Table 7-156**.

Table 7-156 Firewall Policy objects

Attribute	Mandatory	Type	Description
name	No	String	Specifies the name of the network ACL policy. The value can contain a maximum of 255 characters.
description	No	String	Provides supplementary information about the network ACL policy. The value can contain a maximum of 255 characters.
firewall_rules	No	Array of strings	Specifies the firewall rules referenced by the network ACL policy.
audited	No	Boolean	Specifies the audit flag. The value can be **true** or **false**.

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Example Request

Create an ACL policy named **test-policy** and associate it with the ACL rule whose ID is b8243448-cb3c-496e-851c-dadade4c161b.

```
POST https://{Endpoint}/v2.0/fwaas/firewall_policies

{
   "firewall_policy": {
      "name": "test-policy",
      "firewall_rules": [
         "b8243448-cb3c-496e-851c-dadade4c161b"
      ]
   }
}
```

Response Parameters

Table 7-157 Response parameter

Parameter	Type	Description
firewall_policy	**firewall_policy** object	Specifies the firewall policy. For details, see **Table 7-158**.

Table 7-158 Firewall Policy objects

Attribute	Type	Description
id	String	Specifies the UUID of the network ACL policy.
name	String	Specifies the name of the network ACL policy.
description	String	Provides supplementary information about the network ACL policy.
tenant_id	String	Specifies the project ID.
firewall_rules	Array of strings	Specifies the firewall rules referenced by the network ACL policy.
audited	Boolean	Specifies the audit flag.
public	Boolean	Specifies whether the firewall policy can be shared by different tenants.

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Attribute	Type	Description
project_id	String	Specifies the project ID. For details about how to obtain a project ID, see **Obtaining a Project ID**.

Example Response

```
{
    "firewall_policy": {
        "description": "",
        "firewall_rules": [
            "b8243448-cb3c-496e-851c-dadade4c161b"
        ],
        "tenant_id": "23c8a121505047b6869edf39f3062712",
        "public": false,
        "id": "2fb0e81f-9f63-44b2-9894-c13a3284594a",
        "audited": false,
        "name": "test-policy",
        "project_id": "23c8a121505047b6869edf39f3062712"
    }
}
```

Status Code

See **Status Codes**.

Error Code

See **Error Codes**.

7.7.9 Updating a Network ACL Policy

Function

This API is used to update a network ACL policy.

URI

PUT /v2.0/fwaas/firewall_policies/{firewall_policy_id}

Request Parameters

Table 7-159 Request parameter

Parameter	Type	Mandatory	Description
firewall_policy	**firewall_policy** object	Yes	Specifies the firewall policy objects. For details, see **Table 7-160**.

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Table 7-160 Firewall Policy objects

Attribute	Mandatory	Type	Description
name	No	String	Specifies the name of the network ACL policy. The value can contain a maximum of 255 characters.
description	No	String	Provides supplementary information about the network ACL policy. The value can contain a maximum of 255 characters.
firewall_rules	No	Array of strings	Specifies the firewall rules referenced by the network ACL policy.
audited	No	Boolean	Specifies the audit flag. The value can be **true** or **false**.

Example Request

Associate the ACL policy whose ID is 2fb0e81f-9f63-44b2-9894-c13a3284594a to the ACL rule whose ID is 0f82b221-8cd6-44bd-9dfc-0e118fa7b6b1.

```
PUT https://{Endpoint}/v2.0/fwaas/firewall_policies/2fb0e81f-9f63-44b2-9894-c13a3284594a

{
    "firewall_policy": {
        "firewall_rules": [
            "0f82b221-8cd6-44bd-9dfc-0e118fa7b6b1"
        ]
    }
}
```

Response Parameters

Table 7-161 Response parameter

Parameter	Type	Description
firewall_policy	**firewall_policy** object	Specifies the firewall policy objects. For details, see **Table 7-162**.

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Table 7-162 Firewall Policy objects

Attribute	Type	Description
id	String	Specifies the UUID of the network ACL policy.
name	String	Specifies the name of the network ACL policy.
description	String	Provides supplementary information about the network ACL policy.
tenant_id	String	Specifies the project ID.
firewall_rules	Array of strings	Specifies the firewall rules referenced by the network ACL policy.
audited	Boolean	Specifies the audit flag.
public	Boolean	Specifies whether the firewall policy can be shared by different tenants.
project_id	String	Specifies the project ID. For details about how to obtain a project ID, see **Obtaining a Project ID**.

Example Response

```
{
    "firewall_policy": {
        "description": "",
        "firewall_rules": [
            "0f82b221-8cd6-44bd-9dfc-0e118fa7b6b1"
        ],
        "tenant_id": "23c8a121505047b6869edf39f3062712",
        "public": false,
        "id": "2fb0e81f-9f63-44b2-9894-c13a3284594a",
        "audited": false,
        "name": "test-policy",
        "project_id": "23c8a121505047b6869edf39f3062712"
    }
}
```

Status Code

See **Status Codes**.

Error Code

See **Error Codes**.

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7.7.10 Deleting a Network ACL Policy

Function

This API is used to delete a network ACL policy.

URI

DELETE /v2.0/fwaas/firewall_policies/{firewall_policy_id}

Table 7-163 describes the parameters.

Table 7-163 Parameter description

Name	Mandatory	Type	Description
firewall_policy_id	Yes	String	Specifies the network ACL policy ID, which uniquely identifies the network ACL policy.

Request Parameters

None

Response Parameters

None

Example Request

```
DELETE https://{Endpoint}/v2.0/fwaas/firewall_policies/2fb0e81f-9f63-44b2-9894-c13a3284594a
```

Example Response

None

Status Code

See **Status Codes**.

Error Code

See **Error Codes**.

7.7.11 Inserting a Network ACL Rule

Function

This API is used to insert a network ACL rule to a network ACL policy.

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URI

PUT /v2.0/fwaas/firewall_policies/{firewall_policy_id}/insert_rule

Table 7-164 describes the parameters.

Table 7-164 Parameter description

Name	Mandatory	Type	Description
firewall_policy_id	Yes	String	Specifies the network ACL policy ID, which uniquely identifies the network ACL policy.

Request Parameters

Table 7-165 Request parameter

Parameter	Type	Mandatory	Description
firewall_rule_id	String	Yes	Specifies the network ACL rule ID, which uniquely identifies the network ACL rule.
insert_after	String	No	The **insert_after** parameter indicates the firewall rule that has already been associated with the firewall policy. A new firewall rule will be inserted after the firewall rule associated with the firewall policy. If both the **insert_after** and **insert_before** parameters are specified, the **insert_after** parameter will be ignored.
insert_before	String	No	The **insert_before** parameter indicates the firewall rule that has already been associated with the firewall policy. A new firewall rule will be inserted before the firewall rule associated with the firewall policy. If both the **insert_after** and **insert_before** parameters are specified, the **insert_after** parameter will be ignored.

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Example Request

Insert rule 0f82b221-8cd6-44bd-9dfc-0e118fa7b6b1 below rule b8243448-cb3c-496e-851c-dadade4c161b in the ACL policy whose ID is afc52ce9-5305-4ec9-9feb-44feb8330341.

```
PUT https://{Endpoint}/v2.0/fwaas/firewall_policies/afc52ce9-5305-4ec9-9feb-44feb8330341/insert_rule

{
    "insert_after": "b8243448-cb3c-496e-851c-dadade4c161b",
    "firewall_rule_id": "0f82b221-8cd6-44bd-9dfc-0e118fa7b6b1",
    "insert_before": ""
}
```

Response Parameters

Table 7-166 Response parameter

Parameter	Type	Description
description	String	Provides supplementary information about the firewall policy.
audited	Boolean	Each time the firewall policy or the associated firewall rules are changed, this attribute will be set to **False**.
firewall_rules	Array of strings	Specifies the ID list of the firewall rules associated with the current firewall policy.
id	String	Specifies the firewall policy ID.
name	String	Specifies the firewall policy name.
public	Boolean	If this attribute is set to **true**, the network ACL policy is visible to tenants other than its owner. The network ACL policy is not visible to other tenants by default.
tenant_id	String	Specifies the project ID.
project_id	String	Specifies the project ID.

Example Response

```
{
    "description": "",
    "firewall_rules": [
        "b8243448-cb3c-496e-851c-dadade4c161b",
        "0f82b221-8cd6-44bd-9dfc-0e118fa7b6b1"
    ],
    "tenant_id": "23c8a121505047b6869edf39f3062712",
    "public": false,
    "id": "afc52ce9-5305-4ec9-9feb-44feb8330341",
    "audited": false,
    "name": "test-policy",
```

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```
    "project_id": "23c8a121505047b6869edf39f3062712"
}
```

Status Code

See **Status Codes**.

Error Code

See **Error Codes**.

7.7.12 Removing a Network ACL Rule

Function

This API is used to remove a network ACL rule from a network ACL policy.

URI

PUT /v2.0/fwaas/firewall_policies/{firewall_policy_id}/remove_rule

Request Parameters

Table 7-167 Request parameter

Parameter	Type	Mandatory	Description
firewall_rule_id	String	Yes	Specifies the network ACL rule ID, which uniquely identifies the network ACL rule.

Example Request

Remove ACL rule 0f82b221-8cd6-44bd-9dfc-0e118fa7b6b1 from the ACL policy whose ID is afc52ce9-5305-4ec9-9feb-44feb8330341.

```
PUT https://{Endpoint}/v2.0/fwaas/firewall_policies/afc52ce9-5305-4ec9-9feb-44feb8330341/remove_rule

{
    "firewall_rule_id": "0f82b221-8cd6-44bd-9dfc-0e118fa7b6b1"
}
```

Response Parameters

Table 7-168 Response parameter

Parameter	Type	Description
description	String	Provides supplementary information about the firewall policy.

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Parameter	Type	Description
audited	Boolean	Each time the firewall policy or the associated firewall rules are changed, this attribute will be set to **False**.
firewall_rules	Array of strings	Specifies the ID list of the firewall rules associated with the current firewall policy.
id	String	Specifies the firewall policy ID.
name	String	Specifies the firewall policy name.
public	Boolean	If this attribute is set to **true**, the network ACL policy is visible to tenants other than its owner. The network ACL policy is not visible to other tenants by default.
tenant_id	String	Specifies the project ID.
project_id	String	Specifies the project ID.

Example Response

```
{
    "description": "",
    "firewall_rules": [
        "b8243448-cb3c-496e-851c-dadade4c161b"
    ],
    "tenant_id": "23c8a121505047b6869edf39f3062712",
    "public": false,
    "id": "afc52ce9-5305-4ec9-9feb-44feb8330341",
    "audited": false,
    "name": "test-policy",
    "project_id": "23c8a121505047b6869edf39f3062712"
}
```

Status Code

See **Status Codes**.

Error Code

See **Error Codes**.

7.7.13 Querying Network ACL Groups

Function

This API is used to query all network ACL groups accessible to the tenant submitting the request.

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URI

GET /v2.0/fwaas/firewall_groups

Example of querying groups by page

```
GET https://{Endpoint}/v2.0/fwaas/firewall_groups?
limit=2&marker=cd600d47-0045-483f-87a1-5041ae2f513b&page_reverse=False
```

Table 7-169 describes the parameters.

Table 7-169 Parameter description

Name	Mandatory	Type	Description
id	No	String	Specifies that the ID of the network ACL group is used as the filtering condition.
name	No	String	Specifies that the name of the network ACL group is used as the filtering condition.
description	No	String	Specifies that the description of the network ACL group is used as the filtering condition.
admin_state_up	No	Boolean	Specifies that the admin state of the network ACL group is used as the filtering condition. The value can be **true** or **false**.
tenant_id	No	String	Specifies that the project ID of the network ACL group is used as the filtering condition.

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Name	Mandatory	Type	Description
marker	No	String	Specifies a resource ID for pagination query, indicating that the query starts from the next record of the specified resource ID. This parameter can work together with the parameter **limit**. ● If parameters **marker** and **limit** are not passed, resource records on the first page will be returned. ● If the parameter **marker** is not passed and the value of parameter **limit** is set to **10**, the first 10 resource records will be returned. ● If the value of the parameter **marker** is set to the resource ID of the 10th record and the value of parameter **limit** is set to **10**, the 11th to 20th resource records will be returned. ● If the value of the parameter **marker** is set to the resource ID of the 10th record and the parameter **limit** is not passed, resource records starting from the 11th records (including 11th) will be returned.
limit	No	Integer	Specifies the number of records that will be returned on each page. The value is from 0 to intmax (2^31-1). The default value is 2000. **limit** can be used together with **marker**. For details, see the parameter description of **marker**.

Request Parameters

None

Example Request

```
GET https://{Endpoint}/v2.0/fwaas/firewall_groups
```

Response Parameters

Table 7-170 Response parameter

Parameter	Type	Description
firewall_groups	Array of **Firewall Group** objects	Specifies the firewall group list. For details, see **Table 7-171**.
firewall_groups_links	Array of **firewall_groups_link** objects	Specifies the **firewall_groups_link** object list. For details, see **Table 7-172**. Only when **limit** is used for filtering and the number of resources exceeds the value of **limit** or 2000 (default value of **limit**), value **next** will be returned for **rel** and a link for **href**.

Table 7-171 Firewall Group objects

Attribute	Type	Description
id	String	Specifies the UUID of the network ACL group.
name	String	Specifies the name of the network ACL group.
description	String	Provides supplementary information about the network ACL group.
tenant_id	String	Specifies the project ID.
ingress_firewall_policy_id	String	Specifies the network ACL policy for inbound traffic.
egress_firewall_policy_id	String	Specifies the network ACL policy for outbound traffic.
ports	Array of strings	Specifies the list of ports bound with the network ACL group.
public	Boolean	Specifies whether the firewall group can be shared by different tenants.
status	String	Specifies the status of a network ACL group.

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Attribute	Type	Description
admin_state_up	Boolean	Specifies the administrative status of the network ACL.
project_id	String	Specifies the project ID. For details about how to obtain a project ID, see **Obtaining a Project ID**.
created_at	String	Specifies the time (UTC) when the resource is created. Format: *yyyy-MM-ddTHH:mm:ss*
updated_at	String	Specifies the time (UTC) when the resource is updated. Format: *yyyy-MM-ddTHH:mm:ss*

Table 7-172 firewall_groups_link object

Name	Type	Description
href	String	Specifies the API link.
rel	String	Specifies the relationship between the API link and the API version.

Example Response

```
{
   "firewall_groups": [
      {
         "status": "INACTIVE",
         "public": false,
         "egress_firewall_policy_id": null,
         "name": "",
         "admin_state_up": true,
         "ports": [ ],
         "tenant_id": "23c8a121505047b6869edf39f3062712",
         "id": "cd600d47-0045-483f-87a1-5041ae2f513b",
         "ingress_firewall_policy_id": null,
         "description": "",
         "project_id": "23c8a121505047b6869edf39f3062712",
         "created_at": "2018-09-12T08:24:14",
         "updated_at": "2018-09-12T08:24:14"
      },
      {
         "status": "INACTIVE",
         "public": false,
         "egress_firewall_policy_id": "d939df29-fe76-4089-90c3-3778e4d53141",
         "name": "fwg-1475475043",
         "admin_state_up": true,
         "ports": [ ],
         "tenant_id": "0af57070695044ea9a70f04779e6aa1f",
         "id": "ca971b45-70ce-4879-9734-b6cac1d00845",
         "ingress_firewall_policy_id": "d939df29-fe76-4089-90c3-3778e4d53141",
         "description": "",
         "project_id": "0af57070695044ea9a70f04779e6aa1f",
```

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```
            "created_at": "2018-09-12T08:24:14",
            "updated_at": "2018-09-12T08:24:14"
        }
    ],
    "firewall_groups_links": [
        {    "rel": "previous",
             "href": "https://{Endpoint}/v2.0/fwaas/firewall_groups?
marker=cd600d47-0045-483f-87a1-5041ae2f513b&page_reverse=True"
        }
    ]
}
```

Status Code

See **Status Codes**.

Error Code

See **Error Codes**.

7.7.14 Querying a Network ACL Group

Function

This API is used to query details about a specific network ACL group.

URI

GET /v2.0/fwaas/firewall_groups/{firewall_group_id}

Table 7-173 describes the parameters.

Table 7-173 Parameter description

Name	Mandatory	Type	Description
firewall_group_id	Yes	String	Specifies the network ACL group ID, which uniquely identifies the network ACL group. The **fire_group_id** value is used as the filter.

Request Parameters

None

Example Request

```
GET https://{Endpoint}/v2.0/fwaas/firewall_groups/a504a4cf-9300-40e0-b2d4-649bd157c55a
```

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Response Parameters

Table 7-174 Response parameter

Parameter	Type	Description
firewall_group	**firewall_group** object	Specifies the firewall group. For details, see **Table 7-175**.

Table 7-175 Firewall Group objects

Attribute	Type	Description
id	String	Specifies the UUID of the network ACL group.
name	String	Specifies the name of the network ACL group.
description	String	Provides supplementary information about the network ACL group.
tenant_id	String	Specifies the project ID.
ingress_firewall_policy_id	String	Specifies the network ACL policy for inbound traffic.
egress_firewall_policy_id	String	Specifies the network ACL policy for outbound traffic.
ports	Array of strings	Specifies the list of ports bound with the network ACL group.
public	Boolean	Specifies whether the firewall group can be shared by different tenants.
status	String	Specifies the status of the network ACL policy.
admin_state_up	Boolean	Specifies the administrative status of the network ACL.
project_id	String	Specifies the project ID. For details about how to obtain a project ID, see **Obtaining a Project ID**.
created_at	String	Specifies the time (UTC) when the resource is created. Format: *yyyy-MM-ddTHH:mm:ss*

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Attribute	Type	Description
updated_at	String	Specifies the time (UTC) when the resource is updated. Format: *yyyy-MM-ddTHH:mm:ss*

Example Response

```
{
   "firewall_group": {
      "status": "ACTIVE",
      "public": false,
      "egress_firewall_policy_id": null,
      "name": "bobby_fwg1",
      "admin_state_up": true,
      "ports": [
         "16e6d779-15e9-48fb-abc5-b86457792a15"
      ],
      "tenant_id": "23c8a121505047b6869edf39f3062712",
      "id": "a504a4cf-9300-40e0-b2d4-649bd157c55a",
      "ingress_firewall_policy_id": "fed2d88f-d0e7-4cc5-bd7e-c495f67037b6",
      "description": "test",
      "project_id": "23c8a121505047b6869edf39f3062712",
      "created_at": "2018-09-12T08:24:14",
      "updated_at": "2018-09-12T08:24:14"
   }
}
```

Status Code

See **Status Codes**.

Error Code

See **Error Codes**.

7.7.15 Creating a Network ACL Group

Function

This API is used to create a network ACL group.

URI

POST /v2.0/fwaas/firewall_groups

Request Parameters

Table 7-176 Request parameter

Parameter	Type	Mandatory	Description
firewall_group	**firewall_group** object	Yes	Specifies the firewall group. For details, see **Table 7-177**.

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Table 7-177 Firewall Group objects

Attribute	Mandatory	Type	Description
name	No	String	Specifies the name of the network ACL group. The value can contain a maximum of 255 characters.
description	No	String	Provides supplementary information about the network ACL group. The value can contain a maximum of 255 characters.
ingress_firewall_policy_id	No	String	Specifies the network ACL policy for inbound traffic.
egress_firewall_policy_id	No	String	Specifies the network ACL policy for outbound traffic.
ports	No	Array of strings	Specifies the list of ports bound with the network ACL group. The value must be the port ID. **NOTE** The port is the one whose **device_owner** is **network:router_interface_distributed**. • Call the VPC API for querying the port ID. The filtering criteria are the specified **network_id** and **device_owner**. The **network_id** is the network ID of the subnet associated with the network ACL. Example: `GET https://{Endpoint}/v1/{project_id}/ports?network_id={network_id}&device_owner=network%3Arouter_interface_distributed`
admin_state_up	No	Boolean	Specifies the administrative status of the network ACL. The value can be **true** or **false**.

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Example Request

Create an ACL group, associate it with the inbound ACL policy afc52ce9-5305-4ec9-9feb-44feb8330341, and set the port ID to c133f2bf-6937-4416-bb17-012e1be5cd2d.

```
POST https://{Endpoint}/v2.0/fwaas/firewall_groups

{
   "firewall_group": {
      "name": "test",
      "ingress_firewall_policy_id": "afc52ce9-5305-4ec9-9feb-44feb8330341",
      "ports": [
         "c133f2bf-6937-4416-bb17-012e1be5cd2d"
      ]
   }
}
```

Response Parameters

Table 7-178 Response parameter

Parameter	Type	Description
firewall_group	**firewall_group** object	Specifies the firewall group. For details, see **Table 7-179**.

Table 7-179 Firewall Group objects

Attribute	Type	Description
id	String	Specifies the UUID of the network ACL group.
name	String	Specifies the name of the network ACL group.
description	String	Provides supplementary information about the network ACL group.
tenant_id	String	Specifies the project ID.
ingress_firewall_policy_id	String	Specifies the network ACL policy for inbound traffic.
egress_firewall_policy_id	String	Specifies the network ACL policy for outbound traffic.
ports	Array of strings	Specifies the list of ports bound with the network ACL group.
public	Boolean	Specifies whether the firewall group can be shared by different tenants.

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Attribute	Type	Description
status	String	Specifies the status of the network ACL policy.
admin_state_up	Boolean	Specifies the administrative status of the network ACL.
project_id	String	Specifies the project ID. For details about how to obtain a project ID, see **Obtaining a Project ID**.
created_at	String	Specifies the time (UTC) when the resource is created. Format: *yyyy-MM-ddTHH:mm:ss*
updated_at	String	Specifies the time (UTC) when the resource is updated. Format: *yyyy-MM-ddTHH:mm:ss*

Example Response

```
{
    "firewall_group": {
        "status": "PENDING_CREATE",
        "public": false,
        "egress_firewall_policy_id": null,
        "name": "test",
        "admin_state_up": true,
        "ports": [
            "c133f2bf-6937-4416-bb17-012e1be5cd2d"
        ],
        "tenant_id": "23c8a121505047b6869edf39f3062712",
        "id": "0415f554-26ed-44e7-a881-bdf4e6216e38",
        "ingress_firewall_policy_id": "afc52ce9-5305-4ec9-9feb-44feb8330341",
        "description": "",
        "project_id": "23c8a121505047b6869edf39f3062712",
        "created_at": "2018-09-12T08:24:14",
        "updated_at": "2018-09-12T08:24:14"
    }
}
```

Status Code

See **Status Codes**.

Error Code

See **Error Codes**.

7.7.16 Updating a Network ACL Group

Function

This API is used to update a network ACL group.

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URI

PUT /v2.0/fwaas/firewall_groups/{firewall_group_id}

Request Parameters

Table 7-180 Request parameter

Parameter	Type	Mandatory	Description
firewall_group	**firewall_group** object	Yes	Specifies the firewall group. For details, see **Table 7-181**.

Table 7-181 Firewall Group objects

Attribute	Mandatory	Type	Description
name	No	String	Specifies the name of the network ACL group. The value can contain a maximum of 255 characters.
description	No	String	Provides supplementary information about the network ACL group. The value can contain a maximum of 255 characters.
ingress_firewall_policy_id	No	String	Specifies the network ACL policy for inbound traffic.
egress_firewall_policy_id	No	String	Specifies the network ACL policy for outbound traffic.

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Attribute	Mandatory	Type	Description
ports	No	Array of strings	Specifies the list of ports bound with the network ACL group. The value must be the port ID. **NOTE** The port is the one whose **device_owner** is **network:router_interface_distributed**. • Call the VPC API for querying the port ID. The filtering criteria are the specified **network_id** and **device_owner**. The **network_id** is the network ID of the subnet associated with the network ACL. Example: GET https://{Endpoint}/v1/{project_id}/ports?network_id={network_id}&device_owner=network%3Arouter_interface_distributed
admin_state_up	No	Boolean	Specifies the administrative status of the network ACL. The value can be **true** or **false**.

Example Request

Associate the ACL group whose ID is 2fb0e81f-9f63-44b2-9894-c13a3284594a with the outbound ACL policy 53f36c32-db25-4856-a0ba-e605fd88c5e9.

```
PUT https://{Endpoint}/v2.0/fwaas/firewall_groups/2fb0e81f-9f63-44b2-9894-c13a3284594a

{
    "firewall_group": {
        "egress_firewall_policy_id": "53f36c32-db25-4856-a0ba-e605fd88c5e9"
    }
}
```

Response Parameters

Table 7-182 Response parameter

Parameter	Type	Description
firewall_group	**firewall_group** object	Specifies the firewall group. For details, see **Table 7-183**.

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Table 7-183 Firewall Group objects

Attribute	Type	Description
id	String	Specifies the UUID of the network ACL group.
name	String	Specifies the name of the network ACL group.
description	String	Provides supplementary information about the network ACL group.
tenant_id	String	Specifies the project ID.
ingress_firewall_policy_id	String	Specifies the network ACL policy for inbound traffic.
egress_firewall_policy_id	String	Specifies the network ACL policy for outbound traffic.
ports	Array of strings	Specifies the list of ports bound with the network ACL group.
public	Boolean	Specifies whether the firewall group can be shared by different tenants.
status	String	Specifies the status of the network ACL policy.
admin_state_up	Boolean	Specifies the administrative status of the network ACL.
project_id	String	Specifies the project ID. For details about how to obtain a project ID, see **Obtaining a Project ID**.
created_at	String	Specifies the time (UTC) when the resource is created. Format: *yyyy-MM-ddTHH:mm:ss*
updated_at	String	Specifies the time (UTC) when the resource is updated. Format: *yyyy-MM-ddTHH:mm:ss*

Example Response

```
{
    "firewall_group": {
        "status": "PENDING_UPDATE",
        "public": false,
        "egress_firewall_policy_id": "53f36c32-db25-4856-a0ba-e605fd88c5e9",
        "name": "",
        "admin_state_up": true,
        "ports": [
            "c133f2bf-6937-4416-bb17-012e1be5cd2d"
        ],
        "tenant_id": "23c8a121505047b6869edf39f3062712",
```

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```
    "id": "0415f554-26ed-44e7-a881-bdf4e6216e38",
    "ingress_firewall_policy_id": "afc52ce9-5305-4ec9-9feb-44feb8330341",
    "description": "",
    "project_id": "23c8a121505047b6869edf39f3062712",
    "created_at": "2018-09-12T08:24:14",
    "updated_at": "2018-09-12T08:24:14"
  }
}
```

Status Code

See **Status Codes**.

Error Code

See **Error Codes**.

7.7.17 Deleting a Network ACL Group

Function

This API is used to delete a network ACL group.

URI

DELETE /v2.0/fwaas/firewall_groups/{firewall_group_id}

Table 7-184 describes the parameters.

Table 7-184 Parameter description

Name	Mandatory	Type	Description
firewall_group_id	Yes	String	Specifies the network ACL group ID, which uniquely identifies the network ACL group.

Request Parameters

None

Response Parameters

None

Example Request

```
DELETE https://{Endpoint}/v2.0/fwaas/firewall_groups/0415f554-26ed-44e7-a881-bdf4e6216e38
```

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Example Response

None

Status Code

See **Status Codes**.

Error Code

See **Error Codes**.

7.8 Security Group

7.8.1 Querying Security Groups

Function

This API is used to query all security groups accessible to the tenant submitting the request.

URI

GET /v2.0/security-groups

Example of querying security groups by page

```
GET https://{Endpoint}/v2.0/security-groups?
limit=2&marker=0431c9c5-1660-42e0-8a00-134bec7f03e2&page_reverse=False
```

Table 7-185 describes the parameters.

Table 7-185 Parameter description

Name	Mandatory	Type	Description
id	No	String	Specifies that the ID is used as the filtering condition.
name	No	String	Specifies that the name is used as the filtering condition.
description	No	String	Specifies that the description is used as the filtering condition.
tenant_id	No	String	Specifies that the project ID is used as the filtering condition.

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Name	Mandatory	Type	Description
marker	No	String	Specifies a resource ID for pagination query, indicating that the query starts from the next record of the specified resource ID. This parameter can work together with the parameter **limit**. ● If parameters **marker** and **limit** are not passed, resource records on the first page will be returned. ● If the parameter **marker** is not passed and the value of parameter **limit** is set to **10**, the first 10 resource records will be returned. ● If the value of the parameter **marker** is set to the resource ID of the 10th record and the value of parameter **limit** is set to **10**, the 11th to 20th resource records will be returned. ● If the value of the parameter **marker** is set to the resource ID of the 10th record and the parameter **limit** is not passed, resource records starting from the 11th records (including 11th) will be returned.
limit	No	Integer	Specifies the number of records that will be returned on each page. The value is from 0 to intmax (2^31-1). The default value is 2000. **limit** can be used together with **marker**. For details, see the parameter description of **marker**.

Request Parameters

None

Example Request

```
GET https://{Endpoint}/v2.0/security-groups?limit=1
```

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Response Parameters

Table 7-186 Response parameter

Parameter	Type	Description
security_groups	Array of **Security Group** objects	Specifies the security group list. For details, see **Table 7-187**.
security_groups_links	Array of **SecurityGroupsLink** objects	Shows pagination information about security groups. Only when **limit** is used for filtering and the number of resources exceeds the value of **limit** or 2000 (default value of **limit**), value **next** will be returned for **rel** and a link for **href**.

Table 7-187 Security Group objects

Attribute	Type	Description
id	String	Specifies the security group ID. This parameter is not mandatory when you query security groups.
tenant_id	String	Specifies the project ID.
name	String	Specifies the security group name.
description	String	Provides supplementary information about the security group.
security_group_rules	Array of **Security Group Rule** objects	Specifies the security group rule list. For details, see **Table 7-188**.
project_id	String	Specifies the project ID. For details about how to obtain a project ID, see **Obtaining a Project ID**.
created_at	String	Specifies the time (UTC) when the security group is created. Format: *yyyy-MM-ddTHH:mm:ss*
updated_at	String	Specifies the time (UTC) when the security group is updated. Format: *yyyy-MM-ddTHH:mm:ss*

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Table 7-188 Security Group Rule objects

Attribute	Type	Description
id	String	Specifies the security group rule ID. This parameter is not mandatory when you query security group rules.
description	String	Provides supplementary information about the security group rule.
security_group_id	String	Specifies the ID of the belonged security group.
remote_group_id	String	Specifies the peer ID of the belonged security group.
direction	String	Specifies the direction of the traffic for which the security group rule takes effect.
remote_ip_prefix	String	Specifies the peer IP address segment.
protocol	String	Specifies the protocol type or the IP protocol number.
port_range_max	Integer	Specifies the maximum port number. When ICMP is used, the value is the ICMP code.
port_range_min	Integer	Specifies the minimum port number. If the ICMP protocol is used, this parameter indicates the ICMP type. When the TCP or UDP protocol is used, both **port_range_max** and **port_range_min** must be specified, and the **port_range_max** value must be greater than the **port_range_min** value. When the ICMP protocol is used, if you specify the ICMP code (**port_range_max**), you must also specify the ICMP type (**port_range_min**).
ethertype	String	Specifies the network type. IPv4 and IPv6 are supported.
tenant_id	String	Specifies the project ID.
project_id	String	Specifies the project ID. For details about how to obtain a project ID, see **Obtaining a Project ID**.

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Attribute	Type	Description
created_at	String	Specifies the time (UTC) when the security group rule is created. Format: *yyyy-MM-ddTHH:mm:ss*
updated_at	String	Specifies the time (UTC) when the security group rule is updated. Format: *yyyy-MM-ddTHH:mm:ss*

Table 7-189 SecurityGroupsLink objects

Parameter	Type	Description
href	String	Specifies the API link.
rel	String	Specifies the relationship between the API link and the API version.

Example Response

```
{
   "security_groups": [
      {
         "id": "0431c9c5-1660-42e0-8a00-134bec7f03e2",
         "name": "sg-ad3f",
         "description": "",
         "tenant_id": "bbfe8c41dd034a07bebd592bf03b4b0c",
         "project_id": "bbfe8c41dd034a07bebd592bf03b4b0c",
         "security_group_rules": [
            {
               "id": "d90e55ba-23bd-4d97-b722-8cb6fb485d69",
               "direction": "ingress",
               "protocol": null,
               "ethertype": "IPv4",
               "description": null,
               "remote_group_id": "0431c9c5-1660-42e0-8a00-134bec7f03e2",
               "remote_ip_prefix": null,
               "tenant_id": "bbfe8c41dd034a07bebd592bf03b4b0c",
               "port_range_max": null,
               "port_range_min": null,
               "security_group_id": "0431c9c5-1660-42e0-8a00-134bec7f03e2"
            },
            {
               "id": "aecff4d4-9ce9-489c-86a3-803aedec65f7",
               "direction": "egress",
               "protocol": null,
               "ethertype": "IPv4",
               "description": null,
               "remote_group_id": null,
               "remote_ip_prefix": null,
               "tenant_id": "bbfe8c41dd034a07bebd592bf03b4b0c",
               "port_range_max": null,
               "port_range_min": null,
               "security_group_id": "0431c9c5-1660-42e0-8a00-134bec7f03e2"
            }
         ],
         "created_at": "2018-09-12T08:24:14",
         "updated_at": "2018-09-12T08:24:14"
```

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```
    }
  ],
  "security_groups_links": [
    {
        "rel": "next",
        "href": "https://{Endpoint}/v2.0/security-groups?
limit=1&marker=0431c9c5-1660-42e0-8a00-134bec7f03e2"
    },
    {   "rel": "previous",
        "href": "https://{Endpoint}/v2.0/security-groups?
limit=1&marker=0431c9c5-1660-42e0-8a00-134bec7f03e2&page_reverse=True"
    }
  ]
}
```

Status Code

See **Status Codes**.

Error Code

See **Error Codes**.

7.8.2 Querying a Security Group

Function

This API is used to query details about a specific security group.

URI

GET /v2.0/security-groups/{security_group_id}

Request Parameters

None

Example Request

```
GET https://{Endpoint}/v2.0/security-groups/0431c9c5-1660-42e0-8a00-134bec7f03e2
```

Response Parameters

Table 7-190 Response parameter

Parameter	Type	Description
security_group	**security_group** object	Specifies the security group. For details, see **Table 7-191**.

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Table 7-191 Security Group objects

Attribute	Type	Description
id	String	Specifies the security group ID. This parameter is not mandatory when you query security groups.
tenant_id	String	Specifies the project ID.
name	String	Specifies the security group name.
description	String	Provides supplementary information about the security group.
security_group_rules	Array of **Security Group Rule** objects	Specifies the security group rule list. For details, see **Table 7-192**.
project_id	String	Specifies the project ID. For details about how to obtain a project ID, see **Obtaining a Project ID**.
created_at	String	Specifies the time (UTC) when the security group is created. Format: *yyyy-MM-ddTHH:mm:ss*
updated_at	String	Specifies the time (UTC) when the security group is updated. Format: *yyyy-MM-ddTHH:mm:ss*

Table 7-192 Security Group Rule objects

Attribute	Type	Description
id	String	Specifies the security group rule ID. This parameter is not mandatory when you query security group rules.
description	String	Provides supplementary information about the security group rule.
security_group_id	String	Specifies the ID of the belonged security group.
remote_group_id	String	Specifies the peer ID of the belonged security group.
direction	String	Specifies the direction of the traffic for which the security group rule takes effect.
remote_ip_prefix	String	Specifies the peer IP address segment.

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Attribute	Type	Description
protocol	String	Specifies the protocol type or the IP protocol number.
port_range_max	Integer	Specifies the maximum port number. When ICMP is used, the value is the ICMP code.
port_range_min	Integer	Specifies the minimum port number. If the ICMP protocol is used, this parameter indicates the ICMP type. When the TCP or UDP protocol is used, both **port_range_max** and **port_range_min** must be specified, and the **port_range_max** value must be greater than the **port_range_min** value. When the ICMP protocol is used, if you specify the ICMP code (**port_range_max**), you must also specify the ICMP type (**port_range_min**).
ethertype	String	Specifies the network type. IPv4 and IPv6 are supported.
tenant_id	String	Specifies the project ID.
project_id	String	Specifies the project ID. For details about how to obtain a project ID, see **Obtaining a Project ID**.
created_at	String	Specifies the time (UTC) when the security group rule is created. Format: *yyyy-MM-ddTHH:mm:ss*
updated_at	String	Specifies the time (UTC) when the security group rule is updated. Format: *yyyy-MM-ddTHH:mm:ss*

Example Response

```
{
    "security_group": {
        "id": "0431c9c5-1660-42e0-8a00-134bec7f03e2",
        "name": "sg-ad3f",
        "description": "",
        "tenant_id": "bbfe8c41dd034a07bebd592bf03b4b0c",
        "project_id": "bbfe8c41dd034a07bebd592bf03b4b0c",
        "security_group_rules": [
            {
                "id": "d90e55ba-23bd-4d97-b722-8cb6fb485d69",
                "direction": "ingress",
                "protocol": null,
```

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```
            "ethertype": "IPv4",
            "description": null,
            "remote_group_id": "0431c9c5-1660-42e0-8a00-134bec7f03e2",
            "remote_ip_prefix": null,
            "tenant_id": "bbfe8c41dd034a07bebd592bf03b4b0c",
            "port_range_max": null,
            "port_range_min": null,
            "security_group_id": "0431c9c5-1660-42e0-8a00-134bec7f03e2"
        },
        {
            "id": "aecff4d4-9ce9-489c-86a3-803aedec65f7",
            "direction": "egress",
            "protocol": null,
            "ethertype": "IPv4",
            "description": null,
            "remote_group_id": null,
            "remote_ip_prefix": null,
            "tenant_id": "bbfe8c41dd034a07bebd592bf03b4b0c",
            "port_range_max": null,
            "port_range_min": null,
            "security_group_id": "0431c9c5-1660-42e0-8a00-134bec7f03e2"
        }
    ],
    "created_at": "2018-09-12T08:24:14",
    "updated_at": "2018-09-12T08:24:14"
  }
}
```


Status Code

See **Status Codes**.

Error Code

See **Error Codes**.

7.8.3 Creating a Security Group

Function

This API is used to create a security group.

URI

POST /v2.0/security-groups

Request Parameters

Table 7-193 Request parameter

Parameter	Mandatory	Type	Description
security_group	Yes	**security_group** object	Specifies the security group. For details, see **Table 7-194**.

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Table 7-194 Security Group objects

Attribute	Mandatory	Type	Description
name	No	String	Specifies the security group name.
description	No	String	Provides supplementary information about the security group.

Example Request

Create a security group named **sg-test**.

```
POST https://{Endpoint}/v2.0/security-groups

{
    "security_group": {
        "name": "sg-test"
    }
}
```

Response Parameters

Table 7-195 Response parameter

Parameter	Type	Description
security_group	**security_group** object	Specifies the security group. For details, see **Table 7-196**.

Table 7-196 Security Group objects

Attribute	Type	Description
id	String	Specifies the security group ID. This parameter is not mandatory when you query security groups.
tenant_id	String	Specifies the project ID.
name	String	Specifies the security group name.
description	String	Provides supplementary information about the security group.
security_group_rules	Array of **Security Group Rule** objects	Specifies the security group rule list. For details, see **Table 7-197**.

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Attribute	Type	Description
project_id	String	Specifies the project ID. For details about how to obtain a project ID, see **Obtaining a Project ID**.
created_at	String	Specifies the time (UTC) when the security group is created. Format: *yyyy-MM-ddTHH:mm:ss*
updated_at	String	Specifies the time (UTC) when the security group is updated. Format: *yyyy-MM-ddTHH:mm:ss*

Table 7-197 Security Group Rule objects

Attribute	Type	Description
id	String	Specifies the security group rule ID. This parameter is not mandatory when you query security group rules.
description	String	Provides supplementary information about the security group rule.
security_group_id	String	Specifies the ID of the belonged security group.
remote_group_id	String	Specifies the peer ID of the belonged security group.
direction	String	Specifies the direction of the traffic for which the security group rule takes effect.
remote_ip_prefix	String	Specifies the peer IP address segment.
protocol	String	Specifies the protocol type or the IP protocol number.
port_range_max	Integer	Specifies the maximum port number. When ICMP is used, the value is the ICMP code.

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Attribute	Type	Description
port_range_min	Integer	Specifies the minimum port number. If the ICMP protocol is used, this parameter indicates the ICMP type. When the TCP or UDP protocol is used, both **port_range_max** and **port_range_min** must be specified, and the **port_range_max** value must be greater than the **port_range_min** value. When the ICMP protocol is used, if you specify the ICMP code (**port_range_max**), you must also specify the ICMP type (**port_range_min**).
ethertype	String	Specifies the network type. IPv4 and IPv6 are supported.
tenant_id	String	Specifies the project ID.
project_id	String	Specifies the project ID. For details about how to obtain a project ID, see **Obtaining a Project ID**.
created_at	String	Specifies the time (UTC) when the security group rule is created. Format: *yyyy-MM-ddTHH:mm:ss*
updated_at	String	Specifies the time (UTC) when the security group rule is updated. Format: *yyyy-MM-ddTHH:mm:ss*

Example Response

```
{
    "security_group": {
        "id": "d29ae17d-f355-4992-8747-1fb66cc9afd2",
        "name": "sg-test",
        "description": "",
        "tenant_id": "bbfe8c41dd034a07bebd592bf03b4b0c",
        "project_id": "bbfe8c41dd034a07bebd592bf03b4b0c",
        "security_group_rules": [
            {
                "id": "3f51e52c-0e85-40f7-a137-85927392e436",
                "direction": "egress",
                "protocol": null,
                "ethertype": "IPv4",
                "description": null,
                "remote_group_id": null,
                "remote_ip_prefix": null,
                "tenant_id": "bbfe8c41dd034a07bebd592bf03b4b0c",
                "port_range_max": null,
                "port_range_min": null,
                "security_group_id": "d29ae17d-f355-4992-8747-1fb66cc9afd2"
            },
```

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```
        {
            "id": "6332de3e-98fb-4f8c-b44a-fcb8ff09881e",
            "direction": "egress",
            "protocol": null,
            "ethertype": "IPv6",
            "description": null,
            "remote_group_id": null,
            "remote_ip_prefix": null,
            "tenant_id": "bbfe8c41dd034a07bebd592bf03b4b0c",
            "port_range_max": null,
            "port_range_min": null,
            "security_group_id": "d29ae17d-f355-4992-8747-1fb66cc9afd2"
        }
    ],
    "created_at": "2018-09-20T02:15:34",
    "updated_at": "2018-09-20T02:15:34"
  }
}
```


Status Code

See **Status Codes**.

Error Code

See **Error Codes**.

7.8.4 Updating a Security Group

Function

This API is used to update a security group.

URI

PUT /v2.0/security-groups/{security_group_id}

Request Parameters

Table 7-198 Request parameter

Parameter	Type	Mandatory	Description
security_group	**security_group** object	Yes	Specifies the security group. For details, see **Table 7-199**. You must specify at least one attribute when updating a security group.

Table 7-199 Security Group objects

Attribute	Mandatory	Type	Description
name	No	String	Specifies the security group name.
description	No	String	Provides supplementary information about the security group.

Example Request

Change the name of the security group whose ID is d29ae17d-f355-4992-8747-1fb66cc9afd2 to **sg-test02**.

```
PUT https://{Endpoint}/v2.0/security-groups/d29ae17d-f355-4992-8747-1fb66cc9afd2

{
   "security_group": {
        "name": "sg-test02"
   }
}
```

Response Parameters

Table 7-200 Response parameter

Parameter	Type	Description
security_group	**security_group** object	Specifies the security group objects. For details, see **Table 7-201**.

Table 7-201 Security Group objects

Attribute	Type	Description
id	String	Specifies the security group ID. This parameter is not mandatory when you query security groups.
tenant_id	String	Specifies the project ID.
name	String	Specifies the security group name.
description	String	Provides supplementary information about the security group.
security_group_rules	Array of **Security Group Rule** objects	Specifies the security group rule list. For details, see **Table 7-202**.

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Attribute	Type	Description
project_id	String	Specifies the project ID. For details about how to obtain a project ID, see **Obtaining a Project ID**.
created_at	String	Specifies the time (UTC) when the security group is created. Format: *yyyy-MM-ddTHH:mm:ss*
updated_at	String	Specifies the time (UTC) when the security group is updated. Format: *yyyy-MM-ddTHH:mm:ss*

Table 7-202 Security Group Rule objects

Attribute	Type	Description
id	String	Specifies the security group rule ID. This parameter is not mandatory when you query security group rules.
description	String	Provides supplementary information about the security group rule.
security_group_id	String	Specifies the ID of the belonged security group.
remote_group_id	String	Specifies the peer ID of the belonged security group.
direction	String	Specifies the direction of the traffic for which the security group rule takes effect.
remote_ip_prefix	String	Specifies the peer IP address segment.
protocol	String	Specifies the protocol type or the IP protocol number.
port_range_max	Integer	Specifies the maximum port number. When ICMP is used, the value is the ICMP code.

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Attribute	Type	Description
port_range_min	Integer	Specifies the minimum port number. If the ICMP protocol is used, this parameter indicates the ICMP type. When the TCP or UDP protocol is used, both **port_range_max** and **port_range_min** must be specified, and the **port_range_max** value must be greater than the **port_range_min** value. When the ICMP protocol is used, if you specify the ICMP code (**port_range_max**), you must also specify the ICMP type (**port_range_min**).
ethertype	String	Specifies the network type. IPv4 and IPv6 are supported.
tenant_id	String	Specifies the project ID.
project_id	String	Specifies the project ID. For details about how to obtain a project ID, see **Obtaining a Project ID**.
created_at	String	Specifies the time (UTC) when the security group rule is created. Format: *yyyy-MM-ddTHH:mm:ss*
updated_at	String	Specifies the time (UTC) when the security group rule is updated. Format: *yyyy-MM-ddTHH:mm:ss*

Example Response


```
{
    "security_group": {
        "id": "d29ae17d-f355-4992-8747-1fb66cc9afd2",
        "name": "sg-test02",
        "description": "",
        "tenant_id": "bbfe8c41dd034a07bebd592bf03b4b0c",
        "project_id": "bbfe8c41dd034a07bebd592bf03b4b0c",
        "security_group_rules": [
            {
                "id": "6332de3e-98fb-4f8c-b44a-fcb8ff09881e",
                "direction": "egress",
                "protocol": null,
                "ethertype": "IPv6",
                "description": null,
                "remote_group_id": null,
                "remote_ip_prefix": null,
                "tenant_id": "bbfe8c41dd034a07bebd592bf03b4b0c",
                "port_range_max": null,
                "port_range_min": null,
                "security_group_id": "d29ae17d-f355-4992-8747-1fb66cc9afd2"
            },
```


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```
        {
            "id": "3f51e52c-0e85-40f7-a137-85927392e436",
            "direction": "egress",
            "protocol": null,
            "ethertype": "IPv4",
            "description": null,
            "remote_group_id": null,
            "remote_ip_prefix": null,
            "tenant_id": "bbfe8c41dd034a07bebd592bf03b4b0c",
            "port_range_max": null,
            "port_range_min": null,
            "security_group_id": "d29ae17d-f355-4992-8747-1fb66cc9afd2"
        }
    ],
    "created_at": "2018-09-20T02:15:34",
    "updated_at": "2018-09-20T02:16:31"
  }
}
```

Status Code

See **Status Codes**.

Error Code

See **Error Codes**.

7.8.5 Deleting a Security Group

Function

This API is used to delete a security group.

URI

DELETE /v2.0/security-groups/{security_group_id}

Request Parameters

None

Response Parameters

None

Example Request

```
DELETE https://{Endpoint}/v2.0/security-groups/a7ebb1d8-71e5-42e5-9030-4e0fca059d50
```

Example Response

None

Status Code

See **Status Codes**.

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Error Code

See **Error Codes**.

7.8.6 Querying Security Group Rules

Function

This API is used to query all security group rules accessible to the tenant submitting the request.

URI

GET /v2.0/security-group-rules

Example:

```
GET https://{Endpoint}/v2.0/security-group-rules?
security_group_id={security_group_id}&remote_group_id={remote_group_id}&direction={direction}&remote_ip_prefix={remote_ip_prefix}&protocol={protocol}&port_range_max={port_range_max}&port_range_min={port_range_min}&ethertype={ethertype}&tenant_id ={tenant_id}
```

Example of querying security group rules by page

```
GET https://{Endpoint}/v2.0/networks?limit=2&marker=07adc044-3f21-4eeb-bd57-5e5eb6024b7f&page_reverse=False
```

Table 7-203 describes the parameters.

Table 7-203 Parameter description

Name	Mandatory	Type	Description
id	No	String	Specifies that the security group rule ID is used as the filtering condition.
description	No	String	Specifies that the description is used as the filtering condition.
remote_group_id	No	String	Specifies the ID of the remote security group associated with the security group rule is used as the filtering condition.
security_group_id	No	String	Specifies the ID of the corresponding security group is used as the filtering condition.

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Name	Mandatory	Type	Description
direction	No	String	Specifies the security group rule direction is used as the filtering condition. The value can be **ingress** or **egress**.
protocol	No	String	Specifies that the IP protocol is used as the filtering condition.
remote_ip_prefix	No	String	Specifies the remote IP address range matching the security group rule is used as the filtering condition.
ethertype	No	String	Specifies that the network type is used as the filtering condition.
port_range_max	No	Integer	Specifies that the maximum port is used as the filtering condition.
port_range_min	No	Integer	Specifies that the minimum port is used as the filtering condition.
tenant_id	No	String	Specifies that the project ID is used as the filtering condition.

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Name	Mandatory	Type	Description
marker	No	String	Specifies a resource ID for pagination query, indicating that the query starts from the next record of the specified resource ID. This parameter can work together with the parameter **limit**. • If parameters **marker** and **limit** are not passed, resource records on the first page will be returned. • If the parameter **marker** is not passed and the value of parameter **limit** is set to **10**, the first 10 resource records will be returned. • If the value of the parameter **marker** is set to the resource ID of the 10th record and the value of parameter **limit** is set to **10**, the 11th to 20th resource records will be returned. • If the value of the parameter **marker** is set to the resource ID of the 10th record and the parameter **limit** is not passed, resource records starting from the 11th records (including 11th) will be returned.
limit	No	Integer	Specifies the number of records that will be returned on each page. The value is from 0 to intmax (2^31-1). The default value is 2000. **limit** can be used together with **marker**. For details, see the parameter description of **marker**.

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Request Parameters

None

Example Request

```
GET https://{Endpoint}/v2.0/security-group-rules
```

Response Parameters

Table 7-204 Response parameter

Parameter	Type	Description
security_group_rules	Array of **Security Group Rule** objects	Specifies the security group rule list. For details, see **Table 7-205**.
security_group_rules_links	Array of **SecurityGroupRulesLink** objects	Shows pagination information about security group rules. Only when **limit** is used for filtering and the number of resources exceeds the value of **limit** or 2000 (default value of **limit**), value **next** will be returned for **rel** and a link for **href**.

Table 7-205 Security Group Rule objects

Attribute	Type	Description
id	String	Specifies the security group rule ID. This parameter is not mandatory when you query security group rules.
description	String	Provides supplementary information about the security group rule.
security_group_id	String	Specifies the ID of the belonged security group.
remote_group_id	String	Specifies the peer ID of the belonged security group.
direction	String	Specifies the direction of the traffic for which the security group rule takes effect.
remote_ip_prefix	String	Specifies the peer IP address segment.
protocol	String	Specifies the protocol type or the IP protocol number.

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Attribute	Type	Description
port_range_max	Integer	Specifies the maximum port number. When ICMP is used, the value is the ICMP code.
port_range_min	Integer	Specifies the minimum port number. If the ICMP protocol is used, this parameter indicates the ICMP type. When the TCP or UDP protocol is used, both **port_range_max** and **port_range_min** must be specified, and the **port_range_max** value must be greater than the **port_range_min** value. When the ICMP protocol is used, if you specify the ICMP code (**port_range_max**), you must also specify the ICMP type (**port_range_min**).
ethertype	String	Specifies the network type. IPv4 and IPv6 are supported.
tenant_id	String	Specifies the project ID.
project_id	String	Specifies the project ID. For details about how to obtain a project ID, see **Obtaining a Project ID**.
created_at	String	Specifies the time (UTC) when the security group rule is created. Format: *yyyy-MM-ddTHH:mm:ss*
updated_at	String	Specifies the time (UTC) when the security group rule is updated. Format: *yyyy-MM-ddTHH:mm:ss*

Table 7-206 SecurityGroupRulesLink objects

Parameter	Type	Description
href	String	Specifies the API link.
rel	String	Specifies the relationship between the API link and the API version.

Example Response

```
{
   "security_group_rules": [
```

```
    {
        "remote_group_id": "1d8b19c7-7c56-48f7-a99b-4b40eb390967",
        "direction": "ingress",
        "remote_ip_prefix": null,
        "protocol": null,
        "tenant_id": "6c9298ec8c874f7f99688489ab65f90e",
        "port_range_max": null,
        "security_group_id": "1d8b19c7-7c56-48f7-a99b-4b40eb390967",
        "port_range_min": null,
        "ethertype": "IPv6",
        "description": null,
        "id": "07adc044-3f21-4eeb-bd57-5e5eb6024b7f",
        "project_id": "6c9298ec8c874f7f99688489ab65f90e",
        "created_at": "2018-09-20T02:15:34",
        "updated_at": "2018-09-20T02:15:34"
    },
    {
        "remote_group_id": null,
        "direction": "egress",
        "remote_ip_prefix": null,
        "protocol": null,
        "tenant_id": "6c9298ec8c874f7f99688489ab65f90e",
        "port_range_max": null,
        "security_group_id": "328fb454-a2ee-4a11-bdb1-ee19bbdfde43",
        "port_range_min": null,
        "ethertype": "IPv6",
        "description": null,
        "id": "09358f83-f4a5-4386-9563-a1e3c373d655",
        "project_id": "6c9298ec8c874f7f99688489ab65f90e",
        "created_at": "2018-09-20T02:15:34",
        "updated_at": "2018-09-20T02:15:34"
    },
    {
        "remote_group_id": "4c763030-366e-428c-be2b-d48f6baf5297",
        "direction": "ingress",
        "remote_ip_prefix": null,
        "protocol": null,
        "tenant_id": "6c9298ec8c874f7f99688489ab65f90e",
        "port_range_max": null,
        "security_group_id": "4c763030-366e-428c-be2b-d48f6baf5297",
        "port_range_min": null,
        "ethertype": "IPv6",
        "description": null,
        "id": "219a6f56-1069-458b-bec0-df9270e7a074",
        "project_id": "6c9298ec8c874f7f99688489ab65f90e",
        "created_at": "2018-09-20T02:15:34",
        "updated_at": "2018-09-20T02:15:34"
    }
  ],
  "security_group_rules_links": [
    {   "rel": "previous",
        "href": "https://{Endpoint}/v2.0/
security-group-rules?marker=07adc044-3f21-4eeb-bd57-5e5eb6024b7f&page_reverse=True"
    }
  ]
}
```


Status Code

See **Status Codes**.

Error Code

See **Error Codes**.

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7.8.7 Querying a Security Group Rule

Function

This API is used to query details about a specific security group rule.

URI

GET /v2.0/security-group-rules/{security_group_rule_id}

Request Parameters

None

Example Request

```
GET https://{Endpoint}/v2.0/security-group-rules/1755bc80-cf3a-4f57-8ae9-d9796482ddc0
```

Response Parameters

Table 7-207 Response parameter

Parameter	Type	Description
security_group_rule	**security_group_rule** object	Specifies the security group rule. For details, see **Table 7-208**.

Table 7-208 Security Group Rule objects

Attribute	Type	Description
id	String	Specifies the security group rule ID. This parameter is not mandatory when you query security group rules.
description	String	Provides supplementary information about the security group rule.
security_group_id	String	Specifies the ID of the belonged security group.
remote_group_id	String	Specifies the peer ID of the belonged security group.
direction	String	Specifies the direction of the traffic for which the security group rule takes effect.
remote_ip_prefix	String	Specifies the peer IP address segment.

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Attribute	Type	Description
protocol	String	Specifies the protocol type or the IP protocol number.
port_range_max	Integer	Specifies the maximum port number. When ICMP is used, the value is the ICMP code.
port_range_min	Integer	Specifies the minimum port number. If the ICMP protocol is used, this parameter indicates the ICMP type. When the TCP or UDP protocol is used, both **port_range_max** and **port_range_min** must be specified, and the **port_range_max** value must be greater than the **port_range_min** value. When the ICMP protocol is used, if you specify the ICMP code (**port_range_max**), you must also specify the ICMP type (**port_range_min**).
ethertype	String	Specifies the network type. IPv4 and IPv6 are supported.
tenant_id	String	Specifies the project ID.
project_id	String	Specifies the project ID. For details about how to obtain a project ID, see **Obtaining a Project ID**.
created_at	String	Specifies the time (UTC) when the security group rule is created. Format: *yyyy-MM-ddTHH:mm:ss*
updated_at	String	Specifies the time (UTC) when the security group rule is updated. Format: *yyyy-MM-ddTHH:mm:ss*

Example Response

```
{
    "security_group_rule": {
        "remote_group_id": null,
        "direction": "egress",
        "remote_ip_prefix": null,
        "protocol": null,
        "tenant_id": "6fbe9263116a4b68818cf1edce16bc4f",
        "port_range_max": null,
        "security_group_id": "723bc02c-d7f7-49b5-b6ff-d08320f315e2",
        "port_range_min": null,
        "ethertype": "IPv4",
        "description": null,
```

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```
        "id": "1755bc80-cf3a-4f57-8ae9-d9796482ddc0",
        "project_id": "6fbe9263116a4b68818cf1edce16bc4f",
        "created_at": "2018-09-20T02:15:34",
        "updated_at": "2018-09-20T02:15:34"
    }
}
```

Status Code

See **Status Codes**.

Error Code

See **Error Codes**.

7.8.8 Creating a Security Group Rule

Function

This API is used to create a security group rule.

URI

POST /v2.0/security-group-rules

Request Parameters

Table 7-209 Request parameter

Parameter	Type	Mandatory	Description
security_group_rule	**security_group_rule** object	Yes	Specifies the security group rule. For details, see **Table 7-210**.

Table 7-210 Security Group Rule objects

Attribute	Mandatory	Type	Description
description	No	String	Provides supplementary information about the security group rule.
security_group_id	Yes	String	Specifies the ID of the belonged security group.
remote_group_id	No	String	Specifies the peer ID of the belonged security group. This parameter is mutually exclusive with **remote_ip_prefix**.

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Attribute	Mandatory	Type	Description
direction	Yes	String	Specifies the direction of the traffic for which the security group rule takes effect. The value can be **ingress** or **egress**.
remote_ip_prefix	No	String	Specifies the peer IP address segment. This parameter is mutually exclusive with **remote_group_id**.
protocol	No	String	Specifies the protocol type or the IP protocol number. The value can be **tcp**, **udp**, **icmp** or an IP protocol number
port_range_max	No	Integer	Specifies the maximum port number. When ICMP is used, the value is the ICMP code. The value ranges from 1 to 65535. (The value ranges from 0 to 255 when it indicates the code.)
port_range_min	No	Integer	Specifies the minimum port number. If the ICMP protocol is used, this parameter indicates the ICMP type. When the TCP or UDP protocol is used, both **port_range_max** and **port_range_min** must be specified, and the **port_range_max** value must be greater than the **port_range_min** value. When the ICMP protocol is used, if you specify the ICMP code (**port_range_max**), you must also specify the ICMP type (**port_range_min**). The value ranges from 1 to 65535. (The value ranges from 0 to 255 when it indicates the code.)
ethertype	No	String	Specifies the network type. The value can be **IPv4** or **IPv6**.

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Example Request

Create an outbound rule in the security group whose ID is 5cb9c1ee-00e0-4d0f-9623-55463cd26ff8. Set **protocol** to **tcp**, and **remote_ip_prefix** to 10.10.0.0/24.

```
POST https://{Endpoint}/v2.0/security-group-rules

{
    "security_group_rule": {
        "security_group_id": "5cb9c1ee-00e0-4d0f-9623-55463cd26ff8",
        "direction": "egress",
        "protocol": "tcp",
        "remote_ip_prefix": "10.10.0.0/24"
    }
}
```

Response Parameters

Table 7-211 Response parameter

Parameter	Type	Description
security_group_rule	**security_group_rule** object	Specifies the security group rule. For details, see **Table 7-212**.

Table 7-212 Security Group Rule objects

Attribute	Type	Description
id	String	Specifies the security group rule ID. This parameter is not mandatory when you query security group rules.
description	String	Provides supplementary information about the security group rule.
security_group_id	String	Specifies the ID of the belonged security group.
remote_group_id	String	Specifies the peer ID of the belonged security group.
direction	String	Specifies the direction of the traffic for which the security group rule takes effect.
remote_ip_prefix	String	Specifies the peer IP address segment.
protocol	String	Specifies the protocol type or the IP protocol number.

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Attribute	Type	Description
port_range_max	Integer	Specifies the maximum port number. When ICMP is used, the value is the ICMP code.
port_range_min	Integer	Specifies the minimum port number. If the ICMP protocol is used, this parameter indicates the ICMP type. When the TCP or UDP protocol is used, both **port_range_max** and **port_range_min** must be specified, and the **port_range_max** value must be greater than the **port_range_min** value. When the ICMP protocol is used, if you specify the ICMP code (**port_range_max**), you must also specify the ICMP type (**port_range_min**).
ethertype	String	Specifies the network type. IPv4 and IPv6 are supported.
tenant_id	String	Specifies the project ID.
project_id	String	Specifies the project ID. For details about how to obtain a project ID, see **Obtaining a Project ID**.
created_at	String	Specifies the time (UTC) when the security group rule is created. Format: *yyyy-MM-ddTHH:mm:ss*
updated_at	String	Specifies the time (UTC) when the security group rule is updated. Format: *yyyy-MM-ddTHH:mm:ss*

Example Response

```
{
    "security_group_rule": {
        "remote_group_id": null,
        "direction": "egress",
        "remote_ip_prefix": "10.10.0.0/24",
        "protocol": "tcp",
        "tenant_id": "6fbe9263116a4b68818cf1edce16bc4f",
        "port_range_max": null,
        "security_group_id": "5cb9c1ee-00e0-4d0f-9623-55463cd26ff8",
        "port_range_min": null,
        "ethertype": "IPv4",
        "description": null,
        "id": "7c336b04-1603-4911-a6f4-f2af1d9a0488",
        "project_id": "6fbe9263116a4b68818cf1edce16bc4f",
        "created_at": "2018-09-20T02:15:34",
        "updated_at": "2018-09-20T02:15:34"
```

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```
  }
}
```

Status Code

See **Status Codes**.

Error Code

See **Error Codes**.

7.8.9 Deleting a Security Group Rule

Function

This API is used to delete a security group rule.

URI

DELETE /v2.0/security-group-rules/{security_group_rule_id}

Request Parameters

None

Response Parameters

None

Example Request

```
DELETE https://{Endpoint}/v2.0/security-group-rules/07adc044-3f21-4eeb-bd57-5e5eb6024b7f
```

Example Response

None

Status Code

See **Status Codes**.

Error Code

See **Error Codes**.

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8 Application Examples

8.1 Assigning a Virtual IPv6 Address to ECSs for HA

Scenarios

Virtual IP addresses are used for high availability as they make active/standby ECS switchover possible. This way if one ECS goes down for some reason, the other one can take over and services continue uninterrupted.

This section describes how to assign a virtual IPv6 address to ECSs for HA by calling APIs.

Prerequisites

- You have created a VPC and a subnet that support both IPv4 and IPv6 and obtained the VPC ID and subnet ID. .
- You have purchased an ECS.
- If you use a token for authentication, you must obtain the token and add **X-Auth-Token** to the request header when making an API call. Obtain the token by referring to **Authentication**.

NOTE

The token obtained from IAM is valid for only 24 hours. If you want to use a token for authentication, you can cache it to avoid frequent calling.

Procedure

1. Assign a virtual IPv6 address.
   a. Send **POST https://***VPC endpoint***/v2.0/ports**.
   b. Add **X-Auth-Token** to the request header.
   c. Set the following parameters in the request body. The subnet where the virtual IP address resides must be the same as that of the ECS. Set **subnet_id** to the ID of the IPv6 subnet.

```
{
  "port":{
```

```
    "network_id":"b0ad9b80-bb16-4550-8ce0-514f949e35ee",
    "device_owner":"neutron:VIP_PORT",
    "name":"ipv6_vip_port_test",
    "fixed_ips":[
      {
        "subnet_id":"33ce2628-6246-4e3a-859f-99cd753ff704"
      }
    ]
  }
}
```

d. Check the response message.

- The request is successful if the following response is displayed:

```
{
  "port": {
    "id": "d92cfee7-9ebe-4483-85c1-00ffb1e45cd8",
    "name": "ipv6_vip_port_test",
    "status": "DOWN",
    "admin_state_up": true,
    "fixed_ips": [
      {
        "subnet_id": "33ce2628-6246-4e3a-859f-99cd753ff704",
        "ip_address": "2001:db8:a583:21d:2e25:9403:6f3d:4664"
      }
    ],
    "mac_address": "fa:16:3e:99:2e:92",
    "network_id": "b0ad9b80-bb16-4550-8ce0-514f949e35ee",
    "tenant_id": "060576782980d5762f9ec014dd2f1148",
    "project_id": "060576782980d5762f9ec014dd2f1148",
    "device_id": "",
    "device_owner": "neutron:VIP_PORT",
    "security_groups": [],
    "extra_dhcp_opts": [],
    "allowed_address_pairs": [],
    "binding:vnic_type": "normal",
    "binding:vif_details": {},
    "binding:profile": {},
    "port_security_enabled": true,
    "created_at": "2020-12-15T03:01:07",
    "updated_at": "2020-12-15T03:01:07"
  }
}
```

- For details about the error codes displayed if the request fails, see section **Error Codes**.

2. Query the NIC information according to the ECS ID. The value of **fixed_ips** contains IPv4 and IPv6 addresses.

a. Send **GET https://***VPC endpoint***/v2.0/ports?device_id={ecs_id}&network_id={network_id}**.

b. Add **X-Auth-Token** to the request header.

c. Check the response message.

- The request is successful if the following response is displayed:

```
{
    "ports": [{
        "id": "47b4cd46-cfe5-415d-957f-5068189dce94",
        "name": "",
        "status": "ACTIVE",
        "admin_state_up": true,
        "fixed_ips": [
          {
            "subnet_id": "0dd17989-1c23-4501-8dc1-40e4085f793f",
            "ip_address": "172.16.0.191"
          },
          {
```

```
                "subnet_id": "33ce2628-6246-4e3a-859f-99cd753ff704",
                "ip_address": "2001:db8:a583:21d:dfc0:d452:e9ab:65cf"
            }
        ],
        "mac_address": "fa:16:3e:1e:f7:9a",
        "network_id": "b0ad9b80-bb16-4550-8ce0-514f949e35ee",
        "tenant_id": "060576782980d5762f9ec014dd2f1148",
        "project_id": "060576782980d5762f9ec014dd2f1148",
        "device_id": "ab7ca781-66bf-48a8-814b-1568cb393a38",
        "device_owner": "compute:xxx",
        "security_groups": [
            "0552091e-b83a-49dd-88a7-4a5c86fd9ec3"
        ],
        "extra_dhcp_opts": [],
        "allowed_address_pairs": [],
        "binding:vnic_type": "normal",
        "binding:vif_details": {
            "primary_interface": true
        },
        "binding:profile": {},
        "port_security_enabled": true,
        "dns_assignment": [
            {
                "hostname": "ip-172-16-0-191",
                "ip_address": "172.16.0.191",
                "fqdn": "ip-172-16-0-191.br-iaas-odin1.compute.internal."
            }
        ],
        "dns_name": "ip-172-16-0-191",
        "created_at": "2020-11-19T13:32:37",
        "updated_at": "2020-11-19T13:33:50"
    }]
}
```


- For details about the error codes displayed if the request fails, see section **Error Codes**.

3. Bind an ECS to the virtual IP address.
   a. Send **PUT https://***VPC endpoint***/v2.0/ports/***{port_id}*. *port_id* indicates the port ID corresponding to the assigned virtual IPv6 address.
   b. Add **X-Auth-Token** to the request header.
   c. Set the following parameters in the request body. Set the value of **ip_address** to the NIC IPv6 address of the ECS obtained in **2**.

```
{
    "port": {
        "allowed_address_pairs": [{
            "ip_address": "2001:db8:a583:21d:dfc0:d452:e9ab:65cf"
        }]
    }
}
```

   d. Check the response message.
      - The request is successful if the following response is displayed:


```
{
    "port": {
        "id": "d92cfee7-9ebe-4483-85c1-00ffb1e45cd8",
        "name": "ipv6_vip_port_test",
        "status": "DOWN",
        "admin_state_up": true,
        "fixed_ips": [
            {
                "subnet_id": "33ce2628-6246-4e3a-859f-99cd753ff704",
                "ip_address": "2001:db8:a583:21d:2e25:9403:6f3d:4664"
            }
        ],
        "mac_address": "fa:16:3e:99:2e:92",
```


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```
        "network_id": "b0ad9b80-bb16-4550-8ce0-514f949e35ee",
        "tenant_id": "060576782980d5762f9ec014dd2f1148",
        "project_id": "060576782980d5762f9ec014dd2f1148",
        "device_id": "",
        "device_owner": "neutron:VIP_PORT",
        "security_groups": [],
        "extra_dhcp_opts": [],
        "allowed_address_pairs": [{
            "ip_address": "2001:db8:a583:21d:dfc0:d452:e9ab:65cf "
         }],
        "binding:vnic_type": "normal",
        "binding:vif_details": {},
        "binding:profile": {},
        "port_security_enabled": true,
        "created_at": "2020-12-15T03:01:07",
        "updated_at": "2020-12-15T03:01:07"
    }
}
```


- For details about the error codes displayed if the request fails, see section **Error Codes**.

4. Disable the source/destination check function for the ECS NIC.
   a. Send **PUT https://***VPC endpoint***/v2.0/ports/***{port_id}***. port_id** is the NIC ID obtained in **2**.
   b. Add **X-Auth-Token** to the request header.
   c. Set the following parameters in the request body. Set the value of **ip_address** to 1.1.1.1/0, the NIC IP address of the ECS.

```
{
    "port": {
        "allowed_address_pairs": [{
            "ip_address": "1.1.1.1/0"
        }]
    }
}
```

   d. Check the response message.

   - The request is successful if the following response is displayed:


```
{
    "port": {
"id": "47b4cd46-cfe5-415d-957f-5068189dce94",
        "name": "",
        "status": "ACTIVE",
        "admin_state_up": true,
        "fixed_ips": [
            {
                "subnet_id": "0dd17989-1c23-4501-8dc1-40e4085f793f",
                "ip_address": "172.16.0.191"
            },
            {
                "subnet_id": "33ce2628-6246-4e3a-859f-99cd753ff704",
                "ip_address": "2001:db8:a583:21d:dfc0:d452:e9ab:65cf"
            }
        ],
        "mac_address": "fa:16:3e:1e:f7:9a",
        "network_id": "b0ad9b80-bb16-4550-8ce0-514f949e35ee",
        "tenant_id": "060576782980d5762f9ec014dd2f1148",
        "project_id": "060576782980d5762f9ec014dd2f1148",
        "device_id": "ab7ca781-66bf-48a8-814b-1568cb393a38",
        "device_owner": "compute:xxx",
        "security_groups": [
            "0552091e-b83a-49dd-88a7-4a5c86fd9ec3"
        ],
        "extra_dhcp_opts": [],
        "allowed_address_pairs": [{
         "ip_address": "1.1.1.1/0"
```


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```
        }],
        "binding:vnic_type": "normal",
        "binding:vif_details": {
            "primary_interface": true
        },
        "binding:profile": {},
        "port_security_enabled": true,
        "dns_assignment": [
            {
                "hostname": "ip-172-16-0-191",
                "ip_address": "172.16.0.191",
                "fqdn": "ip-172-16-0-191.br-iaas-odin1.compute.internal."
            }
        ],
        "dns_name": "ip-172-16-0-191",
        "created_at": "2020-11-19T13:32:37",
        "updated_at": "2020-11-19T13:33:50"

    }
}
```


- For details about the error codes displayed if the request fails, see section **Error Codes**.

9 Permissions Policies and Supported Actions

9.1 VPC

Permission	API	Action
Creates a VPC.	POST /v1/{project_id}/vpcs	vpc:vpcs:create
Queries a VPC.	GET /v1/{project_id}/vpcs/{vpc_id}	vpc:vpcs:get
Queries VPC details. (v3)	GET /v3/{project_id}/vpc/vpcs/{vpc_id}	vpc:vpcs:get
Queries VPCs.	GET /v1/{project_id}/vpcs	vpc:vpcs:list
Queries VPCs (v3)	GET /v3/{project_id}/vpc/vpcs	vpc:vpcs:list
Updates a VPC.	PUT /v1/{project_id}/vpcs/{vpc_id}	vpc:vpcs:update
Adds a secondary CIDR block to a VPC. (v3)	PUT /v3/{project_id}/vpc/vpcs/{vpc_id}/add-extend-cidr	vpc:vpcs:update
Removes a secondary CIDR block from a VPC. (v3)	PUT /v3/{project_id}/vpc/vpcs/{vpc_id}/remove-extend-cidr	vpc:vpcs:update
Deletes a VPC.	DELETE /v1/{project_id}/vpcs/{vpc_id}	vpc:vpcs:delete

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9.2 Subnet

Permission	API	Action
Creates a subnet.	POST /v1/{project_id}/subnets	vpc:subnets:create
Queries a subnet.	GET /v1/{project_id}/subnets/{subnet_id}	vpc:subnets:get
Queries subnets.	GET /v1/{project_id}/subnets	vpc:subnets:get
Updates a subnet.	PUT /v1/{project_id}/vpcs/{vpc_id}/subnets/{subnet_id}	vpc:subnets:update
Deletes a subnet.	DELETE /v1/{project_id}/vpcs/{vpc_id}/subnets/{subnet_id}	vpc:subnets:delete

9.3 EIP

Permission	API	Action
Assigns an EIP.	POST /v1/{project_id}/publicips	vpc:publicIps:create
Queries an EIP.	GET /v1/{project_id}/publicips/{publicip_id}	vpc:publicIps:get
Queries EIPs.	GET /v1/{project_id}/publicips	vpc:publicIps:list
Updates an EIP.	PUT /v1/{project_id}/publicips/{publicip_id}	vpc:publicIps:update
Release an EIP.	DELETE /v1/{project_id}/publicips/{publicip_id}	vpc:publicIps:delete

9.4 Bandwidth

Permission	API	Action
Queries a bandwidth.	GET /v1/{project_id}/bandwidths/{bandwidth_id}	vpc:bandwidths:get
Queries bandwidths.	GET /v1/{project_id}/bandwidths	vpc:bandwidths:list

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Permission	API	Action
Updates a bandwidth.	PUT /v1/{project_id}/bandwidths/{bandwidth_id}	vpc:bandwidths:update

9.5 Bandwidth (V2.0)

Permission	API	Action
Allocates a shared bandwidth.	POST /v2.0/{project_id}/bandwidths	vpc:bandwidths:create
Deletes a shared bandwidth.	DELETE /v2.0/{project_id}/bandwidths/{bandwidth_id}	vpc:bandwidths:delete
Adds an EIP to a shared bandwidth.	POST /v2.0/{project_id}/bandwidths/{bandwidth_id}/insert	vpc:publicIps:insert
Removes an EIP from a shared bandwidth.	POST /v2.0/{project_id}/bandwidths/{bandwidth_id}/remove	vpc:publicIps:remove

9.6 EIP V3

Permission	API	Action
Querying all EIPs	GET /v3/{project_id}/eip/publicips	eip:publicIps:list
Querying the details of an EIP	GET /v3/{project_id}/eip/publicips/{publicip_id}	eip:publicIps:get
Updating an EIP	PUT /v3/{project_id}/eip/publicips/{publicip_id}	eip:publicIps:update
Binding an EIP to an instance	POST /v3/{project_id}/eip/publicips/{publicip_id}/associate-instance	eip:publicIps:associateInstance
Unbinding an EIP from an instance	POST /v3/{project_id}/eip/publicips/{publicip_id}/disassociate-instance	eip:publicIps:disassociateInstance
Adding EIPs to a shared bandwidth	POST /v3/{project_id}/eip/publicips/attach-share-bandwidth	eip:publicIps:attachBandwidth

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Permission	API	Action
Querying the number of available EIPs	POST /v3/{project_id}/eip/resources/available	eip:publicIps:count
Querying common pools	GET /v3/{project_id}/eip/publicip-pools/common-pools	eip:publicipPools:list
Querying EIP pools	GET /v3/{project_id}/eip/publicip-pools	eip:publicipPools:list
Querying the details of an EIP pool	GET /v3/{project_id}/eip/publicip-pools/{publicip_pool_id}	eip:publicipPools:get

9.7 VPC Peering Connection

Permission	API	Action
Querying VPC peering connections	GET /v2.0/vpc/peerings	vpc:peerings:get
Querying a VPC peering connection	GET /v2.0/vpc/peerings/{peering_id}	vpc:peerings:get
Creating a VPC peering connection	POST /v2.0/vpc/peerings	vpc:peerings:create
Accepting a VPC peering connection	PUT /v2.0/vpc/peerings/{peering_id}/accept	vpc:peerings:accept
Refusing a VPC peering connection	PUT /v2.0/vpc/peerings/{peering_id}/reject	vpc:peerings:reject
Updating a VPC peering connection	PUT /v2.0/vpc/peerings/{peering_id}	vpc:peerings:update
Deleting a VPC peering connection	DELETE /v2.0/vpc/peerings/{peering_id}	vpc:peerings:delete

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9.8 VPC Route

Permission	API	Action
Querying VPC Routes	GET /v2.0/vpc/routes	vpc:routes:list
Querying a VPC Route	GET /v2.0/vpc/routes/{route_id}	vpc:routes:get
Creating a VPC Route	POST /v2.0/vpc/routes	vpc:routes:create
Deleting a VPC Route	DELETE /v2.0/vpc/routes/{route_id}	vpc:routes:delete

9.9 Route Table

Permission	API	Action
Querying Route Tables	GET /v1/{project_id}/routetables	vpc:routeTables:list
Querying a Route Table	GET /v1/{project_id}/routetables/{routetable_id}	vpc:routeTables:get
Creating a Route Table	POST /v1/{project_id}/routetables	vpc:routeTables:create
Updating a Route Table	PUT /v1/{project_id}/routetables/{routetable_id}	vpc:routeTables:update
Associating Subnets with a Route Table	POST /v1/{project_id}/routetables/{routetable_id}/action	vpc:routeTables:associate
Disassociating Subnets from a Route Table	POST /v1/{project_id}/routetables/{routetable_id}/action	vpc:routeTables:associate
Deleting a Route Table	DELETE /v1/{project_id}/routetables/{routetable_id}	vpc:routeTables:delete

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9.10 Quota

Permission	API	Action
Queries quotas.	GET /v1/{project_id}/quotas	vpc:quotas:list

9.11 Private IP Address

Permission	API	Action
Assigns a private IP address.	POST /v1/{project_id}/privateips	vpc:privateIps:create
Queries a private IP address.	GET /v1/{project_id}/privateips/{privateip_id}	vpc:privateIps:get
Queries private IP addresses.	GET /v1/{project_id}/subnets/{subnet_id}/privateips	vpc:privateIps:list
Deletes a private IP address.	DELETE /v1/{project_id}/privateips/{privateip_id}	vpc:privateIps:delete

9.12 Security Group

Permission	API	Action
Creates a security group.	POST /v1/{project_id}/security-groups	vpc:securityGroups:create
Queries a security group.	GET /v1/{project_id}/security-groups/{security_group_id}	vpc:securityGroups:get
Queries security groups.	GET /v1/{project_id}/security-groups	vpc:securityGroups:get

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9.13 VPC Flow Log

Permission	API	Action
Creating a VPC Flow Log	POST /v1/{project_id}/fl/flow_logs	vpc:flowLogs:create
Querying VPC Flow Logs	GET /v1/{project_id}/fl/flow_logs	vpc:flowLogs:get
Querying a VPC Flow Log	GET /v1/{project_id}/fl/flow_logs/{flowlog_id}	vpc:flowLogs:get
Updating a VPC Flow Log	PUT /v1/{project_id}/fl/flow_logs/{flowlog_id}	vpc:flowLogs:update
Deleting a Flow Log	DELETE /v1/{project_id}/fl/flow_logs/{flowlog_id}	vpc:flowLogs:delete

9.14 Port (OpenStack Neutron API)

Permission	API	Action
Queries ports.	GET /v2.0/ports	vpc:ports:get
Queries a port.	GET /v2.0/ports/{port_id}	vpc:ports:get
Creates a port.	POST /v2.0/ports	vpc:ports:create
Updates a port.	PUT /v2.0/ports/{port_id}	vpc:ports:update
Deletes a port.	DELETE /v2.0/ports/{port_id}	vpc:ports:delete

9.15 Network (OpenStack Neutron API)

Permission	API	Action
Queries networks.	GET /v2.0/networks	vpc:networks:get
Queries a network.	GET /v2.0/networks/{network_id}	vpc:networks:get

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Permission	API	Action
Creates a network.	POST /v2.0/networks	vpc:networks:create
Updates a network.	PUT /v2.0/networks/{network_id}	vpc:networks:update
Deletes a network.	DELETE /v2.0/networks/{network_id}	vpc:networks:delete

9.16 Subnet (OpenStack Neutron API)

Permission	API	Action
Queries subnets.	GET /v2.0/subnets	vpc:subnets:get
Queries a subnet.	GET /v2.0/subnets/{subnet_id}	vpc:subnets:get
Creates a subnet.	POST /v2.0/subnets	vpc:subnets:create
Updates a subnet.	PUT /v2.0/subnets/{subnet_id}	vpc:subnets:update
Deletes a subnet.	DELETE /v2.0/subnets/{subnet_id}	vpc:subnets:delete

9.17 Router (OpenStack Neutron API)

Permission	API	Action
Queries routers.	GET /v2.0/routers	vpc:routers:get
Queries a router.	GET /v2.0/routers/{router_id}	vpc:routers:get
Creates a router.	POST /v2.0/routers	vpc:routers:create
Updates a router.	PUT /v2.0/routers/{router_id}	vpc:routers:update
Deletes a router.	DELETE /v2.0/routers/{router_id}	vpc:routers:delete

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Permission	API	Action
Adds an interface to a router.	PUT /v2.0/routers/{router_id}/add_router_interface	• vpc:routers:addInterface • vpc:routers:get
Removes an interface from a router.	PUT /v2.0/routers/{router_id}/remove_router_interface	• vpc:routers:removeInterface • vpc:routers:get

9.18 Floating IP Address (OpenStack Neutron API)

Permission	API	Action
Queries floating IP addresses.	GET /v2.0/floatingips	vpc:floatingIps:get
Queries a floating IP address.	GET /v2.0/floatingips/{floatingip_id}	vpc:floatingIps:get
Creates a floating IP address.	POST /v2.0/floatingips	vpc:floatingIps:create
Updates a floating IP address.	PUT /v2.0/floatingips/{floatingip_id}	vpc:floatingIps:update
Deletes a floating IP address.	DELETE /v2.0/floatingips/{floatingip_id}	vpc:floatingIps:delete

9.19 Network ACL (OpenStack Neutron API)

Permission	API	Action
Queries all network ACL rules.	GET /v2.0/fwaas/firewall_rules	vpc:firewallRules:get
Queries a network ACL rule.	GET /v2.0/fwaas/firewall_rules/{firewall_rule_id}	vpc:firewallRules:get

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Permission	API	Action
Creates a network ACL rule.	POST /v2.0/fwaas/firewall_rules	vpc:firewallRules:create
Updates a network ACL rule.	PUT /v2.0/fwaas/firewall_rules/{firewall_rule_id}	vpc:firewallRules:update
Deletes a network ACL rule.	DELETE /v2.0/fwaas/firewall_rules/{firewall_rule_id}	vpc:firewallRules:delete
Queries all network ACL policies.	GET /v2.0/fwaas/firewall_policies	vpc:firewallPolicies:get
Queries a network ACL policy.	GET /v2.0/fwaas/firewall_policies/{firewall_policy_id}	vpc:firewallPolicies:get
Creates a network ACL policy.	POST /v2.0/fwaas/firewall_policies	vpc:firewallPolicies:create
Updates a network ACL policy.	PUT /v2.0/fwaas/firewall_policies/{firewall_policy_id}	vpc:firewallPolicies:update
Deletes a network ACL policy.	DELETE /v2.0/fwaas/firewall_policies/{firewall_policy_id}	vpc:firewallPolicies:delete
Inserts a network ACL rule.	PUT /v2.0/fwaas/firewall_policies/{firewall_policy_id}/insert_rule	• vpc:firewallPolicies:addRule • vpc:firewallPolicies:get
Removes a network ACL rule.	PUT /v2.0/fwaas/firewall_policies/{firewall_policy_id}/remove_rule	• vpc:firewallPolicies:removeRule • vpc:firewallPolicies:get
Queries all network ACL groups.	GET /v2.0/fwaas/firewall_groups	vpc:firewallGroups:get
Queries a network ACL group.	GET /v2.0/fwaas/firewall_groups/{firewall_group_id}	vpc:firewallGroups:get
Creates a network ACL group.	POST /v2.0/fwaas/firewall_groups	vpc:firewallGroups:create

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Permission	API	Action
Updates a network ACL group.	PUT /v2.0/fwaas/firewall_groups/{firewall_group_id}	vpc:firewallGroups:update
Deletes a network ACL group	DELETE /v2.0/fwaas/firewall_groups/{firewall_group_id}	vpc:firewallGroups:delete

9.20 Security Group (OpenStack Neutron API)

Permission	API	Action
Queries a security group.	GET /v2.0/security-groups	vpc:securityGroups:get
Queries details about a security group.	GET /v2.0/security-groups/{security_group_id}	vpc:securityGroups:get
Creates a security group.	POST /v2.0/security-groups	vpc:securityGroups:create
Updates a security group.	PUT /v2.0/security-groups/{security_group_id}	vpc:securityGroups:update
Deletes a security group.	DELETE /v2.0/security-groups/{security_group_id}	vpc:securityGroups:delete
Queries a security group rule.	GET /v2.0/security-group-rules	vpc:securityGroupRules:get
Queries details about a security group rule.	GET /v2.0/security-group-rules/{rules_security_groups_id}	vpc:securityGroupRules:get
Creates a security group rule.	POST /v2.0/security-group-rules	vpc:securityGroupRules:create
Deletes a security group rule.	DELETE /v2.0/security-group-rules/{rules_security_groups_id}	vpc:securityGroupRules:delete

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9.21 Precautions for API Permissions

If you have insufficient permissions, response code **200** will be returned when you query network resources and an empty list will be displayed.

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A Appendix

A.1 ICMP-Port Range Relationship Table

ICMP Type	port_range_min	port_range_max
Any	NULL	NULL
Echo	8	0
Echo reply	0	0
Fragment need DF set	3	4
Host redirect	5	1
Host TOS redirect	5	3
Host unreachable	3	1
Information reply	16	0
Information request	15	0
Net redirect	5	0
Net TOS redirect	5	2
Net unreachable	3	0
Parameter problem	12	0
Port unreachable	3	3
Protocol unreachable	3	2
Reassembly timeout	11	1
Source quench	4	0
Source route failed	3	5

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ICMP Type	port_range_min	port_range_max
Timestamp reply	14	0
Timestamp request	13	0
TTL exceeded	11	0

A.2 VPC Monitoring Metrics

Description

This section describes monitoring metrics reported by VPC to Cloud Eye as well as their namespaces and dimensions. You can use APIs provided by Cloud Eye to query the monitoring metrics of the monitored object and alarms generated for VPC.

Namespace

SYS.VPCnetwork ACL

Metrics

Table A-1 EIP and bandwidth metrics

ID	Name	Description	Value Range	Monitored Object	Monitoring Interval (Raw Data)
upstream_bandwidth	Outbound Bandwidth	Network rate of outbound traffic Unit: bit/s	≥ 0 bit/s	Bandwidth or EIP	1 minute
downstream_bandwidth	Inbound Bandwidth	Network rate of inbound traffic Unit: bit/s	≥ 0 bit/s	Bandwidth or EIP	1 minute

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ID	Name	Description	Value Range	Monitored Object	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% to 100%	Bandwidth or EIP	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%	Bandwidth or EIP	1 minute
up_stream	Outbound Traffic	Network traffic going out of the cloud platform in a minute Unit: byte	≥ 0 bytes	Bandwidth or EIP	1 minute
down_stream	Inbound Traffic	Network traffic going into the cloud platform in a minute Unit: byte	≥ 0 bytes	Bandwidth or EIP	1 minute

Dimension

Key	Value
publicip_id	EIP ID
bandwidth_id	Bandwidth ID

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A.3 Status Codes

Table A-2 Normal values

Normal Response Code	Type	Description
200	OK	Specifies the normal response code for the GET, PUT, and POST operations.
201	Created	Specifies the normal response code for the POST operation of the OpenStack Neutron API.
204	No Content	Specifies the normal response code for the DELETE operation.

Table A-3 Abnormal values

Returned Value	Description
400 Bad Request	The server failed to process the request.
401 Unauthorized	You must enter a username and password to access the requested page.
403 Forbidden	You are forbidden to access the requested page.
404 Not Found	The server could not find the requested page.
405 Method Not Allowed	You are not allowed to use the method specified in the request.
406 Not Acceptable	The response generated by the server could not be accepted by the client.
407 Proxy Authentication Required	You must use the proxy server for authentication so that the request can be processed.
408 Request Timeout	The request timed out.
409 Conflict	The request could not be processed due to a conflict.
500 Internal Server Error	Failed to complete the request because of an internal service error.
501 Not Implemented	Failed to complete the request because the server does not support the requested function.

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Returned Value	Description
502 Bad Gateway	Failed to complete the request because the server has received an invalid response.
503 Service Unavailable	Failed to complete the request because the service is unavailable.
504 Gateway Timeout	A gateway timeout error occurred.

A.4 Error Codes

Description

If an error occurs when an API is called, error information is returned. This section describes the error information for VPC APIs (excluding native OpenStack APIs).

Example of Returned Error Information

```
{
    "code": "VPC.0002",
    "message": "Available zone Name is null."
}
```

Error Code Description

Module	Status Code	Error Code	Message	Description	Handling Measure
Public	400	VPC.0002	Available zone Name is null.	The AZ is left blank.	Check whether the **availability_zone** field in the request body for creating a subnet is left blank.
	404	VPC.0003	VPC does not exist.	The VPC does not exist.	Check whether the VPC ID is correct or whether the VPC exists under the tenant.

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Module	Status Code	Error Code	Message	Description	Handling Measure
	400	VPC.0004	VPC is not active, please try later.	The VPC status is abnormal.	Try again later or contact technical support.
	401	VPC.0005	Lack of user authority.	User restricted.	Check whether the account is in arrears or has not applied for the OBT permission.
	401	VPC.0009	real-name authentication fail.	Real-name authentication fails.	Contact technical support.
Public	400	VPC.0007	urlTenantId is not equal tokenTenantId	Inconsistent tenant IDs.	The tenant ID in the URL is different from that parsed in the token.
	401	VPC.0008	Invalid token in the header.	Invalid token.	Check whether the token in the request header is valid.
	403	VPC.2701	Token not allowed to do this action.	You do not have permission to perform this operation, or your account balance is insufficient.	Check whether the account balance is insufficient or whether your account has been frozen.
Public	403	VPC.0010	Rules on xx by ** disallowed by policy	Insufficient permissions to make calls to the underlying system.	Obtain the required permissions.

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Module	Status Code	Error Code	Message	Description	Handling Measure
	403	VPC.2201	Policy doesn't allow <x:x:x> to be performed	Insufficient fine-grained permissions.	Obtain the required permissions.
Creating a VPC	400	VPC.0101	Param is invalid.	VPC parameters are incorrect.	Check whether the parameter values are valid based on the returned error message and API reference document.
	409	VPC.0114	Quota exceeded for resources: ['router'].	The number of VPCs has reached the maximum allowed limit specified by the quota.	Clear VPC resources that no longer will be used or apply for expanding the VPC resource quota.
	400	VPC.0115	The router name has exist.	The VPC name already exists.	Change the VPC name.
Querying a VPC	400	VPC.0101	getVpc error vpcId is invalid.	VPC parameters are incorrect.	Ensure that the specified VPC ID is correct.
	404/500	VPC.0105	Neutron Error.	Calling the backend service fails.	Check whether the Neutron service is normal or contact technical support.

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Module	Status Code	Error Code	Message	Description	Handling Measure
	500	VPC.0106	get router is null.	An error is returned for the failure to call the backend service.	Check whether the Neutron service is normal or contact technical support.
Querying VPCs	400	VPC.0101	Query vpc list error.	Failed to query the VPCs.	Check whether the parameter values are valid based on the returned error message.
	500	VPC.0105	Neutron Error.	Calling the backend service fails.	Check whether the Neutron service is normal or contact technical support.
	500	VPC.0106	query routers or getList are null.	The response result of calls to the IaaS OpenStack system is null or empty.	Check whether the Neutron service is normal or contact technical support.
Deleting a VPC	400/404	VPC.0101	Delete router error xx is invalid.	Invalid parameters.	Check whether the parameter values are valid based on the returned error message.

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Module	Status Code	Error Code	Message	Description	Handling Measure
	500	VPC.0102	Delete router fail.	The interface fails to obtain the routing resources.	Contact technical support.
	409	VPC.0103	Resource status is busy, try it again later.	The VPC cannot be deleted because it is being created.	Contact technical support.
	409	VPC.0104	Router contains subnets, please delete subnet first.	The VPC cannot be deleted because it contains subnets.	Delete the subnet in the VPC.
	404/500	VPC.0105	Neutron Error.	Calling the backend service fails.	Check whether the Neutron service is normal or contact technical support.
	409	VPC.0107	Delete the firewall first before deleting the router.	Failed to delete the VPC because it has network ACLs associated.	Delete the network ACLs of the tenant first.
	409	VPC.0108	Router is used not allow deleted.	Failed to delete the VPC because it has EIPs associated.	Delete the EIPs of the tenant first.

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Module	Status Code	Error Code	Message	Description	Handling Measure
	409	VPC.0109	Router is used not allow deleted.	Failed to delete the VPC because one or more VPNs have been created for it.	Delete VPNs of the tenant.
	409	VPC.0110	deleteDefaultNetworkFromRouter router status is invalid.	The VPC cannot be deleted because its status is unstable.	Contact technical support.
	500	VPC.0111	Database Error.	An internal VPC exception occurs.	Contact technical support.
	409	VPC.0112	Delete the securitygroup first before deleting the router.	The VPC cannot be deleted because it contains security groups.	Delete security groups of the tenant.
	409	VPC.0118	ELB exists under this router, delete ELB firstly.	The VPC cannot be deleted because it contains load balancers.	Delete load balancers in the VPC.
	500	VPC.0119	ELB Error.	An error occurred when the VPC service makes calls to the ELB service.	Check whether the ELB service is normal or contact technical support.

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Module	Status Code	Error Code	Message	Description	Handling Measure
	409	VPC.0120	exroutes exists under this router, delete exroutes firstly.	The VPC cannot be deleted because it contains extension routes.	Delete extension routes in the VPC.
Updating a VPC	400	VPC.0101	Update router xx is invalid.	Invalid parameters.	Check whether the parameter values are valid based on the returned error message.
	404/500	VPC.0105	Neutron Error.	Calling the backend service fails.	Check whether the Neutron service is normal or contact technical support.
	500	VPC.0113	Router status is not active.	The VPC cannot be updated because the status of the VPC is abnormal.	Try again later or contact technical support.
	400	VPC.0115	The router name has exist.	The VPC name already exists.	Change the VPC name.
	400	VPC.0117	Cidr can not contain subnetList cidr.	The subnet parameters are invalid. The VPC CIDR block does not contain all its subnet CIDR blocks.	Change the CIDR block of the VPC.

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Module	Status Code	Error Code	Message	Description	Handling Measure
Creating a subnet	400	VPC.0201	Subnet name is invalid.	Incorrect subnet parameters.	Check whether the parameter values are valid based on the returned error message and API reference document.
	500	VPC.0202	Create subnet failed.	An internal error occurs in the subnet.	Contact technical support.
	400	VPC.0203	Subnet is not in the range of VPC.	The CIDR block of the subnet is not in the range of the VPC.	Change the CIDR block of the subnet.
	400	VPC.0204	The subnet has already existed in the VPC, or has been in conflict with the VPC subnet.	The CIDR block of the subnet already exists in the VPC.	Change the CIDR block of the subnet.
	400	VPC.0212	The subnet cidr is not valid.	Invalid subnet CIDR block.	Check whether the subnet CIDR block is valid.
Querying a subnet	400	VPC.0201	Subnet ID is invalid.	Invalid subnet ID.	Check whether the subnet ID is valid.
	404/500	VPC.0202	Query subnet fail.	Failed to query the subnet.	Contact technical support.

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Module	Status Code	Error Code	Message	Description	Handling Measure
Querying subnets	400	VPC.0201	Query subnets list error.	Failed to query the subnets.	Check whether the parameter values are valid based on the returned error message.
	500	VPC.0202	List subnets error.	Failed to query the subnets.	Contact technical support.
Deleting a subnet	400	VPC.0201	Subnet ID is invalid.	Invalid subnet ID.	Check whether the parameter values are valid based on the returned error message.
	404/500	VPC.0202	Neutron Error.	An internal error occurs in the subnet.	Contact technical support.
	500	VPC.0206	Subnet has been used by VPN, please remove the subnet from the VPN and try again.	The subnet cannot be deleted because it is being used by the VPN.	Delete the subnet that is used by the VPN.
	400	VPC.0207	Subnet does not belong to the VPC.	This operation is not allowed because the subnet does not belong to the VPC.	Check whether the subnet is in the VPC.

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Module	Status Code	Error Code	Message	Description	Handling Measure
	500	VPC.0208	Subnet is used by private IP, can not be deleted.	The subnet cannot be deleted because it is being used by the private IP address.	Delete the private IP address of the subnet.
	500	VPC.0209	subnet is still used ,such as computer,LB.	The subnet cannot be deleted because it is being used by an ECS or load balancer.	Delete the ECS or load balancer in the subnet.
	500	VPC.0210	Subnet has been used by routes, please remove the routes first and try again.	The subnet cannot be deleted because it is being used by the custom route.	Delete the custom route.
	500	VPC.0211	subnet is still used by LBaas.	The subnet cannot be deleted because it is being used by load balancers.	Delete load balancers in the subnet.
Updating a subnet	400	VPC.0201	xx is invalid.	Incorrect subnet parameters.	Check whether the parameter values are valid based on the returned error message.
	404/500	VPC.0202	Neutron Error.	An internal error occurs in the subnet.	Contact technical support.

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Module	Status Code	Error Code	Message	Description	Handling Measure
	500	VPC.0205	Subnet states is invalid, please try again later.	The subnet cannot be updated because it is being processed.	Try again later or contact technical support.
	400	VPC.0207	Subnet does not belong to the VPC.	This operation is not allowed because the subnet does not belong to the VPC.	Check whether the subnet is in the VPC.
Assigning an EIP	400	VPC.0301	Bandwidth name or share_type is invalid.	The specified bandwidth parameter for assigning an EIP is invalid.	Check whether the specified bandwidth parameter is valid.
	400	VPC.0501	Bandwidth share_type is invalid.	Invalid EIP parameters.	Check whether the parameter values are valid based on the returned error message and API reference document.
	403	VPC.0502	Tenant status is op_restricted.	You are not allowed to assign the EIP.	Check whether the account balance is insufficient or whether your account has been frozen.
	500	VPC.0503	Creating publicIp failed.	Failed to assign the EIP.	Contact technical support.

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Module	Status Code	Error Code	Message	Description	Handling Measure
	500	VPC.0504	FloatIp is null.	Failed to assign the EIP because no IP address is found.	Contact technical support.
	500	VPC.0508	Port is invalid.	Port-related resources could not be found.	Contact technical support.
	409	VPC.0510	Floatingip has already associated with port.	The EIP has already been bound to another ECS.	Unbind the EIP from the ECS.
	409	VPC.0511	Port has already associated with floatingip.	The port has already been associated with an EIP.	Disassociate the port from the EIP.
	409	VPC.0521	Quota exceeded for resources: ['floatingip'].	Insufficient EIP quota.	Release the unbound EIPs or request to increase the EIP quota.
	409	VPC.0522	The IP address is in use.	The IP address is invalid or in use.	Check whether the IP address format is valid or replace it with another IP address.
	409	VPC.0532	No more IP addresses available on network.	Failed to assign the IP address because no IP addresses are available.	Release unbound EIPs or try again later.
Querying an EIP	400	VPC.0501	Invalid floatingip_id.	Invalid EIP parameters.	Check whether the EIP ID is valid.

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Module	Status Code	Error Code	Message	Description	Handling Measure
	404	VPC.0504	Floating IP could not be found.	The EIP could not be found.	Check whether the specified EIP ID is valid.
	500	VPC.0514	Neutron Error.	An exception occurs in the IaaS OpenStack system.	Check whether the Neutron service is normal or contact technical support.
Querying EIPs	400	VPC.0501	Invalid limit.	Invalid EIP parameters.	Check whether the parameter values are valid based on the returned error message and API reference document.
Releasing an EIP	400	VPC.0501	Invalid param.	Invalid EIP parameters.	Contact technical support.
	404	VPC.0504	Floating IP could not be found.	The EIP could not be found.	Check whether the specified EIP ID is valid.
	409	VPC.0512	Resource status is busy, try it again later.	The EIP status is abnormal.	Try again later or contact technical support.
	500	VPC.0513	getElementByKey error.	Network resources cannot be found.	Contact technical support.

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Module	Status Code	Error Code	Message	Description	Handling Measure
	500	VPC.0516	Publicip is in used by ELB.	Failed to release the EIP because it is being used by a load balancer.	Unbind the EIP from the load balancer.
	409	VPC.0517	Floatingip has associated with port, please disassociate it firstly.	Failed to release the EIP because it is bound to an ECS.	Unbind the EIP from the ECS.
	500	VPC.0518	Public IP has firewall rules.	Failed to release the EIP because it is being used by a network ACL.	Contact technical support.
Updating an EIP	400	VPC.0501	Port id is invalid.	Invalid EIP parameters.	Check whether the port ID is valid.
	404	VPC.0504	Floating IP could not be found.	The EIP could not be found.	Check whether the specified EIP ID is valid.
	500	VPC.0509	Floating ip double status is invalid.	The port has already been associated with an EIP.	Disassociate the port from the EIP.
	409	VPC.0510	Floatingip has already associated with port.	The EIP has already been bound to another ECS.	Unbind the EIP from the ECS.

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Module	Status Code	Error Code	Message	Description	Handling Measure
	409	VPC.0511	Port has already associated with floatingip.	Failed to bind the EIP to the ECS because another EIP has already been bound to the ECS.	Unbind the EIP from the ECS.
	409	VPC.0512	Resource status is busy, try it again later.	The EIP status is abnormal.	Try again later or contact technical support.
	404/500	VPC.0514	Neutron Error.	An exception occurs in the IaaS OpenStack system.	Check whether the Neutron service is normal or contact technical support.
Querying a bandwidth	400	VPC.0301	getBandwidth error bandwidthId is invalid.	The bandwidth parameters are incorrect.	Check whether the bandwidth ID is valid.
	404	VPC.0306	No Eip bandwidth exist with id.	The bandwidth object does not exist.	The bandwidth object to be queried does not exist.
	500	VPC.0302	Neutron Error.	An exception occurs in the IaaS OpenStack system.	Check whether the Neutron service is normal or contact technical support.

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Module	Status Code	Error Code	Message	Description	Handling Measure
Querying bandwidths	400	VPC.0301	Get bandwidths error limit is invalid.	The bandwidth parameters are incorrect.	Check whether the parameter values are valid based on the returned error message and API reference document.
	404	VPC.0306	No Eip bandwidth exist with id.	The bandwidth object does not exist.	The bandwidth object to be queried does not exist.
	500	VPC.0302	Neutron Error.	An exception occurs in the IaaS OpenStack system.	Check whether the Neutron service is normal or contact technical support.
Updating a bandwidth	400	VPC.0301	updateBandwidth input param is invalid.	The bandwidth parameters are incorrect.	Check whether the parameter values are valid based on the returned error message and API reference document.
	500	VPC.0302	Neutron Error.	Failed to obtain underlying resources.	Check whether the Neutron service is normal or contact technical support.

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Module	Status Code	Error Code	Message	Description	Handling Measure
	500	VPC.0305	updateBandwidth error.	An internal error occurs during the bandwidth update.	Contact technical support.
Querying quotas	400	VPC.1207	resource type is invalid.	The specified resource type does not exist.	Use an existing resource type.
Assigning a private IP address	500	VPC.0701	The IP has been used.	The private IP address already exists.	Change another private IP address and try again.
	400	VPC.0705	IP address is not a valid IP for the specified subnet.	Invalid private IP address	Check whether the specified IP address in the request body is within the subnet CIDR block.
	404	VPC.2204	Query resource by id fail.	The resource does not exist or the permission is insufficient.	Check whether the specified subnet in the request body exists or the current account has the permission to query the subnet.
	409	VPC.0703	No more IP addresses available on network xxx.	Insufficient IP addresses.	Check whether the subnet has sufficient IP addresses.

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Module	Status Code	Error Code	Message	Description	Handling Measure
Querying a Private IP Address	404	VPC.0704	Query resource by id fail.	The private IP address does not exist.	Check whether the private IP address exists.
Querying Private IP Addresses	400	VPC.0702	query privateIps error.	Invalid parameters.	Check whether the parameter values are valid based on the returned error message.
Releasing a Private IP Address	404	VPC.0704	Query resource by id fail.	The private IP address does not exist.	Check whether the private IP address exists.
	500	VPC.0706	Delete port fail.	An error occurs when the private IP address is being released.	Try again later or contact technical support.
	409	VPC.0707	privateIp is in use.	The private IP address is in use.	Check whether the private IP address is being used by other resource.
Creating a security group	400	VPC.0601	Creating securitygroup name is invalid.	The parameters of the security group are incorrect.	Check whether the parameter values are valid based on the returned error message and API reference document.

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Module	Status Code	Error Code	Message	Description	Handling Measure
	500	VPC.0602	Add security group fail.	An internal error occurs in the security group.	Check whether the Neutron service is normal or contact technical support.
	409	VPC.0604	Quota exceeded for resources: ['security_group'].	Insufficient security group quota.	Delete the security group that is no longer required or apply for increasing the quota.
Querying a security group	400	VPC.0601	Securitygroup id is invalid.	The parameters of the security group are incorrect.	Check whether the security group ID is valid.
	500	VPC.0602	Query security group fail.	An internal error occurs in the security group.	Check whether the Neutron service is normal or contact technical support.
	404	VPC.0603	Securitygroup is not exist.	The security group does not exist.	Check whether the security group ID is correct or whether the security group exists under the tenant.
	404/500	VPC.0612	Neutron Error.	An internal error occurs in the security group.	Contact technical support.

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Module	Status Code	Error Code	Message	Description	Handling Measure
Querying security groups	400	VPC.0601	Query security groups error limit is invalid.	The parameters of the security group are incorrect.	Check whether the parameter values are valid based on the returned error message and API reference document.
	500	VPC.0602	Query security groups fail.	An internal error occurs in the security group.	Check whether the Neutron service is normal or contact technical support.
Flow log	400	VPC.3001	resource could not be found, flowlog id is invalid	Invalid parameters.	Check whether the parameters are valid.
	400	VPC.3002	create its topic failed	An error occurred during log topic creation in LTS.	Check whether the parameters are valid.
	404	VPC.3002	NeutronError	Failed to query the flow log.	Check whether the parameters are valid.
	500	VPC.3002	NeutronError	Failed to create the flow log.	Contact technical support.
Resource tags	400	VPC.1801	resource id is invalid.	Incorrect resource ID.	Use a correct resource ID.
	400	VPC.1801	action is invalid.	Invalid action value.	Ensure that the value of **action** is **create** or **delete**.

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Module	Status Code	Error Code	Message	Description	Handling Measure
	400	VPC.1801	Tag length is invalid. The key length must be in range [1,36] and value in range [0,43]	Invalid key length. The key can contain 1 to 36 characters.	Use a valid key value.
	400	VPC.1801	Tag length is invalid. The key length must be in range [1,36] and value in range [0,43]	Invalid value length. The value can contain 0 to 43 characters.	Use a value of valid length.
	400	VPC.1801	Resource_type xxx is invalid.	Incorrect resource type.	Ensure that the value of **resource_type** is **vpcs**.
	400	VPC.1801	Tag can not be null.	The tag list contains value null.	Use valid tags.
	400	VPC.1801	The list of matches contains null.	The matches list contains value null.	Use valid matches.
	400	VPC.1801	Tag value can not be null.	The tags exist, but their values are null.	Use valid tags.
	400	VPC.1801	The value of Matches in resourceInstancesReq is null.	The matches exist, and the value is null.	Use valid matches.
	400	VPC.1801	number of tags exceeds max num of 10.	The tag list contains more than 10 keys.	Use valid tags.
	400	VPC.1801	Tag key is repeated.	The tag list contains duplicate keys.	Use valid tags.

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Module	Status Code	Error Code	Message	Description	Handling Measure
	400	VPC.1801	Value of tags in resourceInstancesReq is duplicate.	There are duplicate tag values in the tag list.	Use valid tags.
	400	VPC.1801	number of tags exceeds max num of 10.	The tag in the tag list has more than 10 tag values.	Use valid tags.
	400	VPC.1801	The key of matches is invalid.	The key in **matches** is not the resource name.	Use valid matches.
	400	VPC.1801	Limit in resourceInstancesReq is invalid. Offset in resourceInstancesReq is invalid.	Invalid **limit** or **offset** value.	Use valid **limit** and **offset** values.
	400	VPC.1801	ResourceInstancesReq is null or invalid.	The tags dictionary structure is missing.	Use a valid tags dictionary structure.
	400	VPC.1801	Tag length is invalid. The key length must be in range [1,36] and value in range [0,43]	The key in tags exceeds the maximum length or is left blank.	Use valid keys in tags.
	400	VPC.1801	Tag length is invalid. The key length must be in range [1,36] and value in range [0,43]	A value in tags exceeds the maximum length.	Use valid values in tags.
	400	VPC.1801	ResourceInstancesReq is null or invalid.	The matches dictionary structure is missing.	Use a valid matches dictionary structure.

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Module	Status Code	Error Code	Message	Description	Handling Measure
	400	VPC.1801	The number of Matches in resourceInstances Req is 0.	The matches are an empty list.	Use a valid matches list.
	400	VPC.1801	The value's length of Matches in resourceInstances Req is more than 255.	The matches list contains tag values that contain more than 255 Unicode characters.	Use a valid matches list.
	500	VPC.1801	InvalidInput	Incorrect request body format.	Use the correct request body format.
	404	VPC.2204	Query subnet by id fail.	The resource does not exist or the permission is insufficient.	Use an existing resource or obtain required permission.
Creating a VPC flow log	400	VPC.3001	resource_type/ log_store_type/ traffic_type/ log_group_id/ log_topic_id is invalid	Incorrect type or ID.	Check whether the type is supported or whether the ID format is correct.
	400	VPC.3002	Port does not support flow log, port id : xxx	The VPC flow log does not support this type of port.	Check whether the port is an S3, C3, or M3 ECS NIC port.
	404	VPC.3002	Port/Network/Vpc xxx could not be found.	The resource does not exist.	Check whether the resource exists.

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Module	Status Code	Error Code	Message	Description	Handling Measure
	409	VPC.3004	Content of flow log is duplicate: resource type xxx, reousce id xxx, traffic type all, log group id xxx, log topic id xxx, log store type xxx, log store name xxx.	This VPC flow log already exists.	Modify the parameters of the VPC flow log.
	500	VPC.3002	Create flow log by xxx(tenant_id) fail.	Calling the backend service fails.	Try again later or contact technical support.
Querying VPC flow logs	404	VPC.3001	resource could not be found, xxx(listParam) is invalid	Invalid parameters.	Check whether the parameter format is correct.
	500	VPC.3002	Neutron Error.	Calling the backend service fails.	Try again later or contact technical support.
Querying a VPC flow log	404	VPC.3001	resource could not be found, flowlog id is invalid.	Invalid VPC flow log ID.	Check whether the VPC flow log ID format is correct.
	404	VPC.3002	Flow log xxx could not be found.	The VPC flow log does not exist.	Check whether the VPC flow log exists or whether its ID is correct.
Updating a VPC flow log	404	VPC.3001	resource could not be found, flowlog id is invalid.	Invalid VPC flow log ID.	Check whether the VPC flow log ID format is correct.

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Module	Status Code	Error Code	Message	Description	Handling Measure
	404	VPC.3005	Flow log xxx could not be found.	The VPC flow log does not exist.	Check whether the VPC flow log exists or whether its ID is correct.
	500	VPC.3002	Update flow log by xxx(tenant_id) fail.	Calling the backend service fails.	Try again later or contact technical support.
Deleting a VPC flow log	404	VPC.3001	resource could not be found, flowlog id is invalid.	Invalid VPC flow log ID.	Check whether the VPC flow log ID format is correct.
	404	VPC.3005	Flow log xxx could not be found.	The VPC flow log does not exist.	Check whether the VPC flow log exists or whether its ID is correct.
	500	VPC.3002	Delete flow log by xxx(tenant_id) fail.	Calling the backend service fails.	Try again later or contact technical support.

A.5 Obtaining a Project ID

A project ID is required for some URLs when an API is called. Therefore, you need to obtain a project ID in advance. The steps are as follows:

1. Obtain the token.

   For details, see **Token Authentication**.

2. Obtain a project ID.

   The API for obtaining the project ID is **GET https://iam.eu-west-0.myhuaweicloud.com/v3/projects**.

   Add **X-Auth-Token** to the request header and set its value to the token obtained in the preceding step.

   The following is an example response. The value of **id** is the project ID to be obtained.

   ```
   {
       "links": {},
   ```

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```
  "projects": [
      {
          "is_domain": ,
          "description": "",
          "links": {},
          "enabled": true,
          "id": "",   // Project ID
          "parent_id": "",
          "domain_id": "",
          "name": ""
      },
      ...
  ]
}
```

B Change History

Released On	Description
2022-11-28	This release incorporates the following change: Added **Route Table**.
2022-05-25	This release incorporates the following changes: • Added **Querying VPCs**. • Added **Querying Details About a VPC**. • Modified the **charge_mode** parameter in **Assigning an EIP** , **Querying a Bandwidth**, and **Assigning a Shared Bandwidth**. • Added notes and constraints in **Creating a Subnet** and **Creating a Subnet**.
2022-01-25	This release incorporates the following change: Added **Assigning a Virtual IPv6 Address to ECSs for HA**.
2021-12-30	This release incorporates the following changes: • Added **Adding a Secondary CIDR Block to a VPC**. • Added **Removing a Secondary CIDR Block from a VPC**.
2021-06-30	This release incorporates the following changes: • Added IPv6-related description in **Subnet**. • Added **Bandwidth (V2.0)**.
2020-12-03	This release incorporates the following changes: • Modified description about the **status** parameter in section **Subnet**. • Added section **VPC Tag Management**. • Added section **Subnet Tag Management**. • Added section **EIP Tag Management**. • Added APIs described in section **VPC Flow Log** and VPC flow log error codes to section **Error Codes**.

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Released On	Description
2020-05-15	This release incorporates the following changes: • Added the **routes** field in section **Updating VPC Information**. • Modified description of parameters in the **security_group_rule** field in section **Creating a Security Group Rule**. • Added URI parameter description in **Port**, **Network**, **Querying Subnets**, **Querying Routers**, **Network ACL**, and **Security Group**. • Modified URI parameters in sections **Querying Security Group Rule Details** and **Deleting a Security Group Rule**. • Modified description of the **tenant_id** field in section **Creating a VPC Peering Connection**. • Modified the **networks** parameter type in section **Querying Networks**. • Added response parameter **project_id** in sections **Adding an Interface to a Router** and **Removing an Interface from a Router**. • Added the **device_owner** field in section **Creating a Port**. • Added information about whether the **allow_address_pair** and **extra_dhcp_opt** fields are mandatory in section **Updating a Port**. • Added or modified the **ports_links**, **binding:profile**, and **binding:vif_details** fields in section **Port**. • Added the **networks_links** field in section **Network**. • Added the **subnets_links** field in section **Subnet**. • Added the **routers_links** field in section **Router**. • Added or modified the **firewall_rules_links** and **firewall_policies** fields in section **Network ACL**. • Modified the URI in sections **Querying a Security Group Rule** and **Deleting a Security Group Rule**. • Added the **tenant_id** field in sections **Creating a Security Group** and **Querying Security Group Rule Details**. • Added the **peerings_link** object in section **Querying VPC Peering Connections**. • Added the **routes_link** object in section **Querying VPC Routes**. • Added the **fixed_ip** field in section **Creating a Port**. • Added the **firewall_policies_link** object in section **Querying Network ACL Policies**. • Added the **project_id** field in sections **Inserting a Network ACL Rule** and **Removing a Network ACL Rule**. • Added the **created_at** and **updated_at** fields in sections **Querying Network ACL Groups**, **Querying a Network ACL Group**, **Creating a Network ACL Group**, and **Updating a Network ACL Group**.

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Released On	Description
	• Added the **firewall_groups_link** object in section **Querying Network ACL Groups**. • Changed the position of the section **Permissions Policies and Supported Actions** and adjusted the table.
2018-12-25	This issue is the first official release.

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