Elastic Load Balance

API Reference(Kuala Lumpur Region)

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Contents

1 Before You Start

1.1 Endpoints

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

1.2 Notes and Constraints

- The numbers of load balancer and associated resources that you can create are determined by your quotas. To view or increase the quota, see section "What Is Quota?" in the *Elastic Load Balance User Guide*.

- For more constraints, see API description.

1.3 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.

  Figure 1-1 Project isolation model
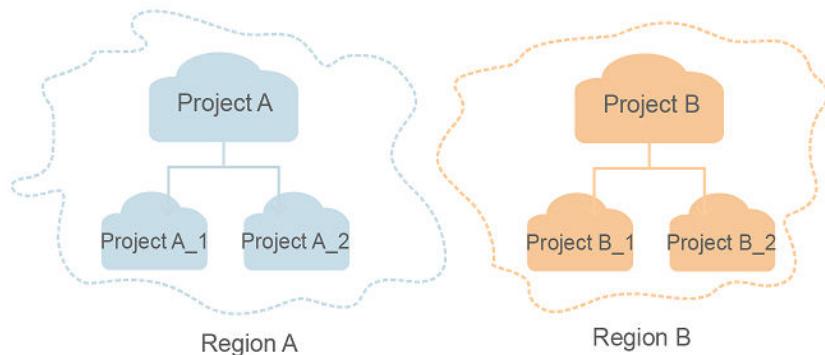
- Enterprise project

  Enterprise projects group and manage resources across regions. Resources in different enterprise projects are logically isolated. An enterprise project can contain resources of multiple regions, and resources can be added to or removed from enterprise projects.

  For details about enterprise projects and about how to obtain enterprise project IDs, see *Enterprise Management User Guide*.

2 API Overview

A combination of these types of APIs allows you to use all functions provided by ELB. **Table 2-1** describes the APIs provided by ELB.

Table 2-1 ELB APIs

Type	Resource	Description
load balancer APIs (enterprise project)	Load balancer	Creates, updates, deletes a load balancer, shows the details of a load balancer, lists load balancers, and queries the status tree for a load balancer.
	Listener	Adds, updates, and deletes a listener, shows the details of a listener, and lists listeners.
	Backend server group	Adds, updates, and deletes a backend server group, shows the details of a backend server group, and lists backend server groups.
	Backend server	Adds, updates, and removes a backend server, shows the details of a backend server, and lists backend servers.
	Health check	Configures, updates, and disables a health check, and shows the details of a health check.
	Forwarding policy	Adds, updates, and deletes a forwarding policy, shows the details of a forwarding policy, and lists forwarding policies.
	Forwarding rule	Adds, updates, and deletes a forwarding rule, shows the details of a forwarding rule, and lists forwarding rules.
	Whitelist	Creates, updates, and deletes a certificate, and lists whitelist.
	SSL certificate	Creates, updates, and deletes a certificate, and lists certificates.

Type	Resource	Description
ELB APIs	Load balancer	Creates, updates, deletes a load balancer, shows the details of a load balancer, lists load balancers, and queries the status tree for a load balancer.
	Listener	Adds, updates, and deletes a listener, shows the details of a listener, and lists listeners.
	Backend server group	Adds, updates, and deletes a backend server group, shows the details of a backend server group, and lists backend server groups.
	Backend server	Adds, updates, and removes a backend server, shows the details of a backend server, and lists backend servers.
	Health check	Configures, updates, and disables a health check, and shows the details of a health check.
	Forwarding policy	Adds, updates, and deletes a forwarding policy, shows the details of a forwarding policy, and lists forwarding policies.
	Forwarding rule	Adds, updates, and deletes a forwarding rule, shows the details of a forwarding rule, and lists forwarding rules.
	Whitelist	Creates, updates, and deletes a certificate, and lists whitelist.
	SSL certificate	Creates, updates, and deletes a certificate, and lists certificates.
	Tag	Adds a tag to and deletes a tag from a load balancer, batch adds and deletes load balancer tags, lists all tags of a load balancer, lists tags of all load balancers, queries load balancers by tag, adds and deletes a tag to a listener, batch adds and deletes tags to a listener, lists all tags of a listener, lists tags of all listeners, and queries listeners by tag.

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**. For example, the endpoint of IAM in the **my-kualalumpur-1** region is **iam.my-kualalumpur-1.myhuaweicloud.com**.
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**.

Parameter	Description
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.

For example, to obtain an IAM token in the **AP-Kuala Lumpur-OP6** region, obtain the endpoint of IAM (**iam.my-kualalumpur-1.myhuaweicloud.com**) for this region and the **resource-path** (**/v3/auth/tokens**) in the URI of the API used to **obtain a user token**. Then, construct the URI as follows:

https://iam.my-kualalumpur-1.myhuaweicloud.com/v3/auth/tokens

Figure 3-1 Example URI


```
https://iam.my-kualalumpur-1.myhuaweicloud.com/v3/auth/tokens
```

URI-scheme   Endpoint   resource-path
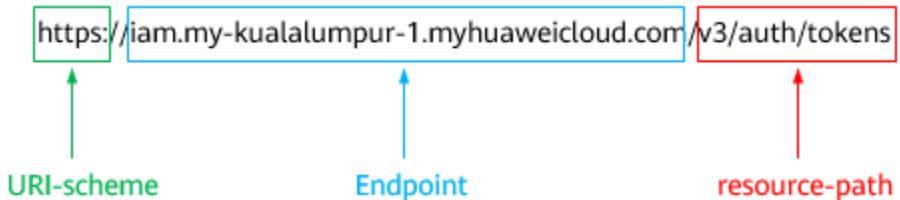
☐ NOTE

> 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.

Method	Description
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://iam.my-kualalumpur-1.myhuaweicloud.com/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.

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

Parameter	Description	Mandatory	Example Value
X-Project-Id	Specifies the project ID. Obtain the project ID by following the instructions in **Obtaining a Project ID**.	No	e9993fc787d94b6c886cbaa340f9c0f4
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://iam.my-kualalumpur-1.myhuaweicloud.com/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 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 *xxxxxxxxxxxxxxxx* (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://iam.my-kualalumpur-1.myhuaweicloud.com/v3/auth/tokens
Content-Type: application/json

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

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.

A cloud service can be deployed as either a project-level service or global service.

- For a project-level service, you need to obtain a project-level token. When you call the API, set **auth.scope** in the request body to **project**.

- For a global service, you need to obtain a global token. When you call the API, set **auth.scope** in the request body to **domain**.

IMS 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",
                    "password": "********",
                    "domain": {
                        "name": "domainname"
                    }
                }
            }
        },
        "scope": {
            "project": {
                "name": "xxxxxxxx"
            }
        }
    }
}
```

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://iam.my-kualalumpur-1.myhuaweicloud.com/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**.

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 3-2 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.

Figure 3-2 Header fields of the response to the request for obtaining a user token

connection → keep-alive

content-type → application/json

date → Tue, 12 Feb 2019 06:52:13 GMT

server → Web Server

strict-transport-security → max-age=31536000; includeSubdomains;

transfer-encoding → chunked

via → proxy A

x-content-type-options → nosniff

x-download-options → noopen

x-frame-options → SAMEORIGIN

x-iam-trace-id → 218d45ab-d674-4995-af3a-2d0255ba41b5

x-subject-token
→ MIIYXQYJKoZIhvcNAQcCoIIYTjCCGEoCAQExDTALBglghkgBZQMEAgEwgharBgkqhkiG9w0BBwGgghacBIIWmHsidG9rZW4iOnsiZXhwaXJlc19hdCI6IjIwMTktMDItMTNUMD
fj3KJs6YgKnpVNRbW2eZ5eb78SZOkqjACgkIqO1wi4JIGzrpd18LGXK5txIdfq4lqHCYb8P4NaY0NYejcAgzJVeFIYtLWT1GSO0zxKZmIQHQj82HBqHdglZO9fuEbL5dMhdavj+33wEl
xHRCE9I87o+k9-
j+CMZSEB7bUGd5Uj6eRASXl1jipPEGA270g1FruooL6jqglFkNPQuFSOU8+uSsttVwRtNfsC+qTp22Rkd5MCqFGQ8LcuUxC3a+9CMBnOintWW7oeRUVhVpxk8pxiX1wTEboX-
RzT6MUbpvGw-oPNFYxJECKnoH3HRozv0vN--n5d6Nbxg==

x-xss-protection → 1; mode=block;

(Optional) Response Body

The body of a response is often returned in structured format 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.

```
{
   "error_msg": "The format of message is error",
   "error_code": "AS.0001"
}
```

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

4 APIs

4.1 Load Balancer

4.1.1 Creating a Load Balancer

Function

> This API is used to create a private network load balancer. After the load balancer is created, its details, such as load balancer ID, IP address, and subnet ID, are returned.
>
> To create a public network load balancer, you also need to call the API for assigning an EIP and associate this IP address to the port bound to the IP address of the private network load balancer.
>
> You can set the **enterprise_project_id** parameter to perform fine-grained authorization for resources.

URI

> POST /v2/{project_id}/elb/loadbalancers
>
> **Table 4-1** Parameter description

Parameter	Mandatory	Type	Description
project_id	Yes	String	Specifies the project ID.

Request

Table 4-2 Parameter description

Parameter	Mandatory	Type	Description
loadbalancer	Yes	**Loadbalancer** object	Specifies the load balancer. For details, see **Table 4-3**.

Table 4-3 **loadbalancer** parameter description

Parameter	Mandatory	Type	Description
name	No	String	Specifies the load balancer name. The value contains a maximum of 255 characters.
description	No	String	Provides supplementary information about the load balancer. The value contains a maximum of 255 characters.
tenant_id	No	String	Specifies the ID of the project where the load balancer is used. The value contains a maximum of 255 characters. The value must be the same as the value of **project_id** in the token.
vip_subnet_id	Yes	String	Specifies the ID of the subnet where the load balancer resides. Obtain the value by listing the subnets. The private IP address of the load balancer is in this subnet. Only IPv4 subnets are supported.
provider	No	String	Specifies the provider of the load balancer. The value can only be **vlb**.

Parameter	Mandato ry	Type	Description
vip_address	No	String	Specifies the private IP address of the load balancer.
			This IP address must be the one in the subnet specified by **vip_subnet_id**. If this parameter is not specified, an IP address is automatically assigned to the load balancer from the subnet specified by **vip_subnet_id**.
			The value contains a maximum of 64 characters.
admin_state_up	No	Boolea n	Specifies the administrative status of the load balancer.
			This parameter is reserved, and the default value is **true**.
enterprise_proje ct_id	No	String	Specifies the enterprise project ID. When creating a load balancer, you can assign an enterprise project to the load balancer.
			The value is character string **0** or a UUID with hyphens (-). Value **0** indicates the default enterprise project.
			The default value is **0**.

Response

Table 4-4 Parameter description

Parameter	Type	Description
loadbalancer	**Loadbalancer** object	Specifies the load balancer. For details, see **Table 4-5**.

Table 4-5 loadbalancer parameter description

Parameter	Type	Description
id	String	Specifies the load balancer ID.
tenant_id	String	Specifies the ID of the project where the load balancer is used.
		The value contains a maximum of 255 characters.

Parameter	Type	Description
name	String	Specifies the load balancer name. The value contains a maximum of 255 characters.
description	String	Provides supplementary information about the load balancer. The value contains a maximum of 255 characters.
vip_subnet_id	String	Specifies the ID of the subnet where the load balancer resides.
vip_port_id	String	Specifies the ID of the port bound to the private IP address of the load balancer.
provider	String	Specifies the provider of the load balancer.
vip_address	String	Specifies the private IP address of the load balancer. The value contains a maximum of 64 characters.
listeners	Array of **Listeners** objects	Lists the IDs of listeners added to the load balancer. For details, see **Table 4-6**.
pools	Array of **Pools** objects	Lists the IDs of backend server groups associated with the load balancer. For details, see **Table 4-7**.
operating_status	String	This parameter is reserved, and its value can be **ONLINE** or **FROZEN**. It specifies the operating status of the load balancer.
provisioning_status	String	This parameter is reserved, and its value can only be **ACTIVE**. It specifies the provisioning status of the load balancer.

Parameter	Type	Description
admin_state_up	Boolean	Specifies the administrative status of the load balancer. This parameter is reserved. The value can be **true** or **false**. ● **true**: Enabled ● **false**: Disabled
tags	Array	Lists load balancer tags.
created_at	String	Specifies the time when the load balancer was created. The UTC time is in *YYYY-MM-DDTHH:MM:SS* format. The value contains a maximum of 19 characters.
updated_at	String	Specifies the time when the load balancer was updated. The UTC time is in *YYYY-MM-DDTHH:MM:SS* format. The value contains a maximum of 19 characters.
enterprise_project_id	String	Specifies the enterprise project ID. When creating a load balancer, you can assign an enterprise project to the load balancer. The value is character string **0** or a UUID with hyphens (-). Value **0** indicates the default enterprise project.

Table 4-6 listeners parameter description

Parameter	Type	Description
id	String	Specifies the ID of the associated listener.

Table 4-7 pools parameter description

Parameter	Type	Description
id	String	Specifies the ID of the associated backend server group.

Example Request

- Example request 1: Creating a private network load balancer
  POST https://{Endpoint}/v2/1867112d054b427e808cc6096d8193a1/elb/loadbalancers

  ```
  {
      "loadbalancer": {
          "name": "loadbalancer1",
          "description": "simple lb",
          "tenant_id": "1867112d054b427e808cc6096d8193a1",
          "vip_subnet_id": "58077bdb-d470-424b-8c45-2e3c65060a5b",
          "vip_address": "10.0.0.4",
          "admin_state_up": true,
          "enterprise_project_id": "0aad99bc-f5f6-4f78-8404-c598d76b0ed2"
      }
  }
  ```

- Example request 2: Creating a public network load balancer

  (Bind an EIP to the port that has been bound to the load balancer's private IP address. For details about the parameters, see **Table 4-8**.)

Table 4-8 Request parameters

Parameter	Mandatory	Type	Description
publicip	Yes	Object	Specifies the EIP. For details, see **Table 4-9**.
bandwidth	Yes	Object	Specifies the bandwidth. For details, see **Table 4-10**.
enterprise_project_id	No	String	- Specifies the enterprise project ID. The value is **0** or a UUID that can contain a maximum of 36 characters, including hyphens (-). - When assigning an EIP, you need to bind an enterprise project ID to the EIP. - If this parameter is not specified, the default value is **0**. **NOTE** For more information about enterprise projects and how to obtain enterprise project IDs, see *Enterprise Management User Guide*.

Table 4-9 publicip parameter description

Parameter	Mandatory	Type	Description
type	Yes	String	• Specifies the EIP type. • Note: 　– 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**.
ip_version	No	Integer	• Specifies the EIP version. • The value can be **4** and **6**. **4** indicates an IPv4 address, and **6** indicates an IPv6 address. • Note: 　– The configured value must be supported by the system. 　– If this parameter is left blank or is an empty string, an IPv4 address is assigned by default.
ip_address	No	String	• Specifies the EIP to be assigned. The system automatically assigns an EIP if you do not specify it. • The value must be a valid IPv4 address in the available IP address range.

Table 4-10 bandwidth parameter description

Parameter	Mandatory	Type	Description
name	Yes	String	● Specifies the bandwidth name. ● The value can contain 1 to 64 characters that can contain 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.

Parameter	Mandatory	Type	Description
size	Yes	Integer	- Specifies the bandwidth (Mbit/s). - The value ranges from **1** to **3001** to **100** by default. (The 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 unit 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 to 300 Mbit/s. - The minimum increment is 50 Mbit/s if the allowed bandwidth ranges from 301 Mbit/s to 1000 Mbit/s. - The minimum increment is 500 Mbit/s if the allowed bandwidth is greater than 1000 Mbit/s.
id	No	String	- Specifies the bandwidth ID. You can specify an existing shared bandwidth when assigning an EIP. - The value can be the ID of the shared bandwidth whose type is set to **WHOLE**.

Parameter	Mandatory	Type	Description
share_type	Yes	String	● Specifies the bandwidth type. ● The value is **PER**, indicating that the bandwidth is dedicated.
charge_mode	No	String	● If the value is **traffic**, the bandwidth is billed by traffic.

– Step 1: Apply for an EIP.
POST https://{VPCEndpoint}/v1/8b7e35ad379141fc9df3e178bd64f55c/publicips

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

– Example response

```
{
    "publicip": {
        "id": "f588ccfa-8750-4d7c-bf5d-2ede24414706",
        "status": "PENDING_CREATE",
        "type": "5_bgp",
        "public_ip_address": "139.9.204.183",
        "tenant_id": "8b7e35ad379141fc9df3e178bd64f55c",
        "ip_version": 4,
        "create_time": "2019-06-29 06:45:32",
        "bandwidth_size": 1

    }
}
```

– Step 2: Bind the EIP. (The value of **public_id** is the same as that in the ▪ **Example response**, and the value of **port_id** is the same as that of **vip_port_id** in **Example response 1**.)
PUT /v1/8b7e35ad379141fc9df3e178bd64f55c/publicips/f588ccfa-8750-4d7c-bf5d-2ede24414706

```
{
    "publicip": {
        "port_id": "a7ecbdb5-5a63-41dd-a830-e16c0a7e04a7"
    }
}
```

– Example response

```
{
 "publicip": {
    "id": "f588ccfa-8750-4d7c-bf5d-2ede24414706",
    "status": "ACTIVE",
    "type": "5_bgp",
    "port_id": "a7ecbdb5-5a63-41dd-a830-e16c0a7e04a7",
    "public_ip_address": "139.9.204.183",
    "private_ip_address": "192.168.1.131",
    "tenant_id": "8b7e35ad379141fc9df3e178bd64f55c",
```

```
            "create_time": "2019-06-29 07:33:18",
            "bandwidth_size": 1,
            "ip_version": 4
        }
    }
```

–   After the preceding steps are complete, the load balancer has the capability of accessing the public network. You can access the load balancer using 139.9.204.183, the value of parameter **public_ip_address**.

Example Response

- Example response 1

```
{
    "loadbalancer": {
        "description": "",
        "admin_state_up": true,
        "tenant_id": "1867112d054b427e808cc6096d8193a1",

        "provisioning_status": "ACTIVE",
        "vip_subnet_id": "58077bdb-d470-424b-8c45-2e3c65060a5b",
        "listeners": [],
        "vip_address": "10.0.0.4",
        "vip_port_id": "519f6af5-74aa-4347-9dba-84c440192877",
        "provider": "vlb",
        "pools": [],
        "tags": [],
        "id": "b0657373-0c68-41d1-980f-1a44d9e3ff01",
        "operating_status": "ONLINE",
        "name": "loadbalancer1",
        "created_at": "2018-07-25T01:54:13",
        "updated_at": "2018-07-25T01:54:14",
        "enterprise_project_id": "0aad99bc-f5f6-4f78-8404-c598d76b0ed2"
    }
}
```

- Example response 2

```
{
    "publicip": {
        "id": "f588ccfa-8750-4d7c-bf5d-2ede24414706",
        "status": "ACTIVE",
        "type": "5_bgp",
        "port_id": "a7ecbdb5-5a63-41dd-a830-e16c0a7e04a7",
        "public_ip_address": "139.9.204.183",
        "private_ip_address": "192.168.1.131",
        "tenant_id": "8b7e35ad379141fc9df3e178bd64f55c",
        "create_time": "2019-06-29 07:33:18",
        "bandwidth_size": 1,
        "ip_version": 4
    }
}
```

After the preceding steps are complete, the load balancer has the capability of accessing the public network. You can access the load balancer using 139.9.204.183, the value of parameter **public_ip_address**.

Status Code

For details, see **Status Codes**.

4.1.2 Querying Load Balancers

Function

This API is used to query load balancers and display them in a list. Filter query and pagination query are supported.

Unless otherwise specified, exact match is applied.

URI

GET /v2/{project_id}/elb/loadbalancers

Table 4-11 Path parameters

Parameter	Mandatory	Type	Description
project_id	Yes	String	Specifies the project ID.

Table 4-12 Query parameters

Parameter	Mandatory	Type	Description
marker	No	String	Specifies the ID of the listener from which pagination query starts, that is, the ID of the last listener on the previous page. This parameter must be used together with **limit**.
limit	No	Integer	Specifies the number of listeners on each page. If this parameter is not set, all load balancers are queried by default.
page_reverse	No	Boolean	Specifies the page direction. The value can be **true** or **false**, and the default value is **false**. The last page in the list requested with **page_reverse** set to **false** will not contain the "next" link, and the last page in the list requested with **page_reverse** set to **true** will not contain the "previous" link. This parameter must be used together with **limit**.
id	No	String	Specifies the load balancer ID.

Parameter	Mandat ory	Type	Description
description	No	String	Provides supplementary information about the load balancer. The value contains a maximum of 255 characters.
name	No	String	Specifies the load balancer name. The value contains a maximum of 255 characters.
operating_status	No	String	This parameter is reserved, and its value can be **ONLINE** or **FROZEN**. It specifies the operating status of the load balancer.
provisioning_stat us	No	String	This parameter is reserved, and its value can only be **ACTIVE**. It specifies the provisioning status of the load balancer.
admin_state_up	No	Boole an	Specifies the administrative status of the load balancer. This parameter is reserved, and the default value is **true**.
vip_address	No	String	Specifies the private IP address of the load balancer. The value contains a maximum of 64 characters.
vip_port_id	No	String	Specifies the ID of the port bound to the private IP address of the load balancer.
vip_subnet_id	No	String	Specifies the ID of the subnet where the load balancer resides.
member_address	No	String	Specifies the IP address of the backend server associated with the load balancer.
member_device_i d	No	String	Specifies the ID of the cloud server used as the backend server associated with the load balancer.
vpc_id	No	String	Specifies the ID of the VPC where the load balancer resides.

Parameter	Mandat ory	Type	Description
enterprise_projec t_id	No	String	Specifies the enterprise project ID. ● If **enterprise_project_id** is not passed, resources in all enterprise projects are queried by default. Fine-grained authorization is performed. The **elb:loadbalancers:list** permissions must be assigned to the user group. ● If **enterprise_project_id** is passed, the value can be a specific enterprise project ID or **all_granted_eps**. If the value is a specific enterprise project ID, only resources in the enterprise project are queried. If the value is **all_granted_eps**, resources in the enterprise projects with the **elb:loadbalancers:list** permissions are queried.

Request

None

Response

Table 4-13 Response parameters

Parameter	Type	Description
loadbalancers	Array of **Loadbalancers** objects	Lists the load balancers. For details, see **Table 4-14**.

Table 4-14 loadbalancer parameter description

Parameter	Type	Description
id	String	Specifies the load balancer ID.
tenant_id	String	Specifies the ID of the project where the load balancer is used. The value contains a maximum of 255 characters.

Parameter	Type	Description
name	String	Specifies the load balancer name. The value contains a maximum of 255 characters.
description	String	Provides supplementary information about the load balancer. The value contains a maximum of 255 characters.
vip_subnet_id	String	Specifies the ID of the subnet where the load balancer resides.
vip_port_id	String	Specifies the ID of the port bound to the private IP address of the load balancer.
provider	String	Specifies the provider of the load balancer.
vip_address	String	Specifies the private IP address of the load balancer. The value contains a maximum of 64 characters.
listeners	Array of **Listeners** objects	Lists the IDs of listeners added to the load balancer. For details, see **Table 4-6**.
pools	Array of **Pools** objects	Lists the IDs of backend server groups associated with the load balancer. For details, see **Table 4-7**.
operating_status	String	This parameter is reserved, and its value can be **ONLINE** or **FROZEN**. It specifies the operating status of the load balancer.
provisioning_status	String	This parameter is reserved, and its value can only be **ACTIVE**. It specifies the provisioning status of the load balancer.

Parameter	Type	Description
admin_state_up	Boolean	Specifies the administrative status of the load balancer. This parameter is reserved. The value can be **true** or **false**. ● **true**: Enabled ● **false**: Disabled
tags	Array	Lists load balancer tags.
created_at	String	Specifies the time when the load balancer was created. The UTC time is in *YYYY-MM-DDTHH:MM:SS* format. The value contains a maximum of 19 characters.
updated_at	String	Specifies the time when the load balancer was updated. The UTC time is in *YYYY-MM-DDTHH:MM:SS* format. The value contains a maximum of 19 characters.
enterprise_project_id	String	Specifies the enterprise project ID. When creating a load balancer, you can assign an enterprise project to the load balancer. The value is character string **0** or a UUID with hyphens (-). Value **0** indicates the default enterprise project.

Table 4-15 listeners parameter description

Parameter	Type	Description
id	String	Specifies the ID of the associated listener.

Table 4-16 pools parameter description

Parameter	Type	Description
id	String	Specifies the ID of the associated backend server group.

Example Request

- Example request 1
  GET https://{Endpoint}/v2/1a3e005cf9ce40308c900bcb08e5320c/elb/loadbalancers

- Example request 2
  GET https://{Endpoint}/v2/1a3e005cf9ce40308c900bcb08e5320c/elb/loadbalancers?
  limit=10&marker=165b6a38-5278-4569-b747-b2ee65ea84a4

- Example request 3
  GET https://{Endpoint}/v2/601240b9c5c94059b63d484c92cfe308/elb/loadbalancers?
  member_address=192.168.0.198

Example Response

- Example response 1

```
{
    "loadbalancers": [
        {
            "description": "simple lb",
            "admin_state_up": true,
            "tenant_id": "1a3e005cf9ce40308c900bcb08e5320c",

            "provisioning_status": "ACTIVE",
            "vip_subnet_id": "5328f1e6-ce29-44f1-9493-b128a5653350",
            "listeners": [
                {
                    "id": "45196943-2907-4369-87b1-c009b1d7ac35"
                }
            ],
            "vip_address": "10.0.0.2",
            "vip_port_id": "cbced4fe-6f6f-4fd6-9348-0c3d1219d6ca",
            "provider": "vlb",
            "pools": [
                {
                    "id": "21d49cf7-4fd3-4cb6-8c48-b7fc6c259aab"
                }
            ],
            "id": "a9729389-6147-41a3-ab22-a24aed8692b2",
            "operating_status": "ONLINE",
            "tags": [],
            "name": "loadbalancer1",
            "created_at": "2018-07-25T01:54:13",
            "updated_at": "2018-07-25T01:54:14",
            "enterprise_project_id ": "0aad99bc-f5f6-4f78-8404-c598d76b0ed2"
        }
    ]
}
```

- Example response 2

```
{
    "loadbalancers": [
        {
            "description": "",
            "provisioning_status": "ACTIVE",
            "tenant_id": "601240b9c5c94059b63d484c92cfe308",

            "admin_state_up": true,
            "provider": "vlb",
            "pools": [
                {
                    "id": "b13dba4c-a44c-4c40-8f6e-ce7a162b9f22"
                },
                {
                    "id": "4b9e765f-82ee-4128-911b-0a2d9ebc74c7"
                }
            ],
            "listeners": [
                {
                    "id": "21c41336-d0d3-4349-8641-6e82b4a4d097"
```

```
                                }
                            ],
                            "vip_port_id": "44ac5d9b-b0c0-4810-9a9d-c4dbf541e47e",
                            "operating_status": "ONLINE",
                            "vip_address": "192.168.0.234",
                            "vip_subnet_id": "9d60827e-0e5c-490a-8183-0b6ebf9084ca",
                            "id": "e79a7dd6-3a38-429a-95f9-c7f78b346cbe",
                            "tags": [],
                            "name": "elb-robot",
                            "created_at": "2018-07-25T01:54:13",
                            "updated_at": "2018-07-25T01:54:14",
                            "enterprise_project_id ": "0aad99bc-f5f6-4f78-8404-c598d76b0ed2"
                        }
                    ]
                }
```

- Example response 3

```
{
    "loadbalancers": [
        {
            "description": "",
            "provisioning_status": "ACTIVE",
            "tenant_id": "601240b9c5c94059b63d484c92cfe308",

            "admin_state_up": true,
            "provider": "vlb",
            "pools": [
                {
                    "id": "ed75f16e-fcc6-403e-a3fb-4eae82005eab"
                },
                {
                    "id": "f15f2723-4135-4bf8-9259-047d92684197"
                }
            ],
            "listeners": [
                {
                    "id": "75045172-70e9-480d-9443-b8b6459948f7"
                },
                {
                    "id": "b9a99cbb-d0a1-4269-bc5f-752ec37a10c3"
                }
            ],
            "vip_port_id": "fb3f10f0-9417-4cf2-a82e-8f1da1687484",
            "operating_status": "ONLINE",
            "vip_address": "192.168.0.16",
            "vip_subnet_id": "3a450aa4-f642-4da8-b70d-cafd4a633b51",
            "id": "bc7ba445-035a-4464-a1a3-a62cf4a14116",
            "tags": [],
            "name": "elb-hm-test",
            "created_at": "2018-07-25T01:54:13",
            "updated_at": "2018-07-25T01:54:14",
            "enterprise_project_id ": "0aad99bc-f5f6-4f78-8404-c598d76b0ed2"
        }
    ]
}
```

Status Code

For details, see **Status Codes**.

4.1.3 Querying Details of a Load Balancer

Function

This API is used to query details about a load balancer using its ID.

URI

GET /v2/{project_id}/elb/loadbalancers/{loadbalancer_id}

Table 4-17 Parameter description

Parameter	Mandatory	Type	Description
project_id	Yes	String	Specifies the project ID.
loadbalancer_id	Yes	String	Specifies the load balancer ID.

Request

None

Response

Table 4-18 Response parameters

Parameter	Type	Description
loadbalancer	**Loadbalancer** object	Specifies the load balancer. For details, see **Table 4-19**.

Table 4-19 loadbalancer parameter description

Parameter	Type	Description
id	String	Specifies the load balancer ID.
tenant_id	String	Specifies the ID of the project where the load balancer is used. The value contains a maximum of 255 characters.
name	String	Specifies the load balancer name. The value contains a maximum of 255 characters.
description	String	Provides supplementary information about the load balancer. The value contains a maximum of 255 characters.
vip_subnet_id	String	Specifies the ID of the subnet where the load balancer resides.

Parameter	Type	Description
vip_port_id	String	Specifies the ID of the port bound to the private IP address of the load balancer.
provider	String	Specifies the provider of the load balancer.
vip_address	String	Specifies the private IP address of the load balancer. The value contains a maximum of 64 characters.
listeners	Array of **Listeners** objects	Lists the IDs of listeners added to the load balancer. For details, see **Table 4-6**.
pools	Array of **Pools** objects	Lists the IDs of backend server groups associated with the load balancer. For details, see **Table 4-7**.
operating_status	String	This parameter is reserved, and its value can be **ONLINE** or **FROZEN**. It specifies the operating status of the load balancer.
provisioning_status	String	This parameter is reserved, and its value can only be **ACTIVE**. It specifies the provisioning status of the load balancer.
admin_state_up	Boolean	Specifies the administrative status of the load balancer. This parameter is reserved. The value can be **true** or **false**. ● **true**: Enabled ● **false**: Disabled
tags	Array	Lists load balancer tags.
created_at	String	Specifies the time when the load balancer was created. The UTC time is in *YYYY-MM-DDTHH:MM:SS* format. The value contains a maximum of 19 characters.

Parameter	Type	Description
updated_at	String	Specifies the time when the load balancer was updated. The UTC time is in *YYYY-MM-DDTHH:MM:SS* format. The value contains a maximum of 19 characters.
enterprise_project_id	String	Specifies the enterprise project ID. When creating a load balancer, you can assign an enterprise project to the load balancer. The value is character string **0** or a UUID with hyphens (-). Value **0** indicates the default enterprise project.

Table 4-20 listeners parameter description

Parameter	Type	Description
id	String	Specifies the ID of the associated listener.

Table 4-21 pools parameter description

Parameter	Type	Description
id	String	Specifies the ID of the associated backend server group.

Example Request

- Example request
  ```
  GET https://{Endpoint}/v2/1867112d054b427e808cc6096d8193a1/elb/loadbalancers/
  3d77894d-2ffe-4411-ac0a-0d57689779b8
  ```

Example Response

- Example response
  ```
  {
      "loadbalancer": {
          "description": "",
          "admin_state_up": true,
          "tenant_id": "1867112d054b427e808cc6096d8193a1",
          "provisioning_status": "ACTIVE",
          "vip_subnet_id": "4f5e8efe-fbbe-405e-b48c-a41202ef697c",
          "listeners": [
              {
                  "id": "09e64049-2ab0-4763-a8c5-f4207875dc3e"
  ```

```
          }
      ],
      "vip_address": "192.168.2.4",
      "vip_port_id": "c7157e7a-036a-42ca-8474-100be22e3727",
      "provider": "vlb",
      "pools": [
          {
              "id": "b7e53dbd-62ab-4505-a280-5c066078a5c9"
          }
      ],
      "id": "3d77894d-2ffe-4411-ac0a-0d57689779b8",
      "operating_status": "ONLINE",
      "tags": [],
      "name": "lb-2",
      "created_at": "2018-07-25T01:54:13",
      "updated_at": "2018-07-25T01:54:14",
      "enterprise_project_id ": "0aad99bc-f5f6-4f78-8404-c598d76b0ed2"
   }
}
```

Status Code

For details, see **Status Codes**.

4.1.4 Querying the Status Tree of a Load Balancer

Function

This API is used to query the status tree of a load balancer. You can use this API to query details about the associated listeners, backend server groups, backend servers, health checks, forwarding policies, and forwarding rules, helping you understand the topology of resources associated with the load balancer.

URI

GET /v2/{project_id}/elb/loadbalancers/{loadbalancer_id}/statuses

Table 4-22 Parameter description

Parameter	Mandatory	Type	Description
project_id	Yes	String	Specifies the project ID.
loadbalancer_id	Yes	String	Specifies the load balancer ID.

Request

None

Response

Table 4-23 Parameter description

Parameter	Type	Description
statuses	**Statuses** object	Specifies the status tree of a load balancer. For details, see **Table 4-24**.

Table 4-24 statuses parameter description

Parameter	Type	Description
loadbalancer	**Loadbalancer** object	Specifies the load balancer. For details, see **Table 4-25**.

Table 4-25 loadbalancer parameter description

Parameter	Type	Description
id	String	Specifies the load balancer ID.
name	String	Specifies the load balancer name. The value contains a maximum of 255 characters.
listeners	Array of **Listeners** objects	Lists the listeners added to the load balancer. For details of this parameter, see **Table 4-26**.
pools	Array of **Pools** objects	Lists the backend server groups associated with the load balancer. For details of this parameter, see **Table 4-27**.

Parameter	Type	Description
operating_status	String	This field is reserved.
		It specifies the operating status of the load balancer. The value can be one of the following:
		● **ONLINE** (default): The load balancer is running normally.
		● **DEGRADED**: This status is displayed only when **provisioning_status** of a forwarding policy or forwarding rule added to a listener of the load balancer is set to **ERROR** and the API for querying the load balancer status tree is called.
		● **DISABLED**: This status is displayed only when **admin_state_up** of the load balancer is set to **false** and the API for querying the load balancer status tree is called.
provisioning_status	String	This parameter is reserved, and its value can only be **ACTIVE**.
		It specifies the provisioning status of the load balancer.

Table 4-26 listeners parameter description

Parameter	Type	Description
id	String	Specifies the listener ID.
name	String	Specifies the listener name.
l7policies	Array of **l7policies** objects	Lists associated forwarding policies. For details of this parameter, see **Table 4-30**.
pools	Array of **Pools** objects	Lists the backend server groups associated with the listener. For details of this parameter, see **Table 4-27**.
operating_status	String	This parameter is reserved, and its value can only be **ONLINE**.
		It specifies the operating status of the listener.

Parameter	Type	Description
provisioning_status	String	This parameter is reserved, and its value can only be **ACTIVE**. It specifies the provisioning status of the listener.

Table 4-27 pools parameter description

Parameter	Type	Description
id	String	Specifies the ID of the backend server group.
name	String	Specifies the name of the backend server group.
healthmonitor	**Healthmonitor** object	Provides health check details of the backend server group. For details of this parameter, see **Table 4-28**.
members	Array of **Members** objects	Lists the members contained in the backend server group. For details of this parameter, see **Table 4-29**.
operating_status	String	This parameter is reserved, and its value can only be **ONLINE**. It specifies the operating status of the backend server group.
provisioning_status	String	This parameter is reserved, and its value can only be **ACTIVE**. It specifies the provisioning status of the backend server group.

Table 4-28 healthmonitor parameter description

Parameter	Type	Description
id	String	Specifies the health check ID.
name	String	Specifies the health check name.

Parameter	Type	Description
type	String	• Specifies the health check protocol. • The value can be **UDP_CONNECT**, **TCP**, or **HTTP**.
provisioning_status	String	This parameter is reserved, and its value can only be **ACTIVE**. It specifies the provisioning status of the health check.

Table 4-29 members parameter description

Parameter	Type	Description
id	String	Specifies the backend server ID.
address	String	Specifies the private IP address of the backend server, for example, 192.168.3.11.
protocol_port	Integer	• Specifies the port used by the backend server. • The port number ranges from 0 to 65535.

Parameter	Type	Description
operating_status	String	This parameter is reserved. It specifies the operating status of the backend server. The value can be one of the following: ● **ONLINE**: The backend server is running normally. ● **NO_MONITOR**: No health check is configured for the backend server group that the backend server belongs to. ● **DISABLED**: The backend server is not available. This status is displayed only when **admin_state_up** of the backend server, or the backend server group to which it belongs, or the associated load balancer is set to **false** and the API for querying the load balancer status tree is called. ● **OFFLINE**: The cloud server used as the backend server is stopped or does not exist. **NOTE** When **admin_state_up** is set to **false** and **operating_status** is set to **OFFLINE** for a backend server, **DISABLED** is returned for **operating_status** of the backend server in the response of this API.
provisioning_status	String	This parameter is reserved, and its value can only be **ACTIVE**. It specifies the provisioning status of the backend server.

Table 4-30 l7policies parameter description

Parameter	Type	Description
id	String	Specifies the forwarding policy ID.
name	String	Specifies the forwarding policy name.

Parameter	Type	Description
rules	Array of **Rules** objects	Lists the forwarding rules of the forwarding policy. For details of this parameter, see **Table 4-31**.
action	String	• Specifies whether requests are forwarded to another backend server group or redirected to an HTTPS listener. • The value can be **REDIRECT_TO_POOL** or **REDIRECT_TO_LISTENER**. REDIRECT_TO_POOL: Requests are forwarded to another backend server group. **REDIRECT_TO_LISTENER**: Requests are redirected to an HTTPS listener.
provisioning_status	String	This parameter is reserved. It specifies the provisioning status of the forwarding policy. The value can be one of the following: • **ACTIVE** (default): The forwarding policy is normal. • **ERROR**: Another forwarding policy of the same listener has the same forwarding rule.

Table 4-31 rules parameter description

Parameter	Type	Description
id	String	Specifies the forwarding rule ID.
type	String	• Specifies the match type of a forwarding rule. • The value can be **PATH** or **HOST_NAME**. PATH: matches the path in the request. **HOST_NAME**: matches the domain name in the request.

Parameter	Type	Description
provisioning_status	String	This parameter is reserved. It specifies the provisioning status of the forwarding rule. The value can be one of the following: • **ACTIVE** (default): The forwarding rule is normal. • **ERROR**: Another forwarding policy of the same listener has the same forwarding rule.

Example Request

- Example request
  ```
  GET https://{Endpoint}/v2/145483a5107745e9b3d80f956713e6a3/elb/loadbalancers/38278031-
  cfca-44be-81be-a412f618773b/statuses
  ```

Example Response

- Example response
  ```
  {
      "statuses": {
          "loadbalancer": {
              "name": "lb-jy",
              "provisioning_status": "ACTIVE",
              "listeners": [
                  {
                      "name": "listener-jy-1",
                      "provisioning_status": "ACTIVE",
                      "pools": [
                          {
                              "name": "pool-jy-1",
                              "provisioning_status": "ACTIVE",
                              "healthmonitor": {
                                  "type": "TCP",
                                  "id": "7422b51a-0ed2-4702-9429-4f88349276c6",
                                  "name": "",
                                  "provisioning_status": "ACTIVE"
                              },
                              "members": [
                                  {
                                      "protocol_port": 80,
                                      "address": "192.168.44.11",
                                      "id": "7bbf7151-0dce-4087-b316-06c7fa17b894",
                                      "operating_status": "ONLINE",
                                      "provisioning_status": "ACTIVE"
                                  }
                              ],
                              "id": "c54b3286-2349-4c5c-ade1-e6bb0b26ad18",
                              "operating_status": "ONLINE"
                          }
                      ],
                      "l7policies": [],
                      "id": "eb84c5b4-9bc5-4bee-939d-3900fb05dc7b",
                      "operating_status": "ONLINE"
                  }
              ],
  ```

```
            "pools": [
              {
                "name": "pool-jy-1",
                "provisioning_status": "ACTIVE",
                "healthmonitor": {
                    "type": "TCP",
                    "id": "7422b51a-0ed2-4702-9429-4f88349276c6",
                    "name": "",
                    "provisioning_status": "ACTIVE"
                },
                "members": [
                    {
                        "protocol_port": 80,
                        "address": "192.168.44.11",
                        "id": "7bbf7151-0dce-4087-b316-06c7fa17b894",
                        "operating_status": "ONLINE",
                        "provisioning_status": "ACTIVE"
                    }
                ],
                "id": "c54b3286-2349-4c5c-ade1-e6bb0b26ad18",
                "operating_status": "ONLINE"
              }
            ],
            "id": "38278031-cfca-44be-81be-a412f618773b",
            "operating_status": "ONLINE"
          }
        }
      }
```

Status Code

For details, see **Status Codes**.

4.1.5 Updating a Load Balancer

Function

This API is used to update the name or description of a load balancer.

URI

PUT /v2/{project_id}/elb/loadbalancers/{loadbalancer_id}

Table 4-32 Parameter description

Parameter	Mandatory	Type	Description
project_id	Yes	String	Specifies the project ID.
loadbalancer_id	Yes	String	Specifies the load balancer ID.

Request

Table 4-33 Parameter description

Parameter	Mandatory	Type	Description
loadbalancer	Yes	**Loadbalancer** object	Specifies the load balancer. For details, see **Table 4-34**.

Table 4-34 loadbalancer parameter description

Parameter	Mandatory	Type	Description
name	No	String	Specifies the load balancer name. The value contains a maximum of 255 characters.
description	No	String	Provides supplementary information about the load balancer. The value contains a maximum of 255 characters.
admin_state_up	No	Boolean	Specifies the administrative status of the load balancer. This parameter is reserved, and the default value is **true**.

Response

Table 4-35 Response parameters

Parameter	Type	Description
loadbalancer	**Loadbalancer** object	Specifies the load balancer. For details, see **Table 4-36**.

Table 4-36 loadbalancer parameter description

Parameter	Type	Description
id	String	Specifies the load balancer ID.
tenant_id	String	Specifies the ID of the project where the load balancer is used. The value contains a maximum of 255 characters.
name	String	Specifies the load balancer name. The value contains a maximum of 255 characters.
description	String	Provides supplementary information about the load balancer. The value contains a maximum of 255 characters.
vip_subnet_id	String	Specifies the ID of the subnet where the load balancer resides.
vip_port_id	String	Specifies the ID of the port bound to the private IP address of the load balancer.
provider	String	Specifies the provider of the load balancer.
vip_address	String	Specifies the private IP address of the load balancer. The value contains a maximum of 64 characters.
listeners	Array of **Listeners** objects	Lists the IDs of listeners added to the load balancer. For details, see **Table 4-6**.
pools	Array of **Pools** objects	Lists the IDs of backend server groups associated with the load balancer. For details, see **Table 4-7**.
operating_status	String	This parameter is reserved, and its value can be **ONLINE** or **FROZEN**. It specifies the operating status of the load balancer.

Parameter	Type	Description
provisioning_status	String	This parameter is reserved, and its value can only be **ACTIVE**. It specifies the provisioning status of the load balancer.
admin_state_up	Boolean	Specifies the administrative status of the load balancer. This parameter is reserved. The value can be **true** or **false**. ● **true**: Enabled ● **false**: Disabled
tags	Array	Lists load balancer tags.
created_at	String	Specifies the time when the load balancer was created. The UTC time is in *YYYY-MM-DDTHH:MM:SS* format. The value contains a maximum of 19 characters.
updated_at	String	Specifies the time when the load balancer was updated. The UTC time is in *YYYY-MM-DDTHH:MM:SS* format. The value contains a maximum of 19 characters.
enterprise_project_id	String	Specifies the enterprise project ID. When creating a load balancer, you can assign an enterprise project to the load balancer. The value is character string **0** or a UUID with hyphens (-). Value **0** indicates the default enterprise project.

Table 4-37 listeners parameter description

Parameter	Type	Description
id	String	Specifies the ID of the associated listener.

Table 4-38 pools parameter description

Parameter	Type	Description
id	String	Specifies the ID of the associated backend server group.

Example Request

- Example request
PUT https://{Endpoint}/v2/145483a5107745e9b3d80f956713e6a3/elb/loadbalancers/
1e11b74e-30b7-4b78-b09b-84aec4a04487

```
{
   "loadbalancer": {
      "name": "lb_update_test",
      "description": "lb update test"
   }
}
```

Example Response

- Example response
```
{
  "loadbalancer": {
    "description": "simple lb2",
    "admin_state_up": true,
    "tenant_id": "145483a5107745e9b3d80f956713e6a3",
    "provisioning_status": "ACTIVE",
    "vip_subnet_id": "823d5866-6e30-45c2-9b1a-a1ebc3757fdb",
    "listeners": [
      {
        "id": "37ffe679-08ef-436e-b6bd-cf66fb4c3de2"
      }
    ],
    "vip_address": "192.172.1.68",
    "vip_port_id": "f42e3019-67f7-4d2a-8d1c-af49e7c22fa6",
    "provider": "vlb",
    "tags": [],
    "pools": [
      {
        "id": "75c4f2d4-a213-4408-9fa8-d64708e8d1df"
      }
    ],
    "id": "c32a9f9a-0cc6-4f38-bb9c-cde79a533c19",
    "operating_status": "ONLINE",
    "name": "loadbalancer-test2",
    "created_at": "2018-07-25T01:54:13",
    "updated_at": "2018-07-25T01:54:14",
    "enterprise_project_id": "0aad99bc-f5f6-4f78-8404-c598d76b0ed2"
  }
}
```

Status Code

For details, see **Status Codes**.

4.1.6 Deleting a Load Balancer

Function

This API is used to delete a load balancer by ID.

Constraints

All listeners added to the load balancer must be deleted before the load balancer is deleted.

URI

DELETE /v2/{project_id}/elb/loadbalancers/{loadbalancer_id}

Table 4-39 Parameter description

Parameter	Mandatory	Type	Description
project_id	Yes	String	Specifies the project ID.
loadbalancer_id	Yes	String	Specifies the load balancer ID.

Request

None

Response

None

Example Request

- Example request
  DELETE https://{Endpoint}/v2/145483a5107745e9b3d80f956713e6a3/elb/loadbalancers/
  90f7c765-0bc9-47c4-8513-4cc0c264c8f8

Example Response

- Example response
  None

Status Code

For details, see **Status Codes**.

4.2 Listener

4.2.1 Adding a Listener

Function

This API is used to add a listener to a load balancer.

Constraints

- Only users with the ELB administrator permissions can specify the value of **connection_limit**.

- The value of **protocol** can be **TCP**, **HTTP**, **UDP**, or **TERMINATED_HTTPS**.

URI

POST /v2/{project_id}/elb/listeners

Table 4-40 Parameter description

Parameter	Mandatory	Type	Description
project_id	Yes	String	Specifies the project ID.

Request

Table 4-41 Parameter description

Parameter	Mandatory	Type	Description
listener	Yes	**Listener** object	Specifies the listener. For details, see **Table 4-42**.

Table 4-42 listener parameter description

Parameter	Mandatory	Type	Description
tenant_id	No	String	Specifies the ID of the project where the listener is used. The value must be the same as the value of **project_id** in the token. The value contains a maximum of 255 characters.
name	No	String	Specifies the listener name. The value contains a maximum of 255 characters.

Parameter	Mandatory	Type	Description
description	No	String	Provides supplementary information about the listener. The value contains a maximum of 255 characters.
protocol	Yes	String	Specifies the protocol used by the listener. The value can be **TCP**, **HTTP**, **UDP**, or **TERMINATED_HTTPS**.
protocol_port	Yes	Integer	Specifies the port used by the listener. The port number ranges from 1 to 65535. **NOTE** If the protocol used by the listener is UDP, the port number cannot be 4789.
loadbalancer_id	Yes	String	Specifies the ID of the associated load balancer.
connection_limit	No	Integer	Specifies the maximum number of connections. The value ranges from **-1** to **2147483647**. The default value is **-1**, indicating that there is no restriction on the maximum number of connections. This parameter is reserved.
admin_state_up	No	Boolean	Specifies the administrative status of the listener. This parameter is reserved, and the default value is **true**.
http2_enable	No	Boolean	Specifies whether to use HTTP/2. The value can be **true** or **false**. ● **true**: HTTP/2 will be used. ● **false**: HTTP/2 will not be used. The default value is **false**. This parameter takes effect only when the protocol used by the listener is set to **TERMINATED_HTTPS**.

Parameter	Mandatory	Type	Description
default_pool_id	No	String	Specifies the ID of the associated backend server group.
			If a request does not match the forwarding policy, the request is forwarded to the default backend server group for processing. If the value is **null**, the listener has no default backend server group.
			The **default_pool_id** parameter has the following constraints:
			● Its value cannot be the ID of any backend server group of other listeners.
			● Its value cannot be the ID of any backend server group associated with the forwarding policies set for other listeners.
			The relationships between the protocol of the backend server group and the protocol used by the listener are as follows:
			● When the protocol used by the listener is **TCP**, the protocol of the backend server group must be **TCP**.
			● When the protocol used by the listener is **UDP**, the protocol of the backend server group must be **UDP**.
			● When the protocol used by the listener is **HTTP** or **TERMINATED_HTTPS**, the protocol of the backend server group must be **HTTP**.

Parameter	Mandatory	Type	Description
default_tls_container_ref	No	String	Specifies the ID of the server certificate used by the listener. This parameter is mandatory when **protocol** is set to **TERMINATED_HTTPS**. The default value is **null** when **protocol** is not set to **TERMINATED_HTTPS**. The value contains a maximum of 128 characters. **NOTE** This parameter takes effect only when the protocol used by the listener is set to **TERMINATED_HTTPS**.
client_ca_tls_container_ref	No	String	Specifies the ID of the CA certificate used by the listener. The default value is **null**. The value contains a maximum of 128 characters. **NOTE** This parameter takes effect only when the protocol used by the listener is set to **TERMINATED_HTTPS**.
sni_container_refs	No	Array	Lists the IDs of SNI certificates (server certificates with domain names) used by the listener. If the parameter value is an empty list, the SNI feature is disabled. The default value is **[]**. **NOTE** This parameter takes effect only when the protocol used by the listener is set to **TERMINATED_HTTPS**.

Response

Table 4-43 Response parameters

Parameter	Type	Description
listener	**Listener** object	Specifies the listener. For details, see **Table 4-44**.

Table 4-44 listener parameter description

Parameter	Type	Description
id	String	Specifies the listener ID.
tenant_id	String	Specifies the ID of the project where the listener is used. The value contains a maximum of 255 characters.
name	String	Specifies the listener name. The value contains a maximum of 255 characters.
description	String	Provides supplementary information about the listener. The value contains a maximum of 255 characters.
protocol	String	Specifies the protocol used by the listener. The value can be **TCP**, **HTTP**, **UDP**, or **TERMINATED_HTTPS**.
protocol_port	Integer	Specifies the port used by the listener. The port number ranges from 1 to 65535.
loadbalancers	Array of **Loadbalancers** objects	Specifies the ID of the associated load balancer. For details, see **Table 4-45**.
connection_limit	Integer	Specifies the maximum number of connections. The value ranges from **-1** to **2147483647**. The default value is **-1**, indicating that there is no restriction on the maximum number of connections. This parameter is reserved.
admin_state_up	Boolean	Specifies the administrative status of the listener. This parameter is reserved. The value can be **true** or **false**. ● **true**: Enabled ● **false**: Disabled

Parameter	Type	Description
http2_enable	Boolean	Specifies whether to use HTTP/2. The value can be **true** or **false**. ● **true**: HTTP/2 is used. ● **false**: HTTP/2 is not used. This parameter takes effect only when the protocol used by the listener is set to **TERMINATED_HTTPS**.
default_pool_id	String	Specifies the ID of the associated backend server group. If a request does not match the forwarding policy, the request is forwarded to the default backend server group for processing. If the value is **null**, the listener has no default backend server group.
default_tls_container_ref	String	Specifies the ID of the server certificate used by the listener. For details, see **Certificate**. This parameter is mandatory when **protocol** is set to **TERMINATED_HTTPS**. The value contains a maximum of 128 characters.
client_ca_tls_container_ref	String	Specifies the ID of the CA certificate used by the listener. The value contains a maximum of 128 characters. For details, see **Certificate**.
sni_container_refs	Array	Lists the IDs of SNI certificates (server certificates with domain names) used by the listener. If the parameter value is an empty list, the SNI feature is disabled.
tags	Array	Tags the listener.
created_at	String	Specifies the time when the listener was created. YYYY-MM-DDTHH:MM:SS
updated_at	String	Specifies the time when the listener was updated. YYYY-MM-DDTHH:MM:SS

Table 4-45 loadbalancers parameter description

Parameter	Mandat ory	Type	Description
id	Yes	String	Specifies the ID of the associated load balancer.

Example Request

- Example request 1: Adding a TCP listener
  POST https://{Endpoint}/v2/145483a5107745e9b3d80f956713e6a3/elb/listeners

```
{
    "listener": {
        "protocol_port": 80,
        "protocol": "TCP",
        "loadbalancer_id": "0416b6f1-877f-4a51-987e-978b3f084253",
        "name": "listener-test",

        "admin_state_up": true
    }
}
```

- Example request 2: Adding a listener with **protocol** set to
  TERMINATED_HTTPS
  POST https://{Endpoint}/v2/601240b9c5c94059b63d484c92cfe308/elb/listeners

```
{
    "listener": {
        "protocol_port": 25,
        "protocol": "TERMINATED_HTTPS",
        "default_tls_container_ref": "02dcd56799e045bf8b131533cc911dd6",
        "loadbalancer_id": "0416b6f1-877f-4a51-987e-978b3f084253",
        "name": "listener-test",
        "admin_state_up": true
    }
}
```

Example Response

- Example response 1

```
{
    "listener": {
        "protocol_port": 80,
        "protocol": "TCP",
        "description": "",
        "client_ca_tls_container_ref": null,
        "default_tls_container_ref": null,
        "admin_state_up": true,
        "http2_enable": false,
        "loadbalancers": [
            {
                "id": "0416b6f1-877f-4a51-987e-978b3f084253"
            }
        ],
        "tenant_id": "145483a5107745e9b3d80f956713e6a3",

        "sni_container_refs": [],
        "connection_limit": -1,
        "default_pool_id": null,
        "tags": [],
        "id": "b7f32b52-6f17-4b16-9ec8-063d71b653ce",
        "name": "listener-test",
```

```
      "created_at": "2018-07-25T01:54:13",
      "updated_at": "2018-07-25T01:54:14"
    }
}
```

● Example response 2

```
{
  "listener": {
    "insert_headers": {},
    "protocol_port": 25,
    "protocol": "TERMINATED_HTTPS",
    "description": "",
    "default_tls_container_ref": "02dcd56799e045bf8b131533cc911dd6",
    "sni_container_refs": [],
    "loadbalancers": [
      {
        "id": "0416b6f1-877f-4a51-987e-978b3f084253"
      }
    ],
    "tenant_id": "601240b9c5c94059b63d484c92cfe308",

    "created_at": "2019-01-21T12:38:31",
    "client_ca_tls_container_ref": null,
    "connection_limit": -1,
    "updated_at": "2019-01-21T12:38:31",
    "http2_enable": false,
    "admin_state_up": true,
    "default_pool_id": null,
    "id": "b56634cd-5ba8-460e-b5a2-6de5ba8eaf60",
    "tags": [],
    "name": "listener-test"
  }
}
```

● Example response 3

```
{
  "listener": {
    "insert_headers": {},
    "protocol_port": 27,
    "protocol": "TERMINATED_HTTPS",
    "description": "",
    "default_tls_container_ref": "02dcd56799e045bf8b131533cc911dd6",
    "sni_container_refs": [
      "5882325fd6dd4b95a88d33238d293a0f",
      "e15d1b5000474adca383c3cd9ddc06d4"
    ],
    "loadbalancers": [
      {
        "id": "6bb85e33-4953-457a-85a9-336d76125b7b"
      }
    ],
    "tenant_id": "601240b9c5c94059b63d484c92cfe308",

    "created_at": "2019-01-21T12:43:55",
    "client_ca_tls_container_ref": null,
    "connection_limit": -1,
    "updated_at": "2019-01-21T12:43:55",
    "http2_enable": false,
    "admin_state_up": true,
    "default_pool_id": null,
    "id": "b2cfda5b-52fe-4320-8845-34e8d4dac2c7",
    "tags": [],
    "name": "listener-test"
  }
}
```

Status Code

For details, see **Status Codes**.

4.2.2 Querying Details of a Listener

Function

This API is used to query details about a listener using its ID.

URI

GET /v2/{project_id}/elb/listeners/{listener_id}

Table 4-46 Parameter description

Parameter	Mand atory	Type	Description
project_id	Yes	String	Specifies the project ID.
listener_id	Yes	String	Specifies the listener ID.

Request

None

Response

Table 4-47 Response parameters

Parameter	Type	Description
listener	**Listener** object	Specifies the listener. For details, see **Table 4-48**.

Table 4-48 listener parameter description

Parameter	Type	Description
id	String	Specifies the listener ID.
tenant_id	String	Specifies the ID of the project where the listener is used. The value contains a maximum of 255 characters.
name	String	Specifies the listener name. The value contains a maximum of 255 characters.

Parameter	Type	Description
description	String	Provides supplementary information about the listener. The value contains a maximum of 255 characters.
protocol	String	Specifies the protocol used by the listener. The value can be **TCP**, **HTTP**, **UDP**, or **TERMINATED_HTTPS**.
protocol_port	Integer	Specifies the port used by the listener. The port number ranges from 1 to 65535.
loadbalancers	Array of **Loadbalancers** objects	Specifies the ID of the associated load balancer. For details, see **Table 4-45**.
connection_limit	Integer	Specifies the maximum number of connections. The value ranges from **-1** to **2147483647**. The default value is **-1**, indicating that there is no restriction on the maximum number of connections. This parameter is reserved.
admin_state_up	Boolean	Specifies the administrative status of the listener. This parameter is reserved. The value can be **true** or **false**. ● **true**: Enabled ● **false**: Disabled
http2_enable	Boolean	Specifies whether to use HTTP/2. The value can be **true** or **false**. ● **true**: HTTP/2 is used. ● **false**: HTTP/2 is not used. This parameter takes effect only when the protocol used by the listener is set to **TERMINATED_HTTPS**.
default_pool_id	String	Specifies the ID of the associated backend server group. If a request does not match the forwarding policy, the request is forwarded to the default backend server group for processing. If the value is **null**, the listener has no default backend server group.

Parameter	Type	Description
default_tls_con tainer_ref	String	Specifies the ID of the server certificate used by the listener. For details, see **Certificate**. This parameter is mandatory when **protocol** is set to **TERMINATED_HTTPS**. The value contains a maximum of 128 characters.
client_ca_tls_co ntainer_ref	String	Specifies the ID of the CA certificate used by the listener. The value contains a maximum of 128 characters. For details, see **Certificate**.
sni_container_r efs	Array	Lists the IDs of SNI certificates (server certificates with domain names) used by the listener. If the parameter value is an empty list, the SNI feature is disabled.
tags	Array	Tags the listener.
created_at	String	Specifies the time when the listener was created. YYYY-MM-DDTHH:MM:SS
updated_at	String	Specifies the time when the listener was updated. YYYY-MM-DDTHH:MM:SS

Table 4-49 loadbalancers parameter description

Parameter	Mandat ory	Type	Description
id	Yes	String	Specifies the ID of the associated load balancer.

Example Request

- Example request
  ```
  GET https://{Endpoint}/v2/1867112d054b427e808cc6096d8193a1/elb/listeners/09e64049-2ab0-4763-a8c5-f4207875dc3e
  ```

Example Response

- Example response
  ```
  {
      "listener": {
          "protocol_port": 8000,
          "protocol": "TCP",
          "description": "",
          "client_ca_tls_container_ref": null,
  ```

            "default_tls_container_ref": null,
            "admin_state_up": true,
            "http2_enable": false,
            "loadbalancers": [
                {
                    "id": "3d77894d-2ffe-4411-ac0a-0d57689779b8"
                }
            ],
            "tenant_id": "1867112d054b427e808cc6096d8193a1",

            "sni_container_refs": [],
            "connection_limit": -1,
            "default_pool_id": "b7e53dbd-62ab-4505-a280-5c066078a5c9",
            "id": "09e64049-2ab0-4763-a8c5-f4207875dc3e",
            "tags": [],
            "name": "listener-2",
            "created_at": "2018-07-25T01:54:13",
            "updated_at": "2018-07-25T01:54:14"
        }
    }

Status Code

For details, see **Status Codes**.

4.2.3 Querying Listeners

Function

This API is used to query the listeners and display them in a list. Filter query and pagination query are supported. Unless otherwise specified, exact match is applied.

You can query listeners using information such as listener ID, protocol used by the listener, port used by the listener, or backend server private IP address.

URI

GET /v2/{project_id}/elb/listeners

Table 4-50 Path parameters

Parameter	Mandatory	Type	Description
project_id	Yes	String	Specifies the project ID.

Table 4-51 Query parameters

Parameter	Mandatory	Type	Description
marker	No	String	Specifies the ID of the listener from which pagination query starts, that is, the ID of the last listener on the previous page. This parameter must be used together with **limit**.
limit	No	Integer	Specifies the number of listeners on each page. If this parameter is not set, all listeners are queried by default.
page_reverse	No	Boolean	Specifies the page direction. The value can be **true** or **false**, and the default value is **false**. The last page in the list requested with **page_reverse** set to **false** will not contain the "next" link, and the last page in the list requested with **page_reverse** set to **true** will not contain the "previous" link. This parameter must be used together with **limit**.
id	No	String	Specifies the listener ID.
name	No	String	Specifies the listener name. The value contains a maximum of 255 characters.
description	No	String	Provides supplementary information about the listener. The value contains a maximum of 255 characters.
loadbalancer_id	No	String	Specifies the ID of the associated load balancer.
connection_limit	No	Integer	Specifies the maximum number of connections.
admin_state_up	No	Boolean	Specifies the administrative status of the listener. This parameter is reserved, and the default value is **true**.

Parameter	Mandatory	Type	Description
default_pool_id	No	String	Specifies the ID of the associated backend server group. If a request does not match the forwarding policy, the request is forwarded to the default backend server group for processing.
http2_enable	No	Boolean	Specifies whether to use HTTP/2. The value can be **true** or **false**. ● **true**: HTTP/2 is used. ● **false**: HTTP/2 is not used.
default_tls_container_ref	No	String	Specifies the ID of the server certificate used by the listener.
client_ca_tls_container_ref	No	String	Specifies the ID of the CA certificate used by the listener.
protocol	No	String	Specifies the protocol used by the listener. The value can be **TCP**, **HTTP**, **UDP**, or **TERMINATED_HTTPS**.
protocol_port	No	Integer	Specifies the port used by the listener.
enterprise_project_id	No	String	Specifies the enterprise project ID. Enterprise projects are used for fine-grained authentication. ● If **default_pool_id** is passed, the ID of the enterprise project to which the backend server group belongs is used for authentication. ● If neither **default_pool_id** nor **enterprise_project_id** is passed, fine-grained authentication is performed. The **elb:loadbalancers:list** permissions must be assigned to the user group.

Request

None

Response

Table 4-52 Response parameters

Parameter	Type	Description
listeners	Array of **Listeners** objects	Lists the listeners. For details, see **Table 4-53**.

Table 4-53 listener parameter description

Parameter	Type	Description
id	String	Specifies the listener ID.
tenant_id	String	Specifies the ID of the project where the listener is used. The value contains a maximum of 255 characters.
name	String	Specifies the listener name. The value contains a maximum of 255 characters.
description	String	Provides supplementary information about the listener. The value contains a maximum of 255 characters.
protocol	String	Specifies the protocol used by the listener. The value can be **TCP**, **HTTP**, **UDP**, or **TERMINATED_HTTPS**.
protocol_port	Integer	Specifies the port used by the listener. The port number ranges from 1 to 65535.
loadbalancers	Array of **Loadbalancers** objects	Specifies the ID of the associated load balancer. For details, see **Table 4-45**.
connection_limit	Integer	Specifies the maximum number of connections. The value ranges from **-1** to **2147483647**. The default value is **-1**, indicating that there is no restriction on the maximum number of connections. This parameter is reserved.

Parameter	Type	Description
admin_state_up	Boolean	Specifies the administrative status of the listener. This parameter is reserved. The value can be **true** or **false**. ● **true**: Enabled ● **false**: Disabled
http2_enable	Boolean	Specifies whether to use HTTP/2. The value can be **true** or **false**. ● **true**: HTTP/2 is used. ● **false**: HTTP/2 is not used. This parameter takes effect only when the protocol used by the listener is set to **TERMINATED_HTTPS**.
default_pool_id	String	Specifies the ID of the associated backend server group. If a request does not match the forwarding policy, the request is forwarded to the default backend server group for processing. If the value is **null**, the listener has no default backend server group.
default_tls_container_ref	String	Specifies the ID of the server certificate used by the listener. For details, see **Certificate**. This parameter is mandatory when **protocol** is set to **TERMINATED_HTTPS**. The value contains a maximum of 128 characters.
client_ca_tls_container_ref	String	Specifies the ID of the CA certificate used by the listener. The value contains a maximum of 128 characters. For details, see **Certificate**.
sni_container_refs	Array	Lists the IDs of SNI certificates (server certificates with domain names) used by the listener. If the parameter value is an empty list, the SNI feature is disabled.
tags	Array	Tags the listener.
created_at	String	Specifies the time when the listener was created. YYYY-MM-DDTHH:MM:SS
updated_at	String	Specifies the time when the listener was updated. YYYY-MM-DDTHH:MM:SS

Table 4-54 loadbalancers parameter description

Parameter	Mandatory	Type	Description
id	Yes	String	Specifies the ID of the associated load balancer.

Example Request

- Example request 1: Querying all listeners
  GET https://{Endpoint}/v2/601240b9c5c94059b63d484c92cfe308/elb/listeners

- Request example 2: Querying UDP listeners
  GET https://{Endpoint}/v2/601240b9c5c94059b63d484c92cfe308/elb/listeners?protocol=UDP

Example Response

- Example response 1

```
{
    "listeners": [
        {
            "client_ca_tls_container_ref": null,
            "protocol": "TCP",
            "description": "",
            "default_tls_container_ref": null,
            "admin_state_up": true,
            "http2_enable": false,
            "loadbalancers": [
                {
                    "id": "bc7ba445-035a-4464-a1a3-a62cf4a14116"
                }
            ],
            "tenant_id": "601240b9c5c94059b63d484c92cfe308",

            "sni_container_refs": [],

            "connection_limit": -1,
            "protocol_port": 80,
            "default_pool_id": "ed75f16e-fcc6-403e-a3fb-4eae82005eab",
            "id": "75045172-70e9-480d-9443-b8b6459948f7",
            "tags": [],
            "name": "listener-cb2n",
            "created_at": "2018-07-25T01:54:13",
            "updated_at": "2018-07-25T01:54:14"

        },
        {
            "client_ca_tls_container_ref": null,
            "protocol": "TCP",
            "description": "",
            "default_tls_container_ref": null,
            "admin_state_up": true,
            "http2_enable": false,
            "loadbalancers": [
                {
                    "id": "165b6a38-5278-4569-b747-b2ee65ea84a4"
                }
            ],
            "tenant_id": "601240b9c5c94059b63d484c92cfe308",
            "sni_container_refs": [],
```

```
                "connection_limit": -1,
                "protocol_port": 8080,
                "default_pool_id": null,
                "id": "dada0003-7b0e-4de8-a4e1-1e937be2ba14",
                "tags": [],
                "name": "lsnr_name_mod",
                "created_at": "2018-07-25T01:54:13",
                "updated_at": "2018-07-25T01:54:14"
            }
        ]
    }
```

- Example response 2

```
{
    "listeners": [
        {
            "insert_headers": null,
            "protocol_port": 64809,
            "protocol": "UDP",
            "description": "",
            "default_tls_container_ref": null,
            "sni_container_refs": [],
            "loadbalancers": [
                {
                    "id": "c1127125-64a9-4394-a08a-ef3be8f7ef9c"
                }
            ],
            "tenant_id": "601240b9c5c94059b63d484c92cfe308",

            "created_at": "2018-11-29T13:56:21",
            "client_ca_tls_container_ref": null,
            "connection_limit": -1,
            "updated_at": "2018-11-29T13:56:22",
            "http2_enable": false,

            "admin_state_up": true,
            "default_pool_id": "2f6895be-019b-4c82-9b53-c4a2ac009e20",
            "id": "5c63d176-444f-4c75-9cfe-bcb8a05a845c",
            "tags": [],
            "name": "listener-tvp8"
        }
    ]
}
```

Status Code

For details, see **Status Codes**.

4.2.4 Updating a Listener

Function

This API is used to update a listener, such as listener name, description, associated backend server groups, and server certificates.

Constraints

- If the provisioning status of the associated load balancer is not **ACTIVE**, the listener cannot be updated.

- Only users with the ELB administrator permissions can specify the value of **connection_limit**.

- The **default_pool_id** parameter has the following constraints:

- – Its value cannot be the ID of any backend server group of other listeners.
- – Its value cannot be the ID of any backend server group associated with the forwarding policies set for other listeners.
- The relationships between the protocol used by the listener and the protocol of the backend server group are as follows:
  - – When the protocol used by the listener is **TCP**, the protocol of the backend server group must be **TCP**.
  - – When the protocol used by the listener is **UDP**, the backend server group protocol must be **UDP**.
  - – When the protocol used by the listener is **HTTP** or **TERMINATED_HTTPS**, the protocol of the backend server group must be **HTTP**.

URI

PUT /v2/{project_id}/elb/listeners/{listener_id}

Table 4-55 Parameter description

Parameter	Mandatory	Type	Description
project_id	Yes	String	Specifies the project ID.
listener_id	Yes	String	Specifies the listener ID.

Request

Table 4-56 Parameter description

Parameter	Mandatory	Type	Description
listener	Yes	**Listener** object	Specifies the listener. For details, see **Table 4-57**.

Table 4-57 listener parameter description

Parameter	Mandatory	Type	Description
name	No	String	Specifies the listener name. The value contains a maximum of 255 characters.
description	No	String	Provides supplementary information about the listener. The value contains a maximum of 255 characters.

Parameter	Mandatory	Type	Description
connection_limit	No	Integer	Specifies the maximum number of connections. The value ranges from **-1** to **2147483647**. This field is reserved. Do not use it. Only users with the ELB administrator permissions can specify this field.
http2_enable	No	Boolean	Specifies whether to use HTTP/2. The value can be **true** or **false**. ● **true**: HTTP/2 is used. ● **false**: HTTP/2 is not used. This parameter takes effect only when the protocol used by the listener is set to **TERMINATED_HTTPS**.

Parameter	Mandat ory	Type	Description
default_pool_id	No	String	Specifies the ID of the associated backend server group. If a request does not match the forwarding policy, the request is forwarded to the default backend server group for processing. If the value is **null**, the listener has no default backend server group. The **default_pool_id** parameter has the following constraints: ● Its value cannot be the ID of any backend server group of other listeners. ● Its value cannot be the ID of any backend server group associated with the forwarding policies set for other listeners. The relationships between the protocol of the backend server group and the protocol used by the listener are as follows: ● When the protocol used by the listener is **TCP**, the protocol of the backend server group must be **TCP**. ● When the protocol used by the listener is **UDP**, the protocol of the backend server group must be **UDP**. ● When the protocol used by the listener is **HTTP** or **TERMINATED_HTTPS**, the protocol of the backend server group must be **HTTP**.
admin_state_up	No	Boolean	Specifies the administrative status of the listener. This parameter is reserved, and the default value is **true**.

Parameter	Mandat ory	Type	Description
default_tls_container_r ef	No	String	Specifies the ID of the server certificate used by the listener. The value contains a maximum of 128 characters. This parameter is mandatory when **protocol** is set to **TERMINATED_HTTPS**.
client_ca_tls_container _ref	No	String	Specifies the ID of the CA certificate used by the listener. The value contains a maximum of 128 characters.
sni_container_refs	No	Array	Lists the IDs of SNI certificates (server certificates with domain names) used by the listener. If the parameter value is an empty list, the SNI feature is disabled.

Response

Table 4-58 Response parameters

Parameter	Type	Description
listener	**Listener** object	Specifies the listener. For details, see **Table 4-59**.

Table 4-59 listener parameter description

Parameter	Type	Description
id	String	Specifies the listener ID.
tenant_id	String	Specifies the ID of the project where the listener is used. The value contains a maximum of 255 characters.
name	String	Specifies the listener name. The value contains a maximum of 255 characters.

Parameter	Type	Description
description	String	Provides supplementary information about the listener. The value contains a maximum of 255 characters.
protocol	String	Specifies the protocol used by the listener. The value can be **TCP**, **HTTP**, **UDP**, or **TERMINATED_HTTPS**.
protocol_port	Integer	Specifies the port used by the listener. The port number ranges from 1 to 65535.
loadbalancers	Array of **Loadbalancers** objects	Specifies the ID of the associated load balancer. For details, see **Table 4-45**.
connection_limit	Integer	Specifies the maximum number of connections. The value ranges from **-1** to **2147483647**. The default value is **-1**, indicating that there is no restriction on the maximum number of connections. This parameter is reserved.
admin_state_up	Boolean	Specifies the administrative status of the listener. This parameter is reserved. The value can be **true** or **false**. ● **true**: Enabled ● **false**: Disabled
http2_enable	Boolean	Specifies whether to use HTTP/2. The value can be **true** or **false**. ● **true**: HTTP/2 is used. ● **false**: HTTP/2 is not used. This parameter takes effect only when the protocol used by the listener is set to **TERMINATED_HTTPS**.
default_pool_id	String	Specifies the ID of the associated backend server group. If a request does not match the forwarding policy, the request is forwarded to the default backend server group for processing. If the value is **null**, the listener has no default backend server group.

Parameter	Type	Description
default_tls_container_ref	String	Specifies the ID of the server certificate used by the listener. For details, see **Certificate**. This parameter is mandatory when **protocol** is set to **TERMINATED_HTTPS**. The value contains a maximum of 128 characters.
client_ca_tls_container_ref	String	Specifies the ID of the CA certificate used by the listener. The value contains a maximum of 128 characters. For details, see **Certificate**.
sni_container_refs	Array	Lists the IDs of SNI certificates (server certificates with domain names) used by the listener. If the parameter value is an empty list, the SNI feature is disabled.
tags	Array	Tags the listener.
created_at	String	Specifies the time when the listener was created. YYYY-MM-DDTHH:MM:SS
updated_at	String	Specifies the time when the listener was updated. YYYY-MM-DDTHH:MM:SS

Table 4-60 loadbalancers parameter description

Parameter	Mandatory	Type	Description
id	Yes	String	Specifies the ID of the associated load balancer.

Example Request

- Example request: Updating a listener

```
PUT https://{Endpoint}/v2/601240b9c5c94059b63d484c92cfe308/elb/listeners/f622c150-72f5-4263-a47a-e5003c652aa3
{
    "listener": {
        "description": "my listener",
        "name": "listener-jy-test2",
        "default_pool_id": "c61310de-9a06-4f0c-850c-6f4797b9984c",
        "default_tls_container_ref": "23b58a961a4d4c95be585e98046e657a",
        "client_ca_tls_container_ref": "417a0976969f497db8cbb083bff343ba"
    }
}
```

Example Response

- Example response

```
{
    "listener": {
        "client_ca_tls_container_ref": "417a0976969f497db8cbb083bff343ba",
        "protocol": "TERMINATED_HTTPS",
        "description": "my listener",
        "default_tls_container_ref": "23b58a961a4d4c95be585e98046e657a",
        "admin_state_up": true,
        "http2_enable": false,
        "loadbalancers": [
            {
                "id": "165b6a38-5278-4569-b747-b2ee65ea84a4"
            }
        ],
        "tenant_id": "601240b9c5c94059b63d484c92cfe308",
        "sni_container_refs": [],
        "connection_limit": -1,
        "protocol_port": 443,
        "tags": [],
        "default_pool_id": "c61310de-9a06-4f0c-850c-6f4797b9984c",
        "id": "f622c150-72f5-4263-a47a-e5003c652aa3",
        "name": "listener-jy-test2",
        "created_at": "2018-07-25T01:54:13",

        "updated_at": "2018-07-25T01:54:14"

    }
}
```

Status Code

For details, see **Status Codes**.

4.2.5 Deleting a Listener

Function

This API is used to delete a listener by ID.

Constraints

Before deleting the listener, delete the associated backend server groups by referring to **Deleting a Backend Server Group**, or change the value of **default_pool_id** to **null** by referring to **Updating a Listener** and delete associated forwarding policies by referring to **Deleting a Forwarding Policy**.

URI

DELETE /v2/{project_id}/elb/listeners/{listener_id}

Table 4-61 Parameter description

Parameter	Mandatory	Type	Description
project_id	Yes	String	Specifies the project ID.

Parameter	Mandatory	Type	Description
listener_id	Yes	String	Specifies the listener ID.

Request

None

Response

None

Example Request

- Example request: Deleting a listener
  DELETE https://{Endpoint}/v2/{project_id}/elb/listeners/35cb8516-1173-4035-8dae-0dae3453f37f

Example Response

- Example response

None

Status Code

For details, see **Status Codes**.

4.3 Backend Server Group

4.3.1 Adding a Backend Server Group

Function

This API is used to add a backend server group. After multiple backend servers are added to a backend server group, requests are distributed among backend servers based on the load balancing algorithm configured for the backend server group and the weight set for each backend server.

Constraints

- If parameter **session-persistence** is configured, parameter **cookie_name** is available only when the value of **type** is **APP_COOKIE**.

URI

POST /v2/{project_id}/elb/pools

Table 4-62 Parameter description

Parameter	Mandatory	Type	Description
project_id	Yes	String	Specifies the project ID.

Request

Table 4-63 Parameter description

Parameter	Mandatory	Type	Description
pool	Yes	**Pool** object	Specifies the backend server group. For details, see **Table 4-64**.

Table 4-64 pool parameter description

Parameter	Mandatory	Type	Description
tenant_id	No	String	Specifies the ID of the project where the backend server group is used. The value must be the same as the value of **project_id** in the token. The value contains a maximum of 255 characters.
name	No	String	Specifies the name of the backend server group. The value contains a maximum of 255 characters.
description	No	String	Provides supplementary information about the backend server group. The value contains a maximum of 255 characters.

Parameter	Mandatory	Type	Description
protocol	Yes	String	Specifies the protocol that the backend server group uses to receive requests. TCP, UDP, and HTTP are supported. When a backend server group is associated with a listener, the relationships between the protocol used by the listener and the protocol of the backend server group are as follows: ● When the protocol used by the listener is **UDP**, the protocol of the backend server group must be **UDP**. ● When the protocol used by the listener is **TCP**, the protocol of the backend server group must be **TCP**. ● When the protocol used by the listener is **HTTP** or **TERMINATED_HTTPS**, the protocol of the backend server group must be **HTTP**.
lb_algorithm	Yes	String	Specifies the load balancing algorithm of the backend server group. The value range varies depending on the protocol of the backend server group: ● **ROUND_ROBIN**: indicates the weighted round robin algorithm. ● **LEAST_CONNECTIONS**: indicates the weighted least connections algorithm. ● **SOURCE_IP**: indicates the source IP hash algorithm. When the value is **SOURCE_IP**, the weights of backend servers in the server group are invalid.
admin_state_up	No	Boolean	Specifies the administrative status of the backend server group. This parameter is reserved, and the default value is **true**.

Parameter	Mandatory	Type	Description
listener_id	No	String	Specifies the ID of the listener associated with the backend server group. Specify either **listener_id** or **loadbalancer_id**, or both of them.
loadbalancer_id	No	String	Specifies the ID of the load balancer associated with the backend server group. Specify either **listener_id** or **loadbalancer_id**, or both of them.
session_persistence	No	**SessionPersisten**ce object	Specifies the sticky session timeout duration in minutes. For details, see **Table 4-65**. If the value is **null**, the sticky session feature is disabled.

Table 4-65 session_persistence parameter description

Parameter	Mandatory	Type	Description
type	Yes	String	Specifies the sticky session type.
			The value range varies depending on the protocol of the backend server group:
			• **SOURCE_IP**: Requests are distributed based on the client's IP address. Requests from the same IP address are sent to the same backend server.
			• **HTTP_COOKIE**: When the client sends a request for the first time, the load balancer automatically generates a cookie and inserts the cookie into the response message. Subsequent requests are sent to the backend server that processes the first request.
			• **APP_COOKIE**: When the client sends a request for the first time, the backend server that receives the request generates a cookie and inserts the cookie into the response message. Subsequent requests are sent to this backend server.
			When the protocol of the backend server group is TCP, only **SOURCE_IP** takes effect. When the protocol of the backend server group is HTTP, only **HTTP_COOKIE** or **APP_COOKIE** takes effect.
cookie_name	No	String	Specifies the cookie name.
			This parameter is mandatory when the sticky session type is **APP_COOKIE**.

Parameter	Mandatory	Type	Description
persistence_timeout	No	Integer	Specifies the sticky session timeout duration in minutes. This parameter is invalid when **type** is set to **APP_COOKIE**. The value range varies depending on the protocol of the backend server group: ● When the protocol of the backend server group is TCP or UDP, the value ranges from **1** to **60**. ● When the protocol of the backend server group is HTTP or HTTPS, the value ranges from **1** to **1440**.

Response

Table 4-66 Parameter description

Parameter	Type	Description
pool	**Pool** object	Specifies the backend server group. For details, see **Table 4-67**.

Table 4-67 pool parameter description

Parameter	Type	Description
id	String	Specifies the ID of the backend server group.
tenant_id	String	Specifies the ID of the project where the backend server group is used. The value contains a maximum of 255 characters.
name	String	Specifies the name of the backend server group. The value contains a maximum of 255 characters.
description	String	Provides supplementary information about the backend server group. The value contains a maximum of 255 characters.

Parameter	Type	Description
protocol	String	Specifies the protocol that the backend server group uses to receive requests. TCP, UDP, and HTTP are supported. When a backend server group is associated with a listener, the relationships between the protocol used by the listener and the protocol of the backend server group are as follows: ● When the protocol used by the listener is **UDP**, the protocol of the backend server group must be **UDP**. ● When the protocol used by the listener is **TCP**, the protocol of the backend server group must be **TCP**. ● When the protocol used by the listener is **HTTP** or **TERMINATED_HTTPS**, the protocol of the backend server group must be **HTTP**.
lb_algorithm	String	Specifies the load balancing algorithm of the backend server group. The value range varies depending on the protocol of the backend server group: ● **ROUND_ROBIN**: indicates the weighted round robin algorithm. ● **LEAST_CONNECTIONS**: indicates the weighted least connections algorithm. ● **SOURCE_IP**: indicates the source IP hash algorithm. When the value is **SOURCE_IP**, the weights of backend servers in the server group are invalid.
members	Array of **Members** objects	Lists the IDs of backend servers in the backend server group. For details, see **Table 4-68**.
healthmonitor_id	String	Specifies the ID of the health check configured for the backend server group.
admin_state_up	Boolean	Specifies the administrative status of the backend server group. This parameter is reserved. The value can be **true** or **false**. ● **true**: Enabled ● **false**: Disabled

Parameter	Type	Description
listeners	Array of **Listeners** objects	Lists the IDs of listeners associated with the backend server group. For details, see **Table 4-69**.
loadbalancers	Array of **Loadbalancers** objects	Lists the IDs of load balancers associated with the backend server group. For details, see **Table 4-70**.
session_persistence	**SessionPersistence** object	Specifies whether to enable the sticky session feature. For details, see **Table 4-71**. Once sticky session are enabled, requests from the same client are sent to the same backend server during the session. When sticky sessions are disabled, the value is **null**.

Table 4-68 members parameter description

Parameter	Type	Description
id	String	Specifies the ID of the associated backend server.

Table 4-69 listeners parameter description

Parameter	Type	Description
id	String	Specifies the ID of the associated backend server group.

Table 4-70 loadbalancers parameter description

Parameter	Type	Description
id	String	Specifies the ID of the associated load balancer.

Table 4-71 **session_persistence** parameter description

Parameter	Mandatory	Type	Description
type	Yes	String	Specifies the sticky session type. The value range varies depending on the protocol of the backend server group: ● **SOURCE_IP**: Requests are distributed based on the client's IP address. Requests from the same IP address are sent to the same backend server. ● **HTTP_COOKIE**: When the client sends a request for the first time, the load balancer automatically generates a cookie and inserts the cookie into the response message. Subsequent requests are sent to the backend server that processes the first request. ● **APP_COOKIE**: When the client sends a request for the first time, the backend server that receives the request generates a cookie and inserts the cookie into the response message. Subsequent requests are sent to this backend server. When the protocol of the backend server group is TCP, only **SOURCE_IP** takes effect. When the protocol of the backend server group is HTTP, only **HTTP_COOKIE** or **APP_COOKIE** takes effect.
cookie_name	No	String	Specifies the cookie name. This parameter is mandatory when the sticky session type is **APP_COOKIE**.

Parameter	Mandat ory	Type	Description
persistence_timeo ut	No	Integer	Specifies the sticky session timeout duration in minutes. This parameter is invalid when **type** is set to **APP_COOKIE**. The value range varies depending on the protocol of the backend server group: • When the protocol of the backend server group is TCP or UDP, the value ranges from **1** to **60**. • When the protocol of the backend server group is HTTP or HTTPS, the value ranges from **1** to **1440**.

Example Request

- Example request 1
  - Step 1: Query the subnet ID and IP address using the server ID. **device_id** in the request indicates the server ID. Obtain the values of **subnet_id** and **ip_address** of the primary NIC (the port for which **primary_interface** is **true**) in the response body.

    GET https://{VPCEndpoint}/v2.0/ports?device_id=f738c464-b5c2-45df-86c0-7f436620cd54

    Example response

    ```
    {
        "ports": [
            {
                "id": "94971c39-46f0-443a-85e8-31cb7497c78e",
                "name": "",
                "status": "ACTIVE",
                "admin_state_up": true,
                "fixed_ips": [
                    {
                        "subnet_id": "33d8b01a-bbe6-41f4-bc45-78a1d284d503",
                        "ip_address": "192.168.44.11"
                    }
                ],
                "mac_address": "fa:16:3e:5c:d2:57",
                "network_id": "1b76b9c2-9b7e-4ced-81bd-d13f7389d7c9",
                "tenant_id": "04dd36f978800fe22f9bc00bea090736",
                "project_id": "04dd36f978800fe22f9bc00bea090736",
                "device_id": "f738c464-b5c2-45df-86c0-7f436620cd54",
                "device_owner": "compute:xx-xxxx-4a",
                "security_groups": [
                    "a10dfc31-0055-4b84-b36e-1291b918125c",
                    "7a233393-5be2-4dff-8360-1558dd950f6e"
                ],
                "extra_dhcp_opts": [],
                "allowed_address_pairs": [],
                "binding:vnic_type": "normal",
                "binding:vif_details": {
                    "primary_interface": true
                },
                "binding:profile": {},
                "port_security_enabled": true,
    ```

```
        "created_at": "2019-11-12T17:17:51",
        "updated_at": "2019-11-12T17:17:51"
      }
    ]
  }
}
```

- Step 2: Add a backend server group with the sticky session feature disabled.

POST https://{Endpoint}/v2/601240b9c5c94059b63d484c92cfe308/elb/pools

```
{
   "pool": {
      "lb_algorithm":"ROUND_ROBIN",
      "loadbalancer_id": "63ad9dfe-4750-479f-9630-ada43ccc8117",
      "protocol":"HTTP"
   }
}
```

- Example request 2: Adding a backend server group with the value of **type** set to **APP_COOKIE**

POST https://{Endpoint}/v2/145483a5107745e9b3d80f956713e6a3/elb/pools

```
{
 "pool": {
   "lb_algorithm": "ROUND_ROBIN",
   "loadbalancer_id": "370fb112-e920-486a-b051-1d0d30704dd3",
   "protocol": "HTTP",
   "session_persistence": {
     "cookie_name": "my_cookie",
     "type": "APP_COOKIE",
     "persistence_timeout": 1
   },
   "admin_state_up": true
 }
}
```

- Example request 3: Adding an HTTP backend server group with the value of **type** set to **HTTP_COOKIE**

POST https://{Endpoint}/v2/601240b9c5c94059b63d484c92cfe308/elb/pools

```
{
   "pool": {
      "lb_algorithm":"ROUND_ROBIN",
      "loadbalancer_id": "63ad9dfe-4750-479f-9630-ada43ccc8117",
      "protocol":"HTTP",
      "session_persistence":{
         "type":"HTTP_COOKIE"
      }
   }
}
```

Example Response

- Example response 1

```
{
   "pool": {
      "lb_algorithm": "ROUND_ROBIN",
      "protocol": "HTTP",
      "description": "",
      "admin_state_up": true,
      "loadbalancers": [
         {
            "id": "63ad9dfe-4750-479f-9630-ada43ccc8117"
         }
      ],
      "tenant_id": "601240b9c5c94059b63d484c92cfe308",
      "session_persistence": null,
      "healthmonitor_id": null,
      "listeners": [],
```

```
        "members": [],
        "id": "4e496951-befb-47bf-9573-c1cd11825c07",
        "name": ""
    }
}
```

- Example response 2

```
{
 "pool": {
   "lb_algorithm": "ROUND_ROBIN",
   "protocol": "HTTP",
   "description": "",
   "admin_state_up": true,
   "loadbalancers": [
     {
       "id": "6b041b9e-976b-40ba-b075-375be6110b53"
     }
   ],
   "tenant_id": "145483a5107745e9b3d80f956713e6a3",
   "session_persistence": {
     "cookie_name": "my_cookie",
     "type": "APP_COOKIE",
     "persistence_timeout": 1
   },
   "healthmonitor_id": null,
   "listeners": [
     {
       "id": "370fb112-e920-486a-b051-1d0d30704dd3"
     }
   ],
   "members": [],
   "id": "307f8968-9474-4d0c-8434-66be09dabcc1",
   "name": ""
 }
}
```

- Example response 3

```
{
   "pool": {
       "lb_algorithm": "ROUND_ROBIN",
       "protocol": "HTTP",
       "description": "",
       "admin_state_up": true,
       "loadbalancers": [
           {
               "id": "63ad9dfe-4750-479f-9630-ada43ccc8117"
           }
       ],
       "tenant_id": "601240b9c5c94059b63d484c92cfe308",
       "session_persistence": {
           "persistence_timeout": 1440,
           "cookie_name": null,
           "type": "HTTP_COOKIE"
       },
       "healthmonitor_id": null,
       "listeners": [],
       "members": [],
       "id": "d46eab56-d76b-4cd3-8952-3c3c4cf113aa",
       "name": ""
   }
}
```

Status Code

For details, see **Status Codes**.

4.3.2 Querying Backend Server Groups

Function

This API is used to query the backend server groups and display them in a list. Filter query and pagination query are supported. Unless otherwise specified, exact match is applied.

URI

GET /v2/{project_id}/elb/pools

Table 4-72 Path parameters

Parameter	Mandatory	Type	Description
project_id	Yes	String	Specifies the project ID.

Table 4-73 Query parameters

Parameter	Mandatory	Type	Description
marker	No	String	Specifies the ID of the backend server group from which pagination query starts, that is, the ID of the last backend server group on the previous page. If this parameter is not specified, the first page will be queried. This parameter must be used together with **limit**.
limit	No	Integer	Specifies the number of backend server groups on each page. If this parameter is not set, all backend server groups are queried by default.
page_reverse	No	Boolean	Specifies the page direction. The value can be **true** or **false**, and the default value is **false**. The last page in the list requested with **page_reverse** set to **false** will not contain the "next" link, and the last page in the list requested with **page_reverse** set to **true** will not contain the "previous" link. This parameter must be used together with **limit**.

Parameter	Manda tory	Type	Description
id	No	String	Specifies the ID of the backend server group.
name	No	String	Specifies the name of the backend server group. The value contains a maximum of 255 characters.
description	No	String	Provides supplementary information about the backend server group. The value contains a maximum of 255 characters.
healthmonitor_id	No	String	Specifies the ID of the health check configured for the backend server group.
loadbalancer_id	No	String	Specifies the ID of the load balancer associated with the backend server group.
protocol	No	String	Specifies the protocol that the backend server group uses to receive requests. TCP, UDP, and HTTP are supported.
lb_algorithm	No	String	Specifies the load balancing algorithm of the backend server group. The value range varies depending on the protocol of the backend server group: • **ROUND_ROBIN**: indicates the weighted round robin algorithm. • **LEAST_CONNECTIONS**: indicates the weighted least connections algorithm. • **SOURCE_IP**: indicates the source IP hash algorithm. When the value is **SOURCE_IP**, the weights of backend servers in the server group are invalid. For details about parameter **weight**, see **Response**.
member_address	No	String	Lists the IDs of backend servers in the backend server group.

Parameter	Manda tory	Type	Description
member_device_i d	No	String	Specifies the ID of the cloud server used as the backend server in the backend server group.
enterprise_projec t_id	No	String	Specifies the enterprise project ID. Enterprise projects are used for fine-grained authentication. ● If **loadbalancer_id** is passed, the ID of the enterprise project to which the load balancer belongs is used for authentication. ● If **loadbalancer_id** is not passed but **healthmonitor_id** is passed, the ID of the enterprise project to which the load balancer belongs is used for authentication. ● If any of the three parameters **enterprise_project_id**, **loadbalancer_id**, or **healthmonitor_id** is not passed, fine-grained authentication is performed. The **elb:loadbalancers:list** permissions must be assigned to the user group.

Request

None

Response

Table 4-74 Parameter description

Parameter	Type	Description
pools	Array of **Pools** objects	Specifies the backend server group. For details, see **Table 4-75**.

Table 4-75 pool parameter description

Parameter	Type	Description
id	String	Specifies the ID of the backend server group.

Parameter	Type	Description
tenant_id	String	Specifies the ID of the project where the backend server group is used. The value contains a maximum of 255 characters.
name	String	Specifies the name of the backend server group. The value contains a maximum of 255 characters.
description	String	Provides supplementary information about the backend server group. The value contains a maximum of 255 characters.
protocol	String	Specifies the protocol that the backend server group uses to receive requests. TCP, UDP, and HTTP are supported. When a backend server group is associated with a listener, the relationships between the protocol used by the listener and the protocol of the backend server group are as follows: ● When the protocol used by the listener is **UDP**, the protocol of the backend server group must be **UDP**. ● When the protocol used by the listener is **TCP**, the protocol of the backend server group must be **TCP**. ● When the protocol used by the listener is **HTTP** or **TERMINATED_HTTPS**, the protocol of the backend server group must be **HTTP**.
lb_algorithm	String	Specifies the load balancing algorithm of the backend server group. The value range varies depending on the protocol of the backend server group: ● **ROUND_ROBIN**: indicates the weighted round robin algorithm. ● **LEAST_CONNECTIONS**: indicates the weighted least connections algorithm. ● **SOURCE_IP**: indicates the source IP hash algorithm. When the value is **SOURCE_IP**, the weights of backend servers in the server group are invalid.

Parameter	Type	Description
members	Array of **Members** objects	Lists the IDs of backend servers in the backend server group. For details, see **Table 4-68**.
healthmonitor_id	String	Specifies the ID of the health check configured for the backend server group.
admin_state_up	Boolean	Specifies the administrative status of the backend server group. This parameter is reserved. The value can be **true** or **false**. ● **true**: Enabled ● **false**: Disabled
listeners	Array of **Listeners** objects	Lists the IDs of listeners associated with the backend server group. For details, see **Table 4-69**.
loadbalancers	Array of **Loadbalancers** objects	Lists the IDs of load balancers associated with the backend server group. For details, see **Table 4-70**.
session_persistence	**SessionPersistence** object	Specifies whether to enable the sticky session feature. For details, see **Table 4-71**. Once sticky session are enabled, requests from the same client are sent to the same backend server during the session. When sticky sessions are disabled, the value is **null**.

Table 4-76 members parameter description

Parameter	Type	Description
id	String	Specifies the ID of the associated backend server.

Table 4-77 listeners parameter description

Parameter	Type	Description
id	String	Specifies the ID of the associated backend server group.

Table 4-78 loadbalancers parameter description

Parameter	Type	Description
id	String	Specifies the ID of the associated load balancer.

Table 4-79 session_persistence parameter description

Parameter	Mandatory	Type	Description
type	Yes	String	Specifies the sticky session type. The value range varies depending on the protocol of the backend server group: ● **SOURCE_IP**: Requests are distributed based on the client's IP address. Requests from the same IP address are sent to the same backend server. ● **HTTP_COOKIE**: When the client sends a request for the first time, the load balancer automatically generates a cookie and inserts the cookie into the response message. Subsequent requests are sent to the backend server that processes the first request. ● **APP_COOKIE**: When the client sends a request for the first time, the backend server that receives the request generates a cookie and inserts the cookie into the response message. Subsequent requests are sent to this backend server. When the protocol of the backend server group is TCP, only **SOURCE_IP** takes effect. When the protocol of the backend server group is HTTP, only **HTTP_COOKIE** or **APP_COOKIE** takes effect.
cookie_name	No	String	Specifies the cookie name. This parameter is mandatory when the sticky session type is **APP_COOKIE**.

Parameter	Mandat ory	Type	Description
persistence_timeo ut	No	Integer	Specifies the sticky session timeout duration in minutes. This parameter is invalid when **type** is set to **APP_COOKIE**. The value range varies depending on the protocol of the backend server group: ● When the protocol of the backend server group is TCP or UDP, the value ranges from **1** to **60**. ● When the protocol of the backend server group is HTTP or HTTPS, the value ranges from **1** to **1440**.

Example Request

- Example request 1: Querying all backend server groups
  ```
  GET https://{Endpoint}/v2/1867112d054b427e808cc6096d8193a1/elb/pools
  ```

- Example request 2: Querying backend server groups whose load balancing algorithm is **SOURCE_IP**
  ```
  GET https://{Endpoint}/v2/1867112d054b427e808cc6096d8193a1/elb/pools?lb_algorithm=SOURCE_IP
  ```

Example Response

- Example response 1
  ```
  {
      "pools": [
          {
              "lb_algorithm": "SOURCE_IP",
              "protocol": "TCP",
              "description": "",
              "admin_state_up": true,
              "loadbalancers": [
                  {
                      "id": "07d28d4a-4899-40a3-a939-5d09d69019e1"
                  }
              ],
              "tenant_id": "1867112d054b427e808cc6096d8193a1",
              "session_persistence": null,
              "healthmonitor_id": null,
              "listeners": [
                  {
                      "id": "1b421c2d-7e78-4a78-9ee4-c8ccba41f15b"
                  }
              ],
              "members": [
                  {
                      "id": "88f9c079-29cb-435a-b98f-0c5c0b90c2bd"
                  },
                  {
                      "id": "2f4c9644-d5d2-4cf8-a3c0-944239a4f58c"
                  }
              ],
              "id": "3a9f50bb-f041-4eac-a117-82472d8a0007",
              "name": "my-pool"
  ```

```
          }
       ]
   }
```

- Example response 2

```
{
   "pools": [
      {
         "lb_algorithm": "SOURCE_IP",
         "protocol": "TCP",
         "description": "",
         "admin_state_up": true,
         "loadbalancers": [
            {
               "id": "07d28d4a-4899-40a3-a939-5d09d69019e1"
            }
         ],
         "tenant_id": "1867112d054b427e808cc6096d8193a1",

         "session_persistence": null,
         "healthmonitor_id": null,
         "listeners": [
            {
               "id": "1b421c2d-7e78-4a78-9ee4-c8ccba41f15b"
            }
         ],
         "members": [
            {
               "id": "88f9c079-29cb-435a-b98f-0c5c0b90c2bd"
            },
            {
               "id": "2f4c9644-d5d2-4cf8-a3c0-944239a4f58c"
            }
         ],
         "id": "3a9f50bb-f041-4eac-a117-82472d8a0007",
         "name": "my-pool"
      }
   ]
}
```

Status Code

For details, see **Status Codes**.

4.3.3 Querying Details of a Backend Server Group

Function

This API is used to query details about a backend server group using its ID.

URI

GET /v2/{project_id}/elb/pools/{pool_id}

Table 4-80 Parameter description

Parameter	Mandatory	Type	Description
project_id	Yes	String	Specifies the project ID.

Parameter	Mandatory	Type	Description
pool_id	Yes	String	Specifies the ID of the backend server group.

Request

None

Response

Table 4-81 Response parameters

Parameter	Type	Description
pool	**Pool** object	Specifies the backend server group. For details, see **Table 4-82**.

Table 4-82 pool parameter description

Parameter	Type	Description
id	String	Specifies the ID of the backend server group.
tenant_id	String	Specifies the ID of the project where the backend server group is used. The value contains a maximum of 255 characters.
name	String	Specifies the name of the backend server group. The value contains a maximum of 255 characters.
description	String	Provides supplementary information about the backend server group. The value contains a maximum of 255 characters.

Parameter	Type	Description
protocol	String	Specifies the protocol that the backend server group uses to receive requests. TCP, UDP, and HTTP are supported. When a backend server group is associated with a listener, the relationships between the protocol used by the listener and the protocol of the backend server group are as follows: • When the protocol used by the listener is **UDP**, the protocol of the backend server group must be **UDP**. • When the protocol used by the listener is **TCP**, the protocol of the backend server group must be **TCP**. • When the protocol used by the listener is **HTTP** or **TERMINATED_HTTPS**, the protocol of the backend server group must be **HTTP**.
lb_algorithm	String	Specifies the load balancing algorithm of the backend server group. The value range varies depending on the protocol of the backend server group: • **ROUND_ROBIN**: indicates the weighted round robin algorithm. • **LEAST_CONNECTIONS**: indicates the weighted least connections algorithm. • **SOURCE_IP**: indicates the source IP hash algorithm. When the value is **SOURCE_IP**, the weights of backend servers in the server group are invalid.
members	Array of **Members** objects	Lists the IDs of backend servers in the backend server group. For details, see **Table 4-68**.
healthmonitor_id	String	Specifies the ID of the health check configured for the backend server group.
admin_state_up	Boolean	Specifies the administrative status of the backend server group. This parameter is reserved. The value can be **true** or **false**. • **true**: Enabled • **false**: Disabled

Parameter	Type	Description
listeners	Array of **Listeners** objects	Lists the IDs of listeners associated with the backend server group. For details, see **Table 4-69**.
loadbalancers	Array of **Loadbalancers** objects	Lists the IDs of load balancers associated with the backend server group. For details, see **Table 4-70**.
session_persistence	**SessionPersistence** object	Specifies whether to enable the sticky session feature. For details, see **Table 4-71**. Once sticky session are enabled, requests from the same client are sent to the same backend server during the session. When sticky sessions are disabled, the value is **null**.

Table 4-83 members parameter description

Parameter	Type	Description
id	String	Specifies the ID of the associated backend server.

Table 4-84 listeners parameter description

Parameter	Type	Description
id	String	Specifies the ID of the associated backend server group.

Table 4-85 loadbalancers parameter description

Parameter	Type	Description
id	String	Specifies the ID of the associated load balancer.

Table 4-86 session_persistence parameter description

Parameter	Mandat ory	Type	Description
type	Yes	String	Specifies the sticky session type. The value range varies depending on the protocol of the backend server group: ● **SOURCE_IP**: Requests are distributed based on the client's IP address. Requests from the same IP address are sent to the same backend server. ● **HTTP_COOKIE**: When the client sends a request for the first time, the load balancer automatically generates a cookie and inserts the cookie into the response message. Subsequent requests are sent to the backend server that processes the first request. ● **APP_COOKIE**: When the client sends a request for the first time, the backend server that receives the request generates a cookie and inserts the cookie into the response message. Subsequent requests are sent to this backend server. When the protocol of the backend server group is TCP, only **SOURCE_IP** takes effect. When the protocol of the backend server group is HTTP, only **HTTP_COOKIE** or **APP_COOKIE** takes effect.
cookie_name	No	String	Specifies the cookie name. This parameter is mandatory when the sticky session type is **APP_COOKIE**.

Parameter	Mandatory	Type	Description
persistence_timeout	No	Integer	Specifies the sticky session timeout duration in minutes. This parameter is invalid when **type** is set to **APP_COOKIE**. The value range varies depending on the protocol of the backend server group: ● When the protocol of the backend server group is TCP or UDP, the value ranges from **1** to **60**. ● When the protocol of the backend server group is HTTP or HTTPS, the value ranges from **1** to **1440**.

Example Request

● Example request: Querying details of a backend server group

```
GET https://{Endpoint}/v2/1867112d054b427e808cc6096d8193a1/elb/pools/5a9a3e9e-d1aa-448e-af37-a70171f2a332
```

Example Response

● Example response 1

```
{
    "pool": {
        "lb_algorithm": "SOURCE_IP",
        "protocol": "TCP",
        "description": "",
        "admin_state_up": true,
        "loadbalancers": [
            {
                "id": "6f52004c-3fe9-4c09-b8ce-ed9d9c74a3b1"
            }
        ],
        "tenant_id": "1867112d054b427e808cc6096d8193a1",

        "session_persistence": null,
        "healthmonitor_id": null,
        "listeners": [
            {
                "id": "6e29b2cd-4e53-40f6-ae7b-29e918de67f2"
            }
        ],
        "members": [],
        "id": "5a9a3e9e-d1aa-448e-af37-a70171f2a332",
        "name": "my-pool"
    }
}
```

Status Code

For details, see **Status Codes**.

4.3.4 Updating a Backend Server Group

Function

This API is used to update a backend server group.

Constraints

If the provisioning status of the load balancer associated with a backend server group is not **ACTIVE**, the backend server group cannot be updated.

URI

PUT /v2/{project_id}/elb/pools/{pool_id}

Table 4-87 Parameter description

Parameter	Mandatory	Type	Description
project_id	Yes	String	Specifies the project ID.
pool_id	Yes	String	Specifies the ID of the backend server group.

Request

Table 4-88 Parameter description

Parameter	Mandatory	Type	Description
pool	Yes	**Pool** object	Specifies the backend server group. For details, see **Table 4-89**.

Table 4-89 pool parameter description

Parameter	Mandatory	Type	Description
name	No	String	Specifies the name of the backend server group. The value contains a maximum of 255 characters.

Parameter	Mandatory	Type	Description
description	No	String	Provides supplementary information about the backend server group. The value contains a maximum of 255 characters.
lb_algorithm	No	String	Specifies the load balancing algorithm of the backend server group. The value range varies depending on the protocol of the backend server group: **ROUND_ROBIN**: indicates the weighted round robin algorithm. **LEAST_CONNECTIONS**: indicates the weighted least connections algorithm. **SOURCE_IP**: indicates the source IP hash algorithm. When the value is **SOURCE_IP**, the weights of backend servers in the server group are invalid.
admin_state_up	No	Boolean	Specifies the administrative status of the backend server group. This parameter is reserved, and the default value is **true**.
session_persistence	No	**SessionPersistence** object	Specifies whether to enable the sticky session feature. For details, see **Table 4-90**. Once sticky session are enabled, requests from the same client are sent to the same backend server during the session. When sticky sessions are disabled, the value is **null**.

Table 4-90 session_persistence parameter description

Parameter	Mandatory	Type	Description
type	Yes	String	Specifies the sticky session type. The value range varies depending on the protocol of the backend server group: ● **SOURCE_IP**: Requests are distributed based on the client's IP address. Requests from the same IP address are sent to the same backend server. ● **HTTP_COOKIE**: When the client sends a request for the first time, the load balancer automatically generates a cookie and inserts the cookie into the response message. Subsequent requests are sent to the backend server that processes the first request. ● **APP_COOKIE**: When the client sends a request for the first time, the backend server that receives the request generates a cookie and inserts the cookie into the response message. Subsequent requests are sent to this backend server. When the protocol of the backend server group is TCP, only **SOURCE_IP** takes effect. When the protocol of the backend server group is HTTP, only **HTTP_COOKIE** or **APP_COOKIE** takes effect.
cookie_name	No	String	Specifies the cookie name. This parameter is mandatory when the sticky session type is **APP_COOKIE**.

Parameter	Mandatory	Type	Description
persistence_timeout	No	Integer	Specifies the sticky session timeout duration in minutes. This parameter is invalid when **type** is set to **APP_COOKIE**. The value range varies depending on the protocol of the backend server group: ● When the protocol of the backend server group is TCP or UDP, the value ranges from **1** to **60**. ● When the protocol of the backend server group is HTTP or HTTPS, the value ranges from **1** to **1440**.

Response

Table 4-91 Response parameters

Parameter	Type	Description
pool	**Pool** object	Specifies the backend server group. For details, see **Table 4-92**.

Table 4-92 pool parameter description

Parameter	Type	Description
id	String	Specifies the ID of the backend server group.
tenant_id	String	Specifies the ID of the project where the backend server group is used. The value contains a maximum of 255 characters.
name	String	Specifies the name of the backend server group. The value contains a maximum of 255 characters.
description	String	Provides supplementary information about the backend server group. The value contains a maximum of 255 characters.

Parameter	Type	Description
protocol	String	Specifies the protocol that the backend server group uses to receive requests. TCP, UDP, and HTTP are supported. When a backend server group is associated with a listener, the relationships between the protocol used by the listener and the protocol of the backend server group are as follows: • When the protocol used by the listener is **UDP**, the protocol of the backend server group must be **UDP**. • When the protocol used by the listener is **TCP**, the protocol of the backend server group must be **TCP**. • When the protocol used by the listener is **HTTP** or **TERMINATED_HTTPS**, the protocol of the backend server group must be **HTTP**.
lb_algorithm	String	Specifies the load balancing algorithm of the backend server group. The value range varies depending on the protocol of the backend server group: • **ROUND_ROBIN**: indicates the weighted round robin algorithm. • **LEAST_CONNECTIONS**: indicates the weighted least connections algorithm. • **SOURCE_IP**: indicates the source IP hash algorithm. When the value is **SOURCE_IP**, the weights of backend servers in the server group are invalid.
members	Array of **Members** objects	Lists the IDs of backend servers in the backend server group. For details, see **Table 4-68**.
healthmonitor_id	String	Specifies the ID of the health check configured for the backend server group.
admin_state_up	Boolean	Specifies the administrative status of the backend server group. This parameter is reserved. The value can be **true** or **false**. • **true**: Enabled • **false**: Disabled

Parameter	Type	Description
listeners	Array of **Listeners** objects	Lists the IDs of listeners associated with the backend server group. For details, see **Table 4-69**.
loadbalancers	Array of **Loadbalancers** objects	Lists the IDs of load balancers associated with the backend server group. For details, see **Table 4-70**.
session_persistence	**SessionPersistence** object	Specifies whether to enable the sticky session feature. For details, see **Table 4-71**. Once sticky session are enabled, requests from the same client are sent to the same backend server during the session. When sticky sessions are disabled, the value is **null**.

Table 4-93 members parameter description

Parameter	Type	Description
id	String	Specifies the ID of the associated backend server.

Table 4-94 listeners parameter description

Parameter	Type	Description
id	String	Specifies the ID of the associated backend server group.

Table 4-95 loadbalancers parameter description

Parameter	Type	Description
id	String	Specifies the ID of the associated load balancer.

Table 4-96 session_persistence parameter description

Parameter	Mandat ory	Type	Description
type	Yes	String	Specifies the sticky session type. The value range varies depending on the protocol of the backend server group: ● **SOURCE_IP**: Requests are distributed based on the client's IP address. Requests from the same IP address are sent to the same backend server. ● **HTTP_COOKIE**: When the client sends a request for the first time, the load balancer automatically generates a cookie and inserts the cookie into the response message. Subsequent requests are sent to the backend server that processes the first request. ● **APP_COOKIE**: When the client sends a request for the first time, the backend server that receives the request generates a cookie and inserts the cookie into the response message. Subsequent requests are sent to this backend server. When the protocol of the backend server group is TCP, only **SOURCE_IP** takes effect. When the protocol of the backend server group is HTTP, only **HTTP_COOKIE** or **APP_COOKIE** takes effect.
cookie_name	No	String	Specifies the cookie name. This parameter is mandatory when the sticky session type is **APP_COOKIE**.

Parameter	Mandatory	Type	Description
persistence_timeout	No	Integer	Specifies the sticky session timeout duration in minutes. This parameter is invalid when **type** is set to **APP_COOKIE**. The value range varies depending on the protocol of the backend server group: ● When the protocol of the backend server group is TCP or UDP, the value ranges from **1** to **60**. ● When the protocol of the backend server group is HTTP or HTTPS, the value ranges from **1** to **1440**.

Example Request

● Example request: Updating the name, description, and load balancing algorithm of a backend server group

```
PUT https://{Endpoint}/v2/1a3e005cf9ce40308c900bcb08e5320c/elb/pools/12ff63af-4127-4074-a251-bcb2ecc53ebe

{
    "pool": {
        "name": "pool2",
        "description": "pool two",
        "lb_algorithm": "LEAST_CONNECTIONS"
    }
}
```

Example Response

● Example response 1

```
{
    "pool": {
        "lb_algorithm": "LEAST_CONNECTIONS",
        "protocol": "HTTP",
        "description": "pool two",
        "admin_state_up": false,
        "tenant_id": "1a3e005cf9ce40308c900bcb08e5320c",
        "session_persistence": {
            "cookie_name": null,
            "type": "HTTP_COOKIE",
            "persistence_timeout": 1440
        },
        "healthmonitor_id": null,
        "listeners": [
            {
                "id": "39de4d56-d663-46e5-85a1-5b9d5fa17829"
            }
        ],
        "members": [],
        "id": "12ff63af-4127-4074-a251-bcb2ecc53ebe",
        "name": "pool2"
    }
}
```

Status Code

For details, see **Status Codes**.

4.3.5 Deleting a Backend Server Group

Function

This API is used to delete a backend server group.

Constraints

Before deleting a backend server group, remove all backend servers, delete the health check, and disassociate forwarding policies from the backend server group by changing the value of **redirect_pool_id** to **null**. For details, see **Updating a Forwarding Policy**.

URI

DELETE /v2/{project_id}/elb/pools/{pool_id}

Table 4-97 Parameter description

Parameter	Mandatory	Type	Description
project_id	Yes	String	Specifies the project ID.
pool_id	Yes	String	Specifies the ID of the backend server group.

Request

None

Response

None

Example Request

● Example request: Deleting a backend server group
  DELETE https://{Endpoint}/v2/1a3e005cf9ce40308c900bcb08e5320c/elb/pools/5a9a3e9e-d1aa-448e-
  af37-a70171f2a332

Example Response

● Example response

None

Status Code

For details, see **Status Codes**.

4.4 Backend Server

4.4.1 Adding a Backend Server

Function

This API is used to add a backend server to a specific backend server group. After a backend server group is added to a listener, traffic is distributed to backend servers in this server group using the specified load balancing algorithm.

Constraints

Two backend servers in a backend server group cannot have the same private IP address or port number.

The subnet specified during server creation must be in the same VPC as the subnet from which the private IP address of the load balancer is assigned.

You can call this API for a maximum of 200 times per minute globally.

URI

POST /v2/{project_id}/elb/pools/{pool_id}/members

Table 4-98 Parameter description

Parameter	Mandatory	Type	Description
project_id	Yes	String	Specifies the project ID.
pool_id	Yes	String	Specifies the ID of the backend server group.

Request

Table 4-99 Parameter description

Parameter	Mandatory	Type	Description
member	Yes	**Member** object	Specifies the backend server. For details, see **Table 4-100**.

Table 4-100 member parameter description

Parameter	Mandatory	Type	Description
tenant_id	No	String	Specifies the ID of the project where the backend server is used. The value must be the same as the value of **project_id** in the token. The value contains a maximum of 255 characters.
name	No	String	Specifies the backend server name. The value is an empty character string by default. The value contains a maximum of 255 characters.
address	Yes	String	Specifies the private IP address of the backend server. This IP address must be in the subnet specified by **subnet_id**. This parameter can be set only to the IP address of the primary NIC, for example, 192.168.3.11. The value contains a maximum of 64 characters.
protocol_port	Yes	Integer	Specifies the port used by the backend server. The port number ranges from 1 to 65535.
subnet_id	Yes	String	Specifies the ID of the subnet where the backend server resides. The private IP address of the backend server is in this subnet. Only IPv4 subnets are supported.

Parameter	Mandatory	Type	Description
admin_state_up	No	Boolean	Specifies the administrative status of the backend server. This parameter is reserved, and the default value is **true**.
weight	No	Integer	Specifies the backend server weight. The value ranges from **0** to **100**. If the value is **0**, the backend server will not accept new requests. The default value is **1**.

Response

Table 4-101 Parameter description

Parameter	Type	Description
member	**Member** object	Specifies the backend server. For details, see **Table 4-102**.

Table 4-102 member parameter description

Parameter	Type	Description
id	String	Specifies the backend server ID. **NOTE** The value of this parameter is not the ID of the server but an ID automatically generated for the backend server that has already associated with the load balancer.
tenant_id	String	Specifies the ID of the project where the backend server is used. The value contains a maximum of 255 characters.
name	String	Specifies the backend server name. The value contains a maximum of 255 characters.

Parameter	Type	Description
address	String	Specifies the private IP address of the backend server. This IP address must be in the subnet specified by **subnet_id**. This parameter can be set only to the IP address of the primary NIC, for example, 192.168.3.11. The value contains a maximum of 64 characters.
protocol_port	Integer	Specifies the port used by the backend server. The port number ranges from 1 to 65535.
subnet_id	String	Specifies the ID of the subnet where the backend server resides. The private IP address of the backend server is in this subnet. IPv6 subnets are not supported.
admin_state_up	Boolean	Specifies the administrative status of the backend server. This parameter is reserved. The value can be **true** or **false**. ● **true**: Enabled ● **false**: Disabled
weight	Integer	Specifies the backend server weight. The value ranges from **0** to **100**. If the value is **0**, the backend server will not accept new requests. The default value is **1**.
operating_status	String	Specifies the health check result of the backend server. The value can be one of the following: ● **ONLINE**: The backend server is running normally. ● **NO_MONITOR**: No health check is configured for the backend server group that the backend server belongs to. ● **OFFLINE**: The cloud server used as the backend server is stopped or does not exist.

Example Request

- Step 1: Query the subnet ID and IP address using the server ID. **device_id** in the request indicates the server ID. Obtain the values of **subnet_id** and **ip_address** of the primary NIC (the port for which **primary_interface** is **true**) in the response body.

  GET https://{VPCEndpoint}/v2.0/ports?device_id=f738c464-b5c2-45df-86c0-7f436620cd54

  Example response

  ```
  {
      "ports": [
          {
              "id": "94971c39-46f0-443a-85e8-31cb7497c78e",
              "name": "",
              "status": "ACTIVE",
              "admin_state_up": true,
              "fixed_ips": [
                  {
                      "subnet_id": "33d8b01a-bbe6-41f4-bc45-78a1d284d503",
                      "ip_address": "192.168.44.11"
                  }
              ],
              "mac_address": "fa:16:3e:5c:d2:57",
              "network_id": "1b76b9c2-9b7e-4ced-81bd-d13f7389d7c9",
              "tenant_id": "04dd36f978800fe22f9bc00bea090736",
              "project_id": "04dd36f978800fe22f9bc00bea090736",
              "device_id": "f738c464-b5c2-45df-86c0-7f436620cd54",
              "device_owner": "compute:xx-xxxx-4a",
              "security_groups": [
                  "a10dfc31-0055-4b84-b36e-1291b918125c",
                  "7a233393-5be2-4dff-8360-1558dd950f6e"
              ],
              "extra_dhcp_opts": [],
              "allowed_address_pairs": [],
              "binding:vnic_type": "normal",
              "binding:vif_details": {
                  "primary_interface": true
              },
              "binding:profile": {},
              "port_security_enabled": true,
              "created_at": "2019-11-12T17:17:51",
              "updated_at": "2019-11-12T17:17:51"
          }
      ]
  }
  ```

- Step 2: Use the subnet ID and IP address obtained in ▪ **Step 1** to add a backend server.

  POST https://{Endpoint}/v2/145483a5107745e9b3d80f956713e6a3/elb/pools/5a9a3e9e-d1aa-448e-af37-a70171f2a332/members

  ```
  {
      "member": {
          "subnet_id": "33d8b01a-bbe6-41f4-bc45-78a1d284d503",
          "protocol_port": 88,
          "name": "member-jy-tt-1",
          "address": "192.168.44.11"
      }
  }
  ```

Example Response

- Example response

  ```
  {
      "member": {
          "name": "member-jy-tt-1",
          "weight": 1,
          "admin_state_up": true,
  ```

```
            "subnet_id": "33d8b01a-bbe6-41f4-bc45-78a1d284d503",
            "tenant_id": "145483a5107745e9b3d80f956713e6a3",

            "address": "192.168.44.11",
            "protocol_port": 88,
            "operating_status": "ONLINE",
            "id": "c0042496-e220-44f6-914b-e6ca33bab503"
        }
    }
```

Status Code

For details, see **Status Codes**.

4.4.2 Querying Backend Servers

Function

This API is used to query backend servers in a specific backend server group. Filter query and pagination query are supported. Unless otherwise specified, exact match is applied.

URI

GET /v2/{project_id}/elb/pools/{pool_id}/members

Table 4-103 Path parameters

Parameter	Mandatory	Type	Description
project_id	Yes	String	Specifies the project ID.
pool_id	Yes	String	Specifies the ID of the backend server group.

Table 4-104 Query parameters

Parameter	Mandatory	Type	Description
marker	No	String	Specifies the ID of the backend server from which pagination query starts, that is, the ID of the last backend server on the previous page. If this parameter is not specified, the first page will be queried. This parameter must be used together with **limit**.

Parameter	Mandatory	Type	Description
limit	No	Integer	Specifies the number of backend servers on each page. If this parameter is not set, all backend servers are queried by default.
page_reverse	No	Boolean	Specifies the page direction. The value can be **true** or **false**, and the default value is **false**. The last page in the list requested with **page_reverse** set to **false** will not contain the "next" link, and the last page in the list requested with **page_reverse** set to **true** will not contain the "previous" link. This parameter must be used with **limit**.
id	No	String	Specifies the backend server ID. **NOTE** The value of this parameter is not the ID of the server but an ID automatically generated for the backend server that has already associated with the load balancer.
tenant_id	No	String	Specifies the ID of the project where the backend server is used. The value contains a maximum of 255 characters.
name	No	String	Specifies the backend server name. The value contains a maximum of 255 characters. **NOTE** The value of this parameter is not the name of server. It is the name automatically generated for the backend server associated with the load balancer.
address	No	String	Specifies the private IP address of the backend server. The value contains a maximum of 64 characters.
protocol_port	No	Integer	Specifies the port used by the backend server.
subnet_id	No	String	Specifies the ID of the subnet where the backend server resides.

Parameter	Mandatory	Type	Description
admin_state_up	No	Boolean	Specifies the administrative status of the backend server. This parameter is reserved, and the default value is **true**.
weight	No	Integer	Specifies the backend server weight.

Request

None

Response

Table 4-105 Parameter description

Parameter	Type	Description
members	Array of **Members** objects	Lists backend servers in the backend server group. For details, see **Table 4-106**.

Table 4-106 members parameter description

Parameter	Type	Description
id	String	Specifies the backend server ID. **NOTE** The value of this parameter is not the ID of the server but an ID automatically generated for the backend server that has already associated with the load balancer.
tenant_id	String	Specifies the ID of the project where the backend server is used. The value contains a maximum of 255 characters.
name	String	Specifies the backend server name. The value contains a maximum of 255 characters.

Parameter	Type	Description
address	String	Specifies the private IP address of the backend server. This IP address must be in the subnet specified by **subnet_id**.
		This parameter can be set only to the IP address of the primary NIC, for example, 192.168.3.11.
		The value contains a maximum of 64 characters.
protocol_port	Integer	Specifies the port used by the backend server. The port number ranges from 1 to 65535.
subnet_id	String	Specifies the ID of the subnet where the backend server resides. The private IP address of the backend server is in this subnet.
		IPv6 subnets are not supported.
admin_state_up	Boolean	Specifies the administrative status of the backend server.
		This parameter is reserved. The value can be **true** or **false**.
		● **true**: Enabled
		● **false**: Disabled
weight	Integer	Specifies the backend server weight. The value ranges from **0** to **100**.
		If the value is **0**, the backend server will not accept new requests. The default value is **1**.
operating_status	String	Specifies the health check result of the backend server. The value can be one of the following:
		● **ONLINE**: The backend server is running normally.
		● **NO_MONITOR**: No health check is configured for the backend server group that the backend server belongs to.
		● **OFFLINE**: The cloud server used as the backend server is stopped or does not exist.

Example Request

- Example request 1: Querying all backend servers
  GET https://{Endpoint}/v2/1a3e005cf9ce40308c900bcb08e5320c/elb/pools/5a9a3e9e-d1aa-448e-af37-a70171f2a332/members

- Example request 2: Querying the backend cloud server whose IP address is 10.0.0.8 and port number is 80
  GET https://{Endpoint}/v2/1a3e005cf9ce40308c900bcb08e5320c/elb/pools/5a9a3e9e-d1aa-448e-af37-a70171f2a332/members?address=10.0.0.8&protocol_port=80

Example Response

- Example response 1

```
{
   "members": [
      {
         "address": "10.0.0.8",
         "admin_state_up": true,
         "id": "9a7aff27-fd41-4ec1-ba4c-3eb92c629313",
         "protocol_port": 80,
         "subnet_id": "013d3059-87a4-45a5-91e9-d721068ae0b2",
         "tenant_id": "1a3e005cf9ce40308c900bcb08e5320c",
         "weight": 1,
         "operating_status": "ONLINE",
         "name": "member-name"
      }
   ]
}
```

- Example response 2

```
{
   "members": [
      {
         "address": "10.0.0.8",
         "admin_state_up": true,
         "id": "9a7aff27-fd41-4ec1-ba4c-3eb92c629313",
         "protocol_port": 80,
         "subnet_id": "013d3059-87a4-45a5-91e9-d721068ae0b2",
         "tenant_id": "1a3e005cf9ce40308c900bcb08e5320c",

         "weight": 1,
         "operating_status": "ONLINE",
         "name": "member-name"
      }
   ]
}
```

Status Code

For details, see **Status Codes**.

4.4.3 Querying Details of a Backend Server

Function

This API is used to query details of a backend server.

URI

GET /v2/{project_id}/elb/pools/{pool_id}/members/{member_id}

Table 4-107 Parameter description

Parameter	Mandatory	Type	Description
project_id	Yes	String	Specifies the project ID.
pool_id	Yes	String	Specifies the ID of the backend server group.

Parameter	Mandatory	Type	Description
member_id	Yes	String	Specifies the backend server ID. **NOTE** ● The value of this parameter is not the ID of the server but an ID automatically generated for the backend server that has already associated with the load balancer. ● You can obtain this value by calling the API described in **Querying Backend Servers**.

Request

None

Response

Table 4-108 Parameter description

Parameter	Type	Description
member	**Member** object	Specifies the backend server. For details, see **Table 4-109**.

Table 4-109 member parameter description

Parameter	Type	Description
id	String	Specifies the backend server ID. **NOTE** The value of this parameter is not the ID of the server but an ID automatically generated for the backend server that has already associated with the load balancer.
tenant_id	String	Specifies the ID of the project where the backend server is used. The value contains a maximum of 255 characters.
name	String	Specifies the backend server name. The value contains a maximum of 255 characters.

Parameter	Type	Description
address	String	Specifies the private IP address of the backend server. This IP address must be in the subnet specified by **subnet_id**. This parameter can be set only to the IP address of the primary NIC, for example, 192.168.3.11. The value contains a maximum of 64 characters.
protocol_port	Integer	Specifies the port used by the backend server. The port number ranges from 1 to 65535.
subnet_id	String	Specifies the ID of the subnet where the backend server resides. The private IP address of the backend server is in this subnet. IPv6 subnets are not supported.
admin_state_up	Boolean	Specifies the administrative status of the backend server. This parameter is reserved. The value can be **true** or **false**. ● **true**: Enabled ● **false**: Disabled
weight	Integer	Specifies the backend server weight. The value ranges from **0** to **100**. If the value is **0**, the backend server will not accept new requests. The default value is **1**.
operating_status	String	Specifies the health check result of the backend server. The value can be one of the following: ● **ONLINE**: The backend server is running normally. ● **NO_MONITOR**: No health check is configured for the backend server group that the backend server belongs to. ● **OFFLINE**: The cloud server used as the backend server is stopped or does not exist.

Example Request

- Example request: Querying details of a backend server
  GET https://{Endpoint}/v2/145483a5107745e9b3d80f956713e6a3/elb/pools/5a9a3e9e-d1aa-448e-af37-a70171f2a332/members/cf024846-7516-4e3a-b0fb-6590322c836f

Example Response

- Example response 1
  ```
  {
      "member": {
          "name": "",
          "weight": 1,
          "admin_state_up": true,
          "subnet_id": "823d5866-6e30-45c2-9b1a-a1ebc3757fdb",
          "tenant_id": "145483a5107745e9b3d80f956713e6a3",
          "address": "192.172.3.100",
          "protocol_port": 8080,
          "operating_status": "ONLINE",
          "id": "e58f5bfa-0e46-4bc5-951c-8473d3e5f24a"
      }
  }
  ```

Status Code

For details, see **Status Codes**.

4.4.4 Updating a Backend Server

Function

This API is used to update a backend server. You can modify its name and weight. You can set a larger weight for backend servers that can receive more traffic.

Constraints

If the provisioning status of the associated load balancer is not **ACTIVE**, the backend server cannot be updated.

URI

PUT /v2/{project_id}/elb/pools/{pool_id}/members/{member_id}

Table 4-110 Parameter description

Parameter	Mandatory	Type	Description
project_id	Yes	String	Specifies the project ID.
pool_id	Yes	String	Specifies the ID of the backend server group.

Parameter	Mandatory	Type	Description
member_id	Yes	String	Specifies the backend server ID. **NOTE** ● The value of this parameter is not the ID of the server but an ID automatically generated for the backend server that has already associated with the load balancer. ● You can obtain this value by calling the API described in **Querying Backend Servers**.

Request

Table 4-111 Parameter description

Parameter	Mandatory	Type	Description
member	Yes	**Member object**	Specifies the backend server. For details, see **Table 4-112**.

Table 4-112 member parameter description

Parameter	Mandatory	Type	Description
name	No	String	Specifies the backend server name. The value contains a maximum of 255 characters.
admin_state_up	No	Boolean	Specifies the administrative status of the backend server. This parameter is reserved, and the default value is **true**.
weight	No	Integer	Specifies the backend server weight. The value ranges from **0** to **100**. If the value is **0**, the backend server will not accept new requests. The default value is **1**.

Response

Table 4-113 Parameter description

Parameter	Type	Description
member	**Member** object	Specifies the backend server. For details, see **Table 4-114**.

Table 4-114 **member** parameter description

Parameter	Type	Description
id	String	Specifies the backend server ID. **NOTE** The value of this parameter is not the ID of the server but an ID automatically generated for the backend server that has already associated with the load balancer.
tenant_id	String	Specifies the ID of the project where the backend server is used. The value contains a maximum of 255 characters.
name	String	Specifies the backend server name. The value contains a maximum of 255 characters.
address	String	Specifies the private IP address of the backend server. This IP address must be in the subnet specified by **subnet_id**. This parameter can be set only to the IP address of the primary NIC, for example, 192.168.3.11. The value contains a maximum of 64 characters.
protocol_port	Integer	Specifies the port used by the backend server. The port number ranges from 1 to 65535.
subnet_id	String	Specifies the ID of the subnet where the backend server resides. The private IP address of the backend server is in this subnet. IPv6 subnets are not supported.

Parameter	Type	Description
admin_state_up	Boolean	Specifies the administrative status of the backend server. This parameter is reserved. The value can be **true** or **false**. ● **true**: Enabled ● **false**: Disabled
weight	Integer	Specifies the backend server weight. The value ranges from **0** to **100**. If the value is **0**, the backend server will not accept new requests. The default value is **1**.
operating_status	String	Specifies the health check result of the backend server. The value can be one of the following: ● **ONLINE**: The backend server is running normally. ● **NO_MONITOR**: No health check is configured for the backend server group that the backend server belongs to. ● **OFFLINE**: The cloud server used as the backend server is stopped or does not exist.

Example Request

● Example request: Updating the name and weight of a backend server

```
PUT https://{Endpoint}/v2/145483a5107745e9b3d80f956713e6a3/elb/pools/5a9a3e9e-d1aa-448e-
af37-a70171f2a332/members/c0042496-e220-44f6-914b-e6ca33bab503

{
   "member": {
      "name": "member create test",
      "weight": 10
   }
}
```

Example Response

● Example response

```
{
   "member": {
      "name": "member-jy-tt-1",
      "weight": 1,
      "admin_state_up": true,
      "subnet_id": "33d8b01a-bbe6-41f4-bc45-78a1d284d503",
      "tenant_id": "145483a5107745e9b3d80f956713e6a3",
      "address": "192.168.44.11",
      "protocol_port": 88,
      "operating_status": "ONLINE",
      "id": "c0042496-e220-44f6-914b-e6ca33bab503"
```

```
        }
    }
```

Status Code

For details, see **Status Codes**.

4.4.5 Removing a Backend Server

Function

This API is used to remove a backend server by its ID.

Constraints

After you remove a backend server, new connections to this server will not be established. However, long connections that have been established will be maintained.

URI

DELETE /v2/{project_id}/elb/pools/{pool_id}/members/{member_id}

Table 4-115 Parameter description

Parameter	Mandatory	Type	Description
project_id	Yes	String	Specifies the project ID.
pool_id	Yes	String	Specifies the ID of the backend server group.
member_id	Yes	String	Specifies the backend server ID. **NOTE** ● The value of this parameter is not the ID of the server but an ID automatically generated for the backend server that has already associated with the load balancer. ● You can obtain this value by calling the API described in **Querying Backend Servers**.

Request

None

Response

None

Example Request

- Example request: Removing a backend server

  DELETE https://{Endpoint}/v2/145483a5107745e9b3d80f956713e6a3/elb/pools/5a9a3e9e-d1aa-448e-af37-a70171f2a332/members/cf024846-7516-4e3a-b0fb-6590322c836f

Example Response

- Example response

  None

Status Code

For details, see **Status Codes**.

4.5 Health Check

4.5.1 Configuring a Health Check

Function

This API is used to configure a health check for a backend server group to check the status of backend servers. If the health check result is **OFFLINE**, backend servers are considered unhealthy. You need to check the server configuration.

Constraints

- The security groups must have rules that allow access by 100.125.0.0/16.
- If UDP is used for the health check, the protocol of the backend server group must be UDP.

URI

POST /v2/{project_id}/elb/healthmonitors

Table 4-116 Parameter description

Parameter	Mandatory	Type	Description
project_id	Yes	String	Specifies the project ID.

Request

Table 4-117 Parameter description

Parameter	Mandatory	Type	Description
healthmonitor	Yes	**Healthmonitor** object	Specifies the health check. For details, see **Table 4-118**.

Table 4-118 healthmonitor parameter description

Parameter	Mandatory	Type	Description
tenant_id	No	String	Specifies the ID of the project where the health check is performed. The value must be the same as the value of **project_id** in the token. The value contains a maximum of 255 characters.
name	No	String	Specifies the health check name. The value contains a maximum of 255 characters.
delay	Yes	Integer	Specifies the maximum time between health checks in the unit of second. The value ranges from **1** to **50**.
max_retries	Yes	Integer	Specifies the maximum number of retries. The value ranges from **1** to **10**.
pool_id	Yes	String	Specifies the ID of the backend server group. Only one health check can be configured for each backend server group.
admin_state_up	No	Boolean	Specifies the administrative status of the health check. This parameter is reserved, and the default value is **true**.

Parameter	Mandatory	Type	Description
timeout	Yes	Integer	Specifies the health check timeout duration in the unit of second. The value ranges from **1** to **50**. **NOTE** You are advised to set the value less than that of parameter **delay**.
type	Yes	String	Specifies the health check protocol. The value can be **TCP**, **UDP_CONNECT**, or **HTTP**.
monitor_port	No	Integer	Specifies the health check port. The port number ranges from 1 to 65535. The value is left blank by default, indicating that the port of the backend server is used as the health check port.
domain_name	No	String	Specifies the domain name of HTTP requests during the health check. This parameter takes effect only when the value of **type** is set to **HTTP**. The value is left blank by default, indicating that the private IP address of the load balancer is used as the destination address of HTTP requests. The value can contain only digits, letters, hyphens (-), and periods (.) and must start with a digit or letter, for example, www.test.com. The value contains a maximum of 100 characters.

Parameter	Mandatory	Type	Description
url_path	No	String	Specifies the HTTP request path for the health check. The default value is **/**. The value starts with a slash (/). This parameter takes effect only when the value of **type** is set to **HTTP**. An example value is **/test**. The value contains a maximum of 255 characters.
expected_codes	No	String	Specifies the expected HTTP status code. The following options are available: A single value, such as **200** A list of values, such as **200,202** A value range, such as **200–204** This parameter takes effect only when the value of **type** is set to **HTTP**. The value contains a maximum of 64 characters. **NOTE** 　This parameter is reserved.
http_method	No	String	Specifies the HTTP request method. The default value is **GET**. The value can be **GET**, **HEAD**, **POST**, **PUT**, **DELETE**, **TRACE**, **OPTIONS**, **CONNECT**, or **PATCH**. This parameter takes effect only when the value of **type** is set to **HTTP**. **NOTE** 　This parameter is reserved.

Response

Table 4-119 Parameter description

Parameter	Type	Description
healthmonitor	**Healthmonit or** object	Specifies the health check. For details, see **Table 4-120**.

Table 4-120 healthmonitor parameter description

Parameter	Type	Description
id	String	Specifies the health check ID.
tenant_id	String	Specifies the ID of the project where the health check is performed.
name	String	Specifies the health check name.
delay	Integer	Specifies the maximum time between health checks in the unit of second. The value ranges from **1** to **50**.
max_retries	Integer	Specifies the number of consecutive health checks when the health check result of a backend server changes from **OFFLINE** to **ONLINE**. The value ranges from **1** to **10**.
pools	Array of **Pools** objects	Lists the IDs of backend server groups associated with the health check. For details, see **Table 4-121**.
admin_state_u p	Boolean	Specifies the administrative status of the health check. This parameter is reserved. The value can be **true** or **false**. ● **true**: Enabled ● **false**: Disabled
timeout	Integer	Specifies the health check timeout duration in the unit of second. The value ranges from **1** to **50**. **NOTE** You are advised to set the value less than that of parameter **delay**.
type	String	Specifies the health check protocol. The value can be **TCP**, **UDP_CONNECT**, or **HTTP**.

Parameter	Type	Description
monitor_port	Integer	Specifies the health check port. The port number ranges from 1 to 65535. The value is left blank by default, indicating that the port of the backend server is used as the health check port.
expected_codes	String	Specifies the expected HTTP status code. The following options are available: A single value, such as **200** A list of values, such as **200,202** A value range, such as **200–204** This parameter takes effect only when the value of **type** is set to **HTTP**. Currently, this parameter is not supported and is fixed at **200**.
domain_name	String	Specifies the domain name of HTTP requests during the health check. This parameter takes effect only when the value of **type** is set to **HTTP**. The value is left blank by default, indicating that the private IP address of the load balancer is used as the destination address of HTTP requests. The value can contain only digits, letters, hyphens (-), and periods (.) and must start with a digit or letter, for example: www.test.com.
url_path	String	Specifies the HTTP request path for the health check. The default value is **/**. The value starts with a slash (/). This parameter takes effect only when the value of **type** is set to **HTTP**. An example value is **/test**.
http_method	String	Specifies the HTTP request method. The default value is **GET**. The value can be **GET**, **HEAD**, **POST**, **PUT**, **DELETE**, **TRACE**, **OPTIONS**, **CONNECT**, or **PATCH**. This parameter takes effect only when the value of **type** is set to **HTTP**. **NOTE** This parameter is reserved.

Table 4-121 pools parameter description

Parameter	Mandatory	Type	Description
id	Yes	String	Specifies the ID of the backend server group.

Example Request

- Example request: Configuring a health check
POST https://{Endpoint}/v2/145483a5107745e9b3d80f956713e6a3/elb/healthmonitors

```
{
  "healthmonitor": {
    "admin_state_up": true,
    "pool_id": "bb44bffb-05d9-412c-9d9c-b189d9e14193",
    "domain_name": "www.test.com",
    "delay": 10,
    "max_retries": 10,
    "timeout": 10,
    "type": "HTTP"
  }
}
```

Example Response

- Example response 1
```
{
  "healthmonitor": {
    "name": "",
    "admin_state_up": true,
    "tenant_id": "145483a5107745e9b3d80f956713e6a3",
    "domain_name": "www.test.com",
    "delay": 10,
    "expected_codes": "200",
    "max_retries": 10,
    "http_method": "GET",
    "timeout": 10,
    "pools": [
      {
        "id": "bb44bffb-05d9-412c-9d9c-b189d9e14193"
      }
    ],
    "url_path": "/",
    "type": "HTTP",
    "id": "2dca3867-98c5-4cde-8f2c-b89ae6bd7e36",
    "monitor_port": 112
  }
}
```

Status Code

For details, see **Status Codes**.

4.5.2 Querying Health Checks

Function

This API is used to query all the health checks. Filter query and pagination query are supported. Unless otherwise specified, exact match is applied.

URI

GET /v2/{project_id}/elb/healthmonitors

Table 4-122 Path parameters

Parameter	Mandatory	Type	Description
project_id	Yes	String	Specifies the project ID.

Table 4-123 Query parameters

Parameter	Mandatory	Type	Description
marker	No	String	Specifies the ID of the health check from which pagination query starts, that is, the ID of the last health check on the previous page. This parameter must be used with **limit**.
limit	No	Integer	Specifies the number of health checks on each page. If this parameter is not set, all health checks are queried by default.
page_reverse	No	Boolean	Specifies the page direction. The value can be **true** or **false**, and the default value is **false**. The last page in the list requested with **page_reverse** set to **false** will not contain the "next" link, and the last page in the list requested with **page_reverse** set to **true** will not contain the "previous" link. This parameter must be used with **limit**.
id	No	String	Specifies the health check ID.
tenant_id	No	String	Specifies the ID of the project where the health check is performed. The value contains a maximum of 255 characters.
name	No	String	Specifies the health check name. The value contains a maximum of 255 characters.
delay	No	Integer	Specifies the maximum time between health checks in the unit of second. The value ranges from **1** to **50**.

Parameter	Manda tory	Type	Description
max_retries	No	Integer	Specifies the number of consecutive health checks when the health check result of a backend server changes from **OFFLINE** to **ONLINE**. The value ranges from **1** to **10**.
admin_state_up	No	Boolea n	Specifies the administrative status of the health check. The value can be **true** or **false**. The default value is **true**. ● **true**: indicates that the health check function is enabled. ● **false**: indicates that the health check function is disabled.
timeout	No	Integer	Specifies the health check timeout duration in the unit of second. The value ranges from **1** to **50**. **NOTE** You are advised to set the value less than that of parameter **delay**.
type	No	String	Specifies the health check protocol. The value can be **TCP**, **UDP_CONNECT**, or **HTTP**.
monitor_port	No	Integer	Specifies the port used for the health check. The value is left blank by default, indicating that the port of the backend server is used as the health check port.
expected_codes	No	String	Specifies the expected HTTP status code. The following options are available: A single value, such as **200** A list of values, such as **200,202** A value range, such as **200–204** This parameter takes effect only when the value of **type** is set to **HTTP**. The value contains a maximum of 64 characters. **NOTE** This parameter is reserved.

Parameter	Mandatory	Type	Description
domain_name	No	String	Specifies the domain name of HTTP requests during the health check. This parameter takes effect only when the value of **type** is set to **HTTP**. The value is left blank by default, indicating that the private IP address of the load balancer is used as the destination address of HTTP requests. The value can contain only digits, letters, hyphens (-), and periods (.) and must start with a digit or letter, for example: www.test.com. The value contains a maximum of 100 characters.
url_path	No	String	Specifies the HTTP request path for the health check. The default value is **/**. The value starts with a slash (/). This parameter takes effect only when the value of **type** is set to **HTTP**. An example value is **/test**. The value contains a maximum of 255 characters.
http_method	No	String	Specifies the HTTP request method. The default value is **GET**. The value can be **GET**, **HEAD**, **POST**, **PUT**, **DELETE**, **TRACE**, **OPTIONS**, **CONNECT**, or **PATCH**. This parameter takes effect only when the value of **type** is set to **HTTP**. **NOTE** This parameter is reserved.

Request

None

Response

Table 4-124 Parameter description

Parameter	Type	Description
healthmonitors	Array of **Healthmonitors** objects	Lists the health checks. For details, see **Table 4-125**.

Table 4-125 healthmonitor parameter description

Parameter	Type	Description
id	String	Specifies the health check ID.
tenant_id	String	Specifies the ID of the project where the health check is performed.
name	String	Specifies the health check name.
delay	Integer	Specifies the maximum time between health checks in the unit of second. The value ranges from **1** to **50**.
max_retries	Integer	Specifies the number of consecutive health checks when the health check result of a backend server changes from **OFFLINE** to **ONLINE**. The value ranges from **1** to **10**.
pools	Array of **Pools** objects	Lists the IDs of backend server groups associated with the health check. For details, see **Table 4-121**.
admin_state_up	Boolean	Specifies the administrative status of the health check. This parameter is reserved. The value can be **true** or **false**. ● **true**: Enabled ● **false**: Disabled
timeout	Integer	Specifies the health check timeout duration in the unit of second. The value ranges from **1** to **50**. **NOTE** You are advised to set the value less than that of parameter **delay**.
type	String	Specifies the health check protocol. The value can be **TCP**, **UDP_CONNECT**, or **HTTP**.

Parameter	Type	Description
monitor_port	Integer	Specifies the health check port. The port number ranges from 1 to 65535. The value is left blank by default, indicating that the port of the backend server is used as the health check port.
expected_codes	String	Specifies the expected HTTP status code. The following options are available: A single value, such as **200** A list of values, such as **200,202** A value range, such as **200–204** This parameter takes effect only when the value of **type** is set to **HTTP**. Currently, this parameter is not supported and is fixed at **200**.
domain_name	String	Specifies the domain name of HTTP requests during the health check. This parameter takes effect only when the value of **type** is set to **HTTP**. The value is left blank by default, indicating that the private IP address of the load balancer is used as the destination address of HTTP requests. The value can contain only digits, letters, hyphens (-), and periods (.) and must start with a digit or letter, for example: www.test.com.
url_path	String	Specifies the HTTP request path for the health check. The default value is **/**. The value starts with a slash (/). This parameter takes effect only when the value of **type** is set to **HTTP**. An example value is **/test**.
http_method	String	Specifies the HTTP request method. The default value is **GET**. The value can be **GET**, **HEAD**, **POST**, **PUT**, **DELETE**, **TRACE**, **OPTIONS**, **CONNECT**, or **PATCH**. This parameter takes effect only when the value of **type** is set to **HTTP**. **NOTE** This parameter is reserved.

Table 4-126 pools parameter description

Parameter	Mandatory	Type	Description
id	Yes	String	Specifies the ID of the backend server group.

Example Request

- Example request 1: Querying all health checks
  GET https://{Endpoint}/v2/601240b9c5c94059b63d484c92cfe308/elb/healthmonitors

- Example request 2: Querying HTTP health checks
  GET https://{Endpoint}/v2/601240b9c5c94059b63d484c92cfe308/elb/healthmonitors?type=HTTP

Example Response

- Example response 1

```
{
    "healthmonitors": [
        {
            "monitor_port": null,
            "name": "",
            "admin_state_up": true,
            "tenant_id": "601240b9c5c94059b63d484c92cfe308",

            "domain_name": null,
            "delay": 5,
            "expected_codes": "200",
            "max_retries": 3,
            "http_method": "GET",
            "timeout": 10,
            "pools": [
                {
                    "id": "caef8316-6b65-4676-8293-cf41fb63cc2a"
                }
            ],
            "url_path": "/",
            "type": "HTTP",
            "id": "1b587819-d619-49c1-9101-fe72d8b361ef"
        }
    ]
}
```

- Example response 2

```
{
    "healthmonitors": [
        {
            "monitor_port": null,
            "name": "",
            "admin_state_up": true,
            "tenant_id": "601240b9c5c94059b63d484c92cfe308",

            "domain_name": null,
            "delay": 5,
            "expected_codes": "200",
            "max_retries": 3,
            "http_method": "GET",
            "timeout": 10,
            "pools": [
                {
                    "id": "caef8316-6b65-4676-8293-cf41fb63cc2a"
                }
            ],
```

```
        "url_path": "/",
        "type": "HTTP",
        "id": "1b587819-d619-49c1-9101-fe72d8b361ef"
      }
    ]
  }
```

Status Code

For details, see **Status Codes**.

4.5.3 Querying Health Check Details

Function

This API is used to query details about a health check.

URI

GET /v2/{project_id}/elb/healthmonitors/{healthmonitor_id}

Table 4-127 Parameter description

Parameter	Mandatory	Type	Description
project_id	Yes	String	Specifies the project ID.
healthmonitor_id	Yes	String	Specifies the health check ID.

Request

None

Response

Table 4-128 Parameter description

Parameter	Type	Description
healthmonitor	**Healthmonitor** object	Specifies the health check. For details, see **Table 4-129**.

Table 4-129 healthmonitor parameter description

Parameter	Type	Description
id	String	Specifies the health check ID.

Parameter	Type	Description
tenant_id	String	Specifies the ID of the project where the health check is performed.
name	String	Specifies the health check name.
delay	Integer	Specifies the maximum time between health checks in the unit of second. The value ranges from **1** to **50**.
max_retries	Integer	Specifies the number of consecutive health checks when the health check result of a backend server changes from **OFFLINE** to **ONLINE**. The value ranges from **1** to **10**.
pools	Array of **Pools** objects	Lists the IDs of backend server groups associated with the health check. For details, see **Table 4-121**.
admin_state_up	Boolean	Specifies the administrative status of the health check. This parameter is reserved. The value can be **true** or **false**. ● **true**: Enabled ● **false**: Disabled
timeout	Integer	Specifies the health check timeout duration in the unit of second. The value ranges from **1** to **50**. **NOTE** You are advised to set the value less than that of parameter **delay**.
type	String	Specifies the health check protocol. The value can be **TCP**, **UDP_CONNECT**, or **HTTP**.
monitor_port	Integer	Specifies the health check port. The port number ranges from 1 to 65535. The value is left blank by default, indicating that the port of the backend server is used as the health check port.

Parameter	Type	Description
expected_codes	String	Specifies the expected HTTP status code. The following options are available: A single value, such as **200** A list of values, such as **200,202** A value range, such as **200–204** This parameter takes effect only when the value of **type** is set to **HTTP**. Currently, this parameter is not supported and is fixed at **200**.
domain_name	String	Specifies the domain name of HTTP requests during the health check. This parameter takes effect only when the value of **type** is set to **HTTP**. The value is left blank by default, indicating that the private IP address of the load balancer is used as the destination address of HTTP requests. The value can contain only digits, letters, hyphens (-), and periods (.) and must start with a digit or letter, for example: www.test.com.
url_path	String	Specifies the HTTP request path for the health check. The default value is **/**. The value starts with a slash (/). This parameter takes effect only when the value of **type** is set to **HTTP**. An example value is **/test**.
http_method	String	Specifies the HTTP request method. The default value is **GET**. The value can be **GET**, **HEAD**, **POST**, **PUT**, **DELETE**, **TRACE**, **OPTIONS**, **CONNECT**, or **PATCH**. This parameter takes effect only when the value of **type** is set to **HTTP**. **NOTE** This parameter is reserved.

Table 4-130 pools parameter description

Parameter	Mandatory	Type	Description
id	Yes	String	Specifies the ID of the backend server group.

Example Request

- Example request: Querying details of a health check
  ```
  GET https://{endpoint}/v2/145483a5107745e9b3d80f956713e6a3/elb/healthmonitors/
  b7633ade-24dc-4d72-8475-06aa22be5412
  ```

Example Response

- Example response 1
  ```
  {
    "healthmonitor": {
      "name": "",
      "admin_state_up": true,
      "tenant_id": "145483a5107745e9b3d80f956713e6a3",
      "domain_name": null,
      "delay": 10,
      "expected_codes": "200",
      "max_retries": 10,
      "http_method": "GET",
      "timeout": 10,
      "pools": [
        {
          "id": "bb44bffb-05d9-412c-9d9c-b189d9e14193"
        }
      ],
      "url_path": "/",
      "type": "HTTP",
      "id": "61c24cba-19bb-45c1-a013-7565e5f98872",
      "monitor_port": 112
    }
  }
  ```

Status Code

For details, see **Status Codes**.

4.5.4 Updating a Health Check

Function

This API is used to update a health check.

Constraints

If **provisioning_status** of the load balancer for which the health check is configured is not **ACTIVE**, the health check cannot be updated.

URI

PUT /v2/{project_id}/elb/healthmonitors/{healthmonitor_id}

Table 4-131 Parameter description

Parameter	Mandatory	Type	Description
project_id	Yes	String	Specifies the project ID.
healthmonitor_id	Yes	String	Specifies the health check ID.

Request

Table 4-132 Parameter description

Parameter	Mandatory	Type	Description
healthmonitor	Yes	**Healthmonitor** object	Specifies the health check. For details, see **Table 4-133**.

Table 4-133 healthmonitor parameter description

Parameter	Mandatory	Type	Description
name	No	String	Specifies the health check name. The value contains a maximum of 255 characters.
delay	No	Integer	Specifies the maximum time between health checks in the unit of second. The value ranges from **1** to **50**.
max_retries	No	Integer	Specifies the number of consecutive health checks when the health check result of a backend server changes from **OFFLINE** to **ONLINE**. The value ranges from **1** to **10**.
admin_state_up	No	Boolean	Specifies the administrative status of the health check. This parameter is reserved, and the default value is **true**.
timeout	No	Integer	Specifies the health check timeout duration in the unit of second. The value ranges from **1** to **50**. **NOTE** You are advised to set the value less than that of parameter **delay**.

Parameter	Mandat ory	Type	Description
type	No	String	Specifies the health check protocol. The value can be **TCP**, **UDP_CONNECT**, or **HTTP**.
monitor_port	No	Integer	Specifies the health check port. The port number ranges from 1 to 65535. The value is left blank by default, indicating that the port of the backend server is used as the health check port.
expected_code s	No	String	Specifies the expected HTTP status code. The following options are available: A single value, such as **200** A list of values, such as **200,202** A value range, such as **200–204** This parameter takes effect only when the value of **type** is set to **HTTP**.
domain_name	No	String	Specifies the domain name of HTTP requests during the health check. This parameter takes effect only when the value of **type** is set to **HTTP**. The value is left blank by default, indicating that the private IP address of the load balancer is used as the destination address of HTTP requests. The value can contain only digits, letters, hyphens (-), and periods (.) and must start with a digit or letter, for example: www.test.com. The value contains a maximum of 100 characters.
url_path	No	String	Specifies the HTTP request path for the health check. The default value is **/**. The value starts with a slash (/). This parameter takes effect only when the value of **type** is set to **HTTP**. An example value is **/test**. The value contains a maximum of 255 characters.

Parameter	Mandatory	Type	Description
http_method	No	String	Specifies the HTTP request method. The default value is **GET**. The value can be **GET**, **HEAD**, **POST**, **PUT**, **DELETE**, **TRACE**, **OPTIONS**, **CONNECT**, or **PATCH**. This parameter takes effect only when the value of **type** is set to **HTTP**. NOTE This parameter is reserved.

Response

Table 4-134 Parameter description

Parameter	Type	Description
healthmonitor	**Healthmonitor** object	Specifies the health check. For details, see **Table 4-135**.

Table 4-135 healthmonitor parameter description

Parameter	Type	Description
id	String	Specifies the health check ID.
tenant_id	String	Specifies the ID of the project where the health check is performed.
name	String	Specifies the health check name.
delay	Integer	Specifies the maximum time between health checks in the unit of second. The value ranges from **1** to **50**.
max_retries	Integer	Specifies the number of consecutive health checks when the health check result of a backend server changes from **OFFLINE** to **ONLINE**. The value ranges from **1** to **10**.
pools	Array of **Pools** objects	Lists the IDs of backend server groups associated with the health check. For details, see **Table 4-121**.

Parameter	Type	Description
admin_state_up	Boolean	Specifies the administrative status of the health check. This parameter is reserved. The value can be **true** or **false**. ● **true**: Enabled ● **false**: Disabled
timeout	Integer	Specifies the health check timeout duration in the unit of second. The value ranges from **1** to **50**. NOTE You are advised to set the value less than that of parameter **delay**.
type	String	Specifies the health check protocol. The value can be **TCP**, **UDP_CONNECT**, or **HTTP**.
monitor_port	Integer	Specifies the health check port. The port number ranges from 1 to 65535. The value is left blank by default, indicating that the port of the backend server is used as the health check port.
expected_codes	String	Specifies the expected HTTP status code. The following options are available: A single value, such as **200** A list of values, such as **200,202** A value range, such as **200–204** This parameter takes effect only when the value of **type** is set to **HTTP**. Currently, this parameter is not supported and is fixed at **200**.
domain_name	String	Specifies the domain name of HTTP requests during the health check. This parameter takes effect only when the value of **type** is set to **HTTP**. The value is left blank by default, indicating that the private IP address of the load balancer is used as the destination address of HTTP requests. The value can contain only digits, letters, hyphens (-), and periods (.) and must start with a digit or letter, for example: www.test.com.

Parameter	Type	Description
url_path	String	Specifies the HTTP request path for the health check. The default value is **/**. The value starts with a slash (/). This parameter takes effect only when the value of **type** is set to **HTTP**. An example value is **/test**.
http_method	String	Specifies the HTTP request method. The default value is **GET**. The value can be **GET**, **HEAD**, **POST**, **PUT**, **DELETE**, **TRACE**, **OPTIONS**, **CONNECT**, or **PATCH**. This parameter takes effect only when the value of **type** is set to **HTTP**. **NOTE** This parameter is reserved.

Table 4-136 pools parameter description

Parameter	Mandatory	Type	Description
id	Yes	String	Specifies the ID of the backend server group.

Example Request

- Example request: Updating a health check
  ```
  PUT https://{endpoint}/v2/145483a5107745e9b3d80f956713e6a3/elb/healthmonitors/
  b7633ade-24dc-4d72-8475-06aa22be5412

  {
   "healthmonitor": {
     "delay": 15,
     "name": "health-xx",
     "timeout": 12
    }
  }
  ```

Example Response

- Example response
  ```
  {
   "healthmonitor": {
     "name": "health-xx",
     "admin_state_up": true,
     "tenant_id": "145483a5107745e9b3d80f956713e6a3",
     "domain_name": null,
     "delay": 15,
     "expected_codes": "200",
     "max_retries": 10,
     "http_method": "GET",
  ```

```
      "timeout": 12,
      "pools": [
        {
          "id": "bb44bffb-05d9-412c-9d9c-b189d9e14193"
        }
      ],
      "url_path": "/",
      "type": "HTTP",
      "id": "2dca3867-98c5-4cde-8f2c-b89ae6bd7e36",
      "monitor_port": 112
    }
}
```

Status Code

For details, see **Status Codes**.

4.5.5 Deleting a Health Check

Function

This API is used to delete a health check.

Constraints

If **provisioning_status** of the load balancer for which the health check is configured is not **ACTIVE**, the health check cannot be deleted.

URI

DELETE /v2/{project_id}/elb/healthmonitors/{healthmonitor_id}

Table 4-137 Parameter description

Parameter	Mandatory	Type	Description
project_id	Yes	String	Specifies the project ID.
healthmonitor_id	Yes	String	Specifies the health check ID.

Request

None

Response

None

Example Request

- Example request: Deleting a health check
  DELETE https://{Endpoint}/v2/145483a5107745e9b3d80f956713e6a3/elb/healthmonitors/
  b7633ade-24dc-4d72-8475-06aa22be5412

Example Response

- Example response

  None

Status Code

For details, see **Status Codes**.

4.6 Forwarding Policy

4.6.1 Adding a Forwarding Policy

Function

This API is used to add a forwarding policy. The listener and forwarding policy determine how traffic is forwarded to backend servers.

- By matching the URL or domain name specified in the forwarding policy when **action** is set to **REDIRECT_TO_POOL**, the load balancer distributes the traffic to backend servers in a specific backend server group.

- When **action** is set to **REDIRECT_TO_LISTENER**, the HTTP listener is redirected to an HTTPS listener, and requests are routed by the HTTPS listener.

Constraints

Currently, only redirects from an HTTP listener to an HTTPS listener are supported. When **action** is set to **REDIRECT_TO_LISTENER**, the listener specified by **listener_id** can only be an HTTP listener, and the listener specified by **redirect_listener_id** can only be an HTTPS listener.

The load balancer of the HTTPS listener to which traffic is redirected must be the same as that of the HTTP listener.

URI

POST /v2/{project_id}/elb/l7policies

Table 4-138 Parameter description

Parameter	Mandatory	Type	Description
project_id	Yes	String	Specifies the project ID.

Request

Table 4-139 Parameter description

Parameter	Man dato ry	Type	Description
l7policy	Yes	**L7policy** object	Specifies the forwarding policy. For details, see **Table 4-140**.

Table 4-140 l7policy parameter description

Parameter	Man dator y	Type	Description
tenant_id	No	String	Specifies the ID of the project where the forwarding policy is used. The value must be the same as the value of **project_id** in the token. The value contains a maximum of 255 characters.
name	No	String	Specifies the forwarding policy name. The value contains a maximum of 255 characters.
admin_state_up	No	Boolean	Specifies the administrative status of the forwarding policy. This parameter is reserved, and the default value is **true**.
description	No	String	Provides supplementary information about the forwarding policy. The value contains a maximum of 255 characters.
listener_id	Yes	String	Specifies the ID of the listener for which the forwarding policy is added. - When **action** is set to **REDIRECT_TO_POOL**, forwarding policies can be added to a listener with **protocol** set to **HTTP** or **TERMINATED_HTTPS**. - When **action** is set to **REDIRECT_TO_LISTENER**, forwarding policies can be added to a listener with **protocol** set to **HTTP**.

Parameter	Man dator y	Type	Description
action	Yes	String	Specifies whether requests are forwarded to another backend server group or redirected to an HTTPS listener. The value range varies depending on the protocol of the backend server group: ● **REDIRECT_TO_POOL**: Requests are forwarded to the backend server group specified by **redirect_pool_id**. ● **REDIRECT_TO_LISTENER**: Requests are redirected from the HTTP listener specified by **listener_id** to the HTTPS listener specified by **redirect_listener_id**.
redirect_pool_id	No	String	Specifies the ID of the backend server group to which traffic is forwarded. The default value is **null**. This parameter is mandatory when **action** is set to **REDIRECT_TO_POOL**. This parameter cannot be specified when **action** is set to **REDIRECT_TO_LISTENER**. The backend server group must meet the following requirements: ● Cannot be the default backend server group of the listener. ● Cannot be the backend server group used by forwarding policies of other listeners.
redirect_listener_i d	No	String	Specifies the ID of the listener to which the traffic is redirected. The default value is **null**. This parameter is mandatory when **action** is set to **REDIRECT_TO_LISTENER**. This parameter cannot be specified when **action** is set to **REDIRECT_TO_POOL**. The listener must meet the following requirements: ● Can only be an HTTPS listener. ● Can only be a listener of the same load balancer.

Parameter	Mandatory	Type	Description
redirect_url	No	String	Specifies the URL to which traffic is redirected. The default value is **null**. This parameter is reserved. The value contains a maximum of 255 characters.
position	No	Integer	Specifies the forwarding priority. The value ranges from **1** to **100**. The default value is **100**. This parameter is reserved.
rules	No	Array of **Rules** objects	Lists the forwarding rules of the forwarding policy. For details, see **Table 4-141**. The list contains a maximum of two rules, and the **type** parameter of each rule must be unique.

Table 4-141 rules parameter description

Parameter	Type	Mandatory	Description
admin_state_up	Boolean	No	Specifies the administrative status of the forwarding rule. This parameter is reserved, and the default value is **true**.
type	String	Yes	Specifies the match type of a forwarding rule. The value range varies depending on the protocol of the backend server group: • **HOST_NAME**: matches the domain name in the request. • **PATH**: matches the path in the request. The match type of forwarding rules in a forwarding policy must be unique.

Parameter	Type	Mandatory	Description
compare_type	String	Yes	Specifies the match mode. The options are as follows: When **type** is set to **HOST_NAME**, the value of this parameter can only be the following: ● **EQUAL_TO**: indicates exact match. When **type** is set to **PATH**, the value of this parameter can be one of the following: ● **REGEX**: indicates regular expression match. ● **STARTS_WITH**: indicates prefix match. ● **EQUAL_TO**: indicates exact match.
invert	Boolean	No	Specifies whether reverse matching is supported. The value can be **true** or **false**. The default value is **false**. This parameter is reserved.
key	String	No	Specifies the key of the match content. The default value is **null**. This parameter is reserved.
value	String	Yes	Specifies the value of the match content. The value cannot contain spaces. ● When **type** is set to **HOST_NAME**, the value can contain a maximum of 100 characters that contain only letters, digits, hyphens (-), and periods (.), and must start with a letter or digit. ● When **type** is set to **PATH**, the value can contain a maximum of 128 characters. When **compare_type** is set to **STARTS_WITH** or **EQUAL_TO**, the value must start with a slash (/) and can contain only letters, digits, and special characters _~';@^-%#&$.*+?,=!:| \/()[]{}

Response

Table 4-142 Parameter description

Parameter	Type	Description
l7policy	**L7policy** object	Specifies the forwarding policy. For details, see **Table 4-143**.

Table 4-143 **l7policy** parameter description

Parameter	Type	Description
id	String	Specifies the forwarding policy ID.
tenant_id	String	Specifies the ID of the project where the forwarding policy is used.
name	String	Specifies the forwarding policy name.
admin_state_up	Boolean	Specifies the administrative status of the forwarding policy. This parameter is reserved. The value can be **true** or **false**. ● **true**: Enabled ● **false**: Disabled
description	String	Provides supplementary information about the forwarding policy.
listener_id	String	Specifies the ID of the listener to which the forwarding policy is added.
action	String	Specifies whether requests are forwarded to another backend server group or redirected to an HTTPS listener. The value range varies depending on the protocol of the backend server group: ● **REDIRECT_TO_POOL**: Requests are forwarded to the backend server group specified by **redirect_pool_id**. ● **REDIRECT_TO_LISTENER**: Requests are redirected from the HTTP listener specified by **listener_id** to the HTTPS listener specified by **redirect_listener_id**.
redirect_pool_id	String	Specifies the ID of the backend server group to which traffic is forwarded.
redirect_listener_id	String	Specifies the ID of the listener to which the traffic is redirected.

Parameter	Type	Description
redirect_url	String	Specifies the URL to which traffic is redirected. This parameter is reserved.
rules	Array of **Rules** objects	Lists the forwarding rules of the forwarding policy. For details, see **Table 4-144**.
position	Integer	Specifies the forwarding priority. The value ranges from **1** to **100**. The default value is **100**. This parameter is reserved.
provisioning_status	String	This parameter is reserved, and its value can only be **ACTIVE**. It specifies the provisioning status of the forwarding policy.

Table 4-144 rules parameter description

Parameter	Type	Description
id	String	Specifies the ID of the associated forwarding rule.

Example Request

- Example request 1: Adding a forwarding policy
  POST https://{Endpoint}/v2/573d73c9f90e48d0bddfa0eb202b25c2/elb/l7policies

```
{
    "l7policy": {
        "name": "niubiao_yaqing_api-2",
        "listener_id": "3e24a3ca-11e5-4aa3-abd4-61ba0a8a18f1",
        "action": "REDIRECT_TO_POOL",
        "redirect_pool_id": "6460f13a-76de-43c7-b776-4fefc06a676e",
        "rules": [
            {
                "type": "PATH",
                "compare_type": "EQUAL_TO",
                "value": "/test"
            },
            {
                "type": "HOST_NAME",
                "compare_type": "EQUAL_TO",
                "value": "www.test.com"
            }
        ]
    }
}
```

Example Response

- Example response 1

```
{
    "l7policy": {
        "redirect_pool_id": "6460f13a-76de-43c7-b776-4fefc06a676e",
        "description": "",
        "admin_state_up": true,
        "rules": [
            {
                "id": "742600d9-2a14-4808-af69-336883dbb590"
            },
            {
                "id": "3251ed77-0d52-412b-9310-733636bb3fbf"
            }
        ],
        "tenant_id": "573d73c9f90e48d0bddfa0eb202b25c2",
        "listener_id": "3e24a3ca-11e5-4aa3-abd4-61ba0a8a18f1",
        "redirect_url": null,
        "redirect_listener_id": null,
        "action": "REDIRECT_TO_POOL",
        "position": 100,
        "provisioning_status": "ACTIVE",

        "id": "65d6e115-f179-4bcd-9bbb-1484e5f8ee81",
        "name": "niubiao_yaqing-_api-2"
    }
}
```

Status Code

For details, see **Status Codes**.

4.6.2 Querying Forwarding Policies

Function

This API is used to query all the forwarding policies. Filter query and pagination query are supported. Unless otherwise specified, exact match is applied.

URI

GET /v2/{project_id}/elb/l7policies

Table 4-145 Path parameters

Parameter	Mandatory	Type	Description
project_id	Yes	String	Specifies the project ID.

Table 4-146 Query parameters

Parameter	Mandatory	Type	Description
marker	No	String	Specifies the ID of the forwarding policy from which pagination query starts, that is, the ID of the last forwarding policy on the previous page. This parameter must be used together with **limit**.
limit	No	Integer	Specifies the number of forwarding policies on each page. If this parameter is not set, all forwarding policies are queried by default.
page_reverse	No	Boolean	Specifies the page direction. The value can be **true** or **false**, and the default value is **false**. The last page in the list requested with **page_reverse** set to **false** will not contain the "next" link, and the last page in the list requested with **page_reverse** set to **true** will not contain the "previous" link. This parameter must be used together with **limit**.
id	No	String	Specifies the forwarding policy ID.
tenant_id	No	String	Specifies the ID of the project where the forwarding policy is used. The value contains a maximum of 255 characters.
name	No	String	Specifies the forwarding policy name. The value contains a maximum of 255 characters.
admin_state_up	No	Boolean	Specifies the administrative status of the forwarding policy. This parameter is reserved, and the default value is **true**.
description	No	String	Provides supplementary information about the forwarding policy. The value contains a maximum of 255 characters.

Parameter	Mandatory	Type	Description
listener_id	No	String	Specifies the ID of the listener to which the forwarding policy is added.
action	No	String	Specifies whether requests are forwarded to another backend server group or redirected to an HTTPS listener. The value range varies depending on the protocol of the backend server group: ● **REDIRECT_TO_POOL**: Requests are forwarded to the backend server group specified by **redirect_pool_id**. ● **REDIRECT_TO_LISTENER**: Requests are redirected from the HTTP listener specified by **listener_id** to the HTTPS listener specified by **redirect_listener_id**.
redirect_pool_id	No	String	Specifies the ID of the backend server group to which traffic is forwarded.
redirect_listener_id	No	String	Specifies the ID of the listener to which the traffic is redirected.
redirect_url	No	String	Specifies the URL to which traffic is redirected. This parameter is reserved. The value contains a maximum of 255 characters.
position	No	Integer	Specifies the forwarding priority. The value ranges from **1** to **100**. The default value is **100**. This parameter is reserved.
provisioning_status	No	String	This parameter is reserved, and its value can only be **ACTIVE**. It specifies the provisioning status of the forwarding policy.

Parameter	Manda tory	Type	Description
enterprise_project_id	No	String	Specifies the enterprise project ID. Enterprise projects are used for fine-grained authentication. ● If **listener_id** is passed, the ID of the enterprise project to which the load balancer belongs is used for authentication. ● If **listener_id** is not passed, the ID of the enterprise project to which the forwarding policy belongs is used for authentication. ● If neither **listener_id** nor **enterprise_project_id** is passed, fine-grained authentication is performed. The **elb:loadbalancers:list** permissions must be assigned to the user group.

Request

None

Response

Table 4-147 Response parameters

Parameter	Type	Description
l7policies	Array of **L7policies** objects	Lists the forwarding policies. For details, see **Table 4-148**.

Table 4-148 l7policy parameter description

Parameter	Type	Description
id	String	Specifies the forwarding policy ID.
tenant_id	String	Specifies the ID of the project where the forwarding policy is used.
name	String	Specifies the forwarding policy name.

Parameter	Type	Description
admin_state_up	Boolean	Specifies the administrative status of the forwarding policy. This parameter is reserved. The value can be **true** or **false**. ● **true**: Enabled ● **false**: Disabled
description	String	Provides supplementary information about the forwarding policy.
listener_id	String	Specifies the ID of the listener to which the forwarding policy is added.
action	String	Specifies whether requests are forwarded to another backend server group or redirected to an HTTPS listener. The value range varies depending on the protocol of the backend server group: ● **REDIRECT_TO_POOL**: Requests are forwarded to the backend server group specified by **redirect_pool_id**. ● **REDIRECT_TO_LISTENER**: Requests are redirected from the HTTP listener specified by **listener_id** to the HTTPS listener specified by **redirect_listener_id**.
redirect_pool_id	String	Specifies the ID of the backend server group to which traffic is forwarded.
redirect_listener_id	String	Specifies the ID of the listener to which the traffic is redirected.
redirect_url	String	Specifies the URL to which traffic is redirected. This parameter is reserved.
rules	Array of **Rules** objects	Lists the forwarding rules of the forwarding policy. For details, see **Table 4-144**.
position	Integer	Specifies the forwarding priority. The value ranges from **1** to **100**. The default value is **100**. This parameter is reserved.
provisioning_status	String	This parameter is reserved, and its value can only be **ACTIVE**. It specifies the provisioning status of the forwarding policy.

Table 4-149 rules parameter description

Parameter	Type	Description
id	String	Specifies the ID of the associated forwarding rule.

Example Request

- Example request 1: Querying all forwarding policies
  GET https://{Endpoint}/v2/a31d2bdcf7604c0faaddb058e1e08819/elb/l7policies

- Example request 2: Querying forwarding policies through which requests are forwarded to the backend server group
  GET https://{Endpoint}/v2/a31d2bdcf7604c0faaddb058e1e08819/elb/l7policies?
  action=REDIRECT_TO_POOL

Example Response

- Example response 1

```
{
    "l7policies": [
        {
            "redirect_pool_id": "431a03eb-81bb-408e-ae37-7ce19023692b",
            "redirect_listener_id": null,
            "description": "",
            "admin_state_up": true,
            "rules": [
                {
                    "id": "67d8a8fa-b0dd-4bd4-a85b-671db19b2ef3"
                },
                {
                    "id": "f02b3bca-69d2-4335-a3fa-a8054e996213"
                }
            ],
            "tenant_id": "a31d2bdcf7604c0faaddb058e1e08819",
            "listener_id": "26058b64-6185-4e06-874e-4bd68b7633d0",
            "redirect_url": null,
            "action": "REDIRECT_TO_POOL",
            "position": 2,
            "provisioning_status": "ACTIVE",
            "id": "5ae0e1e7-5f0f-47a1-b39f-5d4c428a1586",
            "name": ""
        },
        {
            "redirect_pool_id": "59eebd7b-c68f-4f8a-aa7f-e062e84c0690",
            "redirect_listener_id": null,
            "description": "",
            "admin_state_up": true,
            "rules": [
                {
                    "id": "f4499f48-de3d-4efe-926d-926aa4d6aaf5"
                }
            ],
            "tenant_id": "a31d2bdcf7604c0faaddb058e1e08819",
            "listener_id": "e1310063-00de-4867-ab55-ccac4d9db364",
            "redirect_url": null,
            "action": "REDIRECT_TO_POOL",
            "position": 1,
            "provisioning_status": "ACTIVE",
            "id": "6cfd9d89-1d7e-4d84-ae1f-a8c5ff126f72",
            "name": ""
        }
    ]
}
```

- Example response 2

```
{
  "l7policies": [
    {
      "redirect_pool_id": "431a03eb-81bb-408e-ae37-7ce19023692b",
      "redirect_listener_id": null,
      "description": "",
      "admin_state_up": true,
      "rules": [
        {
          "id": "67d8a8fa-b0dd-4bd4-a85b-671db19b2ef3"
        },
        {
          "id": "f02b3bca-69d2-4335-a3fa-a8054e996213"
        }
      ],
      "tenant_id": "a31d2bdcf7604c0faaddb058e1e08819",
      "listener_id": "26058b64-6185-4e06-874e-4bd68b7633d0",
      "redirect_url": null,
      "action": "REDIRECT_TO_POOL",
      "position": 2,
      "provisioning_status": "ACTIVE",
      "id": "5ae0e1e7-5f0f-47a1-b39f-5d4c428a1586",
      "name": ""
    },
    {
      "redirect_pool_id": "59eebd7b-c68f-4f8a-aa7f-e062e84c0690",
      "redirect_listener_id": null,
      "description": "",
      "admin_state_up": true,
      "rules": [
        {
          "id": "f4499f48-de3d-4efe-926d-926aa4d6aaf5"
        }
      ],
      "tenant_id": "a31d2bdcf7604c0faaddb058e1e08819",

      "listener_id": "e1310063-00de-4867-ab55-ccac4d9db364",
      "redirect_url": null,
      "action": "REDIRECT_TO_POOL",
      "position": 1,
      "provisioning_status": "ACTIVE",
      "id": "6cfd9d89-1d7e-4d84-ae1f-a8c5ff126f72",
      "name": ""
    }
  ]
}
```

Status Code

For details, see **Status Codes**.

4.6.3 Querying Details of a Forwarding Policy

Function

This API is used to query details about a forwarding policy.

URI

GET /v2/{project_id}/elb/l7policies/{l7policy_id}

Table 4-150 Parameter description

Parameter	Mandatory	Type	Description
project_id	Yes	String	Specifies the project ID.
l7policy_id	Yes	String	Specifies the forwarding policy ID.

Request

None

Response

Table 4-151 Parameter description

Parameter	Type	Description
l7policy	**L7policy** object	Specifies the forwarding policy. For details, see **Table 4-152**.

Table 4-152 l7policy parameter description

Parameter	Type	Description
id	String	Specifies the forwarding policy ID.
tenant_id	String	Specifies the ID of the project where the forwarding policy is used.
name	String	Specifies the forwarding policy name.
admin_state_up	Boolean	Specifies the administrative status of the forwarding policy. This parameter is reserved. The value can be **true** or **false**. • **true**: Enabled • **false**: Disabled
description	String	Provides supplementary information about the forwarding policy.
listener_id	String	Specifies the ID of the listener to which the forwarding policy is added.

Parameter	Type	Description
action	String	Specifies whether requests are forwarded to another backend server group or redirected to an HTTPS listener. The value range varies depending on the protocol of the backend server group: ● **REDIRECT_TO_POOL**: Requests are forwarded to the backend server group specified by **redirect_pool_id**. ● **REDIRECT_TO_LISTENER**: Requests are redirected from the HTTP listener specified by **listener_id** to the HTTPS listener specified by **redirect_listener_id**.
redirect_pool_id	String	Specifies the ID of the backend server group to which traffic is forwarded.
redirect_listener_id	String	Specifies the ID of the listener to which the traffic is redirected.
redirect_url	String	Specifies the URL to which traffic is redirected. This parameter is reserved.
rules	Array of **Rules** objects	Lists the forwarding rules of the forwarding policy. For details, see **Table 4-144**.
position	Integer	Specifies the forwarding priority. The value ranges from **1** to **100**. The default value is **100**. This parameter is reserved.
provisioning_status	String	This parameter is reserved, and its value can only be **ACTIVE**. It specifies the provisioning status of the forwarding policy.

Table 4-153 rules parameter description

Parameter	Type	Description
id	String	Specifies the ID of the associated forwarding rule.

Example Request

● Example request: Querying details of a forwarding policy
```
GET https://{Endpoint}/v2/a31d2bdcf7604c0faaddb058e1e08819/elb/l7policies/5ae0e1e7-5f0f-47a1-b39f-5d4c428a1586
```

Example Response

- Example response 1

```
{
    "l7policy": {
        "redirect_pool_id": "431a03eb-81bb-408e-ae37-7ce19023692b",
        "redirect_listener_id": null,
        "description": "",
        "admin_state_up": true,
        "rules": [
            {
                "id": "67d8a8fa-b0dd-4bd4-a85b-671db19b2ef3"
            },
            {
                "id": "f02b3bca-69d2-4335-a3fa-a8054e996213"
            }
        ],
        "tenant_id": "a31d2bdcf7604c0faaddb058e1e08819",
        "listener_id": "26058b64-6185-4e06-874e-4bd68b7633d0",
        "redirect_url": null,
        "provisioning_status": "ACTIVE",
        "action": "REDIRECT_TO_POOL",
        "position": 1,
        "id": "5ae0e1e7-5f0f-47a1-b39f-5d4c428a1586",
        "name": "l7policy-garry-1"
    }
}
```

Status Code

For details, see **Status Codes**.

4.6.4 Updating a Forwarding Policy

Function

This API is used to update a forwarding policy.

URI

PUT /v2/{project_id}/elb/l7policies/{l7policy_id}

Table 4-154 Parameter description

Parameter	Mandatory	Type	Description
project_id	Yes	String	Specifies the project ID.
l7policy_id	Yes	String	Specifies the forwarding policy ID.

Request

Table 4-155 Parameter description

Parameter	Mandatory	Type	Description
l7policy	Yes	**L7policy** object	Specifies the forwarding policy. For details, see **Table 4-156**.

Table 4-156 l7policy parameter description

Parameter	Mand atory	Type	Description
name	No	String	Specifies the forwarding policy name. The value contains a maximum of 255 characters.
description	No	String	Provides supplementary information about the forwarding policy. The value contains a maximum of 255 characters.
redirect_pool _id	No	String	Specifies the ID of the backend server group to which traffic is forwarded. The default value is **null**. This parameter is mandatory when **action** is set to **REDIRECT_TO_POOL**. This parameter cannot be specified when **action** is set to **REDIRECT_TO_LISTENER**. The backend server group must meet the following requirements: ● Cannot be the default backend server group of the listener. ● Cannot be the backend server group used by forwarding policies of other listeners.

Parameter	Mand atory	Type	Description
redirect_liste ner_id	No	String	Specifies the ID of the listener to which the traffic is redirected. The default value is **null**. This parameter is mandatory when **action** is set to **REDIRECT_TO_LISTENER**. This parameter cannot be specified when **action** is set to **REDIRECT_TO_POOL**. The listener must meet the following requirements: ● Can only be an HTTPS listener. ● Can only be a listener of the same load balancer.
admin_state _up	No	Boolean	Specifies the administrative status of the forwarding policy. This parameter is reserved, and the default value is **true**.

Response

Table 4-157 Parameter description

Parameter	Type	Description
l7policy	**L7policy** object	Specifies the forwarding policy. For details, see **Table 4-158**.

Table 4-158 l7policy parameter description

Parameter	Type	Description
id	String	Specifies the forwarding policy ID.
tenant_id	String	Specifies the ID of the project where the forwarding policy is used.
name	String	Specifies the forwarding policy name.
admin_state_up	Boolean	Specifies the administrative status of the forwarding policy. This parameter is reserved. The value can be **true** or **false**. ● **true**: Enabled ● **false**: Disabled

Parameter	Type	Description
description	String	Provides supplementary information about the forwarding policy.
listener_id	String	Specifies the ID of the listener to which the forwarding policy is added.
action	String	Specifies whether requests are forwarded to another backend server group or redirected to an HTTPS listener. The value range varies depending on the protocol of the backend server group: ● **REDIRECT_TO_POOL**: Requests are forwarded to the backend server group specified by **redirect_pool_id**. ● **REDIRECT_TO_LISTENER**: Requests are redirected from the HTTP listener specified by **listener_id** to the HTTPS listener specified by **redirect_listener_id**.
redirect_pool_id	String	Specifies the ID of the backend server group to which traffic is forwarded.
redirect_listener_id	String	Specifies the ID of the listener to which the traffic is redirected.
redirect_url	String	Specifies the URL to which traffic is redirected. This parameter is reserved.
rules	Array of **Rules** objects	Lists the forwarding rules of the forwarding policy. For details, see **Table 4-144**.
position	Integer	Specifies the forwarding priority. The value ranges from **1** to **100**. The default value is **100**. This parameter is reserved.
provisioning_status	String	This parameter is reserved, and its value can only be **ACTIVE**. It specifies the provisioning status of the forwarding policy.

Table 4-159 rules parameter description

Parameter	Type	Description
id	String	Specifies the ID of the associated forwarding rule.

Example Request

- Example request: Updating a forwarding policy

```
PUT https://{Endpoint}/v2/a31d2bdcf7604c0faaddb058e1e08819/elb/l7policies/5ae0e1e7-5f0f-47a1-
b39f-5d4c428a1586

{
   "l7policy": {
      "name": "test"
   }
}
```

Example Response

- Example response

```
{
   "l7policy": {
      "redirect_pool_id": "431a03eb-81bb-408e-ae37-7ce19023692b",
      "redirect_listener_id": null,
      "description": "",
      "admin_state_up": true,
      "rules": [
         {
            "id": "67d8a8fa-b0dd-4bd4-a85b-671db19b2ef3"
         },
         {
            "id": "f02b3bca-69d2-4335-a3fa-a8054e996213"
         }
      ],

      "tenant_id": "a31d2bdcf7604c0faaddb058e1e08819",

      "listener_id": "26058b64-6185-4e06-874e-4bd68b7633d0",
      "redirect_url": null,
      "action": "REDIRECT_TO_POOL",
      "position": 2,
      "provisioning_status": "ACTIVE",
      "id": "5ae0e1e7-5f0f-47a1-b39f-5d4c428a1586",
      "name": "test"
   }
}
```

Status Code

For details, see **Status Codes**.

4.6.5 Deleting a Forwarding Policy

Function

This API is used to delete a forwarding policy.

URI

DELETE /v2/{project_id}/elb/l7policies/{l7policy_id}

Table 4-160 Parameter description

Parameter	Mandatory	Type	Description
project_id	Yes	String	Specifies the project ID.
l7policy_id	Yes	String	Specifies the forwarding policy ID.

Request

None

Response

None

Example Request

- Example request: Deleting a forwarding policy
  DELETE https://{Endpoint}/v2/a31d2bdcf7604c0faaddb058e1e08819/elb/l7policies/
  5ae0e1e7-5f0f-47a1-b39f-5d4c428a1586

Example Response

- Example response
  None

Status Code

For details, see **Status Codes**.

4.7 Forwarding Rule

4.7.1 Adding a Forwarding Rule

Function

This API is used to add a forwarding rule. After you add a forwarding rule, the load balancer matches the domain name and path in the request and distributes the traffic to the backend server group specified by **redirect_pool_id** of the associated forwarding policy.

Constraints

The match type of forwarding rules in a forwarding policy must be unique.

URI

POST /v2/{project_id}/elb/l7policies/{l7policy_id}/rules

Table 4-161 Parameter description

Parameter	Mandatory	Type	Description
project_id	Yes	String	Specifies the project ID.
l7policy_id	Yes	String	Specifies the forwarding policy ID.

Request

Table 4-162 Parameter description

Parameter	Mandatory	Type	Description
rule	Yes	**Rule** object	Specifies the forwarding rule. For details, see **Table 4-163**.

Table 4-163 rule parameter description

Parameter	Mandatory	Type	Description
tenant_id	No	String	Specifies the ID of the project where the forwarding rule is used. The value must be the same as the value of **project_id** in the token. The value contains a maximum of 255 characters.
admin_state_up	No	Boolean	Specifies the administrative status of the forwarding rule. This parameter is reserved, and the default value is **true**.

Parameter	Mandatory	Type	Description
type	Yes	String	Specifies the match type of a forwarding rule. The value range varies depending on the protocol of the backend server group: ● **HOST_NAME**: matches the domain name in the request. ● **PATH**: matches the path in the request. The match type of forwarding rules in a forwarding policy must be unique.
compare_type	Yes	String	Specifies the match mode. The options are as follows: When **type** is set to **HOST_NAME**, the value of this parameter can only be the following: ● **EQUAL_TO**: indicates exact match. When **type** is set to **PATH**, the value of this parameter can be one of the following: ● **REGEX**: indicates regular expression match. ● **STARTS_WITH**: indicates prefix match. ● **EQUAL_TO**: indicates exact match.
invert	No	Boolean	Specifies whether reverse matching is supported. The value can be **true** or **false**. The default value is **false**. This parameter is reserved.
key	No	String	Specifies the key of the match content. The default value is **null**. This parameter is reserved. The value contains a maximum of 255 characters.

Parameter	Mandatory	Type	Description
value	Yes	String	Specifies the value of the match content. The value cannot contain spaces. The value contains a maximum of 128 characters. • When **type** is set to **HOST_NAME**, the value can contain a maximum of 100 characters that contain only letters, digits, hyphens (-), and periods (.), and must start with a letter or digit. • When **type** is set to **PATH**, the value can contain a maximum of 128 characters. When **compare_type** is set to **STARTS_WITH** or **EQUAL_TO**, the value must start with a slash (/) and can contain only letters, digits, and special characters _~';@^-%#&$.*+?,=!:| \/()[]{}

Response

Table 4-164 Parameter description

Parameter	Type	Description
rule	**Rule** object	Specifies the forwarding rule. For details, see **Table 4-165**.

Table 4-165 rule parameter description

Parameter	Type	Description
id	String	Specifies the forwarding rule ID.
tenant_id	String	Specifies the ID of the project where the forwarding rule is used. The value contains a maximum of 255 characters.

Parameter	Type	Description
admin_state_up	Boolean	Specifies the administrative status of the forwarding rule. This parameter is reserved. The value can be **true** or **false**. ● **true**: Enabled ● **false**: Disabled
type	String	Specifies the match type of a forwarding rule. The value range varies depending on the protocol of the backend server group: ● **HOST_NAME**: matches the domain name in the request. ● **PATH**: matches the path in the request.
compare_type	String	Specifies the match mode. The options are as follows: When **type** is set to **HOST_NAME**, the value of this parameter can only be the following: ● **EQUAL_TO**: indicates exact match. When **type** is set to **PATH**, the value of this parameter can be one of the following: ● **REGEX**: indicates regular expression match. ● **STARTS_WITH**: indicates prefix match. ● **EQUAL_TO**: indicates exact match.
invert	Boolean	Specifies whether reverse matching is supported. The value can be **true** or **false**. The default value is **false**. This parameter is reserved.
key	String	Specifies the key of the match content. The default value is **null**. This parameter is reserved. The value contains a maximum of 255 characters.

Parameter	Type	Description
value	String	Specifies the value of the match content.
		The value contains a maximum of 128 characters.
		● When **type** is set to **HOST_NAME**, the value can contain a maximum of 100 characters that contain only letters, digits, hyphens (-), and periods (.), and must start with a letter or digit.
		● When **type** is set to **PATH**, the value can contain a maximum of 128 characters. When **compare_type** is set to **STARTS_WITH** or **EQUAL_TO**, the value must start with a slash (/) and can contain only letters, digits, and special characters _~';@^-%#&$.*+?,=!:| \/()[]{}
provisioning_status	String	This parameter is reserved, and its value can only be **ACTIVE**.
		It specifies the provisioning status of the forwarding rule.

Example Request

● Example request: Adding a forwarding rule

POST https://{endpoint}/v2/a31d2bdcf7604c0faaddb058e1e08819/elb/l7policies/5ae0e1e7-5f0f-47a1-b39f-5d4c428a1586/rules

```
{
    "rule": {
        "compare_type": "EQUAL_TO",
        "type": "PATH",
        "value": "/bbb.html"
    }
}
```

Example Response

● Example response

```
{
    "rule": {
        "compare_type": "EQUAL_TO",
        "admin_state_up": true,
        "provisioning_status": "ACTIVE",
        "tenant_id": "a31d2bdcf7604c0faaddb058e1e08819",

        "invert": false,
        "value": "/bbb.html",
        "key": null,
        "type": "PATH",
        "id": "c6f457b8-bf6f-45d7-be5c-a3226945b7b1"
    }
}
```

Status Code

For details, see **Status Codes**.

4.7.2 Querying Forwarding Rules

Function

This API is used to query forwarding rules. Filter query and pagination query are supported. Unless otherwise specified, exact match is applied.

Constraints

Parameters **marker**, **limit**, and **page_reverse** are used for pagination query. Parameters **marker** and **page_reverse** take effect only when they are used together with parameter **limit**.

URI

GET /v2/{project_id}/elb/l7policies/{l7policy_id}/rules

Table 4-166 Path parameters

Parameter	Mandatory	Type	Description
project_id	Yes	String	Specifies the project ID.
l7policy_id	Yes	String	Specifies the forwarding policy ID.

Table 4-167 Query parameters

Parameter	Mandatory	Type	Description
marker	No	String	Specifies the ID of the forwarding rule from which pagination query starts, that is, the ID of the last forwarding rule on the previous page. This parameter must be used with **limit**.
limit	No	Integer	Specifies the number of forwarding rules on each page. If this parameter is not set, all forwarding rules are queried by default.

Parameter	Mandatory	Type	Description
page_reverse	No	Boolean	Specifies the page direction. The value can be **true** or **false**, and the default value is **false**. The last page in the list requested with **page_reverse** set to **false** will not contain the "next" link, and the last page in the list requested with **page_reverse** set to **true** will not contain the "previous" link. This parameter must be used with **limit**.
id	No	String	Specifies the forwarding rule ID.
tenant_id	No	String	Specifies the ID of the project where the forwarding rule is used. The value contains a maximum of 255 characters.
admin_state_up	No	Boolean	Specifies the administrative status of the forwarding rule. This parameter is reserved, and the default value is **true**.
type	No	String	Specifies the match type of a forwarding rule. The value range varies depending on the protocol of the backend server group: ● **HOST_NAME**: matches the domain name in the request. ● **PATH**: matches the path in the request. The match type of forwarding rules in a forwarding policy must be unique.

Parameter	Mand atory	Type	Description
compare_type	No	String	Specifies the match mode. The options are as follows: When **type** is set to **HOST_NAME**, the value of this parameter can only be the following: ● **EQUAL_TO**: indicates exact match. When **type** is set to **PATH**, the value of this parameter can be one of the following: ● **REGEX**: indicates regular expression match. ● **STARTS_WITH**: indicates prefix match. ● **EQUAL_TO**: indicates exact match.
invert	No	Bool ean	Specifies whether reverse matching is supported. The value can be **true** or **false**. The default value is **false**. This parameter is reserved.
key	No	String	Specifies the key of the match content. The default value is **null**. This parameter is reserved. The value contains a maximum of 255 characters.
value	No	String	Specifies the value of the match content. The value contains a maximum of 128 characters. ● When **type** is set to **HOST_NAME**, the value can contain a maximum of 100 characters that contain only letters, digits, hyphens (-), and periods (.), and must start with a letter or digit. ● When **type** is set to **PATH**, the value can contain a maximum of 128 characters. When **compare_type** is set to **STARTS_WITH** or **EQUAL_TO**, the value must start with a slash (/) and can contain only letters, digits, and special characters _~';@^-%#&$.* +?,=!:| \/()[]{}

Parameter	Mand atory	Type	Description
provisioning_status	No	Strin g	This parameter is reserved, and its value can only be **ACTIVE**. It specifies the provisioning status of the forwarding rule.

Request

None

Response

Table 4-168 Parameter description

Parameter	Type	Description
rules	Array of **Rules** objects	Lists the forwarding rules. For details, see **Table 4-169**.

Table 4-169 rules parameter description

Parameter	Type	Description
id	String	Specifies the forwarding rule ID.
tenant_id	String	Specifies the ID of the project where the forwarding rule is used. The value contains a maximum of 255 characters.
admin_state_up	Boolean	Specifies the administrative status of the forwarding rule. This parameter is reserved. The value can be **true** or **false**. **true**: Enabled **false**: Disabled
type	String	Specifies the match type of a forwarding rule. The value range varies depending on the protocol of the backend server group: **HOST_NAME**: matches the domain name in the request. **PATH**: matches the path in the request.

Parameter	Type	Description
compare_type	String	Specifies the match mode. The options are as follows: When **type** is set to **HOST_NAME**, the value of this parameter can only be the following: ● **EQUAL_TO**: indicates exact match. When **type** is set to **PATH**, the value of this parameter can be one of the following: ● **REGEX**: indicates regular expression match. ● **STARTS_WITH**: indicates prefix match. ● **EQUAL_TO**: indicates exact match.
invert	Boolean	Specifies whether reverse matching is supported. The value can be **true** or **false**. The default value is **false**. This parameter is reserved.
key	String	Specifies the key of the match content. The default value is **null**. This parameter is reserved. The value contains a maximum of 255 characters.
value	String	Specifies the value of the match content. The value contains a maximum of 128 characters. ● When **type** is set to **HOST_NAME**, the value can contain a maximum of 100 characters that contain only letters, digits, hyphens (-), and periods (.), and must start with a letter or digit. ● When **type** is set to **PATH**, the value can contain a maximum of 128 characters. When **compare_type** is set to **STARTS_WITH** or **EQUAL_TO**, the value must start with a slash (/) and can contain only letters, digits, and special characters _~';@^-%#&$.*+?,=!:| \/()[]{}
provisioning_status	String	This parameter is reserved, and its value can only be **ACTIVE**. It specifies the provisioning status of the forwarding rule.

Example Request

- Example request: Querying all forwarding rules of a specific forwarding policy

```
GET https://{Endpoint}/v2/a31d2bdcf7604c0faaddb058e1e08819/elb/l7policies/5ae0e1e7-5f0f-47a1-
b39f-5d4c428a1586/rules
```

Example Response

- Example response

```
{
    "rules": [
        {
            "compare_type": "EQUAL_TO",
            "provisioning_status": "ACTIVE",
            "admin_state_up": true,
            "tenant_id": "a31d2bdcf7604c0faaddb058e1e08819",

            "invert": false,
            "value": "www.test.com",
            "key": null,
            "type": "HOST_NAME",
            "id": "67d8a8fa-b0dd-4bd4-a85b-671db19b2ef3"
        },
        {
            "compare_type": "EQUAL_TO",
            "provisioning_status": "ACTIVE",
            "admin_state_up": true,
            "tenant_id": "a31d2bdcf7604c0faaddb058e1e08819",

            "invert": false,
            "value": "/aaa.html",
            "key": null,
            "type": "PATH",
            "id": "f02b3bca-69d2-4335-a3fa-a8054e996213"
        }
    ]
}
```

Status Code

For details, see **Status Codes**.

4.7.3 Querying Details of a Forwarding Rule

Function

This API is used to query details about a forwarding rule.

URI

GET /v2/{project_id}/elb/l7policies/{l7policy_id}/rules/{l7rule_id}

Table 4-170 Parameter description

Parameter	Mandatory	Type	Description
project_id	Yes	String	Specifies the project ID.

Parameter	Mandatory	Type	Description
l7policy_id	Yes	String	Specifies the forwarding policy ID.
l7rule_id	Yes	String	Specifies the forwarding rule ID.

Request

None

Response

Table 4-171 Parameter description

Parameter	Type	Description
rule	**Rule** object	Specifies the forwarding rule. For details, see **Table 4-172**.

Table 4-172 rule parameter description

Parameter	Type	Description
id	String	Specifies the forwarding rule ID.
tenant_id	String	Specifies the ID of the project where the forwarding rule is used. The value contains a maximum of 255 characters.
admin_state_up	Boolean	Specifies the administrative status of the forwarding rule. This parameter is reserved. The value can be **true** or **false**. ● **true**: Enabled ● **false**: Disabled
type	String	Specifies the match type of a forwarding rule. The value range varies depending on the protocol of the backend server group: ● **HOST_NAME**: matches the domain name in the request. ● **PATH**: matches the path in the request.

Parameter	Type	Description
compare_type	String	Specifies the match mode. The options are as follows: When **type** is set to **HOST_NAME**, the value of this parameter can only be the following: ● **EQUAL_TO**: indicates exact match. When **type** is set to **PATH**, the value of this parameter can be one of the following: ● **REGEX**: indicates regular expression match. ● **STARTS_WITH**: indicates prefix match. ● **EQUAL_TO**: indicates exact match.
invert	Boolean	Specifies whether reverse matching is supported. The value can be **true** or **false**. The default value is **false**. This parameter is reserved.
key	String	Specifies the key of the match content. The default value is **null**. This parameter is reserved. The value contains a maximum of 255 characters.
value	String	Specifies the value of the match content. The value contains a maximum of 128 characters. ● When **type** is set to **HOST_NAME**, the value can contain a maximum of 100 characters that contain only letters, digits, hyphens (-), and periods (.), and must start with a letter or digit. ● When **type** is set to **PATH**, the value can contain a maximum of 128 characters. When **compare_type** is set to **STARTS_WITH** or **EQUAL_TO**, the value must start with a slash (/) and can contain only letters, digits, and special characters _~';@^-%#&$.*+?,=!:| \/()[]{}
provisioning_stat us	String	This parameter is reserved, and its value can only be **ACTIVE**. It specifies the provisioning status of the forwarding rule.

Example Request

- Example request: Querying details of a forwarding rule
  GET https://{Endpoint}/v2/a31d2bdcf7604c0faaddb058e1e08819/elb/l7policies/5ae0e1e7-5f0f-47a1-b39f-5d4c428a1586/rules/67d8a8fa-b0dd-4bd4-a85b-671db19b2ef3

Example Response

- Example response 1

```
{
    "rule": {
        "compare_type": "EQUAL_TO",
        "provisioning_status": "ACTIVE",
        "admin_state_up": true,
        "tenant_id": "a31d2bdcf7604c0faaddb058e1e08819",

        "invert": false,
        "value": "/index.html",
        "key": null,
        "type": "PATH",
        "id": "67d8a8fa-b0dd-4bd4-a85b-671db19b2ef3"
    }
}
```

Status Code

For details, see **Status Codes**.

4.7.4 Updating a Forwarding Rule

Function

This API is used to update a forwarding rule. You can change the mode that how traffic is distributed by updating the forwarding rule.

URI

PUT /v2/{project_id}/elb/l7policies/{l7policy_id}/rules/{l7rule_id}

Table 4-173 Parameter description

Parameter	Mandatory	Type	Description
project_id	Yes	String	Specifies the project ID.
l7policy_id	Yes	String	Specifies the forwarding policy ID.
l7rule_id	Yes	String	Specifies the forwarding rule ID.

Request

Table 4-174 Parameter description

Parameter	Mandatory	Type	Description
rule	Yes	**Rule** object	Specifies the forwarding rule. For details, see **Table 4-175**.

Table 4-175 rule parameter description

Parameter	Mandatory	Type	Description
compare_type	No	String	Specifies the match mode. The options are as follows: When **type** is set to **HOST_NAME**, the value of this parameter can only be the following: ● **EQUAL_TO**: indicates exact match. When **type** is set to **PATH**, the value of this parameter can be one of the following: ● **REGEX**: indicates regular expression match. ● **STARTS_WITH**: indicates prefix match. ● **EQUAL_TO**: indicates exact match.
admin_state_up	No	Boolean	Specifies the administrative status of the forwarding rule. This parameter is reserved, and the default value is **true**.
invert	No	Boolean	Specifies whether reverse matching is supported. The value can be **true** or **false**. The default value is **false**. This parameter is reserved.
key	No	String	Specifies the key of the match content. The default value is **null**. This parameter is reserved. The value contains a maximum of 255 characters.

Parameter	Mandat ory	Type	Description
value	No	String	Specifies the value of the match content. The value cannot contain spaces. The value contains a maximum of 128 characters. • When **type** is set to **HOST_NAME**, the value can contain a maximum of 100 characters that contain only letters, digits, hyphens (-), and periods (.), and must start with a letter or digit. • When **type** is set to **PATH**, the value can contain a maximum of 128 characters. When **compare_type** is set to **STARTS_WITH** or **EQUAL_TO**, the value must start with a slash (/) and can contain only letters, digits, and special characters _~';@^-%#&$.* +?,=!:| \/()[]{}

Response

Table 4-176 Parameter description

Parameter	Type	Description
rule	**Rule** object	Specifies the forwarding rule. For details, see **Table 4-177**.

Table 4-177 rule parameter description

Parameter	Type	Description
id	String	Specifies the forwarding rule ID.
tenant_id	String	Specifies the ID of the project where the forwarding rule is used. The value contains a maximum of 255 characters.
admin_state_up	Boolean	Specifies the administrative status of the forwarding rule. This parameter is reserved. The value can be **true** or **false**. • **true**: Enabled • **false**: Disabled

Parameter	Type	Description
type	String	Specifies the match type of a forwarding rule. The value range varies depending on the protocol of the backend server group: ● **HOST_NAME**: matches the domain name in the request. ● **PATH**: matches the path in the request.
compare_type	String	Specifies the match mode. The options are as follows: When **type** is set to **HOST_NAME**, the value of this parameter can only be the following: ● **EQUAL_TO**: indicates exact match. When **type** is set to **PATH**, the value of this parameter can be one of the following: ● **REGEX**: indicates regular expression match. ● **STARTS_WITH**: indicates prefix match. ● **EQUAL_TO**: indicates exact match.
invert	Boolean	Specifies whether reverse matching is supported. The value can be **true** or **false**. The default value is **false**. This parameter is reserved.
key	String	Specifies the key of the match content. The default value is **null**. This parameter is reserved. The value contains a maximum of 255 characters.
value	String	Specifies the value of the match content. The value contains a maximum of 128 characters. ● When **type** is set to **HOST_NAME**, the value can contain a maximum of 100 characters that contain only letters, digits, hyphens (-), and periods (.), and must start with a letter or digit. ● When **type** is set to **PATH**, the value can contain a maximum of 128 characters. When **compare_type** is set to **STARTS_WITH** or **EQUAL_TO**, the value must start with a slash (/) and can contain only letters, digits, and special characters _~';@^-%#&$.*+?,=!:| \/()[]{}

Parameter	Type	Description
provisioning_stat us	String	This parameter is reserved, and its value can only be **ACTIVE**. It specifies the provisioning status of the forwarding rule.

Example Request

- Example request: Updating a forwarding rule

```
PUT https://{Endpoint}/v2/a31d2bdcf7604c0faaddb058e1e08819/elb/l7policies/5ae0e1e7-5f0f-47a1-
b39f-5d4c428a1586/rules/c6f457b8-bf6f-45d7-be5c-a3226945b7b1
```

```
{
    "rule": {
        "compare_type": "STARTS_WITH",
        "value": "/ccc.html"
    }
}
```

Example Response

- Example response

```
{
    "rule": {
        "compare_type": "STARTS_WITH",
        "provisioning_status": "ACTIVE",
        "admin_state_up": true,
        "tenant_id": "a31d2bdcf7604c0faaddb058e1e08819",
        "invert": false,
        "value": "/ccc.html",
        "key": null,
        "type": "PATH",
        "id": "c6f457b8-bf6f-45d7-be5c-a3226945b7b1"
    }
}
```

Status Code

For details, see **Status Codes**.

4.7.5 Deleting a Forwarding Rule

Function

This API is used to delete a forwarding rule.

URI

DELETE /v2/{project_id}/elb/l7policies/{l7policy_id}/rules/{l7rule_id}

Table 4-178 Parameter description

Parameter	Mandatory	Type	Description
project_id	Yes	String	Specifies the project ID.
l7policy_id	Yes	String	Specifies the forwarding policy ID.
l7rule_id	Yes	String	Specifies the forwarding rule ID.

Request

None

Response

None

Example Request

- Example request: Deleting a forwarding rule
  DELETE https://{Endpoint}/v2/a31d2bdcf7604c0faaddb058e1e08819/elb/l7policies/
  5ae0e1e7-5f0f-47a1-b39f-5d4c428a1586/rules/c6f457b8-bf6f-45d7-be5c-a3226945b7b1

Example Response

- Example response
  None

Status Code

For details, see **Status Codes**.

4.8 Whitelist

4.8.1 Adding a Whitelist

Function

This API is used to add a whitelist to control access to a specific listener. After a whitelist is added, only IP addresses in the whitelist can access the listener.

URI

POST /v2/{project_id}/elb/whitelists

Table 4-179 Parameter description

Parameter	Mandatory	Type	Description
project_id	Yes	String	Specifies the project ID.

Request

Table 4-180 Parameter description

Parameter	Mandatory	Type	Description
whitelist	Yes	**Whitelist** object	Specifies the whitelist. For details, see **Table 4-181**.

Table 4-181 whitelist parameter description

Parameter	Mandatory	Type	Description
tenant_id	No	String	Specifies the ID of the project where the whitelist is used. The value must be the same as the value of **project_id** in the token. The value contains a maximum of 255 characters.
listener_id	Yes	String	Specifies the listener ID. Only one whitelist can be created for a listener.
enable_whitelist	No	Boolean	Specifies whether to enable access control. **true**: Access control is enabled. **false**: Access control is disabled. The default value is **true**.
whitelist	No	String	Specifies the IP addresses in the whitelist. Use commas (,) to separate multiple IP addresses. You can specify an IP address, for example, 192.168.11.1. You can also specify an IP address range, for example, 192.168.0.1/24. The default value is an empty string, that is, **""**.

Response

Table 4-182 Parameter description

Parameter	Type	Description
whitelist	**Whitelist** object	Specifies the whitelist. For details, see **Table 4-183**.

Table 4-183 **whitelist** parameter description

Parameter	Type	Description
id	String	Specifies the whitelist ID.
tenant_id	String	Specifies the ID of the project where the whitelist is used. The value contains a maximum of 255 characters.
listener_id	String	Specifies the ID of the listener to which the whitelist is added.
enable_whitelist	Boolean	Specifies whether to enable access control. **true**: Access control is enabled. **false**: Access control is disabled.
whitelist	String	Specifies the IP addresses in the whitelist.

Example Request

- Example request: Adding a whitelist
  POST https://{Endpoint}/v2/eabfefa3fd1740a88a47ad98e132d238/elb/whitelists

```
{
    "whitelist": {
        "listener_id": "eabfefa3fd1740a88a47ad98e132d238",
        "enable_whitelist": true,
        "whitelist": "192.168.11.1,192.168.0.1/24,192.168.201.18/8,100.164.0.1/24"
    }
}
```

Example Response

- Example response
```
{
    "whitelist": {
        "id": "eabfefa3fd1740a88a47ad98e132d238",
        "listener_id": "eabfefa3fd1740a88a47ad98e132d238",
```

```
    "tenant_id": "eabfefa3fd1740a88a47ad98e132d238",
    "enable_whitelist": true,
    "whitelist": "192.168.11.1,192.168.0.1/24,192.168.201.18/8,100.164.0.1/24"
  }
}
```

Status Code

For details, see **Status Codes**.

4.8.2 Querying Details of a Whitelist

Function

This API is used to query details about a whitelist using its ID.

URI

GET /v2/{project_id}/elb/whitelists/{whitelist_id}

Table 4-184 Parameter description

Parameter	Mandatory	Type	Description
project_id	Yes	String	Specifies the project ID.
whitelist_id	Yes	String	Specifies the whitelist ID.

Request

None

Response

Table 4-185 Parameter description

Parameter	Type	Description
whitelist	**Whitelist** object	Specifies the whitelist. For details, see **Table 4-186**.

Table 4-186 whitelist parameter description

Parameter	Type	Description
id	String	Specifies the whitelist ID.

Parameter	Type	Description
tenant_id	String	Specifies the ID of the project where the whitelist is used. The value contains a maximum of 255 characters.
listener_id	String	Specifies the ID of the listener to which the whitelist is added.
enable_whitelist	Boolean	Specifies whether to enable access control. **true**: Access control is enabled. **false**: Access control is disabled.
whitelist	String	Specifies the IP addresses in the whitelist.

Example Request

- Example request: Querying details of a whitelist
  GET https://{Endpoint}/v2/eabfefa3fd1740a88a47ad98e132d238/elb/whitelists/09e64049-2ab0-4763-a8c5-f4207875dc3e

Example Response

- Example response

```
{
    "whitelist": {
        "id": "eabfefa3fd1740a88a47ad98e132d238",
        "listener_id": "eabfefa3fd1740a88a47ad98e132d238",
        "tenant_id": "eabfefa3fd1740a88a47ad98e132d238",
        "enable_whitelist": true,
        "whitelist": "192.168.11.1,192.168.0.1/24,192.168.201.18/8,100.164.0.1/24"
    }
}
```

Status Code

For details, see **Status Codes**.

4.8.3 Querying Whitelists

Function

This API is used to query the whitelists. Filter query and pagination query are supported. Unless otherwise specified, exact match is applied.

Constraints

Parameters **marker**, **limit**, and **page_reverse** are used for pagination query. Parameters **marker** and **page_reverse** take effect only when they are used together with parameter **limit**.

URI

GET /v2/{project_id}/elb/whitelists

Table 4-187 Path parameters

Parameter	Mandatory	Type	Description
project_id	Yes	String	Specifies the project ID.

Table 4-188 Query parameters

Parameter	Mandatory	Type	Description
marker	No	String	Specifies the ID of the whitelist from which pagination query starts, that is, the ID of the last whitelist on the previous page. This parameter must be used with **limit**.
limit	No	Integer	Specifies the number of whitelists on each page. If this parameter is not set, all whitelists are queried by default.
page_reverse	No	Boolean	Specifies the page direction. The value can be **true** or **false**, and the default value is **false**. The last page in the list requested with **page_reverse** set to **false** will not contain the "next" link, and the last page in the list requested with **page_reverse** set to **true** will not contain the "previous" link. This parameter must be used with **limit**.
id	No	String	Specifies the whitelist ID.
tenant_id	No	String	Specifies the ID of the project where the whitelist is used. The value contains a maximum of 255 characters.
listener_id	No	String	Specifies the ID of the listener to which the whitelist is added.

Parameter	Mandatory	Type	Description
enable_whitelist	No	Boolean	Specifies whether to enable access control. **true**: Access control is enabled. **false**: Access control is disabled.
whitelist	No	String	Specifies the IP addresses in the whitelist.

Request

None

Response

Table 4-189 Parameter description

Parameter	Type	Description
whitelists	Array of **Whitelists** objects	Specifies the whitelist. For details, see **Table 4-190**.

Table 4-190 whitelists parameter description

Parameter	Type	Description
id	String	Specifies the whitelist ID.
tenant_id	String	Specifies the ID of the project where the whitelist is used. The value contains a maximum of 255 characters.
listener_id	String	Specifies the ID of the listener to which the whitelist is added.
enable_whitelist	Boolean	Specifies whether to enable access control. **true**: Access control is enabled. **false**: Access control is disabled.
whitelist	String	Specifies the IP addresses in the whitelist.

Example Request

- Example request 1: Querying all whitelists
  GET https://{Endpoint}/v2/eabfefa3fd1740a88a47ad98e132d238/elb/whitelists

- Example request 2: Querying the whitelists added to listener
  eabfefa3fd1740a88a47ad98e132d230
  GET https://{Endpoint}/v2/eabfefa3fd1740a88a47ad98e132d238/elb/whitelists?
  listener_id=eabfefa3fd1740a88a47ad98e132d230

Example Response

- Example response 1

```
{
    "whitelists": [
        {
            "id": "eabfefa3fd1740a88a47ad98e132d238",
            "listener_id": "eabfefa3fd1740a88a47ad98e132d238",
            "tenant_id": "eabfefa3fd1740a88a47ad98e132d238",
            "enable_whitelist": true,
            "whitelist": "192.168.11.1,192.168.0.1/24,192.168.201.18/8,100.164.0.1/24"
        },
        {
            "id": "eabfefa3fd1740a88a47ad98e132d326",
            "listener_id": "eabfefa3fd1740a88a47ad98e132d327",
            "tenant_id": "eabfefa3fd1740a88a47ad98e132d436",
            "enable_whitelist": true,
            "whiltelist": "192.168.12.1,192.168.1.1/24,192.168.203.18/8,100.164.5.1/24"
        }
    ]
}
```

- Example response 2

```
{
    "whitelists": [
        {
            "id": "eabfefa3fd1740a88a47ad98e132d238",
            "listener_id": "eabfefa3fd1740a88a47ad98e132d230",
            "tenant_id": "eabfefa3fd1740a88a47ad98e132d239",
            "enable_whitelist": true,
            "whitelist": "192.168.11.1,192.168.0.1/24,192.168.201.18/8,100.164.0.1/24"
        },
        {
            "id": "eabfefa3fd1740a88a47ad98e132d326",
            "listener_id": "eabfefa3fd1740a88a47ad98e132d327",
            "tenant_id": "eabfefa3fd1740a88a47ad98e132d439",
            "enable_whitelist": true,
            "whiltelist": "192.168.12.1,192.168.1.1/24,192.168.203.18/8,100.164.5.1/24"
        }
    ]
}
```

Status Code

For details, see **Status Codes**.

4.8.4 Updating a Whitelist

Function

This API is used to update a whitelist. You can enable or disable the whitelist function or change IP addresses in the whitelist. If you change IP addresses in the whitelist, it will be deleted, and a new one is generated.

URI

PUT /v2/{project_id}/elb/whitelists/{whitelist_id}

Table 4-191 Parameter description

Parameter	Mandatory	Type	Description
project_id	Yes	String	Specifies the project ID.
whitelist_id	Yes	String	Specifies the whitelist ID.

Request

Table 4-192 Parameter description

Parameter	Mandatory	Type	Description
whitelist	Yes	**Whitelist** object	Specifies the whitelist. For details, see **Table 4-193**.

Table 4-193 whitelist parameter description

Parameter	Mandatory	Type	Description
enable_whitelist	No	Boolean	Specifies whether to enable access control. **true**: Access control is enabled. **false**: Access control is disabled. The default value is **true**.
whitelist	No	String	Specifies the IP addresses in the whitelist. Use commas (,) to separate multiple IP addresses. You can specify an IP address, for example, 192.168.11.1. You can also specify an IP address range, for example, 192.168.0.1/24. The default value is an empty string, that is, **""**.

Response

Table 4-194 Parameter description

Parameter	Type	Description
whitelist	**Whitelist** object	Specifies the whitelist. For details, see **Table 4-195**.

Table 4-195 whitelist parameter description

Parameter	Type	Description
id	String	Specifies the whitelist ID.
tenant_id	String	Specifies the ID of the project where the whitelist is used. The value contains a maximum of 255 characters.
listener_id	String	Specifies the ID of the listener to which the whitelist is added.
enable_whitelist	Boolean	Specifies whether to enable access control. **true**: Access control is enabled. **false**: Access control is disabled.
whitelist	String	Specifies the IP addresses in the whitelist.

Example Request

- Example request: Updating a whitelist
  PUT https://{Endpoint}/v2/eabfefa3fd1740a88a47ad98e132d238/elb/whitelists/dcaf46f1-037c-4f63-a31f-e0c4c18032c7

```
{
    "whitelist": {
        "enable_whitelist": true,
        "whitelist": "192.168.11.1,192.168.0.1/24,192.168.201.18/8,100.164.0.1/24"
    }
}
```

Example Response

- Example response

```
{
    "whitelist": {
        "id": "eabfefa3fd1740a88a47ad98e132d238",
        "listener_id": "eabfefa3fd1740a88a47ad98e132d238",
        "tenant_id": "eabfefa3fd1740a88a47ad98e132d238",
        "enable_whitelist": true,
        "whitelist": "192.168.11.1,192.168.0.1/24,192.168.201.18/8,100.164.0.1/24"
```

```
    }
}
```

Status Code

For details, see **Status Codes**.

4.8.5 Deleting a Whitelist

Function

This API is used to delete a specific whitelist.

URI

DELETE /v2/{project_id}/elb/whitelists/{whitelist_id}

Table 4-196 Parameter description

Parameter	Mandatory	Type	Description
project_id	Yes	String	Specifies the project ID.
whitelist_id	Yes	String	Specifies the whitelist ID.

Request

None

Response

None

Example Request

- Example request: Deleting a whitelist
  DELETE https://{Endpoint}/v2/eabfefa3fd1740a88a47ad98e132d238/elb/whitelists/
  35cb8516-1173-4035-8dae-0dae3453f37f

Example Response

- Example response

  None

Status Code

For details, see **Status Codes**.

4.9 Certificate

4.9.1 Creating a Certificate

Function

This API is used to create a certificate. After a certificate is bound to a listener, the load balancer authenticates the client using this certificate, and backend servers can establish secure and reliable HTTP connections with the client.

URI

POST /v2/{project_id}/elb/certificates

Table 4-197 Path parameters

Parameter	Mandatory	Type	Description
project_id	Yes	String	Specifies the project ID.

Request

Table 4-198 Query parameters

Parameter	Mandatory	Type	Description
admin_state_up	No	Boolean	Specifies the administrative status of the certificate. This parameter is reserved, and the default value is **true**.
name	No	String	Specifies the certificate name. The value contains a maximum of 255 characters.
description	No	String	Provides supplementary information about the certificate. The value contains a maximum of 255 characters.

Parameter	Mandatory	Type	Description
type	No	String	Specifies the certificate type. The default value is **server**. The value range varies depending on the protocol of the backend server group: ● **server**: indicates the server certificate. ● **client**: indicates the CA certificate.
domain	No	String	Specifies the domain name associated with the server certificate. The default value is **null**. The value contains a maximum of 100 characters. The value range varies depending on the protocol of the backend server group: ● A common domain name contains 0 to 100 characters and consists of several labels separated by dots (.). Each label can contain a maximum of 63 characters, including letters, digits, and hyphens (-), and must start and end with a letter or digit. ● In addition to the requirements for common domain names, a wildcard domain name can start with an asterisk (*). **NOTE** This parameter takes effect only when **type** is set to **server**.
private_key	No	String	Specifies the private key of the server certificate. The value must be PEM encoded. ● This parameter will be ignored if **type** is set to **client**. A CA server can still be created and used normally. This parameter will be left blank even if you enter a private key that is not PEM encoded. ● This parameter is mandatory only when **type** is set to **server**. If you enter an invalid private key, an error is returned.

Parameter	Manda tory	Type	Description
certificate	Yes	String	Specifies the public key of the server certificate or CA certificate used to authenticate the client. The value of parameter **type** determines whether a public key or CA certificate is required. Both types of certificates are in PEM format.
enterprise_proj ect_id	No	String	Specifies the enterprise project ID. When creating a load balancer, you can assign an enterprise project to the load balancer. The value is character string **0** or a UUID with hyphens (-). Value **0** indicates the default enterprise project. The default value is **0**.

Response

Table 4-199 Parameter description

Parameter	Type	Description
id	String	Specifies the certificate ID.
tenant_id	String	Specifies the ID of the project where the certificate is used. The value contains a maximum of 255 characters.
admin_state_u p	Boolean	Specifies the administrative status of the certificate. This parameter is reserved. The value can be **true** or **false**. ● **true**: Enabled ● **false**: Disabled
name	String	Specifies the certificate name. The value contains a maximum of 255 characters.
description	String	Provides supplementary information about the certificate. The value contains a maximum of 255 characters.

Parameter	Type	Description
type	String	Specifies the certificate type. The value range varies depending on the protocol of the backend server group: ● **server**: indicates the server certificate. ● **client**: indicates the CA certificate.
domain	String	Specifies the domain name associated with the server certificate. The value contains a maximum of 100 characters.
private_key	String	Specifies the private key of the server certificate in PEM format.
certificate	String	Specifies the public key of the server certificate or CA certificate used to authenticate the client. The value of parameter **type** determines whether a public key or CA certificate is required. Both types of certificates are in PEM format.
expire_time	String	Specifies the time when the certificate expires. The UTC time is in *YYYY-MM-DDTHH:MM:SS* format.
create_time	String	Specifies the time when the certificate was created. The UTC time is in *YYYY-MM-DDTHH:MM:SS* format.
update_time	String	Specifies the time when the certificate was updated. The UTC time is in *YYYY-MM-DDTHH:MM:SS* format.

Example Request

● Example request: Creating a certificate

```
POST https://{Endpoint}/v2/930600df07ac4f66964004041bd3deaf/elb/certificates
{
    "name": "https_certificate",
    "description": "description for certificate",
    "type": "server",
    "domain": "www.elb.com",
    "private_key":
"-----BEGIN PRIVATE KEY-----
\nMIIEvgIBADANBgkqhkiG9w0BAQEFAASCBKgwggSkAgEAAoIBAQDQVAbOLe5xNf4M
\n253Wn9vhdUzojetjv4J+B7kYwsMhRcgdcJ8KCnX1nfzTvI2ksXlTQ2o9BkpStnPe
\ntB4s32ZiJRMlk+61iUUMNsHwK2WBX57JT3JgmyVbH8GbmRY0+H3sH1i72luna7rM
\nMD30gLh6QoP3cq7PGWcuZKV7hjd1tjCTQukwMvqV8lcq39buNpIgDOWzEP5AzqXt
\nCOFYn6RTH5SRug4hKNN7sT1eYMslHu7wtEBDKVgrLjOCe/W2f8rLT1zEsoAW2Chl
\nZAPYUBkl/0XuTWRg3CohPPcl+UtlRSfvLDeeQ460swjbwgS/RbJh3slwlCRLU08k
\nEo04Z9H/AgMBAAECggEAEleaQqHCWZk/HyYN0Am/GJSGFa2tD60SXY2fUieh8/Hl
```

\nfvCArftGgMaYWPSNCJRMXB7tPwpQu19esjz4Z/cR2Je4fTLPrffGUsHFgZjv5OQB
\nZVe4a5Hj1OcgJYhwCqPs2d9i2wToYNBbcfgh8lSETq8YaXngBO6vES9LMhHkNKKr
\nciu9YkInNEHu6uRJ5g/eGGX3KQynTvVIhnOVGAJvjTXcoU6fm7gYdHAD6jk9lc9M
\nEGpfYI6AdHIwFZcT/RNAxhP82lg2gUJSgAu66FfDjMwQXKbafKdP3zq4Up8a7Ale
\nkrguPtfV1vWklg+bUFhgGaiAEYTpAUN9t2DVIiijgQKBgQDnYMMsaF0r557CM1CT
\nXUqgCZo8MKeV2jf2drlxRRwRl33SksQbzAQ/qrLdT7GP3sCGqvkxWY2FPdFYf8kx
\nGcCeZPcIeZYCQAM41pjtsaM8tVbLWVR8UtGBuQoPSph7JNF3Tm/JH/fbwjpjP7dt
\nJ7n8EzkRUNE6aIMHOFEeych/PQKBgQDmf1bMogx63rTcwQ0PEZ9Vt7mTgKYK4aLr
\nniWgTWHXPZxUQaYhpjXo6+lMI6DpExiDgBAkMzJGIvS7yQiYWU+wthAr9urbWYdGZ
\nlS6VjoTkF6r7VZoILXX0fbuXh6lm8K8IQRfBpJff56p9phMwaBpDNDrfpHB5utBU
\nxs40yIdp6wKBgQC69Cp/xUwTX7GdxQzEJctYiKnBHKcspAg38zJf3bGSXU/jR4eB
\n1lVQhELGI9CbKSdzKM71GyEImix/T7FnJSHIWlho1qVo6AQyduNWnAQD15pr8KAd
\nXGXAZZ1FQcb3KYa+2fflERmazdOTwjYZ0tGqZnXkEeMdSLkmqlCRigWhGQKBgDak
\n/735uP20KKqhNehZpC2dJei7OiIgRhCS/dKASUXHSW4fptBnUxACYocdDxtY4Vha
\nflI7FPMdvGl8ioYbvlHFh+X0Xs9r1S8yeWnHoXMb6eXWmYKMJrAoveLa+2cFm1Agf
\n7nLhA4R4lqm9IpV6SKegDUkR4fxp9pPyodZPqBLLAoGBAJkD4wHW54Pwd4Ctfk9o
\njHjWB7pQlUYpTZO9dm+4fpCMn9Okf43AE2yAOaAP94GdzdDJkxfciXKcsYr9Iluk
\nfaoXgjKR7p1zERiWZuFF63SB4aiyX1H7IX0MwHDZQO38a5gZaOm/BUlGKMWXzuEd
\n3fy+1rCUwzOp9LSjtJYf4ege
\n-----END PRIVATE KEY-----",
    "certificate":
"-----BEGIN CERTIFICATE-----
\nMIIC4TCCAcmgAwIBAgICEREwDQYJKoZIhvcNAQELBQAwFzEVMBMGA1UEAxMMTXlD
\nb21wYW55IENBMB4XDTE4MDcwMjEzMjU0N1oXDTQ1MTExNzEzMjU0N1owFDESMBAG
\nA1UEAwwJbG9jYWxob3N0MIIBIjANBgkqhkiG9w0BAQEFAAOCAQ8AMIIBCgKCAQEA
\n0FQGzi3ucTX+DNud1p/b4XVM6I3rY7+Cfge5GMLDIUXIHXCfCgp19Z3807yNpLF5
\nU0NqPQZKUrZz3rQeLN9mYiUTJZPutYlFDDbB8CtlgV+eyU9yYJslWx/Bm5kWNPh9
\n7B9Yu9pbp2u6zDA99IC4ekKD93KuzxlnLmSle4Y3dbYwk0LpMDL6lfCHKt/W7jaS
\nlAzlsxD+QM6l7QjhWJ+kUx+UkboOISjTe7E9XmDLJR7u8LRAQylYKy4zgnv1tn/K
\nny09cxLKAFtgoZWQD2FAZJf9F7k1kYNwqITz3CPlLZUUn7yw3nkOOtLMI28IEv0Wy
\nYd7CMJQkS1NPJBKNOGfR/wIDAQABozowODAhBgNVHREEGjAYggpkb21haW4uY29t
\nhhwQKuUvJhwR/AAABMBMGA1UdJQQMMAoGCCsGAQUFBwMBMA0GCSqGSIb3DQEBCwUA
\nA4IBAQA8lMQJxaTey7EjXtRLSVlEAMftAQPG6jijNQuvIBQYUDauDT4W2XUZ5wAn
\njiOyQ83va672K1G9s8n6xlH+xwwdSNnozaKzC87vwSeZKIOdl9I5I98TGKI6OoDa
\nnezmzCwQYtHBMVQ4c7Ml8554Ft1mWSt4dMAK2rzNYjvPRLYlzp1HMnI6hkjPk4PCZ
\nwKnha0dlScati9CCt3UzXSNJOSLalKdHErH08Iqd+1BchScxCfk0xNITn1HZZGmI
\n+vbmunok3A2lucI14rnsrcbkGYqxGikySN6B2cRLBDK4Y3wChiW6NVYtVqcx5/mZ
\niYsGDVN+9QBd0eYUHce+77s96i3I
\n-----END CERTIFICATE-----"
}

Example Response

- Example response

{
    "domain": "www.elb.com",
    "expire_time": "2045-11-17 13:25:47",
    "update_time": "2017-12-04 06:49:13",
    "create_time": "2017-12-04 06:49:13",
    "id": "3d8a7a02f87a40ed931b719edfe75451",
    "admin_state_up": true,
    "private_key": "-----BEGIN PRIVATE KEY-----
\nMIIEvgIBADANBgkqhkiG9w0BAQEFAASCBKgwggSkAgEAAoIBAQDQVAbOLe5xNf4M
\n253Wn9vhdUzojetjv4J+B7kYwsMhRcgdcJ8KCnX1nfzTvI2ksXlTQ2o9BkpStnPe
\ntB4s32ZiJRMlk+61iUUMNsHwK2WBX57JT3JgmyVbH8GbmRY0+H3sH1i72luna7rM
\nMD30gLh6QoP3cq7PGWcuZKV7hjd1tjCTQukwMvqV8Icq39buNpIgDOWzEP5AzqXt
\nCOFYn6RTH5SRug4hKNN7sT1eYMslHu7wtEBDKVgrLjOCe/W2f8rLT1zEsoAW2Chl
\nZAPYUBkl/0XuTWRg3CohPPcI+UtlRSfvLDeeQ460swjbwgS/RbJh3sIwlCRLU08k
\nEo04Z9H/AgMBAAECggEAEIeaQqHCWZk/HyYN0Am/GJSGFa2tD60SXY2fUieh8/Hl
\nfvCArftGgMaYWPSNCJRMXB7tPwpQu19esjz4Z/cR2Je4fTLPrffGUsHFgZjv5OQB
\nZVe4a5Hj1OcgJYhwCqPs2d9i2wToYNBbcfgh8lSETq8YaXngBO6vES9LMhHkNKKr
\nciu9YkInNEHu6uRJ5g/eGGX3KQynTvVIhnOVGAJvjTXcoU6fm7gYdHAD6jk9lc9M
\nEGpfYI6AdHIwFZcT/RNAxhP82lg2gUJSgAu66FfDjMwQXKbafKdP3zq4Up8a7Ale
\nkrguPtfV1vWklg+bUFhgGaiAEYTpAUN9t2DVIiijgQKBgQDnYMMsaF0r557CM1CT
\nXUqgCZo8MKeV2jf2drlxRRwRl33SksQbzAQ/qrLdT7GP3sCGqvkxWY2FPdFYf8kx
\nGcCeZPcIeZYCQAM41pjtsaM8tVbLWVR8UtGBuQoPSph7JNF3Tm/JH/fbwjpjP7dt
\nJ7n8EzkRUNE6aIMHOFEeych/PQKBgQDmf1bMogx63rTcwQ0PEZ9Vt7mTgKYK4aLr
\nniWgTWHXPZxUQaYhpjXo6+lMI6DpExiDgBAkMzJGIvS7yQiYWU+wthAr9urbWYdGZ
\nlS6VjoTkF6r7VZoILXX0fbuXh6lm8K8IQRfBpJff56p9phMwaBpDNDrfpHB5utBU

\nxs40yIdp6wKBgQC69Cp/xUwTX7GdxQzEJctYiKnBHKcspAg38zJf3bGSXU/jR4eB
\n1lVQhELGI9CbKSdzKM71GyEImix/T7FnJSHIWlho1qVo6AQyduNWnAQD15pr8KAd
\nXGXAZZ1FQcb3KYa+2fflERmazdOTwjYZ0tGqZnXkEeMdSLkmqlCRigWhGQKBgDak
\n/735uP20KKqhNehZpC2dJei7OiIgRhCS/dKASUXHSW4fptBnUxACYocdDxtY4Vha
\nfI7FPMdvGl8ioYbvlHFh+X0Xs9r1S8yeWnHoXMb6eXWmYKMJrAoveLa+2cFm1Agf
\n7nLhA4R4lqm9IpV6SKegDUkR4fxp9pPyodZPqBLLAoGBAJkD4wHW54Pwd4Ctfk9o
\njHjWB7pQlUYpTZO9dm+4fpCMn9Okf43AE2yAOaAP94GdzdDJkxfciXKcsYr9IIuk
\nfaoXgjKR7p1zERiWZuFF63SB4aiyX1H7IX0MwHDZQO38a5gZaOm/BUlGKMWXzuEd
\n3fy+1rCUwzOp9LSjtJYf4ege
\n-----END PRIVATE KEY-----",
    "tenant_id": "930600df07ac4f66964004041bd3deaf",
    "type": "server",
    "certificate": "-----BEGIN CERTIFICATE-----
\nMIIC4TCCAcmgAwIBAgICEREwDQYJKoZIhvcNAQELBQAwFzEVMBMGA1UEAxMMTXlD
\nb21wYW55IENBMB4XDTE4MDcwMjEzMjU0N1oXDTQ1MTExNzEzMjU0N1owFDESMBAG
\nA1UEAwwJbG9jYWxob3N0MIIBIjANBgkqhkiG9w0BAQEFAAOCAQ8AMIIBCgKCAQEA
\n0FQGzi3ucTX+DNud1p/b4XVM6I3rY7+Cfge5GMLDIUXIHXCfCgp19Z3807yNpLF5
\nU0NqPQZKUrZz3rQeLN9mYiUTJZPutYlFDDbB8CtlgV+eyU9yYJslWx/Bm5kWNPh9
\n7B9Yu9pbp2u6zDA99IC4ekKD93KuzxlnLmSle4Y3dbYwk0LpMDL6lfCHKt/W7jaS
\nIAzlsxD+QM6l7QjhWJ+kUx+UkboOISjTe7E9XmDLJR7u8LRAQylYKy4zgnv1tn/K
\nny09cxLKAFtgoZWQD2FAZJf9F7k1kYNwqITz3CPlLZUUn7yw3nkOOtLMI28IEv0Wy
\nYd7CMJQkS1NPJBKNOGfR/wIDAQABozowODAhBgNVHREEGjAYggpkb21haW4uuY29t
\nhwQKuUvJhwR/AAABMBMGA1UdJQQMMAoGCCsGAQUFBwMBA0GCSqGSIb3DQEBCwUA
\nA4IBAQA8lMQJxaTey7EjXtRLSVlEAMftAQPG6jijNQuvIBQYUDauDT4W2XUZ5wAn
\njiOyQ83va672K1G9s8n6xlH+xwwdSNnozaKzC87vwSeZKIOdl9I5I98TGKI6OoDa
\nezmzCwQYtHBMVQ4c7Ml8554Ft1mWSt4dMAK2rzNYjvPRLYlzp1HMnI6hkjPk4PCZ
\nwKnha0dlScati9CCt3UzXSNJOSLalKdHErH08Iqd+1BchScxCfk0xNITn1HZZGmI
\n+vbmunok3A2lucl14rnsrcbkGYqxGikySN6B2cRLBDK4Y3wChiW6NVYtVqcx5/mZ
\niYsGDVN+9QBd0eYUHce+77s96i3I
\n-----END CERTIFICATE-----",
    "name": "https_certificate",
    "description": "description for certificate"
}

Status Code

For details, see **Status Codes**.

4.9.2 Querying Certificates

Function

This API is used to query the certificates. Filter query and pagination query are supported. Unless otherwise specified, exact match is applied.

Constraints

Parameters **marker**, **limit**, and **page_reverse** are used for pagination query. Parameters **marker** and **page_reverse** take effect only when they are used together with parameter **limit**.

URI

GET /v2/{project_id}/elb/certificates

Table 4-200 Parameter description

Parameter	Mandatory	Type	Description
project_id	Yes	String	Specifies the project ID.

Table 4-201 Parameter description

Parameter	Mandatory	Type	Description
marker	No	String	Specifies the ID of the certificate from which pagination query starts, that is, the ID of the last certificate on the previous page. This parameter must be used with **limit**.
limit	No	Integer	Specifies the number of certificates on each page. If this parameter is not set, all certificates are queried by default.
page_reverse	No	Boolean	Specifies the page direction. The value can be **true** or **false**, and the default value is **false**. The last page in the list requested with **page_reverse** set to **false** will not contain the "next" link, and the last page in the list requested with **page_reverse** set to **true** will not contain the "previous" link. This parameter must be used with **limit**.
id	No	String	Specifies the certificate ID.
name	No	String	Specifies the certificate name. The value contains a maximum of 255 characters.
description	No	String	Provides supplementary information about the certificate. The value contains a maximum of 255 characters.
type	No	String	Specifies the certificate type. The default value is **server**. The value range varies depending on the protocol of the backend server group: ● **server**: indicates the server certificate. ● **client**: indicates the CA certificate.

Parameter	Mandatory	Type	Description
domain	No	String	Specifies the domain name associated with the server certificate. The default value is **null**.
			The value contains a maximum of 100 characters.
			The value range varies depending on the protocol of the backend server group:
			● A common domain name contains 0 to 100 characters and consists of several labels separated by dots (.). Each label can contain a maximum of 63 characters, including letters, digits, and hyphens (-), and must start and end with a letter or digit.
			● In addition to the requirements for common domain names, a wildcard domain name can start with an asterisk (*). This parameter takes effect only when **type** is set to **server**.
private_key	No	String	Specifies the private key of the server certificate. The value must be PEM encoded.
			● This parameter will be ignored if **type** is set to **client**. A CA server can still be created and used normally. This parameter will be left blank even if you enter a private key that is not PEM encoded.
			● This parameter is mandatory only when **type** is set to **server**. If you enter an invalid private key, an error is returned.

Parameter	Mandatory	Type	Description
certificate	No	String	Specifies the public key of the server certificate or CA certificate used to authenticate the client. The value of parameter **type** determines whether a public key or CA certificate is required. Both types of certificates are in PEM format.
create_time	No	String	Specifies the time when the certificate was created. The UTC time is in *YYYY-MM-DD HH:MM:SS* format.
update_time	No	String	Specifies the time when the certificate was updated. The UTC time is in *YYYY-MM-DD HH:MM:SS* format.

Request

None

Response

Table 4-202 Response parameters

Parameter	Type	Description
certificates	Array of **Certificates** objects	Lists the certificates. For details, see **Table 4-203**.
instance_num	Integer	Specifies the number of certificates.

Table 4-203 certificates parameter description

Parameter	Type	Description
id	String	Specifies the certificate ID.
tenant_id	String	Specifies the ID of the project where the certificate is used. The value contains a maximum of 255 characters.

Parameter	Type	Description
admin_state_up	Boolean	Specifies the administrative status of the certificate. This parameter is reserved. The value can be **true** or **false**. ● **true**: Enabled ● **false**: Disabled
name	String	Specifies the certificate name. The value contains a maximum of 255 characters.
description	String	Provides supplementary information about the certificate. The value contains a maximum of 255 characters.
type	String	Specifies the certificate type. The value range varies depending on the protocol of the backend server group: ● **server**: indicates the server certificate. ● **client**: indicates the CA certificate.
domain	String	Specifies the domain name associated with the server certificate. The value contains a maximum of 100 characters.
private_key	String	Specifies the private key of the server certificate in PEM format.
certificate	String	Specifies the public key of the server certificate or CA certificate used to authenticate the client. The value of parameter **type** determines whether a public key or CA certificate is required. Both types of certificates are in PEM format.
expire_time	String	Specifies the time when the certificate expires. The UTC time is in *YYYY-MM-DD HH:MM:SS* format.
create_time	String	Specifies the time when the certificate was created. The UTC time is in *YYYY-MM-DD HH:MM:SS* format.

Parameter	Type	Description
update_time	String	Specifies the time when the certificate was updated. The UTC time is in *YYYY-MM-DD HH:MM:SS* format.

Example Request

- Request example 1: Querying all certificates
  ```
  GET https://{Endpoint}/v2/a31d2bdcf7604c0faaddb058e1e08819/elb/certificates
  ```

- Example 2: Querying a certificate whose ID is ef4d341365754a959556576501791b19 or ed40e8ea9957488ea82de025e35b74c0
  ```
  GET https://{Endpoint}/v2/601240b9c5c94059b63d484c92cfe308/elb/certificates
  ?id=ef4d341365754a959556576501791b19&id=ed40e8ea9957488ea82de025e35b74c0
  ```

Example Response

- Example response 1

```
{
    "certificates": [
        {
            "certificate": "-----BEGIN CERTIFICATE-----
\nMIIC4TCCAcmgAwIBAgICEREwDQYJKoZIhvcNAQELBQAwFzEVMBMGA1UEAxMMTXlD
\nb21wYW55IENBMB4XDTE4MDcwMjEzMjU0N1oXDTQ1MTExNzEzMjU0N1owFDESMBAG
\nA1UEAwwJbG9jYWxob3N0MIIBIjANBgkqhkiG9w0BAQEFAAOCAQ8AMIIBCgKCAQEA\n0FQGzi3ucTX
+DNud1p/
b4XVM6I3rY7+Cfge5GMLDIUXIHXCfCgp19Z3807yNpLF5\nU0NqPQZKUrZz3rQeLN9mYiUTJZPutYlFDDb
B8CtlgV+eyU9yYJslWx/
Bm5kWNPh9\n7B9Yu9pbp2u6zDA99IC4ekKD93KuzxlnLmSle4Y3dbYwk0LpMDL6lfCHKt/W7jaS
\nIAzlsxD+QM6l7QjhWJ+kUx+UkboOISjTe7E9XmDLJR7u8LRAQylYKy4zgnv1tn/K
\ny09cxLKAFtgoZWQD2FAZJf9F7k1kYNwqITz3CPlLZUUn7yw3nkOOtLMI28IEv0Wy
\nYd7CMJQkS1NPJBKNOGfR/wIDAQABozowODAhBgNVHREEGjAYggpkb21haW4uY29t
\nhhwQKuUvJhwR/AAABMBMGA1UdJQQMMAoGCCsGAQUFBwMBMA0GCSqGSIb3DQEBCwUA
\nA4IBAQA8lMQJxaTey7EjXtRLSVlEAMftAQPG6jijNQuvIBQYUDauDT4W2XUZ5wAn
\njiOyQ83va672K1G9s8n6xlH+xwwdSNnozaKzC87vwSeZKIOdl9I5I98TGKI6OoDa
\nnezmzCwQYtHBMVQ4c7Ml8554Ft1mWSt4dMAK2rzNYjvPRLYlzp1HMnI6hkjPk4PCZ
\nnwKnha0dlScati9CCt3UzXSNJOSLalKdHErH08Iqd+1BchScxCfk0xNITn1HZZGml\n
+vbmunok3A2lucI14rnsrcbkGYqxGikySN6B2cRLBDK4Y3wChiW6NVYtVqcx5/mZ\niYsGDVN
+9QBd0eYUHce+77s96i3I\n-----END CERTIFICATE-----",
            "create_time": "2017-02-25 09:35:27",
            "expire_time": "2045-11-17 13:25:47",
            "description": "description for certificate",
            "domain": "www.elb.com",
            "id": "23ef9aad4ecb463580476d324a6c71af",
            "admin_state_up": true,
            "tenant_id": "a31d2bdcf7604c0faaddb058e1e08819",
            "name": "https_certificate",
            "private_key":
"-----BEGIN PRIVATE KEY-----
\nMIIEvgIBADANBgkqhkiG9w0BAQEFAASCBKgwggSkAgEAAoIBAQDQVAbOLe5xNf4M
\n253Wn9vhdUzojetjv4J+B7kYwsMhRcgdcJ8KCnX1nfzTvI2ksXlTQ2o9BkpStnPe\ntB4s32ZiJRMlk
+61iUUMNsHwK2WBX57JT3JgmyVbH8GbmRY0+H3sH1i72luna7rM
\nMD30gLh6QoP3cq7PGWcuZKV7hjd1tjCTQukwMvqV8Icq39buNpIgDOWzEP5AzqXt
\nCOFYn6RTH5SRug4hKNN7sT1eYMslHu7wtEBDKVgrLjOCe/W2f8rLT1zEsoAW2Chl\nZAPYUBkl/
0XuTWRg3CohPPcI+UtlRSfvLDeeQ460swjbwgS/RbJh3sIwlCRLU08k\nEo04Z9H/
AgMBAAECggEAEIeaQqHCWZk/HyYN0Am/GJSGFa2tD60SXY2fUieh8/Hl
\nnfvCArftGgMaYWPSNCJRMXB7tPwpQu19esjz4Z/cR2Je4fTLPrffGUsHFgZjv5OQB
\nZVe4a5Hj1OcgJYhwCqPs2d9i2wToYNBbcfgh8lSETq8YaXngBO6vES9LMhHkNKKr
\nciu9YkInNEHu6uRJ5g/eGGX3KQynTvVlhnOVGAJvjTXcoU6fm7gYdHAD6jk9lc9M
\nEGpfYI6AdHlwFZcT/RNAxhP82lg2gUJSgAu66FfDjMwQXKbafKdP3zq4Up8a7Ale\nkrguPtfV1vWklg
```

+bUFhgGaiAEYTpAUN9t2DVIiijgQKBgQDnYMMsaF0r557CM1CT
\nXUqgCZo8MKeV2jf2drlxRRwRl33SksQbzAQ/qrLdT7GP3sCGqvkxWY2FPdFYf8kx
\nGcCeZPcIeZYCQAM41pjtsaM8tVbLWVR8UtGBuQoPSph7JNF3Tm/JH/fbwjpjP7dt
\nJ7n8EzkRUNE6aIMHOFEeych/PQKBgQDmf1bMogx63rTcwQ0PEZ9Vt7mTgKYK4aLr
\niWgTWHXPZxUQaYhpjXo6+lMI6DpExiDgBAkMzJGlvS7yQiYWU+wthAr9urbWYdGZ
\nlS6VjoTkF6r7VZoILXX0fbuXh6lm8K8IQRfBpJff56p9phMwaBpDNDrfpHB5utBU
\nxs40yIdp6wKBgQC69Cp/xUwTX7GdxQzEJctYiKnBHKcspAg38zJf3bGSXU/jR4eb
\n1lVQhELGI9CbKSdzKM71GyEImix/T7FnJSHIWlho1qVo6AQyduNWnAQD15pr8KAd
\nXGXAZZ1FQcb3KYa+2fflERmazdOTwjYZ0tGqZnXkEeMdSLkmqlCRigWhGQKBgQDak\n/
735uP20KKqhNehZpC2dJei7OiIgRhCS/dKASUXHSW4fptBnUxACYocdDxtY4Vha\nfI7FPMdvGl8ioYbvlHFh
+X0Xs9r1S8yeWnHoXMb6eXWmYKMJrAoveLa+2cFm1Agf
\n7nLhA4R4lqm9IpV6SKegDUkR4fxp9pPyodZPqBLLAoGBAJkD4wHW54Pwd4Ctfk9o
\njHjWB7pQlUYpTZO9dm+4fpCMn9Okf43AE2yAOaAP94GdzdDJkxfciXKcsYr9IIuk
\nfaoXgjKR7p1zERiWZuFF63SB4aiyX1H7IX0MwwHDZQO38a5gZaOm/BUlGKMWXzuEd\n3fy
+1rCUwzOp9LSjtJYf4ege\n-----END PRIVATE KEY-----",
              "type": "server",
              "update_time": "2017-02-25 09:35:27"
          }
      ],
      "instance_num": 1
  }

- Example response 2

  {
      "certificates": [
          {
              "description": "Push by SSL Certificate Manager",
              "domain": null,
              "id": "ed40e8ea9957488ea82de025e35b74c0",
              "name": "certForSonar9",
              "certificate": "-----BEGIN CERTIFICATE-----
MIIFizCCBHOgAwIBAgIQBlQycV3bWsVsCttvv5rgRjANBgkqhkiG9w0BAQsFADBu
MQswCQYDVQQGEwJVUzEVMBMGA1UEChMMRGlnaUNlcnQgSW5jMRkwFwYDVQQLExB3
d3cuZGlnaWNlcnQuY29tMS0wKwYDVQQDEyRFbmNyeXB0aW9uIEV2ZXJ5d2hlcmUg
RFYgVExTIENBIC0gRzEwHhcNMTgwNzEwMDAwMDAwWhcNMTkwNzEwMTIwMDAwWjAU
MRIwEAYDVQQDEwlpY2U1MjMududGswggEiMA0GCSqGSIb3DQEBAQUAA4IBDwAwggEK
AoIBAQCtTDlQMoAvyInR6X1dihhNwbdGesbMW6NZX7ffpj9XrB3KCqqlxzI4VmH9
PntvrpLJNeolgLqDZZc4zKbUkmqxY1dvGDs41coKzdtc9Ig23GVK48wfesnk5r50
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wcmJ6R3A6JwokOgxXBSu41ufPQiFkMgxygKxEBLzIJLjRqCXQHYoxbsTyolb6jwp
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DgBafYb3xT/MtT2VRSfCJQHgIcsdAgMBAAGjggJ9MIICeTAfBgNVHSMEGDAWgBRV
dE+yck/1YLpQ0dfmUVyaAYca1zAdBgNVHQ4EFgQUEFavzYXNbIHBchbaKcUKad+
qCEwIwYDVR0RBBwwGoIJaWNlNTIzLnRrgg13d3cuaWNlNTIzLnRrMA4GA1UdDwEB
/wQEAwIFoDAdBgNVHSUEFjAUBggrBgEFBQcDAQYIKwYBBQUHAwIwTAYDVR0gBEUw
QzA3BglghkgBhv1sAQIwKjAoBggrBgEFBQcCARYcaHR0cHM6Ly93d3cuZGlnaWNl
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L2NhY2VydHMuZGlnaWNlcnQuY29tL0VuY3J5cHRpb25FdmVyeXdoZXJlRFZUTFND
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AJX6gCXNggPdfOFdDtZPzlYr64TTrR/+b9QKKhyJ2EjBAiAWgu3BG2QK9tWQXpUN
IFadc0nvqmDovabg5nmRMan2mQB2AId1v+dZfPiMQ5lfvfNu/1aNR1Y2/0q1YMG0
6v9veoIMPAAABZIOnLQEAAAQDAEcwRQIhAJVRe/7n88dD6KdhNrd4LdFjGARQNmta
Y/K2dFDOXPSfAiBOLrWW8unHOL25RWHJU7Ost3XkNhQYtrLDJrnzo/9kZzzANBgkq
hkiG9w0BAQsFAAOCAQEAeqtX9cHmj4OnNAk0IGmF3nKS/u/UgGsY4EJfXwQY2bTZ
PCkqxQOA6HEx59vJ+UilTojrNDi0WskRm/8SKBHtmRwzwX3ile8KiR6fFQhPUtV
XHZcTfAFo47c7axqon8vumMlEv1PxVImivQ446K7z3kGm34dhMYxS4Gz2gTl8IKt
90OegejuhbAs5Wlvp1BK8HlYIb5+mw+cgkUC9KTALs5qVbWzogb0bS20KaYarGcu
otcZAOMeJdBFWnpzhr1fxmjaNY4u4hrgPZSTU/iBjdHapoza3zAFFxysmGYqs9dR
jFyxZeR4scz8GqSTFviNdH9jvtDJkdAC5hfMaB811Q==
-----END CERTIFICATE-----
-----BEGIN CERTIFICATE-----
MIIEqjCCA5KgAwIBAgIQAnmsRYvBskWr+YBTzSybsTANBgkqhkiG9w0BAQsFADBh
MQswCQYDVQQGEwJVUzEVMBMGA1UEChMMRGlnaUNlcnQgSW5jMRkwFwYDVQQLExB3
d3cuZGlnaWNlcnQuY29tMSAwHgYDVQQDExdEaWdpQ2VydCBHbG9iYWwgUm9vdCBD
QTAeFw0xNzExMjIxMjI2MTBaFw0yNzExMjIxMjI2MTBaMG4xCzAJBgNVBAYTAlVT
MRUwEwYDVQQKEwxEaWdpQ2VydCBJbmMxGTAXBgNVBAsTEHd3dy5kaWdpY2VydC5j
b20xLTArBgNVBAMTJEVuY3J5cHRpb24gRXZlcnl3aGVyZSBEViBUTFMgQ0EgLSBH
MTCCASIwDQYJKoZIhvcNAQEBBQADggEPADCCAQoCggEBALPeP6wkab41dyQh6mKc

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lbxhm6dWS9OK/lFehKNT0OYI9aqk6F+U7cA6jxSC+iDBPXwdF4rs3KRyp3aQn6pj
pp1yr7IB6Y4zv72Ee/PlZ/6rK6InC6WpK0nPVOYR7n9iDuPe1E4IxUMBH/T33+3h
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wfYCV6v6kDdXkbgGRLKsR4pucbJtbKqIkUGxuZI2t7pfewKRc5nWecvDBZf3+p1M
pA8CAwEAAaOCAU8wggFLMB0GA1UdDgQWBBRVdE+yck/1YLpQ0dfmUVyaAYca1zAf
BgNVHSMEGDAWgBQD3lA1VtFMu2bwo+IbG8OXsj3RVTAOBgNVHQ8BAf8EBAMCAYYw
HQYDVR0lBBYwFAYIKwYBBQUHAwEGCCsGAQUFBwMCMBIGA1UdEwEB/wQIMAYBAf8C
AQAwNAYIKwYBBQUHAQEEKDAmMCQGCCsGAQUFBzABhhhodHRwOi8vb2NzcC5kaWdp
Y2VydC5jb20wQgYDVR0fBDswOTA3oDWgM4YxaHR0cDovL2NybDMuZGlnaWNlcnQu
Y29tL0RpZ2lDZXJ0R0R2xvYmFsUm9vdENBLmNydDBMBgNVHSAERTBDMDcGCWCGSAGG
/WwBAjAqMCgGCCsGAQUFBwIBFhhodHRwczovL3d3dy5kaWdpY2VydC5jb20vQ1BT
MAgGBmeBDAECATANBgkqhkiG9w0BAQsFAAOCAQEAK3Gp6/aGq7aBZsxf/oQ+TD/B
SwW3AU4ETK+GQf2kFzYZkby5SFrHdPomunx2HBzViUchGoofGgg7gHW0W3MlQAXW
M0r5LUvStcr82QDWYNPaUy4taCQmyaJ+VB+6wxHstSigOlSNF2a6vg4rgexixeiV
4YSB03Yqp2t3TeZHM9ESfkus74nQyW7pRGezj+TC44xCagCQQOzzNmzEAP2SnCrJ
sNE2DpRVMnL8J6xBRdjmOsC3N6cQuKuRXbzByVBjCqAA8t1L0I+9wXJerLPyErjy
rMKWaBFLmfK/AHNF4ZihwPGOc7w6UHczBZXH5RFzJNnww+WnKuTPI0HfnVH8lg==
-----END CERTIFICATE-----",
        "type": "server",
        "create_time": "2019-03-03 16:32:30",
        "private_key": "-----BEGIN RSA PRIVATE KEY-----
MIIEpQIBAAKCAQEArUw5UDKAL8iJ0el9XYoYTcG3RnrGzFujWV+336Y/V6wdygqq
pccyOFZh/T57b66SyTXqJYC6g2WXOMym1JJqsWNXbxg7ONXKCs3bXPSINtxlSuPM
H3rJ5Oa+dGn8lOdkdSZUhwzoYg4Rzksoazs3Nhq3i6wclihVGgLnuq058jG80Gkj
7a0wKrFEWcHJiekdwOicKJDoMVwUruNbnz0IhZDIMcoCsRAS8yCS40agl0B2KMW7
E8qJW+o8KcOB+r3ESBHBQILPfAKVkaBCo8u3jj91FJtORfjpDr14a5cRKiD5v65c
BND5lZZpvQ4AWn2G98U/zLU9lUUnwiUB4CHLHQIDAQABAoIBAGs5rISompP2OwA8
virwVRVXdPUQ5oxvbuTPys+A59RxVIU8kFW+qJ4fJMYysOFrXLtOtq+5tK20YBru
1ZLVfVqAowrELXB/J2ID+WTMkLORLsNlq1kW+nC9LL6PDY98lLW/n7FoFSkGl5HT
AxFGNGUvpr2vIojuL6nGfmcM47uscJ9aP6IJxr4p70dhPVjZBdnMnXYwRkB3dZt/
E0B/p8J5i3oo5Rucv4DOfB+01wXGAVyx5/zce+NZdhyrivkj3hHV55SxGhVWzWhj
a3dAlbpKwYgfILj0inRdJYmIjBdbGb2HFix7+ncBg8B2oerJXC6/fANwRGu5/LZU
5xuPVWkCgYEA6an8TY1unIGLYL5aBJ16Tx4usqMyTXr/T4zkQyftRPMt+ZuxVQHl
GHsg7XvLFNd04MBZXtkZXaYVcpOm7OUYcl0i9ZAkWXXoXcBtn1Oom3gz/7RjAUnp
k+myvxCUSQ2JSz4u3QBtyPVyYNyBFXrKqdKfcYyG85+yQVHBNMVrdvMCgYEAvd0C
hFpm83ha+VQp+9XN1DYZNUyqhibj/E3X9jAn+gDbzlKxw/D9en2RIlQYUrl8+il8
QKk4cfOxJYStQfxptz8QBPVeLajDN67zJ0Rk8AB50HHHcNSU8uFkaO8KxsyVjbLS
+JltqfJAEraXLinbp1Fxcg9DsQdMd6cw2DmrWa8CgYEA1UjJOUzo80i4HYWDC4Vn
OEK3o22do+WqmEVlsfsG9BH5HEdGVe7V3EO/6aY+1/ZXBDPvH8mRAs9v8lbeXow7
hWCIYZfB5jre8HyOU4l8dPUCmdxhJrL913rRIuASSqBlet32ztnuXCnWzp1X4nBj
/yF3UqFQKZ7SihcDAZVWo4sCgYEAj7al/BcNzIcynX2mldhdh583b4/Ll+YCNm2Z
5eDHscZKmx8fLcjRpcZE8dXagPqXmwtj6E1vDvQWP9m06VDNCthFHB+nO0tLmidSk
evmbScuiaTRmmbJf2IThY0hlqNsc7PgKF2DTkIstEr0hLDFE8Z6FN6f0PiDfMcbd
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L7s+4it+nIQy24P6g1PihtzsM+HD2UCErBiYUJdRK8Q9GGHdZojFk9Y=
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",
        "update_time": "2019-03-03 16:32:30",
        "admin_state_up": true,
        "tenant_id": "601240b9c5c94059b63d484c92cfe308",
        "expire_time": "2019-07-10 12:00:00"
    },
    {
        "description": null,
        "domain": "www.elb.com",
        "id": "ef4d341365754a959556576501791b19",
        "name": "certificate_28b824c8bbee419992fb7974b2911c72",
        "certificate": "-----BEGIN CERTIFICATE-----
MIIDpTCCAo2gAwIBAgIJAKdmmOBYnFvoMA0GCSqGSIb3DQEBCwUAMGkxCzAJBgNV
BAYTAnh4MQswCQYDVQQIDAJ4eDELMAkGA1UEBwwCeHgxCzAJBgNVBAoMAnh4MQsw
CQYDVQQLDAJ4eDELMAkGA1UEAwwCeHgxGTAXBgkqhkiG9w0BCQEWCnh4QDE2My5j
b20wHhcNMTcxMjA0MDM0MjQ5WhcNMjAxMjAzMDM0MjQ5WjBpMQswCQYDVQQGEwJ4
eDELMAkGA1UECAwCeHgxCzAJBgNVBAcMAnh4MQswCQYDVQQKDAJ4eDELMAkGA1UE
CwwCeHgxCzAJBgNVBAMMAnh4MRkwFwYJKoZIhvcNAQkBFgp4eEAxNjMuY29tMIIB
IjANBgkqhkiG9w0BAQEFAAOCAQ8AMIIBCgKCAQEAwZ5UJULAjWr7p6FVwGRQRjFN
2s8tZ/6LC3X82fajpVsYqF1xqEuUDndDXVD09E4u83MS6HO6a3bIVQDp6/klnYld
iE6Vp8HH5BSKaCWKVg8lGWg1UM9wZFnlryi14KgmpIFmcu9nA8yV/6MZAe6RSDmb

```
3iyNBmiZ8aZhGw2pI1YwR+15MVqFFGB+7ExkziROi7L8CFCyCezK2/oOOvQsH1dz
Q8z1JXWdg8/9Zx7Ktvgwu5PQM3cJtSHX6iBPOkMU8Z8TugLlTqQXKZOEgwajwvQ5
mf2DPkVgM08XAgaLJcLigwD513koAdtJd5v+9irw+5LAuO3JclqwTvwy7u/YwwID
AQABo1AwTjAdBgNVHQ4EFgQUo5A2tIu+bcUfvGTD7wmEkhXKFjcwHwYDVR0jBBgw
FoAUo5A2tIu+bcUfvGTD7wmEkhXKFjcwDAYDVR0TBAUwAwEB/zANBgkqhkiG9w0B
AQsFAAOCAQEAWJ2rS6Mvlqk3GfEpboezx2J3X7l1z8Sxoqg6ntwB+rezvK3mc9H0
83qcVeUcoH+0A0lSHyFN4FvRQL6X1hEheHarYwJK4agb231vb5erasuGO463eYEG
r4SfTuOm7SyiV2xxbaBKrXJtpBp4WLL/s+LF+nklKjaOxkmxUX0sM4CTA7uFJypY
c8Tdr8lDDNqoUtMD8BrUCJi+7lmMXRcC3Qi3oZJW76ja+kZA5mKVFPd1ATih8TbA
i34R7EQDtFeiSvBdeKRsPp8c0KT8H1B4lXNkkCQs2WX5p4lm99+ZtLD4glw8x6Ic
i1YhgnQbn5E0hz55OLu5jvOkKQjPCW+8Kg==
-----END CERTIFICATE-----",
        "type": "server",
        "create_time": "2018-09-28 03:00:47",
        "private_key": "-----BEGIN RSA PRIVATE KEY-----
MIIEowIBAAKCAQEAwZ5UJULAjWr7p6FVwGRQRjFN2s8tZ/6LC3X82fajpVsYqF1x
qEuUDndDXVD09E4u83MS6HO6a3bIVQDp6/klnYldiE6Vp8HH5BSKaCWKVg8lGWg1
UM9wZFnlryi14KgmpIFmcu9nA8yV/6MZAe6RSDmb3iyNBmiZ8aZhGw2pI1YwR+15
MVqFFGB+7ExkziROi7L8CFCyCezK2/oOOvQsH1dzQ8z1JXWdg8/9Zx7Ktvgwu5PQ
M3cJtSHX6iBPOkMU8Z8TugLlTqQXKZOEgwajwvQ5mf2DPkVgM08XAgaLJcLigwD5
13koAdtJd5v+9irw+5LAuO3JclqwTvwy7u/YwwIDAQABAoIBACU9S5fjD9/jTMXA
DRs08A+gGgZUxLn0xk+NAPX3LyB1tfdkCaFB8BccLzO6h3KZuwQOBPv6jkdvEDbx
Nwyw3eA/9GJsIvKiHc0rejdvyPymaw9I8MA7NbXHaJrY7KpqDQyk6sx+aUTcy5jg
iMXLWdwXYHhJ/1HVOo603oZyiS6HZeYU089NDUcX+1SJi3e5Ke0gPVXEqCq1O11/
rh24bMxnwZo4PKBWdcMBN5Zf/4ij9vrZE+fFzW7vGBO48A5lvZxWU2U5t/OZQRtN
1uLOHmMFa0FIF2aWbTVfwdUWAFsvAOkHj9VV8BXOUwKOUuEktdkfAlvrxmsFrO/H
yDeYYPkCgYEA/S55CBbR0sMXpsSZ56uRn8JHApZJhgkgvYr+FqDlJq/e92nAzf01P
RoEBUajwrnf1ycevN/SDfbtWzq2XJGqhWdJmtpO16b7KBsC6BdRcH6dnOYh31jgA
vABMIP3wzI4zSVTyxRE8LDuboytF1mSCeV5tHYPQTZNwrplDnLQhywcCgYEAw8Yc
Uk/eiFr3hfH/ZohMfV5p82Qp7DNIGRzw8YtVG/3+vNXrAXW1VhugNhQY6L+zLtJC
aKn84ooup0m3YCg0hvINqJuvzfsuzQgtjTXyaE0cEwsjUusOmiuj09vVx/3U7siK
Hdjd2ICPCvQ6Q8tdi8jV320gMs05AtaBkZdsiWUCgYEAtLw4Kk4f+xTKDFsrLUNf
75wcqhWVBiwBp7yQ7UX4EYsJPKZcHMRTk0EEcAbpyaJZE3I44vjp5ReXIHNLMfPs
uvI34J4Rfot0LN3n7cFrAi2+wpNo+MOBwrNzpRmijGP2uKKrq4JiMjFbKV/6utGF
Up7VxfwS904JYpqGaZctiIECgYA1A6nZtF0riY6ry/uAdXpZHL8ONNqRZtWoT0kD
79otSVu5ISiRbaGcXsDExC52oKrSDAgFtbqQUiEOFg09UcXfoR6HwRkba2CiDwve
yHQLQI5Qrdxz8Mk0gIrNrSM4FAmcW9vi9z4kCbQyoC5C+4gqeUlJRpDIkQBWP2Y4
2ct/bQKBgHv8qCsQTZphOxc31BJPa2xVhuv18cEU3XLUrVfUZ/1f43JhLp7gynS2
ep++LKUi9D0VGXY8bqvfJjbECoCeu85vl8NpCXwe/LoVoIn+7KaVIZMwqoGMfgNl
nEqm7HWkNxHhf8A6En/IjleuddS1sf9e/x+TJN1Xhnt9W6pe7Fk1
-----END RSA PRIVATE KEY-----",
        "update_time": "2018-09-28 03:00:47",
        "admin_state_up": true,
        "tenant_id": "601240b9c5c94059b63d484c92cfe308",
        "expire_time": "2020-12-03 03:42:49"
    }
  ],
  "instance_num": 2
}
```

Status Code

For details, see **Status Codes**.

4.9.3 Querying Details of a Certificate

Function

This API is used to query details about a certificate.

Constraints

None

URI

GET /v2/{project_id}/elb/certificates/{certificate_id}

Table 4-204 Parameter description

Parameter	Mandatory	Type	Description
project_id	Yes	String	Specifies the project ID.
certificate_id	Yes	String	Specifies the certificate ID.

Request

None

Response

Table 4-205 Parameter description

Parameter	Type	Description
id	String	Specifies the certificate ID.
tenant_id	String	Specifies the ID of the project where the certificate is used. The value contains a maximum of 255 characters.
admin_state_up	Boolean	Specifies the administrative status of the certificate. This parameter is reserved. The value can be **true** or **false**. ● **true**: Enabled ● **false**: Disabled
name	String	Specifies the certificate name. The value contains a maximum of 255 characters.
description	String	Provides supplementary information about the certificate. The value contains a maximum of 255 characters.

Parameter	Type	Description
type	String	Specifies the certificate type. The value range varies depending on the protocol of the backend server group: ● **server**: indicates the server certificate. ● **client**: indicates the CA certificate.
domain	String	Specifies the domain name associated with the server certificate. The value contains a maximum of 100 characters.
private_key	String	Specifies the private key of the server certificate in PEM format.
certificate	String	Specifies the public key of the server certificate or CA certificate used to authenticate the client. The value of parameter **type** determines whether a public key or CA certificate is required. Both types of certificates are in PEM format.
expire_time	String	Specifies the time when the certificate expires. The UTC time is in *YYYY-MM-DDTHH:MM:SS* format.
create_time	String	Specifies the time when the certificate was created. The UTC time is in *YYYY-MM-DDTHH:MM:SS* format.
update_time	String	Specifies the time when the certificate was updated. The UTC time is in *YYYY-MM-DDTHH:MM:SS* format.

Example Request

- Example request: Querying details of a certificate
  GET https://{Endpoint}/v2/a31d2bdcf7604c0faaddb058e1e08819/elb/certificates/
  23ef9aad4ecb463580476d324a6c71af

Example Response

- Example response 1

```
{
    "certificate":
"-----BEGIN CERTIFICATE-----
\nMIIC4TCCAcmgAwIBAgICEREwDQYJKoZIhvcNAQELBQAwFzEVMBMGA1UEAxMMTXlD
\nb21wYW55IENBMB4XDTE4MDcwMjEzMjU0N1oXDTQ1MTExNzEzMjU0N1owFDESMBAG
\nA1UEAwwJbG9jYWxob3N0MIIBIjANBgkqhkiG9w0BAQEFAAOCAQ8AMIIBCgKCAQEA
\n0FQGzi3ucTX+DNud1p/b4XVM6I3rY7+Cfge5GMLDIUXIHXCfCgp19Z3807yNpLF5
\nU0NqPQZKUrZz3rQeLN9mYiUTJZPutYlFDDbB8CtlgV+eyU9yYJslWx/Bm5kWNPh9
```

\n7B9Yu9pbp2u6zDA99IC4ekKD93KuzxlnLmSle4Y3dbYwk0LpMDL6lfCHKt/W7jaS
\nIAzlsxD+QM6l7QjhWJ+kUx+UkboOISjTe7E9XmDLJR7u8LRAQylYKy4zgnv1tn/K
\ny09cxLKAFtgoZWQD2FAZJf9F7k1kYNwqITz3CPlLZUUn7yw3nkOOtLMI28IEv0Wy
\nYd7CMJQkS1NPJBKNOGfR/wIDAQABozowODAhBgNVHREEGjAYggpkb21haW4uY29t
\nhwQKuUvJhwR/AAABMBMGA1UdJQQMMAoGCCsGAQUFBwMBMA0GCSqGSIb3DQEBCwUA
\nA4IBAQA8lMQJxaTey7EjXtRLSVlEAMftAQPG6jijNQuvIBQYUDauDT4W2XUZ5wAn
\njiOyQ83va672K1G9s8n6xlH+xwwdSNnozaKzC87vwSeZKIOdl9I5I98TGKI6OoDa
\nezmzCwQYtHBMVQ4c7Ml8554Ft1mWSt4dMAK2rzNYjvPRLYlzp1HMnI6hkjPk4PCZ
\nwKnha0dlScati9CCt3UzXSNJOSLalKdHErH08Iqd+1BchScxCfk0xNITn1HZZGmI
\n+vbmunok3A2lucI14rnsrcbkGYqxGikySN6B2cRLBDK4Y3wChiW6NVYtVqcx5/mZ
\niYsGDVN+9QBd0eYUHce+77s96i3I
\n-----END CERTIFICATE-----",
    "create_time": "2017-02-25 09:35:27",
    "expire_time": "2045-11-17 13:25:47",
    "description": "description for certificate",
    "domain": "www.elb.com",
    "id": "23ef9aad4ecb463580476d324a6c71af",
    "tenant_id": "a31d2bdcf7604c0faaddb058e1e08819",
    "admin_state_up": true,
    "name": "https_certificate",
    "private_key":
"-----BEGIN PRIVATE KEY-----
\nMIIEvgIBADANBgkqhkiG9w0BAQEFAASCBKgwggSkAgEAAoIBAQDQVAbOLe5xNf4M
\n253Wn9vhdUzojetjv4J+B7kYwsMhRcgdcJ8KCnX1nfzTvI2ksXlTQ2o9BkpStnPe
\ntB4s32ZiJRMlk+61iUUMNsHwK2WBX57JT3JgmyVbH8GbmRY0+H3sH1i72luna7rM
\nMD30gLh6QoP3cq7PGWcuZKV7hjd1tjCTQukwMvqV8Icq39buNpIgDOWzEP5AzqXt
\nCOFYn6RTH5SRug4hKNN7sT1eYMslHu7wtEBDKVgrLjOCe/W2f8rLT1zEsoAW2Chl
\nZAPYUBkl/0XuTWRg3CohPPcI+UtlRSfvLDeeQ460swjbwgS/RbJh3sIwlCRLU08k
\nEo04Z9H/AgMBAAECggEAEIeaQqHCWZk/HyYN0Am/GJSGFa2tD60SXY2fUieh8/Hl
\nnfvCArftGgMaYWPSNCJRMXB7tPwpQu19esjz4Z/cR2Je4fTLPrffGUsHFgZjv5OQB
\nZVe4a5Hj1OcgJYhwCqPs2d9i2wToYNBbcfgh8lSETq8YaXngBO6vES9LMhHkNKKr
\nnciu9YkInNEHu6uRJ5g/eGGX3KQynTvVIhnOVGAJvjTXcoU6fm7gYdHAD6jk9lc9M
\nEGpfYI6AdHIwFZcT/RNAxhP82lg2gUJSgAu66FfDjMwQXKbafKdP3zq4Up8a7Ale
\nkrguPtfV1vWklg+bUFhgGaiAEYTpAUN9t2DVIiijgQKBgQDnYMMsaF0r557CM1CT
\nXUqgCZo8MKeV2jf2drlxRRwRl33SksQbzAQ/qrLdT7GP3sCGqvkxWY2FPdFYf8kx
\nGcCeZPcIeZYCQAM41pjtsaM8tVbLWVR8UtGBuQoPSph7JNF3Tm/JH/fbwjpjP7dt
\nJ7n8EzkRUNE6aIMHOFEeych/PQKBgQDmf1bMogx63rTcwQ0PEZ9Vt7mTgKYK4aLr
\niWgTWHXPZxUQaYhpjXo6+lMI6DpExiDgBAkMzJGIvS7yQiYWU+wthAr9urbWYdGZ
\nlS6VjoTkF6r7VZoILXX0fbuXh6lm8K8IQRfBpJff56p9phMwaBpDNDrfpHB5utBU
\nxs40yIdp6wKBgQC69Cp/xUwTX7GdxQzEJctYiKnBHKcspAg38zJf3bGSXU/jR4eB
\nn1lVQhELGI9CbKSdzKM71GyEImix/T7FnJSHIWlho1qVo6AQyduNWnAQD15pr8KAd
\nXGXAZZ1FQcb3KYa+2fflERmazdOTwjYZ0tGqZnXkEeMdSLkmqlCRigWhGQKBgDak
\n/735uP20KKqhNehZpC2dJei7OiIgRhCS/dKASUXHSW4fptBnUxACYocdDxtY4Vha
\nfI7FPMdvGl8ioYbvlHFh+X0Xs9r1S8yeWnHoXMb6eXWmYKMJrAoveLa+2cFm1Agf
\n7nLhA4R4lqm9IpV6SKegDUkR4fxp9pPyodZPqBLLAoGBAJkD4wHW54Pwd4Ctfk9o
\njHjWB7pQlUYpTZO9dm+4fpCMn9Okf43AE2yAOaAP94GdzdDJkxfciXKcsYr9Iluk
\nfaoXgjKR7p1zERiWZuFF63SB4aiyX1H7IX0MwHDZQO38a5gZaOm/BUlGKMWXzuEd
\n3fy+1rCUwzOp9LSjtJYf4ege
\n-----END PRIVATE KEY-----",
    "type": "server",
    "update_time": "2017-02-25 09:35:27"
}

Status Code

For details, see **Status Codes**.

4.9.4 Updating a Certificate

Function

This API is used to update a certificate.

URI

PUT /v2/{project_id}/elb/certificates/{certificate_id}

Table 4-206 Parameter description

Parameter	Mandatory	Type	Description
project_id	Yes	String	Specifies the project ID.
certificate_id	Yes	String	Specifies the certificate ID.

Request

Table 4-207 Parameter description

Parameter	Mandatory	Type	Description
admin_state_up	No	Boolean	Specifies the administrative status of the certificate. This parameter is reserved, and the default value is **true**.
name	No	String	Specifies the certificate name. The value contains a maximum of 255 characters.
description	No	String	Provides supplementary information about the certificate. The value contains a maximum of 255 characters.

Parameter	Mandatory	Type	Description
domain	No	String	Specifies the domain name associated with the server certificate. The default value is **null**. The value contains a maximum of 100 characters. The value range varies depending on the protocol of the backend server group: ● A common domain name contains 0 to 100 characters and consists of several labels separated by dots (.). Each label can contain a maximum of 63 characters, including letters, digits, and hyphens (-), and must start and end with a letter or digit. ● In addition to the requirements for common domain names, a wildcard domain name can start with an asterisk (*). This parameter takes effect only when **type** is set to **server**. **NOTE** This parameter takes effect only when **type** is set to **server**.
private_key	No	String	Specifies the private key of the server certificate. The value must be PEM encoded. ● This parameter will be ignored if **type** is set to **client**. A CA server can still be created and used normally. This parameter will be left blank even if you enter a private key that is not PEM encoded. ● This parameter is mandatory only when **type** is set to **server**. If you enter an invalid private key, an error is returned.
certificate	No	String	Specifies the public key of the server certificate or CA certificate used to authenticate the client. The value of parameter **type** determines whether a public key or CA certificate is required. Both types of certificates are in PEM format.

Response

Table 4-208 Parameter description

Parameter	Type	Description
id	String	Specifies the certificate ID.
tenant_id	String	Specifies the ID of the project where the certificate is used. The value contains a maximum of 255 characters.
admin_state_up	Boolean	Specifies the administrative status of the certificate. This parameter is reserved. The value can be **true** or **false**. ● **true**: Enabled ● **false**: Disabled
name	String	Specifies the certificate name. The value contains a maximum of 255 characters.
description	String	Provides supplementary information about the certificate. The value contains a maximum of 255 characters.
type	String	Specifies the certificate type. The value range varies depending on the protocol of the backend server group: ● **server**: indicates the server certificate. ● **client**: indicates the CA certificate.
domain	String	Specifies the domain name associated with the server certificate. The value contains a maximum of 100 characters.
private_key	String	Specifies the private key of the server certificate in PEM format.
certificate	String	Specifies the public key of the server certificate or CA certificate used to authenticate the client. The value of parameter **type** determines whether a public key or CA certificate is required. Both types of certificates are in PEM format.

Parameter	Type	Description
expire_time	String	Specifies the time when the certificate expires. The UTC time is in *YYYY-MM-DDTHH:MM:SS* format.
create_time	String	Specifies the time when the certificate was created. The UTC time is in *YYYY-MM-DDTHH:MM:SS* format.
update_time	String	Specifies the time when the certificate was updated. The UTC time is in *YYYY-MM-DDTHH:MM:SS* format.

Example Request

- Example request: Updating a certificate
  PUT https://{Endpoint}/v2/a31d2bdcf7604c0faaddb058e1e08819/elb/certificates/
  23ef9aad4ecb463580476d324a6c71af

{
    "certificate":
"-----BEGIN CERTIFICATE-----
\nMIIC4TCCAcmgAwIBAgICEREwDQYJKoZIhvcNAQELBQAwFzEVMBMGA1UEAxMMTXlD
\nb21wYW55IENBMB4XDTE4MDcwMjEzMjU0N1oXDTQ1MTExNzEzMjU0N1owFDESMBAG
\nA1UEAwwJbG9jYWxob3N0MIIBIjANBgkqhkiG9w0BAQEFAAOCAQ8AMIIBCgKCAQEA
\n0FQGzi3ucTX+DNud1p/b4XVM6I3rY7+Cfge5GMLDIUXIHXCfCgp19Z3807yNpLF5
\nU0NqPQZKUrZz3rQeLN9mYiUTJZPutYlFDDbB8CtlgV+eyU9yYJslWx/Bm5kWNPh9
\n7B9Yu9pbp2u6zDA99IC4ekKD93KuzxlnLmSle4Y3dbYwk0LpMDL6lfCHKt/W7jaS
\nIAzlsxD+QM6l7QjhWJ+kUx+UkboOISjTe7E9XmDLJR7u8LRAQylYKy4zgnv1tn/K
\nny09cxLKAFtgoZWQD2FAZJf9F7k1kYNwqITz3CPlLZUUn7yw3nkOOtLMI28IEv0Wy
\nYd7CMJQkS1NPJBKNOGfR/wIDAQABozowODAhBgNVHREEGjAYggpkb21haW4uY29t
\nhhwQKuUvJhwR/AAABMBMGA1UdJQQMMAoGCCsGAQUFBwMBMA0GCSqGSIb3DQEBCwUA
\nA4IBAQA8lMQJxaTey7EjXtRLSVlEAMftAQPG6jijNQuvIBQYUDauDT4W2XUZ5wAn
\nnjiOyQ83va672K1G9s8n6xlH+xwwdSNnozaKzC87vwSeZKIOdl9I5I98TGKI6OoDa
\nnezmzCwQYtHBMVQ4c7Ml8554Ft1mWSt4dMAK2rzNYjvPRLYlzp1HMnI6hkjPk4PCZ
\nnwKnha0dlScati9CCt3UzXSNJOSLalKdHErH08Iqd+1BchScxCfk0xNITn1HZZGmI
\nn+vbmunok3A2lucI14rnsrcbkGYqxGikySN6B2cRLBDK4Y3wChiW6NVYtVqcx5/mZ
\niYsGDVN+9QBd0eYUHce+77s96i3I
\n-----END CERTIFICATE-----",
    "description": "description for certificate",
    "domain": "www.elb.com",
    "name": "https_certificate",
    "private_key":
"-----BEGIN PRIVATE KEY-----
\nMIIEvgIBADANBgkqhkiG9w0BAQEFAASCBKgwggSkAgEAAoIBAQDQVAbOLe5xNf4M
\nn253Wn9vhdUzojetjv4J+B7kYwsMhRcgdcJ8KCnX1nfzTvl2ksXlTQ2o9BkpStnPe
\ntB4s32ZiJRMlk+61iUUMNsHwK2WBX57JT3JgmyVbH8GbmRY0+H3sH1i72luna7rM
\nMD30gLh6QoP3cq7PGWcuZKV7hjd1tjCTQukwMvqV8Icq39buNpIgDOWzEP5AzqXt
\nCOFYn6RTH5SRug4hKNN7sT1eYMslHu7wtEBDKVgrLjOCe/W2f8rLT1zEsoAW2Chl
\nZAPYUBkl/0XuTWRg3CohPPcI+UtlRSfvLDeeQ460swjbwgS/RbJh3sIwlCRLU08k
\nEo04Z9H/AgMBAAECggEAEIeaQqHCWZk/HyYN0Am/GJSGFa2tD60SXY2fUieh8/Hl
\nnfvCArftGgMaYWPSNCJRMXB7tPwpQu19esjz4Z/cR2Je4fTLPrffGUsHFgZjv5OQB
\nnZVe4a5Hj1OcgJYhwCqPs2d9i2wToYNBbcfgh8lSETq8YaXngBO6vES9LMhHkNKKr
\nciu9YkInNEHu6uRJ5g/eGGX3KQynTvVIhnOVGAJvjTXcoU6fm7gYdHAD6jk9lc9M
\nEGpfYI6AdHIwFZcT/RNAxhP82lg2gUJSgAu66FfDjMwQXKbafKdP3zq4Up8a7Ale
\nkrguPtfV1vWklg+bUFhgGaiAEYTpAUN9t2DVIiijqQKBgQDnYMMsaF0r557CM1CT
\nXUqgCZo8MKeV2jf2drlxRRwRl33SksQbzAQ/qrLdT7GP3sCGqvkxWY2FPdFYf8kx
\nGcCeZPcIeZYCQAM41pjtsaM8tVbLWVR8UtGBuQoPSph7JNF3Tm/JH/fbwjpjP7dt
\nJ7n8EzkRUNE6aIMHOFEeych/PQKBgQDmf1bMogx63rTcwQ0PEZ9Vt7mTgKYK4aLr

\niWgTWHXPZxUQaYhpjXo6+lMI6DpExiDgBAkMzJGIvS7yQiYWU+wthAr9urbWYdGZ
\nlS6VjoTkF6r7VZoILXX0fbuXh6lm8K8IQRfBpJff56p9phMwaBpDNDrfpHB5utBU
\nxs40yIdp6wKBgQC69Cp/xUwTX7GdxQzEJctYiKnBHKcspAg38zJf3bGSXU/jR4eB
\n1lVQhELGI9CbKSdzKM71GyElmix/T7FnJSHIWlho1qVo6AQyduNWnAQD15pr8KAd
\nXGXAZZ1FQcb3KYa+2fflERmazdOTwjYZ0tGqZnXkEeMdSLkmqlCRigWhGQKBgDak
\n/735uP20KKqhNehZpC2dJei7OiIgRhCS/dKASUXHSW4fptBnUxACYocdDxtY4Vha
\nfI7FPMdvGl8ioYbvlHFh+X0Xs9r1S8yeWnHoXMb6eXWmYKMJrAoveLa+2cFm1Agf
\n7nLhA4R4lqm9IpV6SKegDUkR4fxp9pPyodZPqBLLAoGBAJkD4wHW54Pwd4Ctfk9o
\njHjWB7pQlUYpTZO9dm+4fpCMn9Okf43AE2yAOaAP94GdzdDJkxfciXKcsYr9IIuk
\nfaoXgjKR7p1zERiWZuFF63SB4aiyX1H7IX0MwHDZQO38a5gZaOm/BUlGKMWXzuEd
\n3fy+1rCUwzOp9LSjtJYf4ege
\n-----END PRIVATE KEY-----"
}

Example Response

- Example response 1

{
    "certificate": "-----BEGIN CERTIFICATE-----
\nMIIC4TCCAcmgAwIBAgICEREwDQYJKoZIhvcNAQELBQAwFzEVMBGGA1UEAxMMTXlD
\nb21wYW55IENBMB4XDTE4MDcwMjEzMjU0N1oXDTQ1MTExNzEzMjU0N1owFDESMBAG
\nA1UEAwwJbG9jYWxob3N0MIIBIjANBgkqhkiG9w0BAQEFAAOCAQ8AMIIBCgKCAQEA\n0FQGzi3ucTX
+DNud1p/
b4XVM6I3rY7+Cfge5GMLDIUXIHXCfCgp19Z3807yNpLF5\nU0NqPQZKUrZz3rQeLN9mYiUTJZPutYlFDDb
B8CtlgV+eyU9yYJslWx/
Bm5kWNPh9\n7B9Yu9pbp2u6zDA99IC4ekKD93KuzxlnLmSle4Y3dbYwk0LpMDL6lfCHKt/W7jaS
\nIAzlsxD+QM6l7QjhWJ+kUx+UkboOISjTe7E9XmDLJR7u8LRAQylYKy4zgnv1tn/K
\ny09cxLKAFtgoZWQD2FAZJf9F7k1kYNwqITz3CPlLZUUn7yw3nkOOtLMI28IEv0Wy
\nYd7CMJQkS1NPJBKNOGfR/wIDAQABozowODAhBgNVHREEGjAYggpkb21haW4uY29t
\nhwQKuUvJhwR/AAABMBMGA1UdJQQMMAoGCCsGAQUFBwMBMA0GCSqGSIb3DQEBCwUA
\nA4IBAQA8lMQJxaTey7EjXtRLSVlEAMftAQPG6jijNQuvIBQYUDauDT4W2XUZ5wAn
\njiOyQ83va672K1G9s8n6xlH+xwwdSNnozaKzC87vwSeZKIOdl9I5l98TGKl6OoDa
\nezmzCwQYtHBMVQ4c7Ml8554Ft1mWSt4dMAK2rzNYjvPRLYlzp1HMnI6hkjPk4PCZ
\nwKnha0dlScati9CCt3UzXSNJOSLalKdHErH08Iqd+1BchScxCfk0xNITn1HZZGmI\n
+vbmunok3A2lucI14rnsrcbkGYqxGikySN6B2cRLBDK4Y3wChiW6NVYtVqcx5/mZ\niYsGDVN
+9QBd0eYUHce+77s96i3l\n-----END CERTIFICATE-----",
    "expire_time": "2045-11-17 13:25:47",
    "create_time": "2017-02-25 09:35:27",
    "update_time": "2017-02-25 09:38:27",
    "id": "23ef9aad4ecb463580476d324a6c71af",
    "description": "description for certificate",
    "domain": "www.elb.com",
    "type": "server",
    "admin_state_up": true,
    "tenant_id": "a31d2bdcf7604c0faaddb058e1e08819",
    "name": "https_certificate",
    "private_key": "-----BEGIN PRIVATE KEY-----
\nMIIEvgIBADANBgkqhkiG9w0BAQEFAASCBKgwggSkAgEAAoIBAQDQVAbOLe5xNf4M
\n253Wn9vhdUzojetjv4J+B7kYwsMhRcgdcJ8KCnX1nfzTvI2ksXlTQ2o9BkpStnPe\ntB4s32ZiJRMlk
+61iUUMNsHwK2WBX57JT3JgmyVbH8GbmRY0+H3sH1i72luna7rM
\nMD30gLh6QoP3cq7PGWcuZKV7hjd1tjCTQukwMvqV8Icq39buNpIgDOWzEP5AzqXt
\nCOFYn6RTH5SRug4hKNN7sT1eYMslHu7wtEBDKVgrLjOCe/W2f8rLT1zEsoAW2Chl\nZAPYUBkl/
0XuTWRg3CohPPcI+UtlRSfvLDeeQ460swjbwgS/RbJh3slwlCRLU08k\nEo04Z9H/
AgMBAAECggEAEIeaQqHCWZk/HyYN0Am/GJSGFa2tD60SXY2fUieh8/Hl
\nfvCArftGgMaYWPSNCJRMXB7tPwpQu19esjz4Z/cR2Je4fTLPrffGUsHFgZjv5OQB
\nZVe4a5Hj1OcgJYhwCqPs2d9i2wToYNBbcfgh8lSETq8YaXngBO6vES9LMhHkNKKr
\nciu9YkInNEHu6uRJ5g/eGGX3KQynTvVIhnOVGAJvjTXcoU6fm7gYdHAD6jk9lc9M
\nEGpfYI6AdHIwFZcT/RNAxhP82lg2gUJSgAu66FfDjMwQXKbafKdP3zq4Up8a7Ale\nkrguPtfV1vWklg
+bUFhgGaiAEYTpAUN9t2DVIiijgQKBgQDnYMMsaF0r557CM1CT
\nXUqgCZo8MKeV2jf2drlxRRwRl33SksQbzAQ/qrLdT7GP3sCGqvkxWY2FPdFYf8kx
\nGccCeZPcleZYCQAM41pjtsaM8tVbLWVR8UtGBuQoPSph7JNF3Tm/JH/fbwjpjP7dt
\nJ7n8EzkRUNE6aIMHOFEeych/PQKBgQDmf1bMogx63rTcwQ0PEZ9Vt7mTgKYK4aLr
\niWgTWHXPZxUQaYhpjXo6+lMI6DpExiDgBAkMzJGIvS7yQiYWU+wthAr9urbWYdGZ
\nlS6VjoTkF6r7VZoILXX0fbuXh6lm8K8IQRfBpJff56p9phMwaBpDNDrfpHB5utBU
\nxs40yIdp6wKBgQC69Cp/xUwTX7GdxQzEJctYiKnBHKcspAg38zJf3bGSXU/jR4eB
\n1lVQhELGI9CbKSdzKM71GyElmix/T7FnJSHIWlho1qVo6AQyduNWnAQD15pr8KAd
\nXGXAZZ1FQcb3KYa+2fflERmazdOTwjYZ0tGqZnXkEeMdSLkmqlCRigWhGQKBgDak\n/
735uP20KKqhNehZpC2dJei7OiIgRhCS/dKASUXHSW4fptBnUxACYocdDxtY4Vha\nfI7FPMdvGl8ioYbvlHFh
+X0Xs9r1S8yeWnHoXMb6eXWmYKMJrAoveLa+2cFm1Agf

\n7nLhA4R4lqm9IpV6SKegDUkR4fxp9pPyodZPqBLLAoGBAJkD4wHW54Pwd4Ctfk9o
\njHjWB7pQlUYpTZO9dm+4fpCMn9Okf43AE2yAOaAP94GdzdDJkxfciXKcsYr9IIuk
\nfaoXgjKR7p1zERiWZuFF63SB4aiyX1H7IX0MwHDZQO38a5gZaOm/BUlGKMWXzuEd\n3fy
+1rCUwzOp9LSjtJYf4ege\n-----END PRIVATE KEY-----"
}

Status Code

For details, see **Status Codes**.

4.9.5 Deleting a Certificate

Function

This API is used to delete a certificate.

Constraints

If the target certificate is used by a listener, the certificate cannot be deleted, and 409 code will be displayed.

URI

DELETE /v2/{project_id}/elb/certificates/{certificate_id}

Table 4-209 Parameter description

Parameter	Mandatory	Type	Description
project_id	Yes	String	Specifies the project ID.
certificate_id	Yes	String	Specifies the certificate ID.

Request

None

Response

None

Example Request

- Example request: Deleting a certificate
  DELETE https://{Endpoint}/v2/a31d2bdcf7604c0faaddb058e1e08819/elb/certificates/
  23ef9aad4ecb463580476d324a6c71af

Example Response

- Example response

None

Status Code

For details, see **Status Codes**.

5 Permissions Policies and Supported Actions

5.1 Introduction

This section describes fine-grained permissions management for the ELB service. If your account does not need individual IAM users, then you may skip over this chapter.

By default, new IAM users do not have permissions assigned. You need to add a user to one or more groups, and attach permissions policies or roles to these groups. Users inherit permissions from the groups to which they are added and can perform specified operations on cloud services based on the permissions.

An account has all of the permissions required to call all APIs, but IAM users must have the required permissions specifically assigned. The permissions required for calling an API are determined by the actions supported by the API. Only users who have been granted permissions allowing the actions can call the API successfully. For example, if an IAM user queries backend servers using an API, the user must have been granted permissions that allow the elb:servers:list action.

Supported Actions

ELB provides system-defined policies that can be directly used in IAM. You can also create custom policies and use them to supplement system-defined policies, implementing more refined access control. Operations supported by policies are specific to APIs. The following are common concepts related to policies:

- Permissions: Defined by actions in a custom policy.
- APIs: REST APIs that can be called in a custom policy.
- Actions: Added to a custom policy to control permissions for specific operations.
- Related actions: Actions on which a specific action depends to take effect. When assigning permissions for the action to a user, you also need to assign permissions for the dependent actions.

Supported Actions describes the custom policy authorization items supported by ELB.

● **Load balancer actions**, including actions supported by all load balancer APIs, such as the APIs for creating a load balancer, querying a load balancer, querying the load balancer status tree, querying the load balancer list, updating a load balancer, and deleting a load balancer.

📖 **NOTE**

The check mark (√) indicates that an action takes effect. The cross mark (x) indicates that an action does not take effect.

5.2 Supported Actions

5.2.1 Load Balancer

Permission	API	Action	IAM Project	Enterprise Project
Creates a load balancer	POST /v2/{project_id}/elb/loadbalancers	elb:loadbalancers:create	√	√
Queries a load balancer	GET /v2/{project_id}/elb/loadbalancers/{loadbalancer_id}	elb:loadbalancers:get	√	√
Queries the status tree of a load balancer	GET /v2/{project_id}/elb/loadbalancers/{loadbalancer_id}/statuses	elb:loadbalancers:get	√	√
Queries load balancers	GET /v2/{project_id}/elb/loadbalancers	elb:loadbalancers:list	√	√
Updates a load balancer	PUT /v2/{project_id}/elb/loadbalancers/{loadbalancer_id}	elb:loadbalancers:put	√	√

Permission	API	Action	IAM Project	Enterprise Project
Deletes a load balancer	DELETE /v2/{project_id}/elb/loadbalancers/{loadbalancer_id}	elb:loadbalancers:delete	√	√

5.2.2 Listener

Permission	API	Action	IAM Project	Enterprise Project
Adds a listener	POST /v2/{project_id}/elb/listeners	elb:listeners:create	√	√
Queries a listener	GET /v2/{project_id}/elb/listeners/{listener_id}	elb:listeners:get	√	√
Queries listeners	GET /v2/{project_id}/elb/listeners	elb:listeners:list	√	√
Modifies a listener	PUT /v2/{project_id}/elb/listeners/{listener_id}	elb:listeners:put	√	√
Deletes a listener	DELETE /v2/{project_id}/elb/listeners/{listener_id}	elb:listeners:delete	√	√

5.2.3 Backend Server Group

Permission	API	Action	IAM Project	Enterprise Project
Adds a backend server group	POST /v2/{project_id}/elb/pools	elb:pools:create	√	√

Permis sion	API	Action	IAM Project	Enterprise Project
Querie s a backen d server group	GET /v2/ {project_id}/elb/pools/ {pool_id}	elb:pools:get	√	√
Querie s backen d server groups	GET /v2/ {project_id}/elb/pools	elb:pools:list	√	√
Modifi es a backen d server group	PUT /v2/ {project_id}/elb/pools/ {pool_id}	elb:pools:put	√	√
Delete s a backen d server group	DELETE /v2/ {project_id}/elb/pools/ {pool_id}	elb:pools:del ete	√	√

5.2.4 Backend Server

Permi ssion	API	Action	IAM Project	Enterprise Project
Adds a backe nd server	POST /v2/ {project_id}/elb/pools/ {pool_id}/members	elb:members: create	√	√
Querie s a backe nd server	GET /v2/ {project_id}/elb/pools/ {pool_id}/members/ {member_id}	elb:members: get	√	√

Permi ssion	API	Action	IAM Project	Enterprise Project
Querie s backe nd server s	GET /v2/ {project_id}/elb/pools/ {pool_id}/members	elb:members: list	√	√
Modifi es a backe nd server	PUT /v2/ {project_id}/elb/pools/ {pool_id}/members/ {member_id}	elb:members: put	√	√
Remov es a backe nd server	DELETE /v2/ {project_id}/elb/pools/ {pool_id}/members/ {member_id}	elb:members: delete	√	√

5.2.5 Health Check

Permissi on	API	Action	IAM Project	Enterprise Project
Configur es a health check	POST /v2/ {project_id}/elb/ healthmonitors	elb:healthmo nitors:create	√	√
Queries a health check	GET /v2/ {project_id}/elb/ healthmonitors/ {healthmonitor_id}	elb:healthmo nitors:get	√	√
Queries health checks	GET /v2/ {project_id}/elb/ healthmonitors	elb:healthmo nitors:list	√	√
Modifies a health check	PUT /v2/ {project_id}/elb/ healthmonitors/ {healthmonitor_id}	elb:healthmo nitors:put	√	√
Deletes a health check	DELETE /v2/ {project_id}/elb/ healthmonitors/ {healthmonitor_id}	elb:healthmo nitors:delete	√	√

5.2.6 Forwarding Policy

Permis sion	API	Action	IAM Project	Enterprise Project
Adds a forward ing policy	POST /v2/ {project_id}/elb/ l7policies	elb:l7policies: create	√	√
Queries a forward ing policy	GET /v2/ {project_id}/elb/ l7policies /{ l7policy_id}	elb:l7policies: get	√	√
Queries forward ing policies	GET /v2/ {project_id}/elb/ l7policies	elb:l7policies:l ist	√	√
Update s a forward ing policy	PUT /v2/ {project_id}/elb/ l7policies /{l7policy_id}	elb:l7policies: put	√	√
Deletes a forward ing policy	DELETE /v2/ {project_id}/elb/ l7policies/{l7policy_id}	elb:l7policies: delete	√	√

5.2.7 Forwarding Rule

Permis sion	API	Action	IAM Project	Enterprise Project
Creatin g a forwar ding rule	POST /v2/{project_id}/elb/ l7policies/{l7policy_id}/ rules	elb:l7rules:cr eate	√	√
Querie s a forwar ding rule	GET /v2/{project_id}/elb/ l7policies/{l7policy_id}/ rules/{l7rule_id}	elb:l7rules:g et	√	√

Permission	API	Action	IAM Project	Enterprise Project
Queries forwarding rules	GET /v2/{project_id}/elb/ l7policies/{l7policy_id}/ rules	elb:l7rules:list	√	√
Updates a forwarding rule	PUT /v2/{project_id}/elb/ l7policies/{l7policy_id}/ rules/{l7rule_id}	elb:l7rules:put	√	√
Deletes a forwarding rule	DELETE /v2/ {project_id}/elb/l7policies/ {l7policy_id}/rules/ {l7rule_id}	elb:l7rules:delete	√	√

5.2.8 Whitelist

Permission	API	Action	IAM Project	Enterprise Project
Adds a whitelist	POST /v2/{project_id}/elb/ whitelists	elb:whitelists:create	√	√
Queries a whitelist	GET /v2/{project_id}/elb/ whitelists /{whitelist_id}	elb:whitelists:get	√	√
Queries whitelists	GET /v2/{project_id}/elb/ whitelists	elb:whitelists:list	√	√
Modifies a whitelist	PUT /v2/{project_id}/elb/ whitelists /{whitelist_id}	elb:whitelists:put	√	√
Deletes a whitelist	DELETE /v2/{project_id}/ elb/ whitelists/ {whitelist_id}	elb:whitelists:delete	√	√

5.2.9 SSL Certificate

Permission	API	Action	IAM Project	Enterprise Project
Creates a certificate	POST /v2/{project_id}/elb/certificates	elb:certificates:create	√	√
Queries a certificate	GET /v2/{project_id}/elb/certificates/{certificate_id}	elb:certificates:get	√	√
Queries certificates	GET /v2/{project_id}/elb/certificates	elb:certificates:list	√	√
Modifies a certificate	PUT /v2/{project_id}/elb/certificates/{certificate_id}	elb:certificates:put	√	√
Deletes a certificate	DELETE /v2/{project_id}/elb/certificates/{certificate_id}	elb:certificates:delete	√	√

5.2.10 Quota

Permission	API	Action	IAM Project	Enterprise Project
Queries default resource quotas	GET /v2/{project_id}/elb/quotas/defaults	elb:quotas:list	√	x

Permi ssion	API	Action	IAM Project	Enterprise Project
Queri es curren t resour ce quota s	GET /v2/{project_id}/elb/ quotas	elb:quotas :list	√	x

5.2.11 Tag

Permission	API	Action
Queries all tags of a load balancer.	GET /v2.0/{project_id}/loadbalancers/ {loadbalancer_id}/tags	elb:loadbalancerTa gs:get
Adds or deletes load balancer tags in batches.	POST /v2.0/{project_id}/loadbalancers/ {loadbalancer_id}/tags/action	elb:loadbalancerTa gs:create
Queries tags of all load balancers in a specific project.	GET /v2.0/{project_id}/loadbalancers/ tags	elb:loadbalancerTa gs:get
Queries load balancers by tag.	POST /v2.0/{project_id}/loadbalancers/ resource_instances/action	elb:loadbalancerTa gs:get
Adds a tag to a specific load balancer.	POST /v2.0/{project_id}/loadbalancers/ {loadbalancer_id}/tags	elb:loadbalancerTa gs:create
Deletes a tag with a specific key from a load balancer.	DELETE /v2.0/{project_id}/ loadbalancers/{loadbalancer_id}/tags/ {key}	elb:loadbalancerTa gs:delete
Queries all tags of a listener.	GET /v2.0/{project_id}/listeners/ {listener_id}/tags	elb:listenerTags:ge t
Adds or deletes listener tags in batches.	POST /v2.0/{project_id}/listeners/ {listener_id}/tags/action	elb:listenerTags:cre ate
Queries the tags of all listeners.	GET /v2.0/{project_id}/listeners/tags	elb:listenerTags:ge t
Queries listeners by tag.	POST /v2.0/{project_id}/listeners/ resource_instances/action	elb:listenerTags:ge t

Permission	API	Action
Adds a tag to a specific listener.	POST /v2.0/{project_id}/listeners/{listener_id}/tags	elb:listenerTags:create
Deletes a tag with a specific key from a listener.	DELETE /v2.0/{project_id}/listeners/{listener_id}/tags/{key}	elb:listenerTags:delete

5.2.12 Precautions for API Permissions

elb:quotas:list controls the fine-grained permission for quota display.

elb:logtanks:create, **elb:logtanks:list**, **elb:logtanks:get**, **elb:logtanks:put**, and **elb:logtanks:delete** control the fine-grained permission for log creation, log list query, log details query, log update, and log deletion.

The logging function relies on LTS, and the **lts:*:get*** and **lts:*:list*** permissions at the project level are required.

The monitoring function relies on Cloud Eye.

6 Appendix

6.1 Status Codes

Table 6-1 Normal status codes

Status Code	Message	Description
200	OK	Normal response to GET and PUT requests.
201	Created	Normal response to POST requests.
204	No Content	Normal response to DELETE requests.

Table 6-2 Error codes

Status Code	Message	Description
400	Bad Request	Malformed request URI or body.
		Invalid **admin _state_up** value.
		Invalid parameters.
		Batch operations are not allowed.
		Failed to verify the parameters.
		The method is not allowed for the request body, for example, trying to update attributes that be specified only during creation.
		The network is not external (the value of **router:external** is set to **false**).

Status Code	Message	Description
		The IaaS OpenStack network port has no floating IP address bound.
		The requested floating IP address is not in the IP address range of the external network.
		Invalid fixed IP address.
		The router port does not have a fixed IP address.
		The subnet for the router interface must have a gateway IP address.
401	Unauthorized	Authentication required.
403	Forbidden	The URI does not exist. The resource cannot be found.
404	Not Found	The URI does not exist.
		The resource cannot be found.
		The port UUID is not valid.
409	Conflict	The port is already in use.
		The IP address is already in use.
		The IP address pool cannot contain gateway and broadcast addresses.
		The requested floating IP address is already in use.
		The internal IaaS OpenStack network port and fixed IP address are already associated with another floating IP addresses.
500	Internal IaaS OpenStack network error.	Failed to assign the MAC address.
503	Service Unavailable	Failed to assign the MAC address.

6.2 Monitoring Metrics

Overview

This section describes the namespace, the metrics that can be monitored by Cloud Eye, and dimensions of these metrics. You can use APIs provided by Cloud Eye to query the metrics of a monitored object and generated alarms.

Namespace

SYS.ELB

Metrics

Table 6-3 Metrics supported by ELB

Metric ID	Name	Description	Value	Monitored Object	Monitoring Period (Raw Data)
m1_cps	Concurrent Connections	Load balancing at Layer 4: total number of TCP and UDP connections from the monitored object to backend servers Load balancing at Layer 7: total number of TCP connections from the clients to the monitored object Unit: N/A	≥ 0	• Load balancer • Listener	1 minute

Metric ID	Name	Description	Value	Monitored Object	Monitoring Period (Raw Data)
m2_act_c onn	Active Connec tions	Number of TCP and UDP connections in the **ESTABLISHED** state between the monitored object and backend servers You can run the following command to view the connections (both Windows and Linux servers): netstat -an Unit: N/A	≥ 0		
m3_inact _conn	Inactiv e Connec tions	Number of TCP connections between the monitored object and backend servers except those in the **ESTABLISHED** state You can run the following command to view the connections (both Windows and Linux servers): netstat -an Unit: N/A	≥ 0		
m4_ncps	New Connec tions	Number of TCP and UDP connections established between clients and the monitored object per second Unit: Count/s	≥ 0/ second		
m5_in_pp s	Incomi ng Packet s	Number of packets received by the monitored object per second Unit: Packet/s	≥ 0/ second		

Metric ID	Name	Description	Value	Monitored Object	Monitoring Period (Raw Data)
m6_out_pps	Outgoing Packets	Number of packets sent from the monitored object per second Unit: Packet/s	≥ 0/ second		
m7_in_Bps	Inbound Rate	Traffic used for accessing the monitored object from the Internet per second Unit: byte/s	≥ 0 bytes/s		
m8_out_Bps	Outbound Rate	Traffic used by the monitored object to access the Internet per second Unit: byte/s	≥ 0 bytes/s		
m9_abnormal_servers	Unhealthy Servers	Number of unhealthy backend servers associated with the monitored object Unit: N/A	≥ 0	● Load balancer	1 minute
ma_normal_servers	Healthy Servers	Number of healthy backend servers associated with the monitored object Unit: N/A	≥ 0		
mb_l7_qps	Layer-7 Query Rate	Number of requests the monitored object receives per second Unit: Query/s	≥ 0/ second	● Load balancer ● Listener	1 minute
md_l7_http_3xx	3xx Status Codes	Number of 3xx status codes returned by the monitored object Unit: Count/s	≥ 0/ second	● Load balancer ● Listener	1 minute

Metric ID	Name	Description	Value	Monitored Object	Monitoring Period (Raw Data)
mc_l7_http_2xx	2xx Status Codes	Number of 2xx status codes returned by the monitored object Unit: Count/s	≥ 0/ second	• Load balancer • Listener	1 minute
me_l7_http_4xx	4xx Status Codes	Number of 4xx status codes returned by the monitored object Unit: Count/s	≥ 0/ second		
mf_l7_http_5xx	5xx Status Codes	Number of 5xx status codes returned by the monitored object Unit: Count/s	≥ 0/ second		
m10_l7_http_other_status	Other Status Codes	Number of status codes returned by the monitored object except 2xx, 3xx, 4xx, and 5xx status codes Unit: Count/s	≥ 0/ second		
m11_l7_http_404	404 Not Found	Number of 404 Not Found status codes returned by the monitored object Unit: Count/s	≥ 0/ second		
m12_l7_http_499	499 Client Closed Request	Number of 499 Client Closed Request status codes returned by the monitored object Unit: Count/s	≥ 0/ second		
m13_l7_http_502	502 Bad Gateway	Number of 502 Bad Gateway status codes returned by the monitored object Unit: Count/s	≥ 0/ second		

Metric ID	Name	Description	Value	Monitored Object	Monitoring Period (Raw Data)
m14_l7_rt	Average Layer-7 Response Time	Average response time of the monitored object The response time starts when the monitored object receives requests from the clients and ends when it returns all responses to the clients. Unit: ms	≥ 0 ms		

a: If a service is being monitored from multiple dimensions, include all dimensions when you use APIs to query the metrics.

- Example of querying a single metric from both dimensions: dim.0=lbaas_instance_id,223e9eed-2b02-4ed2-a126-7e806a6fee1f&dim.1=lbaas_listener_id,3baa7335-8886-4867-8481-7cbba967a917

- Example of querying metrics in batches from both dimensions:

```
"dimensions": [
{
"name": "lbaas_instance_id",
"value": "223e9eed-2b02-4ed2-a126-7e806a6fee1f"
}
{
"name": "lbaas_listener_id",
"value": "3baa7335-8886-4867-8481-7cbba967a917"
}
],
```

Dimensions

Key	Value
lbaas_instance_id	Load balancer ID
lbaas_listener_id	ID of a listener added to a load balancer
lbaas_pool_id	Backend server group ID

6.3 General Information About Load Balancers

The following information applies only to load balancers.

6.3.1 Querying Data in Pages

APIs v2.0 allow users to query data in pages by adding the limit and marker parameters to the URL of the list request. The query results are displayed in the ascending order of IDs.

- **next ref** in the response indicates the URL of the next page.
- **previous ref** in the response indicates the URL of the previous page.

Request

Table 6-4 Parameter description

Parameter	Type	Mandatory	Description
limit	int	No	Specifies the number of records on each page.
marker	String	No	Specifies the resource ID of pagination query. If the parameter is left blank, only resources on the first page are queried.
page_reverse	Bool	No	Specifies the paging sequence. The value can be **true** or **false**.

Response

None

Example

- Example request
  ```
  GET /v2.0/networks?limit=2&marker=3d42a0d4-a980-4613-ae76-a2cddecff054&page_reverse=False
  ```

- Example response
  ```
  {
     "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": [
      {
        "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"
      }
    ]
}
```

6.3.2 Sequencing Query Results

APIs v2.0 enable the system to sort queried results based on customized keys by adding the **sort_key** and **sort_dir** parameters to the URL of the list request. **sort_key** specifies the parameter used for sequencing results, and **sort_dir** specifies whether results are displayed in ascending or descending order. These APIs allow sorting query results by multiple criteria. The number of **sort_key** parameters must be equal to that of **sort_dir** parameters. Otherwise, 400 status code is returned.

Example Request

```
GET /v2.0/networks?sort_key=name&sort_dir=asc&sort_key=status&sort_dir=desc
```

Example Response

```
{
  "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"
    },
    {
      "status": "ACTIVE",
      "subnets": [
        "e25189a8-54df-4948-9396-d8291ffc92a0"
      ],
      "name": "testnet01",
      "admin_state_up": true,
      "tenant_id": "6fbe9263116a4b68818cf1edce16bc4f",
```

```
        "id": "3d42a0d4-a980-4613-ae76-a2cddecff054"
    }
  ]
}
```

6.3.3 Basic Workflow

The basic workflow of load balancers contains the following: creating a load balancer, adding a listener to a specific load balancer, adding a backend server group to a specific listener, configuring a health check for a specific backend server group, and adding a backend server to a specific backend server group. Deletion operations include removing a backend server, deleting a health check, deleting a backend server group, deleting a listener, and deleting a load balancer.

Provision Resources

- Creating a load balancer
- Adding a listener to a specific load balancer
- Adding a backend server group to a specific listener
- Configuring a health check for a specific backend server group
- Adding a backend server to a specific backend server group

Reclaim Resources

- Removing a backend server
- Deleting a health check
- Deleting a backend server group
- Deleting a listener
- Deleting a load balancer

6.4 Obtaining a Project ID

Scenarios

A project ID is required for some URLs when an API is called. Therefore, you need to obtain a project ID in advance. Two methods are available:

- **Obtain the Project ID by Calling an API**
- **Obtain the Project ID from the Console**

Obtain the Project ID by Calling an API

You can obtain the project ID by calling the IAM API used to query project information based on the specified criteria.

The API used to obtain a project ID is GET https://{Endpoint}/v3/projects. {Endpoint} is the IAM endpoint and can be obtained from **Regions and Endpoints**. For details about API authentication, see **Authentication**.

The following is an example response. The value of **id** is the project ID.

```
{
   "projects": [
```

```
        {
            "domain_id": "65382450e8f64ac0870cd180d14e684b",
            "is_domain": false,
            "parent_id": "65382450e8f64ac0870cd180d14e684b",
            "name": "project_name",
            "description": "",
            "links": {
                "next": null,
                "previous": null,
                "self": "https://www.example.com/v3/projects/a4a5d4098fb4474fa22cd05f897d6b99"
            },
            "id": "a4a5d4098fb4474fa22cd05f897d6b99",
            "enabled": true
        }
    ],
    "links": {
        "next": null,
        "previous": null,
        "self": "https://www.example.com/v3/projects"
    }
}
```

Obtain a Project ID from the Console

To obtain a project ID from the console, perform the following operations:

1. Log in to the management console.

2. Click the username and select **My Credentials** from the drop-down list.

    On the **My Credentials** page, view the project ID (value in the **Project ID** column).

7 Historical APIs

7.1 Load Balancer APIs (OpenStack)

7.1.1 Load Balancer

7.1.1.1 Creating a Load Balancer

Function

This API is used to create a private network load balancer. After the load balancer is created, its details, such as load balancer ID, IP address, and subnet ID, are returned.

To create a public network load balancer, you also need to call the API for assigning an EIP and associate this IP address to the port bound to the IP address of the private network load balancer.

URI

POST /v2.0/lbaas/loadbalancers

Request

Table 7-1 Parameter description

Parameter	Mandatory	Type	Description
loadbalancer	Yes	Object	Specifies the load balancer. For details, see **Table 7-2**.

Table 7-2 loadbalancer parameter description

Parameter	Mand atory	Type	Description
name	No	String	Specifies the load balancer name. The value contains a maximum of 255 characters.
description	No	String	Provides supplementary information about the load balancer. The value contains a maximum of 255 characters.
tenant_id	No	String	Specifies the ID of the project where the load balancer is used. The value contains a maximum of 255 characters. The value must be the same as the value of **project_id** in the token.
project_id	No	String	Specifies the ID of the project to which the load balancer belongs. This parameter has the same meaning as **tenant_id**. The value must be the same as the value of **project_id** in the token.
vip_subnet_id	Yes	String	Specifies the ID of the subnet where the load balancer works. You can obtain the value by calling the API for querying subnets ({VPC endpoint}/v2.0/subnets) using the GET method. The private IP address of the load balancer is in this subnet. Only IPv4 subnets are supported.
provider	No	String	Specifies the provider of the load balancer. The value can only be **vlb**.
vip_address	No	String	Specifies the private IP address of the load balancer. This IP address must be the one in the subnet specified by **vip_subnet_id**. If this parameter is not specified, an IP address is automatically assigned to the load balancer from the subnet specified by **vip_subnet_id**. The value contains a maximum of 64 characters.

Parameter	Mand atory	Type	Description
admin_state_up	No	Boolean	Specifies the administrative status of the load balancer. This parameter is reserved, and the default value is **true**.

Response

Table 7-3 Response parameters

Parameter	Type	Description
loadbalancer	Object	Specifies the load balancer. For details, see **Table 7-4**.

Table 7-4 **loadbalancer** parameter description

Parameter	Type	Description
id	String	Specifies the load balancer ID.
tenant_id	String	Specifies the ID of the project where the load balancer is used. The value contains a maximum of 255 characters.
name	String	Specifies the load balancer name. The value contains a maximum of 255 characters.
description	String	Provides supplementary information about the load balancer. The value contains a maximum of 255 characters.
vip_subnet_id	String	Specifies the ID of the subnet where the load balancer works.

Parameter	Type	Description
vip_port_id	String	Specifies the ID of the port bound to the private IP address of the load balancer. When you create a load balancer, the system automatically creates a port and associates it with a security group. However, the security group will not take effect.
provider	String	Specifies the provider of the load balancer.
vip_address	String	Specifies the private IP address of the load balancer. The value contains a maximum of 64 characters.
listeners	Array	Lists the IDs of listeners added to the load balancer. For details, see **Table 7-5**.
pools	Array	Lists the IDs of backend server groups associated with the load balancer. For details, see **Table 7-6**.
operating_status	String	This parameter is reserved, and its value can be **ONLINE** or **FROZEN**. It specifies the operating status of the load balancer.
provisioning_status	String	This parameter is reserved, and its value can only be **ACTIVE**. It specifies the provisioning status of the load balancer.
admin_state_up	Boolean	Specifies the administrative status of the load balancer. This parameter is reserved. The value can be **true** or **false**. ● **true**: Enabled ● **false**: Disabled
tags	Array	Lists load balancer tags.

Parameter	Type	Description
created_at	String	Specifies the time when the load balancer was created. The UTC time is in *YYYY-MM-DDTHH:MM:SS* format. The value contains a maximum of 19 characters.
updated_at	String	Specifies the time when the load balancer was updated. The UTC time is in *YYYY-MM-DDTHH:MM:SS* format. The value contains a maximum of 19 characters.

Table 7-5 listeners parameter description

Parameter	Type	Description
id	String	Specifies the ID of the associated listener.

Table 7-6 pools parameter description

Parameter	Type	Description
id	String	Specifies the ID of the associated backend server group.

Example Request

- Example request 1: Creating a private network load balancer
  POST https://{Endpoint}/v2.0/lbaas/loadbalancers

```
{
    "loadbalancer": {
        "name": "loadbalancer1",
        "description": "simple lb",
        "tenant_id": "1867112d054b427e808cc6096d8193a1",
        "vip_subnet_id": "58077bdb-d470-424b-8c45-2e3c65060a5b",
        "vip_address": "192.168.0.100",
        "admin_state_up": true
    }
}
```

- Example request 2

  (Bind an EIP to the port that has been bound to the load balancer's private IP address. For details about the parameters, see **Table 7-7**.)

Table 7-7 Request parameters

Parameter	Mandatory	Type	Description
publicip	Yes	Object	Specifies the EIP. For details, see **Table 7-8**.
bandwidth	Yes	Object	Specifies the bandwidth. For details, see **Table 7-9**.
enterprise_project_id	No	String	• Specifies the enterprise project ID. The value is **0** or a UUID that can contain a maximum of 36 characters, including hyphens (-). • When assigning an EIP, you need to bind an enterprise project ID to the EIP. • If this parameter is not specified, the default value is **0**. **NOTE** For more information about enterprise projects and how to obtain enterprise project IDs, see *Enterprise Management User Guide*.

Table 7-8 publicip parameter description

Parameter	Mandatory	Type	Description

type	Yes	String	• Specifies the EIP type.
			• Note:
			  – 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**.

Parameter	Mandatory	Type	Description
ip_version	No	Integer	● Specifies the EIP version. ● The value can be **4** and **6**. **4** indicates an IPv4 address, and **6** indicates an IPv6 address. ● Note: 　– The configured value must be supported by the system. 　– If this parameter is left blank or is an empty string, an IPv4 address is assigned by default.
ip_address	No	String	● Specifies the EIP to be assigned. The system automatically assigns an EIP if you do not specify it. ● The value must be a valid IPv4 address in the available IP address range.

Table 7-9 bandwidth parameter description

Parameter	Mandatory	Type	Description
name	Yes	String	● Specifies the bandwidth name. ● The value can contain 1 to 64 characters that can contain 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.

Parameter	Mandatory	Type	Description

size	Yes	Integer	● Specifies the bandwidth (Mbit/s).
			
			● The value ranges from **1** to **300** by default. (The 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 unit 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 to 300 Mbit/s.
			  – The minimum increment is 50 Mbit/s if the allowed bandwidth ranges from 301 Mbit/s to 1000 Mbit/s.
			  – The minimum increment is 500 Mbit/s if the allowed bandwidth is greater than 1,000 Mbit/s.

id	No	String	● Specifies the bandwidth ID. You can specify an existing shared bandwidth when assigning an EIP. ● The value can be the ID of the shared bandwidth whose type is set to **WHOLE**.

Parameter	Mandatory	Type	Description
share_type	Yes	String	• Specifies the bandwidth type. • The value is **PER**, indicating that the bandwidth is dedicated.
charge_mode	No	String	• If the value is **traffic**, the bandwidth is billed by traffic.

– Step 1: Apply for an EIP.
POST https://{VPCEndpoint}/v1/8b7e35ad379141fc9df3e178bd64f55c/publicips

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

– Example response

```
{
    "publicip": {
        "id": "f588ccfa-8750-4d7c-bf5d-2ede24414706",
        "status": "PENDING_CREATE",
        "type": "5_bgp",
        "public_ip_address": "139.9.204.183",
        "tenant_id": "8b7e35ad379141fc9df3e178bd64f55c",
        "ip_version": 4,
        "create_time": "2019-06-29 06:45:32",
        "bandwidth_size": 1

    }
}
```

– Step 2: Bind the EIP. (The value of **public_id** is the same as that in the •
Example response, and the value of **port_id** is the same as that of
vip_port_id in **Example response 1**.)
PUT /v1/8b7e35ad379141fc9df3e178bd64f55c/publicips/f588ccfa-8750-4d7c-bf5d-2ede24414706

```
{
    "publicip": {
        "port_id": "a7ecbdb5-5a63-41dd-a830-e16c0a7e04a7"
    }
}
```

– Example response

```
{
    "publicip": {
        "id": "f588ccfa-8750-4d7c-bf5d-2ede24414706",
        "status": "ACTIVE",
        "type": "5_bgp",
        "port_id": "a7ecbdb5-5a63-41dd-a830-e16c0a7e04a7",
        "public_ip_address": "139.9.204.183",
        "private_ip_address": "192.168.1.131",
        "tenant_id": "8b7e35ad379141fc9df3e178bd64f55c",
```

```
      "create_time": "2019-06-29 07:33:18",
      "bandwidth_size": 1,
      "ip_version": 4
    }
  }
}
```

– After the preceding steps are complete, the load balancer has the capability of accessing the public network. You can access the load balancer using 139.9.204.183, the value of parameter **public_ip_address**.

Example Response

● Example response 1

```
{
  "loadbalancer": {
    "description": "simple lb",
    "provisioning_status": "ACTIVE",
    "tenant_id": "1867112d054b427e808cc6096d8193a1",
    "created_at": "2019-01-19T05:32:56",
    "admin_state_up": true,
    "updated_at": "2019-01-19T05:32:57",
    "id": "ea2843da-4026-49ec-8338-8fa015b067fc",
    "pools": [],
    "listeners": [],
    "vip_port_id": "a7ecbdb5-5a63-41dd-a830-e16c0a7e04a7",
    "operating_status": "ONLINE",
    "vip_address": "192.168.0.100",
    "vip_subnet_id": "58077bdb-d470-424b-8c45-2e3c65060a5b",
    "provider": "vlb",
    "tags": [],
    "name": "loadbalancer1"
  }
}
```

● Example response 2
POST https://{Endpoint}/v2.0/lbaas/loadbalancers

```
{
  "loadbalancer": {
    "name": "loadbalancer1",
    "description": "simple lb",
    "tenant_id": "1867112d054b427e808cc6096d8193a1",
    "vip_subnet_id": "58077bdb-d470-424b-8c45-2e3c65060a5b",
    "vip_address": "192.168.0.100",
    "admin_state_up": true
  }
}
```

After the preceding steps are complete, the load balancer has the capability of accessing the public network. You can access the load balancer using 139.9.204.183, the value of parameter **public_ip_address**.

Status Code

For details, see **Status Codes**.

7.1.1.2 Querying Load Balancers

Function

This API is used to query load balancers and display them in a list. Filter query and pagination query are supported. Unless otherwise specified, exact match is applied.

Constraints

Parameters **marker**, **limit**, and **page_reverse** are used for pagination query. Parameters **marker** and **page_reverse** take effect only when they are used together with parameter **limit**.

URI

GET /v2.0/lbaas/loadbalancers

Request

Table 7-10 Parameter description

Parameter	Mandatory	Type	Description
marker	No	String	Specifies the ID of the load balancer from which pagination query starts, that is, the ID of the last load balancer on the previous page. This parameter must be used together with **limit**.
limit	No	Integer	Specifies the number of load balancers on each page.
page_reverse	No	Boolean	Specifies the page direction. The value can be **true** or **false**, and the default value is **false**. The last page in the list requested with **page_reverse** set to **false** will not contain the "next" link, and the last page in the list requested with **page_reverse** set to **true** will not contain the "previous" link. This parameter must be used together with **limit**.
tenant_id	No	String	Specifies the ID of the project where the load balancer is used.
id	No	String	Specifies the load balancer ID.
description	No	String	Provides supplementary information about the load balancer. The value contains a maximum of 255 characters.
name	No	String	Specifies the load balancer name. The value contains a maximum of 255 characters.

Parameter	Mandatory	Type	Description
operating _status	No	String	This parameter is reserved, and its value can be **ONLINE** or **FROZEN**. It specifies the operating status of the load balancer.
provisioni ng_status	No	String	This parameter is reserved, and its value can only be **ACTIVE**. It specifies the provisioning status of the load balancer.
admin_st ate_up	No	Boolean	This parameter is reserved, and its value can only be **true**. It specifies the administrative status of the load balancer.
vip_addre ss	No	String	Specifies the private IP address of the load balancer. The value contains a maximum of 64 characters.
vip_port_i d	No	String	Specifies the ID of the port bound to the private IP address of the load balancer.
vip_subne t_id	No	String	Specifies the ID of the subnet where the load balancer works.
member_ address	No	String	Specifies the IP address of the backend server associated with the load balancer.
member_ device_id	No	String	Specifies the ID of the cloud server used as the backend server associated with the load balancer.
vpc_id	No	String	Specifies the ID of the VPC where the load balancer works.

Response

Table 7-11 Response parameters

Parameter	Type	Description
loadbalancers	Array	Lists the load balancers. For details, see **Table 7-12**.

Parameter	Type	Description
loadbalancers_li nks	Array	Provides links to the previous or next page during pagination query, respectively. This parameter exists only in the response body of pagination query. For details, see **Table 7-15**.

Table 7-12 loadbalancer parameter description

Parameter	Type	Description
id	String	Specifies the load balancer ID.
tenant_id	String	Specifies the ID of the project where the load balancer is used. The value contains a maximum of 255 characters.
name	String	Specifies the load balancer name. The value contains a maximum of 255 characters.
description	String	Provides supplementary information about the load balancer. The value contains a maximum of 255 characters.
vip_subnet_id	String	Specifies the ID of the subnet where the load balancer works.
vip_port_id	String	Specifies the ID of the port bound to the private IP address of the load balancer. When you create a load balancer, the system automatically creates a port and associates it with a security group. However, the security group will not take effect.
provider	String	Specifies the provider of the load balancer.
vip_address	String	Specifies the private IP address of the load balancer. The value contains a maximum of 64 characters.

Parameter	Type	Description
listeners	Array	Lists the IDs of listeners added to the load balancer. For details, see **Table 7-5**.
pools	Array	Lists the IDs of backend server groups associated with the load balancer. For details, see **Table 7-6**.
operating_status	String	This parameter is reserved, and its value can be **ONLINE** or **FROZEN**. It specifies the operating status of the load balancer.
provisioning_status	String	This parameter is reserved, and its value can only be **ACTIVE**. It specifies the provisioning status of the load balancer.
admin_state_up	Boolean	Specifies the administrative status of the load balancer. This parameter is reserved. The value can be **true** or **false**. • **true**: Enabled • **false**: Disabled
tags	Array	Lists load balancer tags.
created_at	String	Specifies the time when the load balancer was created. The UTC time is in *YYYY-MM-DDTHH:MM:SS* format. The value contains a maximum of 19 characters.
updated_at	String	Specifies the time when the load balancer was updated. The UTC time is in *YYYY-MM-DDTHH:MM:SS* format. The value contains a maximum of 19 characters.

Table 7-13 listeners parameter description

Parameter	Type	Description
id	String	Specifies the ID of the associated listener.

Table 7-14 pools parameter description

Parameter	Type	Description
id	String	Specifies the ID of the associated backend server group.

Table 7-15 loadbalancers_links parameter description

Parameter	Type	Description
href	String	Provides links to the previous or next page during pagination query, respectively.
rel	String	Specifies the prompt of the previous or next page. The value can be **next** or **previous**. The value **next** indicates the Hypertext Reference (href) containing the URL of the next page, and **previous** indicates the href containing the URL of the previous page.

Example Request

- Example request 1: Querying all load balancers
  GET https://{Endpoint}/v2.0/lbaas/loadbalancers

- Example request 2: Querying load balancers by page (Each page contains one load balancer. The ID of the start load balancer is **165b6a38-5278-4569-b747-b2ee65ea84a4**. The load balancer after **165b6a38-5278-4569-b747-b2ee65ea84a4** is the queried load balancer.)
  GET https://{Endpoint}/v2.0/lbaas/loadbalancers?limit=1&marker=165b6a38-5278-4569-b747-b2ee65ea84a4

- Example request 3: Querying the load balancer using the IP address of a backend server (192.168.0.191)
  GET https://{Endpoint}/v2.0/lbaas/loadbalancers?member_address=192.168.0.181

Example Response

- Example response 1

```
{
    "loadbalancers": [
        {
            "description": "simple lb",
            "admin_state_up": true,
            "tenant_id": "1a3e005cf9ce40308c900bcb08e5320c",
            "project_id": "1a3e005cf9ce40308c900bcb08e5320c",
            "provisioning_status": "ACTIVE",
            "vip_subnet_id": "5328f1e6-ce29-44f1-9493-b128a5653350",
            "listeners": [
                {
```

```
                    "id": "45196943-2907-4369-87b1-c009b1d7ac35"
                }
            ],
            "vip_address": "10.0.0.2",
            "vip_port_id": "cbced4fe-6f6f-4fd6-9348-0c3d1219d6ca",
            "provider": "vlb",
            "pools": [
                {
                    "id": "21d49cf7-4fd3-4cb6-8c48-b7fc6c259aab"
                }
            ],
            "id": "a9729389-6147-41a3-ab22-a24aed8692b2",
            "operating_status": "ONLINE",
            "tags": [],
            "name": "loadbalancer1",
            "created_at": "2018-07-25T01:54:13",
            "updated_at": "2018-07-25T01:54:14"
        }
    ]
}
```

- Example response 2

```
{
    "loadbalancers": [
        {
            "description": "",
            "provisioning_status": "ACTIVE",
            "tenant_id": "601240b9c5c94059b63d484c92cfe308",

            "admin_state_up": true,
            "provider": "vlb",
            "pools": [
                {
                    "id": "b13dba4c-a44c-4c40-8f6e-ce7a162b9f22"
                },
                {
                    "id": "4b9e765f-82ee-4128-911b-0a2d9ebc74c7"
                }
            ],
            "listeners": [
                {
                    "id": "21c41336-d0d3-4349-8641-6e82b4a4d097"
                }
            ],
            "vip_port_id": "44ac5d9b-b0c0-4810-9a9d-c4dbf541e47e",
            "operating_status": "ONLINE",
            "vip_address": "192.168.0.234",
            "vip_subnet_id": "9d60827e-0e5c-490a-8183-0b6ebf9084ca",
            "id": "e79a7dd6-3a38-429a-95f9-c7f78b346cbe",
            "tags": [],
            "name": "elb-robot",
            "created_at": "2018-07-25T01:54:13",
            "updated_at": "2018-07-25T01:54:14"
        }
    ],
    "loadbalancers_links": [
        {
            "href": "https://network.Region.dc1.domainname.com/v2.0/lbaas/loadbalancers?
limit=10&marker=e79a7dd6-3a38-429a-95f9-c7f78b346cbe&page_reverse=True",
            "rel": "previous"
        }
    ]
}
```

- Example response 3

```
{
    "loadbalancers": [
        {
            "description": "",
            "provisioning_status": "ACTIVE",
```

```
              "tenant_id": "601240b9c5c94059b63d484c92cfe308",

              "created_at": "2018-11-29T13:55:20",
              "admin_state_up": true,
              "update_at": "2018-11-29T13:55:21",
              "id": "c1127125-64a9-4394-a08a-ef3be8f7ef9c",
              "pools": [
                  {
                      "id": "2f6895be-019b-4c82-9b53-c4a2ac009e20"
                  }
              ],
              "listeners": [
                  {
                      "id": "5c63d176-444f-4c75-9cfe-bcb8a05a845c"
                  }
              ],
              "vip_port_id": "434ac600-b779-4428-b7a7-830e047511f1",
              "operating_status": "ONLINE",
              "vip_address": "192.168.0.181",
              "vip_subnet_id": "9a303536-417c-45dc-a6db-1234b9e1c2b2",
              "provider": "vlb",
              "tags": [],
              "name": "elb-ftci"


          }
      ]
  }
```

Status Code

For details, see **Status Codes**.

7.1.1.3 Querying Details of a Load Balancer

Function

This API is used to query details about a load balancer using its ID. You can also query the EIP bound to the load balancer based on the value of **vip_port_id**.

URI

GET /v2.0/lbaas/loadbalancers/{loadbalancer_id}

Table 7-16 Parameter description

Parameter	Mandatory	Type	Description
loadbalancer_id	Yes	String	Specifies the load balancer ID.

Request

None

Response

Table 7-17 Parameter description

Parameter	Type	Description
loadbalancer	Object	Specifies the load balancer. For details, see **Table 7-18**.

Table 7-18 loadbalancer parameter description

Parameter	Type	Description
id	String	Specifies the load balancer ID.
tenant_id	String	Specifies the ID of the project where the load balancer is used. The value contains a maximum of 255 characters.
name	String	Specifies the load balancer name. The value contains a maximum of 255 characters.
description	String	Provides supplementary information about the load balancer. The value contains a maximum of 255 characters.
vip_subnet_id	String	Specifies the ID of the subnet where the load balancer works.
vip_port_id	String	Specifies the ID of the port bound to the private IP address of the load balancer. When you create a load balancer, the system automatically creates a port and associates it with a security group. However, the security group will not take effect.
provider	String	Specifies the provider of the load balancer.
vip_address	String	Specifies the private IP address of the load balancer. The value contains a maximum of 64 characters.

Parameter	Type	Description
listeners	Array	Lists the IDs of listeners added to the load balancer. For details, see **Table 7-5**.
pools	Array	Lists the IDs of backend server groups associated with the load balancer. For details, see **Table 7-6**.
operating_status	String	This parameter is reserved, and its value can be **ONLINE** or **FROZEN**. It specifies the operating status of the load balancer.
provisioning_status	String	This parameter is reserved, and its value can only be **ACTIVE**. It specifies the provisioning status of the load balancer.
admin_state_up	Boolean	Specifies the administrative status of the load balancer. This parameter is reserved. The value can be **true** or **false**. ● **true**: Enabled ● **false**: Disabled
tags	Array	Lists load balancer tags.
created_at	String	Specifies the time when the load balancer was created. The UTC time is in *YYYY-MM-DDTHH:MM:SS* format. The value contains a maximum of 19 characters.
updated_at	String	Specifies the time when the load balancer was updated. The UTC time is in *YYYY-MM-DDTHH:MM:SS* format. The value contains a maximum of 19 characters.

Table 7-19 listeners parameter description

Parameter	Type	Description
id	String	Specifies the ID of the associated listener.

Table 7-20 pools parameter description

Parameter	Type	Description
id	String	Specifies the ID of the associated backend server group.

Example Request

- Example request 1: Querying details of a load balancer using its ID

- Example request 2: Querying the EIP bound to the load balancer. For details, see section "Querying EIPs" in the *Elastic IP Address API Reference*.
  GET https://{EIP_Endpoint}/v1/{project_id}/publicips?port_id={vip_port_id}

  vip_port_id is the value of **vip_port_id** for the load balancer.

Example Response

- Example response 1

```
{
    "loadbalancer": {
        "description": "",
        "admin_state_up": true,
        "tenant_id": "1867112d054b427e808cc6096d8193a1",

        "provisioning_status": "ACTIVE",
        "vip_subnet_id": "4f5e8efe-fbbe-405e-b48c-a41202ef697c",
        "listeners": [
            {
                "id": "09e64049-2ab0-4763-a8c5-f4207875dc3e"
            }
        ],
        "vip_address": "192.168.2.4",
        "vip_port_id": "c7157e7a-036a-42ca-8474-100be22e3727",
        "provider": "vlb",
        "pools": [
            {
                "id": "b7e53dbd-62ab-4505-a280-5c066078a5c9"
            }
        ],
        "id": "3d77894d-2ffe-4411-ac0a-0d57689779b8",
        "operating_status": "ONLINE",
        "tags": [],
        "name": "lb-2",
        "created_at": "2018-07-25T01:54:13",
        "updated_at": "2018-07-25T01:54:14"
    }
}
```

Status Code

For details, see **Status Codes**.

7.1.1.4 Querying the Status Tree of a Load Balancer

Function

This API is used to query the status tree of a load balancer. You can use this API to query details about the associated listeners, backend server groups, backend

servers, health checks, forwarding policies, and forwarding rules, helping you understand the topology of resources associated with the load balancer.

URI

GET /v2.0/lbaas/loadbalancers/{loadbalancer_id}/statuses

Table 7-21 Parameter description

Parameter	Mandatory	Type	Description
loadbalancer_id	Yes	String	Specifies the load balancer ID.

Request

None

Response

Table 7-22 Response parameters

Parameter	Type	Description
statuses	Object	Specifies the status tree of a load balancer. For details, see **Table 7-23**.

Table 7-23 statuses parameter description

Parameter	Type	Description
loadbalancer	Object	Specifies the load balancer. For details, see **Table 7-24**.

Table 7-24 loadbalancer parameter description

Parameter	Type	Description
id	String	Specifies the load balancer ID.
name	String	Specifies the load balancer name. The value contains a maximum of 255 characters.
listeners	Array	Lists the listeners added to the load balancer. For details of this parameter, see **Table 7-25**.

Parameter	Type	Description
pools	Array	Lists the backend server groups associated with the load balancer. For details of this parameter, see **Table 7-26**.
operating_status	String	This field is reserved. It specifies the operating status of the load balancer. The value can be one of the following: ● **ONLINE** (default): The load balancer is running normally. ● **DEGRADED**: This status is displayed only when **provisioning_status** of a forwarding policy or forwarding rule added to a listener of the load balancer is set to **ERROR** and the API for querying the load balancer status tree is called. ● **DISABLED**: This status is displayed only when **admin_state_up** of the load balancer is set to **false** and the API for querying the load balancer status tree is called.
provisioning_status	String	This parameter is reserved, and its value can only be **ACTIVE**. It specifies the provisioning status of the load balancer.

Table 7-25 listeners parameter description

Parameter	Type	Description
id	String	Specifies the listener ID.
name	String	Specifies the listener name.
l7policies	Array	Lists associated forwarding policies. For details of this parameter, see **Table 7-29**.
pools	Array	Lists the backend server groups associated with the listener. For details of this parameter, see **Table 7-26**.

Parameter	Type	Description
operating_status	String	This parameter is reserved, and its value can only be **ONLINE**. It specifies the operating status of the listener.
provisioning_status	String	This parameter is reserved, and its value can only be **ACTIVE**. It specifies the provisioning status of the listener.

Table 7-26 pools parameter description

Parameter	Type	Description
id	String	Specifies the ID of the backend server group.
name	String	Specifies the name of the backend server group.
healthmonitor	Object	Provides health check details of the backend server group. For details of this parameter, see **Table 7-27**.
members	Array	Lists the members contained in the backend server group. For details of this parameter, see **Table 7-28**.
operating_status	String	This parameter is reserved, and its value can only be **ONLINE**. It specifies the operating status of the backend server group.
provisioning_status	String	This parameter is reserved, and its value can only be **ACTIVE**. It specifies the provisioning status of the backend server group.

Table 7-27 healthmonitor parameter description

Parameter	Type	Description
id	String	Specifies the health check ID.
name	String	Specifies the health check name.
type	String	● Specifies the health check protocol. ● The value can be **UDP_CONNECT**, **TCP**, or **HTTP**.

Parameter	Type	Description
provisioning_status	String	This parameter is reserved, and its value can only be **ACTIVE**. It specifies the provisioning status of the health check.

Table 7-28 members parameter description

Parameter	Type	Description
id	String	Specifies the backend server ID.
address	String	Specifies the private IP address of the backend server, for example, 192.168.3.11.
protocol_port	Integer	Specifies the port used by the backend server. The port number ranges from 0 to 65535.
operating_status	String	This parameter is reserved. It specifies the operating status of the backend server. The value can be one of the following: ● **ONLINE**: The backend server is running normally. ● **NO_MONITOR**: No health check is configured for the backend server group that the backend server belongs to. ● **DISABLED**: The backend server is not available. This status is displayed only when **admin_state_up** of the backend server, or the backend server group to which it belongs, or the associated load balancer is set to **false** and the API for querying the load balancer status tree is called. ● **OFFLINE**: The cloud server used as the backend server is stopped or does not exist. **NOTE** When **admin_state_up** is set to **false** and **operating_status** is set to **OFFLINE** for a backend server, **DISABLED** is returned for **operating_status** of the backend server in the response of this API.
provisioning_status	String	This parameter is reserved, and its value can only be **ACTIVE**. It specifies the provisioning status of the backend server.

Table 7-29 l7policies parameter description

Parameter	Type	Description
id	String	Specifies the forwarding policy ID.
name	String	Specifies the forwarding policy name.
rules	Array	Lists the forwarding rules of the forwarding policy. For details of this parameter, see **Table 7-30**.

action	String	● Specifies whether requests are forwarded to another backend server group or redirected to an HTTPS listener.
		● The value can be **REDIRECT_TO_POOL** or **REDIRECT_TO_LISTENER**.
		  – **REDIRECT_TO_POOL**: Requests are forwarded to another backend server group.
		  – **REDIRECT_TO_LISTENER**: Requests are redirected to an HTTPS listener.

provisioning_status	String	This parameter is reserved. It specifies the provisioning status of the forwarding policy. Value options: ● **ACTIVE** (default): The forwarding policy is normal. ● **ERROR**: Another forwarding policy of the same listener has the same forwarding rule.

Table 7-30 rules parameter description

Parameter	Type	Description
id	String	Specifies the forwarding rule ID.

type	String	● Specifies the match type of a forwarding rule.
		● The value can be **PATH** or **HOST_NAME**.
		  – **PATH**: matches the path in the request.
		  – **HOST_NAME**: matches the domain name in the request.

Parameter	Type	Description
provisioning_status	String	This parameter is reserved. It specifies the provisioning status of the forwarding rule. The value can be one of the following: ● **ACTIVE** (default): The forwarding rule is normal. ● **ERROR**: Another forwarding policy of the same listener has the same forwarding rule.

Example Request

● Example request
GET https://{Endpoint}/v2.0/lbaas/loadbalancers/38278031-cfca-44be-81be-a412f618773b/statuses

Example Response

● Example response

```
{
    "statuses": {
        "loadbalancer": {
            "name": "lb-jy",
            "provisioning_status": "ACTIVE",
            "listeners": [
                {
                    "name": "listener-jy-1",
                    "provisioning_status": "ACTIVE",
                    "pools": [
                        {
                            "name": "pool-jy-1",
                            "provisioning_status": "ACTIVE",
                            "healthmonitor": {
                                "type": "TCP",
                                "id": "7422b51a-0ed2-4702-9429-4f88349276c6",
                                "name": "",
                                "provisioning_status": "ACTIVE"
                            },
                            "members": [
                                {
                                    "protocol_port": 80,
                                    "address": "192.168.44.11",
                                    "id": "7bbf7151-0dce-4087-b316-06c7fa17b894",
                                    "operating_status": "ONLINE",
                                    "provisioning_status": "ACTIVE"
                                }
                            ],
                            "id": "c54b3286-2349-4c5c-ade1-e6bb0b26ad18",
                            "operating_status": "ONLINE"
                        }
                    ],
                    "l7policies": [],
                    "id": "eb84c5b4-9bc5-4bee-939d-3900fb05dc7b",
                    "operating_status": "ONLINE"
                }
            ],
            "pools": [
                {
                    "name": "pool-jy-1",
                    "provisioning_status": "ACTIVE",
```

```
            "healthmonitor": {
                "type": "TCP",
                "id": "7422b51a-0ed2-4702-9429-4f88349276c6",
                "name": "",
                "provisioning_status": "ACTIVE"
            },
            "members": [
                {
                    "protocol_port": 80,
                    "address": "192.168.44.11",
                    "id": "7bbf7151-0dce-4087-b316-06c7fa17b894",
                    "operating_status": "ONLINE",
                    "provisioning_status": "ACTIVE"
                }
            ],
            "id": "c54b3286-2349-4c5c-ade1-e6bb0b26ad18",
            "operating_status": "ONLINE"
        }
    ],
    "id": "38278031-cfca-44be-81be-a412f618773b",
    "operating_status": "ONLINE"
        }
    }
}
```

Status Code

For details, see **Status Codes**.

7.1.1.5 Updating a Load Balancer

Function

This API is used to update the name or description of a load balancer.

URI

PUT /v2.0/lbaas/loadbalancers/{loadbalancer_id}

Table 7-31 Parameter description

Parameter	Mandatory	Type	Description
loadbalancer_id	Yes	String	Specifies the load balancer ID.

Request

Table 7-32 Parameter description

Parameter	Mandatory	Type	Description
loadbalancer	Yes	Object	Specifies the load balancer. For details, see **Table 7-33**.

Table 7-33 loadbalancer parameter description

Parameter	Mandatory	Type	Description
name	No	String	Specifies the load balancer name. The value contains a maximum of 255 characters.
description	No	String	Provides supplementary information about the load balancer. The value contains a maximum of 255 characters.
admin_state_up	No	Boolean	Specifies the administrative status of the load balancer. This parameter is reserved. The default value is **true**.

Response

Table 7-34 Response parameters

Parameter	Type	Description
loadbalancer	Object	Specifies the load balancer. For details, see **Table 7-35**.

Table 7-35 loadbalancer parameter description

Parameter	Type	Description
id	String	Specifies the load balancer ID.
tenant_id	String	Specifies the ID of the project where the load balancer is used. The value contains a maximum of 255 characters.
name	String	Specifies the load balancer name. The value contains a maximum of 255 characters.

Parameter	Type	Description
description	String	Provides supplementary information about the load balancer. The value contains a maximum of 255 characters.
vip_subnet_id	String	Specifies the ID of the subnet where the load balancer works.
vip_port_id	String	Specifies the ID of the port bound to the private IP address of the load balancer. When you create a load balancer, the system automatically creates a port and associates it with a security group. However, the security group will not take effect.
provider	String	Specifies the provider of the load balancer.
vip_address	String	Specifies the private IP address of the load balancer. The value contains a maximum of 64 characters.
listeners	Array	Lists the IDs of listeners added to the load balancer. For details, see **Table 7-5**.
pools	Array	Lists the IDs of backend server groups associated with the load balancer. For details, see **Table 7-6**.
operating_status	String	This parameter is reserved, and its value can be **ONLINE** or **FROZEN**. It specifies the operating status of the load balancer.
provisioning_status	String	This parameter is reserved, and its value can only be **ACTIVE**. It specifies the provisioning status of the load balancer.

Parameter	Type	Description
admin_state_up	Boolean	Specifies the administrative status of the load balancer. This parameter is reserved. The value can be **true** or **false**. ● **true**: Enabled ● **false**: Disabled
tags	Array	Lists load balancer tags.
created_at	String	Specifies the time when the load balancer was created. The UTC time is in *YYYY-MM-DDTHH:MM:SS* format. The value contains a maximum of 19 characters.
updated_at	String	Specifies the time when the load balancer was updated. The UTC time is in *YYYY-MM-DDTHH:MM:SS* format. The value contains a maximum of 19 characters.

Table 7-36 listeners parameter description

Parameter	Type	Description
id	String	Specifies the ID of the associated listener.

Table 7-37 pools parameter description

Parameter	Type	Description
id	String	Specifies the ID of the associated backend server group.

Example Request

● Example request: Modifying the load balancer name and description

```
PUT https://{Endpoint}/v2.0/lbaas/loadbalancers/1e11b74e-30b7-4b78-b09b-84aec4a04487

{
    "loadbalancer": {
        "name": "lb_update_test",
        "description": "lb update test"
    }
}
```

Example Response

- Example response

```
{
  "loadbalancer": {
    "description": "simple lb2",
    "admin_state_up": true,
    "tenant_id": "145483a5107745e9b3d80f956713e6a3",

    "provisioning_status": "ACTIVE",
    "vip_subnet_id": "823d5866-6e30-45c2-9b1a-a1ebc3757fdb",
    "listeners": [
      {
        "id": "37ffe679-08ef-436e-b6bd-cf66fb4c3de2"
      }
    ],
    "vip_address": "192.172.1.68",
    "vip_port_id": "f42e3019-67f7-4d2a-8d1c-af49e7c22fa6",
    "tags": [],
    "provider": "vlb",
    "pools": [
      {
        "id": "75c4f2d4-a213-4408-9fa8-d64708e8d1df"
      }
    ],
    "id": "c32a9f9a-0cc6-4f38-bb9c-cde79a533c19",
    "operating_status": "ONLINE",
    "name": "loadbalancer-test2",
    "created_at": "2018-07-25T01:54:13",
    "updated_at": "2018-07-25T01:54:14"
  }
}
```

Status Code

For details, see **Status Codes**.

7.1.1.6 Deleting a Load Balancer

Function

This API is used to delete a specific load balancer.

Constraints

All listeners added to the load balancer must be deleted before the load balancer is deleted.

URI

DELETE /v2.0/lbaas/loadbalancers/{loadbalancer_id}

Table 7-38 Parameter description

Parameter	Mandatory	Type	Description
loadbalancer_id	Yes	String	Specifies the load balancer ID.

Request

None

Response

None

Example Request

Example request: Deleting a load balancer
DELETE https://{endpoint}/v2.0/lbaas/loadbalancers/90f7c765-0bc9-47c4-8513-4cc0c264c8f8

Example Response

Example response

None

Status Code

For details, see **Status Codes**.

7.1.2 Listener

7.1.2.1 Adding a Listener

Function

This API is used to add a listener to a load balancer.

URI

POST /v2.0/lbaas/listeners

Request

Table 7-39 Parameter description

Parameter	Mandatory	Type	Description
listener	Yes	Object	Specifies the listener. For details, see **Table 7-40**.

Table 7-40 listener parameter description

Parameter	Mandatory	Type	Description
tenant_id	No	String	Specifies the ID of the project where the listener is used. The value must be the same as the value of **project_id** in the token. The value contains a maximum of 255 characters.
name	No	String	Specifies the listener name. The value contains a maximum of 255 characters.
description	No	String	Provides supplementary information about the listener. The value contains a maximum of 255 characters.
protocol	Yes	String	Specifies the protocol used by the listener. The value can be **TCP**, **HTTP**, **UDP**, or **TERMINATED_HTTPS**.
protocol_port	Yes	Integer	Specifies the port used by the listener. The port number ranges from 1 to 65535. **NOTE** If the protocol used by the listener is UDP, the port number cannot be 4789.
loadbalancer_id	Yes	String	Specifies the ID of the associated load balancer.
connection_limit	No	Integer	Specifies the maximum number of connections. The value ranges from **-1** to **2147483647**. The default value is **-1**, indicating that there is no restriction on the maximum number of connections. This parameter is reserved.
admin_state_up	No	Boolean	Specifies the administrative status of the listener. This parameter is reserved, and the default value is **true**.

Parameter	Mandatory	Type	Description
http2_enable	No	Boolean	Specifies whether to use HTTP/2. The value can be **true** or **false**. ● **true**: HTTP/2 is used. ● **false**: HTTP/2 is not used. The default value is **false**. This parameter is valid only when the protocol used by the listener is set to **TERMINATED_HTTPS**.
default_pool_id	No	String	Specifies the ID of the associated backend server group. If a request does not match the forwarding policy, the request is forwarded to the default backend server group for processing. If the value is **null**, the listener has no default backend server group. This parameter has the following constraints: ● Its value cannot be the ID of any backend server group of other listeners. ● Its value cannot be the ID of any backend server group associated with the forwarding policies set for other listeners. The relationships between the protocol used by the listener and the protocol of the backend server group are as follows: ● When the protocol used by the listener is **TCP**, the protocol of the backend server group must be **TCP**. ● When the protocol used by the listener is **UDP**, the protocol of the backend server group must be **UDP**. ● When the protocol used by the listener is **HTTP** or **TERMINATED_HTTPS**, the protocol of the backend server group must be **HTTP**.

Parameter	Mandatory	Type	Description
default_tls_container_ref	No	String	Specifies the ID of the server certificate used by the listener. This parameter is mandatory when **protocol** is set to **TERMINATED_HTTPS**. The default value is **null** when **protocol** is not set to **TERMINATED_HTTPS**. The value contains a maximum of 128 characters. **NOTE** This parameter is valid only when **protocol** is set to **TERMINATED_HTTPS**.
client_ca_tls_container_ref	No	String	Specifies the ID of the CA certificate used by the listener. The default value is **null**. The value contains a maximum of 128 characters. **NOTE** This parameter is valid only when **protocol** is set to **TERMINATED_HTTPS**.
sni_container_refs	No	Array	Lists the IDs of SNI certificates (server certificates with domain names) used by the listener. If the parameter value is an empty list, the SNI feature is disabled. The default value is **[]**. **NOTE** This parameter is valid only when **protocol** is set to **TERMINATED_HTTPS**.

Table 7-41 tls_ciphers_policy parameter description

Security Policy	TLS Version	Cipher Suite
tls-1-0-inherit	TLS 1.2 TLS 1.1 TLS 1.0	ECDHE-RSA-AES256-GCM-SHA384:ECDHE-RSA-AES128-GCM-SHA256:ECDHE-ECDSA-AES256-GCM-SHA384:ECDHE-ECDSA-AES128-GCM-SHA256:AES128-GCM-SHA256:AES256-GCM-SHA384:ECDHE-ECDSA-AES128-SHA256:ECDHE-RSA-AES128-SHA256:AES128-SHA256:AES256-SHA256:ECDHE-ECDSA-AES256-SHA384:ECDHE-RSA-AES256-SHA384:ECDHE-ECDSA-AES128-SHA:ECDHE-RSA-AES128-SHA:DHE-RSA-AES128-SHA:ECDHE-RSA-AES256-SHA:ECDHE-ECDSA-AES256-SHA:AES128-SHA:AES256-SHA:DHE-DSS-AES128-SHA:CAMELLIA128-SHA:EDH-RSA-DES-CBC3-SHA:DES-CBC3-SHA:ECDHE-RSA-RC4-SHA:RC4-SHA:DHE-RSA-AES256-SHA:DHE-DSS-AES256-SHA:DHE-RSA-CAMELLIA256-SHA:DHE-DSS-CAMELLIA256-SHA:CAMELLIA256-SHA:EDH-DSS-DES-CBC3-SHA:DHE-RSA-CAMELLIA128-SHA:DHE-DSS-CAMELLIA128-SHA
tls-1-0	TLS 1.2 TLS 1.1 TLS 1.0	ECDHE-RSA-AES256-GCM-SHA384:ECDHE-RSA-AES128-GCM-SHA256:ECDHE-ECDSA-AES256-GCM-SHA384:ECDHE-ECDSA-AES128-GCM-SHA256:AES128-GCM-SHA256:AES256-GCM-SHA384:ECDHE-ECDSA-AES128-SHA256:ECDHE-RSA-AES128-SHA256:AES128-SHA256:AES256-SHA256:ECDHE-ECDSA-AES256-SHA384:ECDHE-RSA-AES256-SHA384:ECDHE-ECDSA-AES128-SHA:ECDHE-RSA-AES128-SHA:ECDHE-RSA-AES256-SHA:ECDHE-ECDSA-AES256-SHA:AES128-SHA:AES256-SHA
tls-1-1	TLS 1.2 TLS 1.1	
tls-1-2	TLS 1.2	
tls-1-2-strict	TLS 1.2	ECDHE-RSA-AES256-GCM-SHA384:ECDHE-RSA-AES128-GCM-SHA256:ECDHE-ECDSA-AES256-GCM-SHA384:ECDHE-ECDSA-AES128-GCM-SHA256:AES128-GCM-SHA256:AES256-GCM-SHA384:ECDHE-ECDSA-AES128-SHA256:ECDHE-RSA-AES128-SHA256:AES128-SHA256:AES256-SHA256:ECDHE-ECDSA-AES256-SHA384:ECDHE-RSA-AES256-SHA384

Response

Table 7-42 Response parameters

Parameter	Type	Description
listener	Object	Specifies the listener. For details, see **Table 7-43**.

Table 7-43 listeners parameter description

Parameter	Type	Description
id	String	Specifies the listener ID.
tenant_id	String	Specifies the ID of the project where the listener is used.
name	String	Specifies the listener name.
description	String	Provides supplementary information about the listener.
protocol	String	Specifies the protocol used by the listener. The value can be **TCP**, **HTTP**, **UDP**, or **TERMINATED_HTTPS**.
protocol_port	Integer	Specifies the port used by the listener. The port number ranges from 1 to 65535.
loadbalancers	Array	Specifies the ID of the associated load balancer. For details, see **Table 7-44**.
connection_limit	Integer	Specifies the maximum number of connections. The value ranges from **-1** to **2147483647**. The default value is **-1**, indicating that there is no restriction on the maximum number of connections. This parameter is reserved.
admin_state_up	Boolean	Specifies the administrative status of the listener. This parameter is reserved. The value can be **true** or **false**. ● **true**: The load balancer is enabled. ● **false**: The load balancer is disabled.
http2_enable	Boolean	Specifies whether to use HTTP/2. The value can be **true** or **false**. ● **true**: HTTP/2 is used. ● **false**: HTTP/2 is not used. This parameter is valid only when the protocol used by the listener is set to **TERMINATED_HTTPS**.

Parameter	Type	Description
default_pool_id	String	Specifies the ID of the associated backend server group.
		If a request does not match the forwarding policy, the request is forwarded to the default backend server group for processing. If the value is **null**, the listener has no default backend server group.
default_tls_container_ref	String	Specifies the ID of the server certificate used by the listener. For details, see **Certificate**.
		This parameter is mandatory when **protocol** is set to **TERMINATED_HTTPS**.
client_ca_tls_container_ref	String	Specifies the ID of the CA certificate used by the listener. For details, see **Certificate**.
sni_container_refs	Array	Lists the IDs of SNI certificates (server certificates with domain names) used by the listener.
		If the parameter value is an empty list, the SNI feature is disabled.
tags	Array	Tags the listener.
created_at	String	Specifies the time when the listener was created. The UTC time is in *YYYY-MM-DDTHH:MM:SS* format.
updated_at	String	Specifies the time when the listener was updated. The UTC time is in *YYYY-MM-DDTHH:MM:SS* format.

Table 7-44 loadbalancers parameter description

Parameter	Type	Description
id	String	Specifies the ID of the associated load balancer.

Example Request

- Example request 1: Adding a TCP listener
  POST https://{Endpoint}/v2.0/lbaas/listeners

  ```
  {
      "listener": {
          "protocol_port": 80,
          "protocol": "TCP",
          "loadbalancer_id": "0416b6f1-877f-4a51-987e-978b3f084253",
          "name": "listener-test",
          "admin_state_up": true
      }
  }
  ```

- Example request 2: Adding an HTTPS listener
  POST https://{Endpoint}/v2.0/lbaas/listeners

```
{
    "listener": {
        "protocol_port": 25,
        "protocol": "TERMINATED_HTTPS",
        "default_tls_container_ref": "02dcd56799e045bf8b131533cc911dd6",
        "loadbalancer_id": "0416b6f1-877f-4a51-987e-978b3f084253",
        "name": "listener-test",
        "admin_state_up": true

    }
}
```

Example Response

- Example response 1

```
{
    "listener": {
        "protocol_port": 80,
        "protocol": "TCP",
        "description": "",
        "client_ca_tls_container_ref": null,
        "default_tls_container_ref": null,
        "admin_state_up": true,
        "http2_enable": false,
        "loadbalancers": [
            {
                "id": "0416b6f1-877f-4a51-987e-978b3f084253"
            }
        ],
        "tenant_id": "145483a5107745e9b3d80f956713e6a3",
        "sni_container_refs": [],
        "connection_limit": -1,
        "default_pool_id": null,
        "tags": [],
        "id": "b7f32b52-6f17-4b16-9ec8-063d71b653ce",
        "name": "listener-test",
        "created_at": "2018-07-25T01:54:13",
        "updated_at": "2018-07-25T01:54:14"
    }
}
```

- Example response 2

```
{
    "listener": {
        "protocol_port": 25,
        "protocol": "TERMINATED_HTTPS",
        "description": "",
        "default_tls_container_ref": "02dcd56799e045bf8b131533cc911dd6",
        "sni_container_refs": [],
        "loadbalancers": [
            {
                "id": "0416b6f1-877f-4a51-987e-978b3f084253"
            }
        ],
        "tenant_id": "601240b9c5c94059b63d484c92cfe308",

        "created_at": "2019-01-21T12:38:31",
        "client_ca_tls_container_ref": null,
        "connection_limit": -1,
        "updated_at": "2019-01-21T12:38:31",
        "http2_enable": false,
        "admin_state_up": true,
        "default_pool_id": null,
        "id": "b56634cd-5ba8-460e-b5a2-6de5ba8eaf60",
        "tags": [],
        "name": "listener-test"

    }
}
```

Status Code

For details, see **Status Codes**.

7.1.2.2 Querying Listeners

Function

This API is used to query the listeners and display them in a list. Filter query and pagination query are supported. Unless otherwise specified, exact match is applied.

You can query listeners using information such as listener ID, protocol used by the listener, port used by the listener, or backend server private IP address.

Constraints

Parameters **marker**, **limit**, and **page_reverse** are used for pagination query. Parameters **marker** and **page_reverse** take effect only when they are used together with parameter **limit**.

URI

GET /v2.0/lbaas/listeners

Request

Table 7-45 Parameter description

Parameter	Manda tory	Type	Description
marker	No	String	Specifies the ID of the listener from which pagination query starts, that is, the ID of the last listener on the previous page. This parameter must be used together with **limit**.
limit	No	Integer	Specifies the number of listeners on each page.

Parameter	Manda tory	Type	Description
page_reverse	No	Boolea n	Specifies the page direction. The value can be **true** or **false**, and the default value is **false**. The last page in the list requested with **page_reverse** set to **false** will not contain the "next" link, and the last page in the list requested with **page_reverse** set to **true** will not contain the "previous" link. This parameter must be used together with **limit**.
id	No	String	Specifies the listener ID.
tenant_id	No	String	Specifies the ID of the project where the listener is used.
project_id	No	String	Specifies the ID of the project to which the listener belongs. This parameter has the same meaning as **tenant_id**.
name	No	String	Specifies the listener name. The value contains a maximum of 255 characters.
description	No	String	Provides supplementary information about the listener. The value contains a maximum of 255 characters.
loadbalancer_id	No	String	Specifies the ID of the associated load balancer.
connection_limit	No	Integer	Specifies the maximum number of connections.
admin_state_up	No	Boolea n	Specifies the administrative status of the listener. This parameter is reserved, and the default value is **true**.
default_pool_id	No	String	Specifies the ID of the associated backend server group.

Parameter	Manda tory	Type	Description
http2_enable	No	Boolea n	Specifies whether to use HTTP/2. The value can be **true** or **false**. • **true**: HTTP/2 is used. • **false**: HTTP/2 is not used.
default_tls_container_ref	No	String	Specifies the ID of the server certificate used by the listener. The value contains a maximum of 128 characters.
client_ca_tls_container_re f	No	String	Specifies the ID of the CA certificate used by the listener. The value contains a maximum of 128 characters.
protocol	No	String	Specifies the protocol used by the listener. The value can be **TCP**, **HTTP**, **UDP**, or **TERMINATED_HTTPS**.
protocol_port	No	Integer	Specifies the port used by the listener.
tls_container_id	No	String	Queries the listener associated with the certificate.
sni_container_refs	No	String	Queries the listener associated with the SNI certificate.

Table 7-46 tls_ciphers_policy parameter description

Security Policy	TLS Version	Cipher Suite
tls-1-0-inherit	TLS 1.2 TLS 1.1 TLS 1.0	ECDHE-RSA-AES256-GCM-SHA384:ECDHE-RSA-AES128-GCM-SHA256:ECDHE-ECDSA-AES256-GCM-SHA384:ECDHE-ECDSA-AES128-GCM-SHA256:AES128-GCM-SHA256:AES256-GCM-SHA384:ECDHE-ECDSA-AES128-SHA256:ECDHE-RSA-AES128-SHA256:AES128-SHA256:AES256-SHA256:ECDHE-ECDSA-AES256-SHA384:ECDHE-RSA-AES256-SHA384:ECDHE-ECDSA-AES128-SHA:ECDHE-RSA-AES128-SHA:DHE-RSA-AES128-SHA:ECDHE-RSA-AES256-SHA:ECDHE-ECDSA-AES256-SHA:AES128-SHA:AES256-SHA:DHE-DSS-AES128-SHA:CAMELLIA128-SHA:EDH-RSA-DES-CBC3-SHA:DES-CBC3-SHA:ECDHE-RSA-RC4-SHA:RC4-SHA:DHE-RSA-AES256-SHA:DHE-DSS-AES256-SHA:DHE-RSA-CAMELLIA256-SHA:DHE-DSS-CAMELLIA256-SHA:CAMELLIA256-SHA:EDH-DSS-DES-CBC3-SHA:DHE-RSA-CAMELLIA128-SHA:DHE-DSS-CAMELLIA128-SHA
tls-1-0	TLS 1.2 TLS 1.1 TLS 1.0	ECDHE-RSA-AES256-GCM-SHA384:ECDHE-RSA-AES128-GCM-SHA256:ECDHE-ECDSA-AES256-GCM-SHA384:ECDHE-ECDSA-AES128-GCM-SHA256:AES128-GCM-SHA256:AES256-GCM-SHA384:ECDHE-ECDSA-AES128-SHA256:ECDHE-RSA-AES128-SHA256:AES128-SHA256:AES256-SHA256:ECDHE-ECDSA-AES256-SHA384:ECDHE-RSA-AES256-SHA384:ECDHE-ECDSA-AES128-SHA:ECDHE-RSA-AES128-SHA:ECDHE-RSA-AES256-SHA:ECDHE-ECDSA-AES256-SHA:AES128-SHA:AES256-SHA
tls-1-1	TLS 1.2 TLS 1.1	
tls-1-2	TLS 1.2	
tls-1-2-strict	TLS 1.2	ECDHE-RSA-AES256-GCM-SHA384:ECDHE-RSA-AES128-GCM-SHA256:ECDHE-ECDSA-AES256-GCM-SHA384:ECDHE-ECDSA-AES128-GCM-SHA256:AES128-GCM-SHA256:AES256-GCM-SHA384:ECDHE-ECDSA-AES128-SHA256:ECDHE-RSA-AES128-SHA256:AES128-SHA256:AES256-SHA256:ECDHE-ECDSA-AES256-SHA384:ECDHE-RSA-AES256-SHA384

Response

Table 7-47 Parameter description

Parameter	Type	Description
listeners	Array	Lists the listeners. For details, see **Table 7-48**.
listeners_links	Array	Provides links to the previous or next page during pagination query, respectively. This parameter exists only in the response body of pagination query. For details, see **Table 7-51**.

Table 7-48 listeners parameter description

Parameter	Type	Description
id	String	Specifies the listener ID.
tenant_id	String	Specifies the ID of the project where the listener is used. The value contains a maximum of 255 characters.
name	String	Specifies the listener name. The value contains a maximum of 255 characters.
description	String	Provides supplementary information about the listener. The value contains a maximum of 255 characters.
protocol	String	Specifies the protocol used by the listener. The value can be **TCP**, **HTTP**, **UDP**, or **TERMINATED_HTTPS**.
protocol_port	Integer	Specifies the port used by the listener. The port number ranges from 1 to 65535.
loadbalancers	Array	Specifies the ID of the associated load balancer.
connection_limit	Integer	Specifies the maximum number of connections. The value ranges from **-1** to **2147483647**. **NOTE** This parameter is reserved. The default value is **-1**, indicating that there is no restriction on the maximum number of connections.
admin_state_up	Boolean	Specifies the administrative status of the listener. This parameter is reserved. The value can be **true** or **false**. ● **true**: Enabled ● **false**: Disabled

Parameter	Type	Description
http2_enable	Boolean	Specifies whether to use HTTP/2. The value can be **true** or **false**. ● **true**: HTTP/2 will be used. ● **false**: HTTP/2 will not be used. **NOTE** This parameter is valid only when the protocol used by the listener is set to **TERMINATED_HTTPS**.
keepalive_timeout	Integer	Specifies the idle timeout duration in the unit of second. This parameter applies only to TCP, HTTP, or HTTPS listeners. The value can be one of the following: ● TCP listeners: The value ranges from **10** to **4000**, and the default value is **300**. ● HTTP or HTTPS listeners: The value ranges from **0** to **4000**, and the default value is **60**.
client_timeout	Integer	Specifies the request timeout duration in the unit of second. The value ranges from **1** to **300**. The default value is **60**. This parameter is valid only when **protocol** is set to **HTTP** or **HTTPS**. In other cases, the request body does not contain this parameter. Otherwise, an error is reported. When **protocol** is set to **HTTP** or **HTTPS**, if the request body does not contain this parameter or the value of this parameter is **null**, the default value is used.
member_timeout	Integer	Specifies the response timeout duration in the unit of second. The value ranges from **1** to **300**. The default value is **60**. This parameter is valid only when **protocol** is set to **HTTP** or **HTTPS**. In other cases, the request body does not contain this parameter. Otherwise, an error is reported. When **protocol** is set to **HTTP** or **HTTPS**, if the request body does not contain this parameter or the value of this parameter is **null**, the default value is used.
default_pool_id	String	Specifies the ID of the associated backend server group. **NOTE** If a request does not match the forwarding policy, the request is forwarded to the default backend server group for processing. If the value is **null**, the listener has no default backend server group.
default_tls_container_ref	String	Specifies the ID of the server certificate used by the listener. This parameter is mandatory when **protocol** is set to **TERMINATED_HTTPS**. The value contains a maximum of 128 characters.

Parameter	Type	Description
client_ca_tls_container_ref	String	Specifies the ID of the CA certificate used by the listener. The value contains a maximum of 128 characters.
sni_container_refs	Array	Lists the IDs of SNI certificates (server certificates with domain names) used by the listener.
tags	Array	Tags the listener.
created_at	String	Specifies the time when the listener was created. The UTC time is in *YYYY-MM-DDTHH:MM:SS* format. The value contains a maximum of 19 characters.
updated_at	String	Specifies the time when the listener was updated. The UTC time is in *YYYY-MM-DDTHH:MM:SS* format. The value contains a maximum of 19 characters.
listeners_links	Array	Provides links to the previous or next page during pagination query, respectively. This parameter exists only in the response body of pagination query.

Table 7-49 loadbalancers parameter description

Parameter	Type	Description
id	String	Specifies the ID of the associated load balancer.

Table 7-50 tls_ciphers_policy parameter description

Security Policy	TLS Version	Cipher Suite
tls-1-0-inherit	TLS 1.2 TLS 1.1 TLS 1.0	ECDHE-RSA-AES256-GCM-SHA384:ECDHE-RSA-AES128-GCM-SHA256:ECDHE-ECDSA-AES256-GCM-SHA384:ECDHE-ECDSA-AES128-GCM-SHA256:AES128-GCM-SHA256:AES256-GCM-SHA384:ECDHE-ECDSA-AES128-SHA256:ECDHE-RSA-AES128-SHA256:AES128-SHA256:AES256-SHA256:ECDHE-ECDSA-AES256-SHA384:ECDHE-RSA-AES256-SHA384:ECDHE-ECDSA-AES128-SHA:ECDHE-RSA-AES128-SHA:DHE-RSA-AES128-SHA:ECDHE-RSA-AES256-SHA:ECDHE-ECDSA-AES256-SHA:AES128-SHA:AES256-SHA:DHE-DSS-AES128-SHA:CAMELLIA128-SHA:EDH-RSA-DES-CBC3-SHA:DES-CBC3-SHA:ECDHE-RSA-RC4-SHA:RC4-SHA:DHE-RSA-AES256-SHA:DHE-DSS-AES256-SHA:DHE-RSA-CAMELLIA256-SHA:DHE-DSS-CAMELLIA256-SHA:CAMELLIA256-SHA:EDH-DSS-DES-CBC3-SHA:DHE-RSA-CAMELLIA128-SHA:DHE-DSS-CAMELLIA128-SHA
tls-1-0	TLS 1.2 TLS 1.1 TLS 1.0	ECDHE-RSA-AES256-GCM-SHA384:ECDHE-RSA-AES128-GCM-SHA256:ECDHE-ECDSA-AES256-GCM-SHA384:ECDHE-ECDSA-AES128-GCM-SHA256:AES128-GCM-SHA256:AES256-GCM-SHA384:ECDHE-ECDSA-AES128-SHA256:ECDHE-RSA-AES128-SHA256:AES128-SHA256:AES256-SHA256:ECDHE-ECDSA-AES256-SHA384:ECDHE-RSA-AES256-SHA384:ECDHE-ECDSA-AES128-SHA:ECDHE-RSA-AES128-SHA:ECDHE-RSA-AES256-SHA:ECDHE-ECDSA-AES256-SHA:AES128-SHA:AES256-SHA
tls-1-1	TLS 1.2 TLS 1.1	
tls-1-2	TLS 1.2	
tls-1-2-strict	TLS 1.2	ECDHE-RSA-AES256-GCM-SHA384:ECDHE-RSA-AES128-GCM-SHA256:ECDHE-ECDSA-AES256-GCM-SHA384:ECDHE-ECDSA-AES128-GCM-SHA256:AES128-GCM-SHA256:AES256-GCM-SHA384:ECDHE-ECDSA-AES128-SHA256:ECDHE-RSA-AES128-SHA256:AES128-SHA256:AES256-SHA256:ECDHE-ECDSA-AES256-SHA384:ECDHE-RSA-AES256-SHA384

Table 7-51 listeners_links parameter description

Parameter	Type	Description
href	String	Provides links to the previous or next page during pagination query, respectively.

Parameter	Type	Description
rel	String	Specifies the prompt of the previous or next page. The value can be **next** or **previous**. The value **next** indicates the href containing the URL of the next page, and **previous** indicates the href containing the URL of the previous page.

Example Request

- Example request 1: Querying all listeners
  GET https://{Endpoint}/v2.0/lbaas/listeners?limit=2

- Request example 2: Querying UDP listeners
  GET https://{Endpoint}/v2.0/lbaas/listeners?protocol=UDP

Example Response

- Example response 1

```
{
    "listeners": [
        {
            "client_ca_tls_container_ref": null,
            "protocol": "TCP",
            "description": "",
            "default_tls_container_ref": null,
            "admin_state_up": true,
            "http2_enable": false,
            "loadbalancers": [
                {
                    "id": "bc7ba445-035a-4464-a1a3-a62cf4a14116"
                }
            ],
            "tenant_id": "601240b9c5c94059b63d484c92cfe308",

            "sni_container_refs": [],
            "connection_limit": -1,
            "protocol_port": 80,
            "default_pool_id": "ed75f16e-fcc6-403e-a3fb-4eae82005eab",
            "id": "75045172-70e9-480d-9443-b8b6459948f7",
            "tags": [],
            "name": "listener-cb2n",

            "created_at": "2018-07-25T01:54:13",
            "updated_at": "2018-07-25T01:54:14"
        },
        {
            "client_ca_tls_container_ref": null,
            "protocol": "TCP",
            "description": "",
            "default_tls_container_ref": null,
            "admin_state_up": true,
            "http2_enable": false,
            "loadbalancers": [
                {
                    "id": "165b6a38-5278-4569-b747-b2ee65ea84a4"
                }
            ],
            "tenant_id": "601240b9c5c94059b63d484c92cfe308",

            "sni_container_refs": [],
            "connection_limit": -1,
```

```
            "protocol_port": 8080,
            "default_pool_id": null,
            "id": "dada0003-7b0e-4de8-a4e1-1e937be2ba14",
            "tags": [],
            "name": "lsnr_name_mod",
            "created_at": "2018-07-25T01:54:13",
            "updated_at": "2018-07-25T01:54:14"

,

        }
    ],
    "listeners_links": [
        {
        "href": "https://{Endpoint}/v2.0/lbaas/listeners?limit=2&marker=042cc6a5-
e385-4e39-83de-4dde1f801ccb",
        "rel": "next"
        },
        {
        "href": "https://{Endpoint}/v2.0/lbaas/listeners?limit=2&marker=025fcaa9-0159-4a0d-8583-
d97fa77d9972&page_reverse=True",
        "rel": "previous"
        }
    ]
}
```

- Example response 2

```
{
    "listeners": [
        {
            "protocol_port": 64809,
            "protocol": "UDP",
            "description": "",
            "default_tls_container_ref": null,
            "sni_container_refs": [],
            "loadbalancers": [
                {
                    "id": "c1127125-64a9-4394-a08a-ef3be8f7ef9c"
                }
            ],
            "tenant_id": "601240b9c5c94059b63d484c92cfe308",

            "created_at": "2018-11-29T13:56:21",
            "client_ca_tls_container_ref": null,
            "connection_limit": -1,
            "updated_at": "2018-11-29T13:56:22",
            "http2_enable": false,

            "admin_state_up": true,
            "default_pool_id": "2f6895be-019b-4c82-9b53-c4a2ac009e20",
            "id": "5c63d176-444f-4c75-9cfe-bcb8a05a845c",
            "tags": [],
            "name": "listener-tvp8"
        }
    ]
}
```

Status Code

For details, see **Status Codes**.

7.1.2.3 Querying Details of a Listener

Function

This API is used to query details about a listener using its ID.

URI

GET /v2.0/lbaas/listeners/{listener_id}

Table 7-52 Parameter description

Parameter	Mandatory	Type	Description
listener_id	Yes	String	Specifies the listener ID.

Request

None

Response

Table 7-53 Response parameters

Parameter	Type	Description
listener	Object	Lists the listeners. For details, see **Table 7-54**.

Table 7-54 listeners parameter description

Parameter	Type	Description
id	String	Specifies the listener ID.
tenant_id	String	Specifies the ID of the project where the listener is used.
name	String	Specifies the listener name.
description	String	Provides supplementary information about the listener.
protocol	String	Specifies the protocol used by the listener. The value can be **TCP**, **HTTP**, **UDP**, or **TERMINATED_HTTPS**.
protocol_port	Integer	Specifies the port used by the listener. The port number ranges from 1 to 65535.
loadbalancers	Array	Specifies the ID of the associated load balancer. For details, see **Table 7-44**.

Parameter	Type	Description
connection_limit	Integer	Specifies the maximum number of connections. The value ranges from **-1** to **2147483647**. The default value is **-1**, indicating that there is no restriction on the maximum number of connections. This parameter is reserved.
admin_state_up	Boolean	Specifies the administrative status of the listener. This parameter is reserved. The value can be **true** or **false**. **true**: The load balancer is enabled. **false**: The load balancer is disabled.
http2_enable	Boolean	Specifies whether to use HTTP/2. The value can be **true** or **false**. **true**: HTTP/2 is used. **false**: HTTP/2 is not used. This parameter is valid only when the protocol used by the listener is set to **TERMINATED_HTTPS**.
default_pool_id	String	Specifies the ID of the associated backend server group. If a request does not match the forwarding policy, the request is forwarded to the default backend server group for processing. If the value is **null**, the listener has no default backend server group.
default_tls_container_ref	String	Specifies the ID of the server certificate used by the listener. For details, see **Certificate**. This parameter is mandatory when **protocol** is set to **TERMINATED_HTTPS**.
client_ca_tls_container_ref	String	Specifies the ID of the CA certificate used by the listener. For details, see **Certificate**.
sni_container_refs	Array	Lists the IDs of SNI certificates (server certificates with domain names) used by the listener. If the parameter value is an empty list, the SNI feature is disabled.
tags	Array	Tags the listener.
created_at	String	Specifies the time when the listener was created. The UTC time is in *YYYY-MM-DDTHH:MM:SS* format.
updated_at	String	Specifies the time when the listener was updated. The UTC time is in *YYYY-MM-DDTHH:MM:SS* format.

Table 7-55 loadbalancers parameter description

Parameter	Type	Description
id	String	Specifies the ID of the associated load balancer.

Example Request

- Example request: Querying details of a listener
  GET https://{Endpoint}/v2.0/lbaas/listeners/09e64049-2ab0-4763-a8c5-f4207875dc3e

Example Response

- Example response

```
{
    "listener": {
        "protocol_port": 8000,
        "protocol": "TCP",
        "description": "",
        "client_ca_tls_container_ref": null,
        "default_tls_container_ref": null,
        "admin_state_up": true,
        "http2_enable": false,
        "loadbalancers": [
            {
                "id": "3d77894d-2ffe-4411-ac0a-0d57689779b8"
            }
        ],
        "tenant_id": "1867112d054b427e808cc6096d8193a1",
        "sni_container_refs": [],
        "connection_limit": -1,
        "default_pool_id": "b7e53dbd-62ab-4505-a280-5c066078a5c9",
        "id": "09e64049-2ab0-4763-a8c5-f4207875dc3e",
        "tags": [],
        "name": "listener-2",
        "created_at": "2018-07-25T01:54:13",
        "updated_at": "2018-07-25T01:54:14"
    }
}
```

Status Code

For details, see **Status Codes**.

7.1.2.4 Updating a Listener

Function

This API is used to update a listener, such as listener name, description, associated backend server groups, and server certificates.

Constraints

- If the provisioning status of the associated load balancer is not **ACTIVE**, the listener cannot be updated.
- Only users with the ELB administrator permissions can specify the value of **connection_limit**.

- The **default_pool_id** parameter has the following constraints:
  - Its value cannot be the ID of any backend server group of other listeners.
  - Its value cannot be the ID of any backend server group associated with the forwarding policies set for other listeners.
- The relationships between the protocol used by the listener and the protocol of the backend server group are as follows:
  - When the protocol used by the listener is **TCP**, the protocol of the backend server group must be **TCP**.
  - When the protocol used by the listener is **UDP**, the protocol of the backend server group must be **UDP**.
  - When the protocol used by the listener is **HTTP** or **TERMINATED_HTTPS**, the protocol of the backend server group must be **HTTP**.

URI

PUT /v2.0/lbaas/listeners/{listener_id}

Table 7-56 Parameter description

Parameter	Mandatory	Type	Description
listener_id	Yes	String	Specifies the listener ID.

Request

Table 7-57 Parameter description

Parameter	Mandatory	Type	Description
listener	Yes	Object	Specifies the listener. For details, see **Table 7-58**.

Table 7-58 listener parameter description

Parameter	Mandatory	Type	Description
name	No	String	Specifies the listener name. The value contains a maximum of 255 characters.
description	No	String	Provides supplementary information about the listener. The value contains a maximum of 255 characters.

Parameter	Mandatory	Type	Description
connection_limit	No	Integer	Specifies the maximum number of connections. The value ranges from **-1** to **2147483647**. This parameter is reserved. Only users with the ELB administrator permissions can specify this field.
http2_enable	No	Boolean	Specifies whether to use HTTP/2. The value can be **true** or **false**. ● **true**: HTTP/2 is used. ● **false**: HTTP/2 is not used. This parameter is valid only when the protocol used by the listener is set to **TERMINATED_HTTPS**.

Parameter	Mandat ory	Type	Description
default_pool_id	No	String	Specifies the ID of the associated backend server group.
			If a request does not match the forwarding policy, the request is forwarded to the default backend server group for processing. If the value is **null**, the listener has no default backend server group.
			This parameter has the following constraints:
			● Its value cannot be the ID of any backend server group of other listeners.
			● Its value cannot be the ID of any backend server group associated with the forwarding policies set for other listeners.
			The relationships between the protocol used by the listener and the protocol of the backend server group are as follows:
			● When the protocol used by the listener is **TCP**, the protocol of the backend server group must be **TCP**.
			● When the protocol used by the listener is **UDP**, the protocol of the backend server group must be **UDP**.
			● When the protocol used by the listener is **HTTP** or **TERMINATED_HTTPS**, the protocol of the backend server group must be **HTTP**.
admin_state_up	No	Boolean	Specifies the administrative status of the listener.
			This parameter is reserved, and the default value is **true**.
default_tls_contai ner_ref	No	String	Specifies the ID of the server certificate used by the listener.
			The value contains a maximum of 128 characters.
			NOTE This parameter is valid only when **protocol** is set to **TERMINATED_HTTPS**.

Parameter	Mandat ory	Type	Description
client_ca_tls_cont ainer_ref	No	String	Specifies the ID of the CA certificate used by the listener. The value contains a maximum of 128 characters. **NOTE** This parameter is valid only when **protocol** is set to **TERMINATED_HTTPS**.
sni_container_refs	No	Array	Lists the IDs of SNI certificates (server certificates with domain names) used by the listener. If the parameter value is an empty list, the SNI feature is disabled. **NOTE** This parameter is valid only when **protocol** is set to **TERMINATED_HTTPS**.

Table 7-59 tls_ciphers_policy parameter description

Security Policy	TLS Version	Cipher Suite
tls-1-0-inherit	TLS 1.2 TLS 1.1 TLS 1.0	ECDHE-RSA-AES256-GCM-SHA384:ECDHE-RSA-AES128-GCM-SHA256:ECDHE-ECDSA-AES256-GCM-SHA384:ECDHE-ECDSA-AES128-GCM-SHA256:AES128-GCM-SHA256:AES256-GCM-SHA384:ECDHE-ECDSA-AES128-SHA256:ECDHE-RSA-AES128-SHA256:AES128-SHA256:AES256-SHA256:ECDHE-ECDSA-AES256-SHA384:ECDHE-RSA-AES256-SHA384:ECDHE-ECDSA-AES128-SHA:ECDHE-RSA-AES128-SHA:DHE-RSA-AES128-SHA:ECDHE-RSA-AES256-SHA:ECDHE-ECDSA-AES256-SHA:AES128-SHA:AES256-SHA:DHE-DSS-AES128-SHA:CAMELLIA128-SHA:EDH-RSA-DES-CBC3-SHA:DES-CBC3-SHA:ECDHE-RSA-RC4-SHA:RC4-SHA:DHE-RSA-AES256-SHA:DHE-DSS-AES256-SHA:DHE-RSA-CAMELLIA256-SHA:DHE-DSS-CAMELLIA256-SHA:CAMELLIA256-SHA:EDH-DSS-DES-CBC3-SHA:DHE-RSA-CAMELLIA128-SHA:DHE-DSS-CAMELLIA128-SHA
tls-1-0	TLS 1.2 TLS 1.1 TLS 1.0	ECDHE-RSA-AES256-GCM-SHA384:ECDHE-RSA-AES128-GCM-SHA256:ECDHE-ECDSA-AES256-GCM-SHA384:ECDHE-ECDSA-AES128-GCM-SHA256:AES128-GCM-SHA256:AES256-GCM-SHA384:ECDHE-ECDSA-AES128-SHA256:ECDHE-RSA-AES128-SHA256:AES128-SHA256:AES256-SHA256:ECDHE-ECDSA-AES256-SHA384:ECDHE-
tls-1-1	TLS 1.2 TLS 1.1	

Security Policy	TLS Version	Cipher Suite
tls-1-2	TLS 1.2	RSA-AES256-SHA384:ECDHE-ECDSA-AES128-SHA:ECDHE-RSA-AES128-SHA:ECDHE-RSA-AES256-SHA:ECDHE-ECDSA-AES256-SHA:AES128-SHA:AES256-SHA
tls-1-2-strict	TLS 1.2	ECDHE-RSA-AES256-GCM-SHA384:ECDHE-RSA-AES128-GCM-SHA256:ECDHE-ECDSA-AES256-GCM-SHA384:ECDHE-ECDSA-AES128-GCM-SHA256:AES128-GCM-SHA256:AES256-GCM-SHA384:ECDHE-ECDSA-AES128-SHA256:ECDHE-RSA-AES128-SHA256:AES128-SHA256:AES256-SHA256:ECDHE-ECDSA-AES256-SHA384:ECDHE-RSA-AES256-SHA384

Response

Table 7-60 Response parameters

Parameter	Type	Description
listener	Object	Specifies the listener. For details, see **Table 7-61**.

Table 7-61 listeners parameter description

Parameter	Type	Description
id	String	Specifies the listener ID.
tenant_id	String	Specifies the ID of the project where the listener is used.
name	String	Specifies the listener name.
description	String	Provides supplementary information about the listener.
protocol	String	Specifies the protocol used by the listener. The value can be **TCP**, **HTTP**, **UDP**, or **TERMINATED_HTTPS**.
protocol_port	Integer	Specifies the port used by the listener. The port number ranges from 1 to 65535.
loadbalancers	Array	Specifies the ID of the associated load balancer. For details, see **Table 7-44**.

Parameter	Type	Description
connection _limit	Integer	Specifies the maximum number of connections. The value ranges from **-1** to **2147483647**. The default value is **-1**, indicating that there is no restriction on the maximum number of connections. This parameter is reserved.
admin_sta te_up	Boolean	Specifies the administrative status of the listener. This parameter is reserved. The value can be **true** or **false**. ● **true**: The load balancer is enabled. ● **false**: The load balancer is disabled.
http2_ena ble	Boolean	Specifies whether to use HTTP/2. The value can be **true** or **false**. ● **true**: HTTP/2 is used. ● **false**: HTTP/2 is not used. This parameter is valid only when the protocol used by the listener is set to **TERMINATED_HTTPS**.
default_po ol_id	String	Specifies the ID of the associated backend server group. If a request does not match the forwarding policy, the request is forwarded to the default backend server group for processing. If the value is **null**, the listener has no default backend server group.
default_tls _container _ref	String	Specifies the ID of the server certificate used by the listener. For details, see **Certificate**. This parameter is mandatory when **protocol** is set to **TERMINATED_HTTPS**.
client_ca_t ls_contain er_ref	String	Specifies the ID of the CA certificate used by the listener. For details, see **Certificate**.
sni_contai ner_refs	Array	Lists the IDs of SNI certificates (server certificates with domain names) used by the listener. If the parameter value is an empty list, the SNI feature is disabled.
tags	Array	Tags the listener.
created_at	String	Specifies the time when the listener was created. The UTC time is in *YYYY-MM-DDTHH:MM:SS* format.
updated_a t	String	Specifies the time when the listener was updated. The UTC time is in *YYYY-MM-DDTHH:MM:SS* format.

Table 7-62 loadbalancers parameter description

Parameter	Type	Description
id	String	Specifies the ID of the associated load balancer.

Example Request

- Example request: Updating a listener
  PUT https://{Endpoint}/v2.0/lbaas/listeners/f622c150-72f5-4263-a47a-e5003c652aa3

```
{
    "listener": {
        "description": "my listener",
        "name": "listener-jy-test2",
        "default_pool_id": "c61310de-9a06-4f0c-850c-6f4797b9984c",
        "default_tls_container_ref": "23b58a961a4d4c95be585e98046e657a",
        "client_ca_tls_container_ref": "417a0976969f497db8cbb083bff343ba"
    }
}
```

Example Response

- Example response

```
{
    "listener": {
        "client_ca_tls_container_ref": "417a0976969f497db8cbb083bff343ba",
        "protocol": "TERMINATED_HTTPS",
        "description": "my listener",
        "default_tls_container_ref": "23b58a961a4d4c95be585e98046e657a",
        "admin_state_up": true,
        "http2_enable": false,
        "loadbalancers": [
            {
                "id": "165b6a38-5278-4569-b747-b2ee65ea84a4"
            }
        ],
        "tenant_id": "601240b9c5c94059b63d484c92cfe308",

        "sni_container_refs": [],
        "connection_limit": -1,
        "protocol_port": 443,
        "tags": [],
        "default_pool_id": "c61310de-9a06-4f0c-850c-6f4797b9984c",
        "id": "f622c150-72f5-4263-a47a-e5003c652aa3",
        "name": "listener-jy-test2",

        "created_at": "2018-07-25T01:54:13",
        "updated_at": "2018-07-25T01:54:14"

    }
}
```

Status Code

For details, see **Status Codes**.

7.1.2.5 Deleting a Listener

Function

This API is used to delete a listener by ID.

Constraints

Before deleting the listener, delete the associated backend server groups by referring to **Deleting a Backend Server Group**, or change the value of **default_pool_id** to **null** by referring to **Updating a Listener** and delete associated forwarding policies by referring to **Deleting a Forwarding Policy**.

URI

DELETE /v2.0/lbaas/listeners/{listener_id}

Table 7-63 Parameter description

Parameter	Mandatory	Type	Description
listener_id	Yes	String	Specifies the listener ID.

Request

None

Response

None

Example Request

- Example request: Deleting a listener
  DELETE https://{Endpoint}/v2.0/lbaas/listeners/35cb8516-1173-4035-8dae-0dae3453f37f

Example Response

- Example response
  None

Status Code

For details, see **Status Codes**.

7.1.3 Backend Server Group

7.1.3.1 Adding a Backend Server Group

Function

This API is used to add a backend server group. After multiple backend servers are added to a backend server group, requests are distributed among backend servers based on the load balancing algorithm configured for the backend server group and the weight set for each backend server.

Constraints

- If parameter **session-persistence** is configured, parameter **cookie_name** is available only when the value of **type** is **APP_COOKIE**.

URI

POST /v2.0/lbaas/pools

Request

Table 7-64 Parameter description

Parameter	Mandatory	Type	Description
pool	Yes	Object	Specifies the backend server group. For details, see **Table 7-65**.

Table 7-65 pool parameter description

Parameter	Mandatory	Type	Description
tenant_id	No	String	Specifies the ID of the project where the backend server group is used. The value must be the same as the value of **project_id** in the token. The value contains a maximum of 255 characters.
name	No	String	Specifies the name of the backend server group. The value contains a maximum of 255 characters.
description	No	String	Provides supplementary information about the backend server group. The value contains a maximum of 255 characters.

Parameter	Mandatory	Type	Description
protocol	Yes	String	Specifies the protocol that the backend server group uses to receive requests. TCP, UDP, and HTTP are supported. When a backend server group is associated with a listener, the relationships between the protocol used by the listener and the protocol of the backend server group are as follows: • When the protocol used by the listener is **UDP**, the protocol of the backend server group must be **UDP**. • When the protocol used by the listener is **TCP**, the protocol of the backend server group must be **TCP**. • When the protocol used by the listener is **HTTP** or **TERMINATED_HTTPS**, the protocol of the backend server group must be **HTTP**.
lb_algorithm	Yes	String	Specifies the load balancing algorithm of the backend server group. The value can be one of the following: • **ROUND_ROBIN**: indicates the weighted round robin algorithm. • **LEAST_CONNECTIONS**: indicates the weighted least connections algorithm. • **SOURCE_IP**: indicates the source IP hash algorithm. When the value is **SOURCE_IP**, the weights of backend servers in the server group are invalid.
admin_state_up	No	Boolean	Specifies the administrative status of the backend server group. This parameter is reserved, and the default value is **true**.

Parameter	Mandatory	Type	Description
listener_id	No	String	Specifies the ID of the listener associated with the backend server group. Specify either **listener_id** or **loadbalancer_id**, or both of them.
loadbalancer_id	No	String	Specifies the ID of the load balancer associated with the backend server group. Specify either **listener_id** or **loadbalancer_id**, or both of them.
session_persistence	No	Object	Specifies the sticky session timeout duration in minutes. For details, see **Table 7-66**. If the value is **null**, the sticky session feature is disabled.

Table 7-66 session_persistence parameter description

Parameter	Mandatory	Type	Description
type	Yes	String	Specifies the sticky session type. The value can be one of the following: • **SOURCE_IP**: Requests are distributed based on the client's IP address. Requests from the same IP address are sent to the same backend server. • **HTTP_COOKIE**: When the client sends a request for the first time, the load balancer automatically generates a cookie and inserts the cookie into the response message. Subsequent requests are sent to the backend server that processes the first request. • **APP_COOKIE**: When the client sends a request for the first time, the backend server that receives the request generates a cookie and inserts the cookie into the response message. Subsequent requests are sent to this backend server. When the protocol of the backend server group is TCP, only **SOURCE_IP** takes effect. When the protocol of the backend server group is HTTP, only **HTTP_COOKIE** or **APP_COOKIE** takes effect.
cookie_name	No	String	Specifies the cookie name. This parameter is mandatory when the sticky session type is **APP_COOKIE**.

Parameter	Mandator y	Type	Description
persistence_ti meout	No	Integer	Specifies the sticky session timeout duration in minutes. This parameter is invalid when **type** is set to **APP_COOKIE**. The value range varies depending on the protocol of the backend server group: ● When the protocol of the backend server group is TCP or UDP, the value ranges from **1** to **60**. ● When the protocol of the backend server group is HTTP or HTTPS, the value ranges from **1** to **1440**.

Response

Table 7-67 Response parameters

Parameter	Type	Description
pool	Object	Specifies the backend server group. For details, see **Table 7-68**.

Table 7-68 pools parameter description

Parameter	Type	Description
id	String	Specifies the ID of the backend server group.
tenant_id	String	Specifies the ID of the project where the backend server group is used. The value contains a maximum of 255 characters.
name	String	Specifies the name of the backend server group. The value contains a maximum of 255 characters.
description	String	Provides supplementary information about the backend server group. The value contains a maximum of 255 characters.

Parameter	Type	Description
protocol	String	Specifies the protocol that the backend server group uses to receive requests. TCP, UDP, and HTTP are supported. When a backend server group is associated with a listener, the relationships between the protocol used by the listener and the protocol of the backend server group are as follows: ● When the protocol used by the listener is **UDP**, the protocol of the backend server group must be **UDP**. ● When the protocol used by the listener is **TCP**, the protocol of the backend server group must be **TCP**. ● When the protocol used by the listener is **HTTP** or **TERMINATED_HTTPS**, the protocol of the backend server group must be **HTTP**.
lb_algorithm	String	Specifies the load balancing algorithm of the backend server group. The value can be one of the following: ● **ROUND_ROBIN**: indicates the weighted round robin algorithm. ● **LEAST_CONNECTIONS**: indicates the weighted least connections algorithm. ● **SOURCE_IP**: indicates the source IP hash algorithm. When the value is **SOURCE_IP**, the weights of backend servers in the server group are invalid.
members	Array	Lists the IDs of backend servers in the backend server group.
healthmonitor_id	String	Specifies the ID of the health check configured for the backend server group.
admin_state_up	Boolean	Specifies the administrative status of the backend server group. This parameter is reserved. The value can be **true** or **false**. ● **true**: Enabled ● **false**: Disabled
listeners	Array	Lists the IDs of listeners associated with the backend server group.
loadbalancers	Array	Lists the IDs of load balancers associated with the backend server group.

Parameter	Type	Description
session_pe rsistence	Object	Specifies whether to enable sticky sessions. For details, see **Table 7-72**. Once sticky session are enabled, requests from the same client are sent to the same backend server during the session. When sticky sessions are disabled, the value is **null**.

Table 7-69 members parameter description

Parameter	Type	Description
id	String	Specifies the ID of the associated backend server.

Table 7-70 listeners parameter description

Parameter	Type	Description
id	String	Specifies the ID of the associated backend server group.

Table 7-71 loadbalancers parameter description

Parameter	Type	Description
id	String	Specifies the ID of the associated load balancer.

Table 7-72 **session_persistence** parameter description

Parameter	Type	Description
type	String	Specifies the sticky session type. The value can be one of the following: ● **SOURCE_IP**: Requests are distributed based on the client's IP address. Requests from the same IP address are sent to the same backend server. ● **HTTP_COOKIE**: When the client sends a request for the first time, the load balancer automatically generates a cookie and inserts the cookie into the response message. Subsequent requests are sent to the backend server that processes the first request. ● **APP_COOKIE**: When the client sends a request for the first time, the backend server that receives the request generates a cookie and inserts the cookie into the response message. Subsequent requests are sent to this backend server. When the protocol of the backend server group is TCP, only **SOURCE_IP** takes effect. When the protocol of the backend server group is HTTP, only **HTTP_COOKIE** or **APP_COOKIE** takes effect.
cookie_na me	String	Specifies the cookie name. This parameter is mandatory when the sticky session type is **APP_COOKIE**.
persistenc e_timeout	Integer	Specifies the sticky session timeout duration in minutes. This parameter is invalid when **type** is set to **APP_COOKIE**. ● Optional value ranges are as follows: – When the protocol of the backend server group is TCP or UDP, the value ranges from **1** to **60**. – When the protocol of the backend server group is HTTP or HTTPS, the value ranges from **1** to **1440**.

Example Request

● Example request 1: Adding a backend server group with the sticky session feature disabled
POST https://{Endpoint}/v2.0/lbaas/pools

```
{
    "pool": {
        "lb_algorithm":"ROUND_ROBIN",
        "loadbalancer_id": "63ad9dfe-4750-479f-9630-ada43ccc8117",
```

```
      "protocol":"HTTP"
    }
}
```

- Example request 2: Adding an HTTP backend server group with the value of **type** set to **APP_COOKIE**
  POST https://{Endpoint}/v2.0/lbaas/pools

```
{
  "pool": {
   "lb_algorithm": "ROUND_ROBIN",
   "listener_id": "370fb112-e920-486a-b051-1d0d30704dd3",
   "protocol": "HTTP",
   "session_persistence": {
     "cookie_name": "my_cookie",
     "type": "APP_COOKIE",
     "persistence_timeout": 1
   },
   "admin_state_up": true
  }
}
```

- Example request 3: Adding an HTTP backend server group with the value of **type** set to **HTTP_COOKIE**
  POST https://{Endpoint}/v2.0/lbaas/pools

```
{
    "pool": {
       "lb_algorithm":"ROUND_ROBIN",
       "loadbalancer_id": "63ad9dfe-4750-479f-9630-ada43ccc8117",
       "protocol":"HTTP",
       "session_persistence":{
          "type":"HTTP_COOKIE"
       }
    }
}
```

Example Response

- Example response 1
```
{
    "pool": {
       "lb_algorithm": "ROUND_ROBIN",
       "protocol": "HTTP",
       "description": "",
       "admin_state_up": true,
       "loadbalancers": [
          {
             "id": "63ad9dfe-4750-479f-9630-ada43ccc8117"
          }
       ],
       "tenant_id": "601240b9c5c94059b63d484c92cfe308",
       "session_persistence": null,
       "healthmonitor_id": null,
       "listeners": [],
       "members": [],
       "id": "4e496951-befb-47bf-9573-c1cd11825c07",
       "name": ""
    }
}
```

- Example response 2
```
{
  "pool": {
   "lb_algorithm": "ROUND_ROBIN",
   "protocol": "HTTP",
   "description": "",
   "admin_state_up": true,
```

```
      "loadbalancers": [
        {
          "id": "6b041b9e-976b-40ba-b075-375be6110b53"
        }
      ],
      "tenant_id": "145483a5107745e9b3d80f956713e6a3",

      "session_persistence": {
        "cookie_name": "my_cookie",
        "type": "APP_COOKIE",
        "persistence_timeout": 1
      },
      "healthmonitor_id": null,
      "listeners": [
        {
          "id": "370fb112-e920-486a-b051-1d0d30704dd3"
        }
      ],
      "members": [

      ],
      "id": "307f8968-9474-4d0c-8434-66be09dabcc1",
      "name": ""
    }
  }
```

- Example response 3

```
{
    "pool": {
        "lb_algorithm": "ROUND_ROBIN",
        "protocol": "HTTP",
        "description": "",
        "admin_state_up": true,
        "loadbalancers": [
            {
                "id": "63ad9dfe-4750-479f-9630-ada43ccc8117"
            }
        ],
        "tenant_id": "601240b9c5c94059b63d484c92cfe308",
        "session_persistence": {
            "persistence_timeout": 1440,
            "cookie_name": null,
            "type": "HTTP_COOKIE"
        },
        "healthmonitor_id": null,
        "listeners": [],
        "members": [],
        "id": "d46eab56-d76b-4cd3-8952-3c3c4cf113aa",
        "name": ""
    }
}
```

Status Code

For details, see **Status Codes**.

7.1.3.2 Querying Backend Server Groups

Function

This API is used to query the backend server groups and display them in a list. Filter query and pagination query are supported. Unless otherwise specified, exact match is applied.

Constraints

Parameters **marker**, **limit**, and **page_reverse** are used for pagination query. Parameters **marker** and **page_reverse** take effect only when they are used together with parameter **limit**.

URI

GET /v2.0/lbaas/pools

Request

Table 7-73 Parameter description

Parameter	Mandatory	Type	Description
marker	No	String	Specifies the ID of the backend server group from which pagination query starts, that is, the ID of the last backend server group on the previous page. If this parameter is not specified, the first page will be queried. This parameter must be used together with **limit**.
limit	No	Integer	Specifies the number of backend server groups on each page.
page_reverse	No	Boolean	Specifies the page direction. The value can be **true** or **false**, and the default value is **false**. The last page in the list requested with **page_reverse** set to **false** will not contain the "next" link, and the last page in the list requested with **page_reverse** set to **true** will not contain the "previous" link. This parameter must be used together with **limit**.
id	No	String	Specifies the ID of the backend server group.
tenant_id	No	String	Specifies the ID of the project where the backend server group is used. The value contains a maximum of 255 characters.

Parameter	Mandatory	Type	Description
name	No	String	Specifies the name of the backend server group. The value contains a maximum of 255 characters.
description	No	String	Provides supplementary information about the backend server group. The value contains a maximum of 255 characters.
healthmonitor_id	No	String	Specifies the ID of the health check configured for the backend server group.
loadbalancer_id	No	String	Specifies the ID of the load balancer associated with the backend server group.
protocol	No	String	Specifies the protocol that the backend server group uses to receive requests. TCP, UDP, and HTTP are supported.
lb_algorithm	No	String	Specifies the load balancing algorithm of the backend server group. The value can be one of the following: ● **ROUND_ROBIN**: indicates the weighted round robin algorithm. ● **LEAST_CONNECTIONS**: indicates the weighted least connections algorithm. ● **SOURCE_IP**: indicates the source IP hash algorithm. When the value is **SOURCE_IP**, the weights of backend servers in the server group are invalid. For details about parameter **weight**, see **Table 7-110**.
member_address	No	String	Lists the IDs of backend servers in the backend server group.
member_device_id	No	String	Specifies the ID of the cloud server used as the backend server in the backend server group.

Response

Table 7-74 Response parameters

Parameter	Type	Description
pools	Array	Specifies the backend server group. For details, see **Table 7-75**.
pools_links	List	Provides links to the previous or next page during pagination query, respectively. This parameter exists only in the response body of pagination query. For details, see **Table 7-80**.

Table 7-75 pools parameter description

Parameter	Type	Description
id	String	Specifies the ID of the backend server group.
tenant_id	String	Specifies the ID of the project where the backend server group is used. The value contains a maximum of 255 characters.
name	String	Specifies the name of the backend server group. The value contains a maximum of 255 characters.
description	String	Provides supplementary information about the backend server group. The value contains a maximum of 255 characters.
protocol	String	Specifies the protocol that the backend server group uses to receive requests. TCP, UDP, and HTTP are supported.
lb_algorithm	String	Specifies the load balancing algorithm of the backend server group. The value can be one of the following: ● **ROUND_ROBIN**: indicates the weighted round robin algorithm. ● **LEAST_CONNECTIONS**: indicates the weighted least connections algorithm. ● **SOURCE_IP**: indicates the source IP hash algorithm. When the value is **SOURCE_IP**, the weights of backend servers in the server group are invalid.
members	Array	Lists the IDs of backend servers in the backend server group.

Parameter	Type	Description
healthmonit or_id	String	Specifies the ID of the health check configured for the backend server group.
admin_state _up	Boolea n	Specifies the administrative status of the backend server group. This parameter is reserved. The value can be **true** or **false**. ● **true**: Enabled ● **false**: Disabled
listeners	Array	Lists the IDs of listeners associated with the backend server group.
loadbalance rs	String	Lists the IDs of load balancers associated with the backend server group.
session_pers istence	Object	Specifies whether to enable the sticky session feature. For details, see **Table 7-79**. Once sticky session are enabled, requests from the same client are sent to the same backend server during the session. When sticky sessions are disabled, the value is **null**.

Table 7-76 members parameter description

Parameter	Type	Description
id	String	Specifies the ID of the associated backend server.

Table 7-77 listeners parameter description

Parameter	Type	Description
id	String	Specifies the ID of the associated backend server group.

Table 7-78 loadbalancers parameter description

Parameter	Type	Description
id	String	Specifies the ID of the associated load balancer.

Table 7-79 session_persistence parameter description

Parameter	Type	Description
type	String	Specifies the sticky session type.
		The value can be one of the following:
		• **SOURCE_IP**: Requests are distributed based on the client's IP address. Requests from the same IP address are sent to the same backend server.
		• **HTTP_COOKIE**: When the client sends a request for the first time, the load balancer automatically generates a cookie and inserts the cookie into the response message. Subsequent requests are sent to the backend server that processes the first request.
		• **APP_COOKIE**: When the client sends a request for the first time, the backend server that receives the request generates a cookie and inserts the cookie into the response message. Subsequent requests are sent to this backend server.
		When the protocol of the backend server group is TCP, only **SOURCE_IP** takes effect. When the protocol of the backend server group is HTTP, only **HTTP_COOKIE** or **APP_COOKIE** takes effect.
cookie_na me	String	Specifies the cookie name.
		This parameter is mandatory when the sticky session type is **APP_COOKIE**.
persistenc e_timeout	Integer	Specifies the sticky session timeout duration in minutes.
		This parameter is invalid when **type** is set to **APP_COOKIE**.
		• Optional value ranges are as follows:
		– When the protocol of the backend server group is TCP or UDP, the value ranges from **1** to **60**.
		– When the protocol of the backend server group is HTTP or HTTPS, the value ranges from **1** to **1440**.

Table 7-80 pools_links parameter description

Parameter	Type	Description
href	String	Provides links to the previous or next page during pagination query, respectively.

Parameter	Type	Description
rel	String	Specifies the prompt of the previous or next page. The value can be **next** or **previous**. ● **next**: indicates the URL of the next page. ● **previous**: indicates the URL of the previous page.

Example Request

● Example request 1: Querying backend server groups by pages
```
GET https://{Endpoint}/v2.0/lbaas/pools?limit=2
```

● Example request 2: Querying backend server groups whose load balancing algorithm is **SOURCE_IP**
```
GET https://{Endpoint}/v2.0/lbaas/pools?lb_algorithm=SOURCE_IP
```

Example Response

● Example response 1

```
{
    "pools": [
        {
            "lb_algorithm": "SOURCE_IP",
            "protocol": "TCP",
            "description": "",
            "admin_state_up": true,
            "loadbalancers": [
                {
                    "id": "07d28d4a-4899-40a3-a939-5d09d69019e1"
                }
            ],
            "tenant_id": "1867112d054b427e808cc6096d8193a1",

            "session_persistence": null,
            "healthmonitor_id": null,
            "listeners": [
                {
                    "id": "1b421c2d-7e78-4a78-9ee4-c8ccba41f15b"
                }
            ],
            "members": [
                {
                    "id": "88f9c079-29cb-435a-b98f-0c5c0b90c2bd"
                },
                {
                    "id": "2f4c9644-d5d2-4cf8-a3c0-944239a4f58c"
                }
            ],
            "id": "3a9f50bb-f041-4eac-a117-82472d8a0007",
            "name": "my-pool"
        }
    ],
    "pools_links": [
        {
        "href": "https://{Endpoint}/v2.0/lbaas/pools?limit=2&marker=0469a5ad-6233-4669-8d38-5920f2bd95b6",
            "rel": "next"
        },
        {
        "href": "https://{Endpoint}/v2.0/lbaas/pools?limit=2&marker=02d43e35-e874-4139-bdba-d65609db20ab&page_reverse=True",
            "rel": "previous"
        }
```

```
      ]
   }
```

- Example response 2

```
{
   "pools": [
      {
         "lb_algorithm": "SOURCE_IP",
         "protocol": "TCP",
         "description": "",
         "admin_state_up": true,
         "loadbalancers": [
            {
               "id": "07d28d4a-4899-40a3-a939-5d09d69019e1"
            }
         ],
         "tenant_id": "1867112d054b427e808cc6096d8193a1",
         "session_persistence": null,
         "healthmonitor_id": null,
         "listeners": [
            {
               "id": "1b421c2d-7e78-4a78-9ee4-c8ccba41f15b"
            }
         ],
         "members": [
            {
               "id": "88f9c079-29cb-435a-b98f-0c5c0b90c2bd"
            },
            {
               "id": "2f4c9644-d5d2-4cf8-a3c0-944239a4f58c"
            }
         ],
         "id": "3a9f50bb-f041-4eac-a117-82472d8a0007",
         "name": "my-pool"
      }
   ]
}
```

Status Code

For details, see **Status Codes**.

7.1.3.3 Querying Details of a Backend Server Group

Function

This API is used to query details about a backend server group using its ID.

URI

GET /v2.0/lbaas/pools/{pool_id}

Table 7-81 Parameter description

Parameter	Mandatory	Type	Description
pool_id	Yes	String	Specifies the ID of the backend server group.

Request

None

Response

Table 7-82 Response parameters

Parameter	Type	Description
pool	Object	Specifies the backend server group. For details, see **Table 7-83**.

Table 7-83 pools parameter description

Parameter	Type	Description
id	String	Specifies the ID of the backend server group.
tenant_id	String	Specifies the ID of the project where the backend server group is used. The value contains a maximum of 255 characters.
name	String	Specifies the name of the backend server group. The value contains a maximum of 255 characters.
description	String	Provides supplementary information about the backend server group. The value contains a maximum of 255 characters.
protocol	String	Specifies the protocol that the backend server group uses to receive requests. TCP, UDP, and HTTP are supported. When a backend server group is associated with a listener, the relationships between the protocol used by the listener and the protocol of the backend server group are as follows: ● When the protocol used by the listener is **UDP**, the protocol of the backend server group must be **UDP**. ● When the protocol used by the listener is **TCP**, the protocol of the backend server group must be **TCP**. ● When the protocol used by the listener is **HTTP** or **TERMINATED_HTTPS**, the protocol of the backend server group must be **HTTP**.

Parameter	Type	Description
lb_algorith m	String	Specifies the load balancing algorithm of the backend server group. The value can be one of the following: ● **ROUND_ROBIN**: indicates the weighted round robin algorithm. ● **LEAST_CONNECTIONS**: indicates the weighted least connections algorithm. ● **SOURCE_IP**: indicates the source IP hash algorithm. When the value is **SOURCE_IP**, the weights of backend servers in the server group are invalid.
members	Array	Lists the IDs of backend servers in the backend server group.
healthmon itor_id	String	Specifies the ID of the health check configured for the backend server group.
admin_sta te_up	Boolean	Specifies the administrative status of the backend server group. This parameter is reserved. The value can be **true** or **false**. ● **true**: Enabled ● **false**: Disabled
listeners	Array	Lists the IDs of listeners associated with the backend server group.
loadbalanc ers	Array	Lists the IDs of load balancers associated with the backend server group.
session_pe rsistence	Object	Specifies whether to enable sticky sessions. For details, see **Table 7-72**. Once sticky session are enabled, requests from the same client are sent to the same backend server during the session. When sticky sessions are disabled, the value is **null**.

Table 7-84 members parameter description

Parameter	Type	Description
id	String	Specifies the ID of the associated backend server.

Table 7-85 listeners parameter description

Parameter	Type	Description
id	String	Specifies the ID of the associated backend server group.

Table 7-86 loadbalancers parameter description

Parameter	Type	Description
id	String	Specifies the ID of the associated load balancer.

Table 7-87 session_persistence parameter description

Parameter	Type	Description
type	String	Specifies the sticky session type. The value can be one of the following: ● **SOURCE_IP**: Requests are distributed based on the client's IP address. Requests from the same IP address are sent to the same backend server. ● **HTTP_COOKIE**: When the client sends a request for the first time, the load balancer automatically generates a cookie and inserts the cookie into the response message. Subsequent requests are sent to the backend server that processes the first request. ● **APP_COOKIE**: When the client sends a request for the first time, the backend server that receives the request generates a cookie and inserts the cookie into the response message. Subsequent requests are sent to this backend server. When the protocol of the backend server group is TCP, only **SOURCE_IP** takes effect. When the protocol of the backend server group is HTTP, only **HTTP_COOKIE** or **APP_COOKIE** takes effect.
cookie_na me	String	Specifies the cookie name. This parameter is mandatory when the sticky session type is **APP_COOKIE**.

Parameter	Type	Description

persistenc e_timeout	Integer	Specifies the sticky session timeout duration in minutes. This parameter is invalid when **type** is set to **APP_COOKIE**.
		● Optional value ranges are as follows:
		   – When the protocol of the backend server group is TCP or UDP, the value ranges from **1** to **60**.
		   – When the protocol of the backend server group is HTTP or HTTPS, the value ranges from **1** to **1440**.

Example Request

● Example request: Querying details of a backend server group

```
GET https://{Endpoint}/v2.0/lbaas/pools/5a9a3e9e-d1aa-448e-af37-a70171f2a332
```

Example Response

● Example response

```
{
    "pool": {
        "lb_algorithm": "SOURCE_IP",
        "protocol": "TCP",
        "description": "",
        "admin_state_up": true,
        "loadbalancers": [
            {
                "id": "6f52004c-3fe9-4c09-b8ce-ed9d9c74a3b1"
            }
        ],
        "tenant_id": "1867112d054b427e808cc6096d8193a1",
        "session_persistence": null,
        "healthmonitor_id": null,
        "listeners": [
            {
                "id": "6e29b2cd-4e53-40f6-ae7b-29e918de67f2"
            }
        ],
        "members": [],
        "id": "5a9a3e9e-d1aa-448e-af37-a70171f2a332",
        "name": "my-pool"
    }
}
```

Status Code

For details, see **Status Codes**.

7.1.3.4 Updating a Backend Server Group

Function

This API is used to update a backend server group.

Constraints

If the provisioning status of the load balancer associated with a backend server group is not **ACTIVE**, the backend server group cannot be updated.

URI

PUT /v2.0/lbaas/pools/{pool_id}

Table 7-88 Parameter description

Parameter	Mandatory	Type	Description
pool_id	Yes	String	Specifies the ID of the backend server group.

Request

Table 7-89 Parameter description

Parameter	Mandatory	Type	Description
pool	Yes	Object	Specifies the backend server group. For details, see **Table 7-90**.

Table 7-90 pool parameter description

Parameter	Mandatory	Type	Description
name	No	String	Specifies the name of the backend server group. The value contains a maximum of 255 characters.
description	No	String	Provides supplementary information about the backend server group. The value contains a maximum of 255 characters.

Parameter	Mandatory	Type	Description
lb_algorithm	No	String	Specifies the load balancing algorithm of the backend server group. Value options: ● **ROUND_ROBIN**: indicates the weighted round robin algorithm. ● **LEAST_CONNECTIONS**: indicates the weighted least connections algorithm. ● **SOURCE_IP**: indicates the source IP hash algorithm. When the value is **SOURCE_IP**, the weights of backend servers in the server group are invalid.
admin_state_up	No	Boolean	Specifies the administrative status of the backend server group. This parameter is reserved, and the default value is **true**.
session_persistence	No	Object	Specifies whether to enable the sticky session feature. For details, see **Table 7-97**. Once sticky session are enabled, requests from the same client are sent to the same backend server during the session. When sticky sessions are disabled, the value is **null**.

Table 7-91 session_persistence parameter description

Parameter	Mandatory	Type	Description
type	No	String	Specifies the sticky session type. Value options: • **SOURCE_IP**: Requests are distributed based on the client's IP address. Requests from the same IP address are sent to the same backend server. • **HTTP_COOKIE**: When the client sends a request for the first time, the load balancer automatically generates a cookie and inserts the cookie into the response message. Subsequent requests are sent to the backend server that processes the first request. • **APP_COOKIE**: When the client sends a request for the first time, the backend server that receives the request generates a cookie and inserts the cookie into the response message. Subsequent requests are sent to this backend server. • When the protocol of the backend server group is TCP, only **SOURCE_IP** takes effect. When the protocol of the backend server group is HTTP, only **HTTP_COOKIE** or **APP_COOKIE** takes effect.
cookie_name	No	String	Specifies the cookie name. This parameter is mandatory and can be specified when the sticky session type is **APP_COOKIE**.
persistence_timeout	No	Integer	Specifies the sticky session timeout duration in minutes. This parameter is invalid when **type** is set to **APP_COOKIE**. Value range options are as follows: • When the protocol of the backend server group is TCP or UDP, the value ranges from **1** to **60**. • When the protocol of the backend server group is HTTP or HTTPS, the value ranges from **1** to **1440**.

Response

Table 7-92 Parameter description

Parameter	Type	Description
pool	Object	Specifies the backend server group. For details, see **Table 7-93**.

Table 7-93 **pools** parameter description

Parameter	Type	Description
id	String	Specifies the ID of the backend server group.
tenant_id	String	Specifies the ID of the project where the backend server group is used. The value contains a maximum of 255 characters.
name	String	Specifies the name of the backend server group. The value contains a maximum of 255 characters.
description	String	Provides supplementary information about the backend server group. The value contains a maximum of 255 characters.
protocol	String	Specifies the protocol that the backend server group uses to receive requests. TCP, UDP, and HTTP are supported. When a backend server group is associated with a listener, the relationships between the protocol used by the listener and the protocol of the backend server group are as follows: ● When the protocol used by the listener is **UDP**, the protocol of the backend server group must be **UDP**. ● When the protocol used by the listener is **TCP**, the protocol of the backend server group must be **TCP**. ● When the protocol used by the listener is **HTTP** or **TERMINATED_HTTPS**, the protocol of the backend server group must be **HTTP**.

Parameter	Type	Description
lb_algorithm	String	Specifies the load balancing algorithm of the backend server group. The value can be one of the following: ● **ROUND_ROBIN**: indicates the weighted round robin algorithm. ● **LEAST_CONNECTIONS**: indicates the weighted least connections algorithm. ● **SOURCE_IP**: indicates the source IP hash algorithm. When the value is **SOURCE_IP**, the weights of backend servers in the server group are invalid.
members	Array	Lists the IDs of backend servers in the backend server group.
healthmonitor_id	String	Specifies the ID of the health check configured for the backend server group.
admin_state_up	Boolean	Specifies the administrative status of the backend server group. This parameter is reserved. The value can be **true** or **false**. ● **true**: Enabled ● **false**: Disabled
listeners	Array	Lists the IDs of listeners associated with the backend server group.
loadbalancers	Array	Lists the IDs of load balancers associated with the backend server group.
session_persistence	Object	Specifies whether to enable sticky sessions. For details, see **Table 7-72**. Once sticky session are enabled, requests from the same client are sent to the same backend server during the session. When sticky sessions are disabled, the value is **null**.

Table 7-94 members parameter description

Parameter	Type	Description
id	String	Specifies the ID of the associated backend server.

Table 7-95 listeners parameter description

Parameter	Type	Description
id	String	Specifies the ID of the associated backend server group.

Table 7-96 loadbalancers parameter description

Parameter	Type	Description
id	String	Specifies the ID of the associated load balancer.

Table 7-97 session_persistence parameter description

Parameter	Type	Description
type	String	Specifies the sticky session type. The value can be one of the following: ● **SOURCE_IP**: Requests are distributed based on the client's IP address. Requests from the same IP address are sent to the same backend server. ● **HTTP_COOKIE**: When the client sends a request for the first time, the load balancer automatically generates a cookie and inserts the cookie into the response message. Subsequent requests are sent to the backend server that processes the first request. ● **APP_COOKIE**: When the client sends a request for the first time, the backend server that receives the request generates a cookie and inserts the cookie into the response message. Subsequent requests are sent to this backend server. When the protocol of the backend server group is TCP, only **SOURCE_IP** takes effect. When the protocol of the backend server group is HTTP, only **HTTP_COOKIE** or **APP_COOKIE** takes effect.
cookie_name	String	Specifies the cookie name. This parameter is mandatory when the sticky session type is **APP_COOKIE**.

Parameter	Type	Description
persistenc e_timeout	Integer	Specifies the sticky session timeout duration in minutes. This parameter is invalid when **type** is set to **APP_COOKIE**. ● Optional value ranges are as follows: – When the protocol of the backend server group is TCP or UDP, the value ranges from **1** to **60**. – When the protocol of the backend server group is HTTP or HTTPS, the value ranges from **1** to **1440**.

Example Request

● Example request 1: Updating a backend server group

```
PUT https://{Endpoint}/v2.0/lbaas/pools/12ff63af-4127-4074-a251-bcb2ecc53ebe

{
    "pool": {
        "name": "pool2",
        "description": "pool two",
        "lb_algorithm": "LEAST_CONNECTIONS"
    }
}
```

● Example request 2: Disabling the sticky session feature of a backend server group

```
PUT https://{Endpoint}/v2.0/lbaas/pools/d46eab56-d76b-4cd3-8952-3c3c4cf113aa

{
    "pool": {
        "session_persistence":null
    }
}
```

Example Response

● Example response 1

```
{
    "pool": {
        "lb_algorithm": "LEAST_CONNECTIONS",
        "protocol": "HTTP",
        "description": "pool two",
        "loadbalancers": [
            {
                "id": "63ad9dfe-4750-479f-9630-ada43ccc8117"
            }
        ],
        "admin_state_up": true,
        "tenant_id": "1a3e005cf9ce40308c900bcb08e5320c",
        "session_persistence": {
            "cookie_name": null,
            "type": "HTTP_COOKIE",
            "persistence_timeout": 1
        },
        "healthmonitor_id": null,
        "listeners": [
```

```
        {
            "id": "39de4d56-d663-46e5-85a1-5b9d5fa17829"
        }
    ],
    "members": [],
    "id": "12ff63af-4127-4074-a251-bcb2ecc53ebe",
    "name": "pool2"
    }
}
```

- Example response 2

```
{
    "pool": {
        "lb_algorithm": "ROUND_ROBIN",
        "protocol": "HTTP",
        "description": "",
        "admin_state_up": true,
        "loadbalancers": [
            {
                "id": "63ad9dfe-4750-479f-9630-ada43ccc8117"
            }
        ],
        "tenant_id": "601240b9c5c94059b63d484c92cfe308",
        "session_persistence": null,
        "healthmonitor_id": null,
        "listeners": [],
        "members": [],
        "id": "d46eab56-d76b-4cd3-8952-3c3c4cf113aa",
        "name": ""
    }
}
```

Status Code

For details, see **Status Codes**.

7.1.3.5 Deleting a Backend Server Group

Function

This API is used to delete a backend server group.

Constraints

Before deleting a backend server group, remove all backend servers, delete the health check, and disassociate forwarding policies from the backend server group by changing the value of **redirect_pool_id** to **null**. For details, see **Updating a Forwarding Policy**.

URI

DELETE /v2.0/lbaas/pools/{pool_id}

Table 7-98 Parameter description

Parameter	Mandatory	Type	Description
pool_id	Yes	String	Specifies the ID of the backend server group.

Request

None

Response

None

Example Request

- Example request: Deleting a backend server group

  DELETE /v2.0/lbaas/pools/5a9a3e9e-d1aa-448e-af37-a70171f2a332

Example Response

- Example response

  None

Status Code

For details, see **Status Codes**.

7.1.4 Backend Server

7.1.4.1 Adding a Backend Server

Function

This API is used to add a backend server to a specific backend server group. After a backend server group is added to a listener, traffic is distributed to backend servers in this server group using the specified load balancing algorithm.

Constraints

Two backend servers in a backend server group cannot have the same private IP address or port number.

The subnet specified during server creation must be in the same VPC as the subnet from which the private IP address of the load balancer is assigned.

URI

POST /v2.0/lbaas/pools/{pool_id}/members

Table 7-99 Parameter description

Parameter	Mandatory	Type	Description
pool_id	Yes	String	Specifies the ID of the backend server group.

Request

Table 7-100 Parameter description

Parameter	Mandatory	Type	Description
member	Yes	Object	Specifies the backend server. For details, see **Table 7-101**.

Table 7-101 member parameter description

Parameter	Mandatory	Type	Description
tenant_id	No	String	Specifies the ID of the project where the backend server is used. The value must be the same as the value of **project_id** in the token. The value contains a maximum of 255 characters.
name	No	String	Specifies the backend server name. The value is an empty character string by default. The value contains a maximum of 255 characters.
address	Yes	String	Specifies the private IP address of the backend server. This IP address must be in the subnet specified by **subnet_id**. This parameter can be set only to the IP address of the primary NIC, for example, 192.168.3.11. The value contains a maximum of 64 characters.
protocol_port	Yes	Integer	Specifies the port used by the backend server. The port number ranges from 1 to 65535.
subnet_id	Yes	String	Specifies the ID of the subnet where the backend server works. The private IP address of the backend server is in this subnet. Only IPv4 subnets are supported.
admin_state_up	No	Boolean	Specifies the administrative status of the backend server. This parameter is reserved, and the default value is **true**.

Parameter	Mandatory	Type	Description
weight	No	Integer	Specifies the backend server weight. The value ranges from **0** to **100**. If the value is **0**, the backend server will not accept new requests. The default value is **1**.

Response

Table 7-102 Response parameters

Parameter	Type	Description
member	Object	Specifies the backend server. For details, see **Table 7-103**.

Table 7-103 member parameter description

Parameter	Type	Description
id	String	Specifies the backend server ID. **NOTE** The value of this parameter is not the ID of the server but an ID automatically generated for the backend server that has already associated with the load balancer.
tenant_id	String	Specifies the ID of the project where the backend server is used. The value contains a maximum of 255 characters.
name	String	Specifies the backend server name. The value contains a maximum of 255 characters.
address	String	Specifies the private IP address of the backend server. This IP address must be in the subnet specified by **subnet_id**. This parameter can be set only to the IP address of the primary NIC, for example, 192.168.3.11. The value contains a maximum of 64 characters.
protocol_port	Integer	Specifies the port used by the backend server. The port number ranges from 1 to 65535.
subnet_id	String	Specifies the ID of the subnet where the backend server works. The private IP address of the backend server is in this subnet. IPv6 subnets are not supported.

Paramet er	Type	Description
admin_st ate_up	Boolean	Specifies the administrative status of the backend server. This parameter is reserved. The value can be **true** or **false**. ● **true**: Enabled ● **false**: Disabled
weight	Integer	Specifies the backend server weight. The value ranges from **0** to **100**. If the value is **0**, the backend server will not accept new requests. The default value is **1**.
operatin g_status	String	Specifies the health check result of the backend server. The value can be one of the following: ● **ONLINE**: The backend server is running normally. ● **NO_MONITOR**: No health check is configured for the backend server group that the backend server belongs to. ● **OFFLINE**: The cloud server used as the backend server is stopped or does not exist.

Example Request

● Step 1: Query the subnet ID and IP address using the server ID. **device_id** in the request indicates the server ID. Obtain the values of **subnet_id** and **ip_address** of the primary NIC (the port for which **primary_interface** is **true**) in the response body.
  GET https://{VPCEndpoint}/v2.0/ports?device_id=f738c464-b5c2-45df-86c0-7f436620cd54

  Example response

```
{
    "ports": [
        {
            "id": "94971c39-46f0-443a-85e8-31cb7497c78e",
            "name": "",
            "status": "ACTIVE",
            "admin_state_up": true,
            "fixed_ips": [
                {
                    "subnet_id": "33d8b01a-bbe6-41f4-bc45-78a1d284d503",
                    "ip_address": "192.168.44.11"
                }
            ],
            "mac_address": "fa:16:3e:5c:d2:57",
            "network_id": "1b76b9c2-9b7e-4ced-81bd-d13f7389d7c9",
            "tenant_id": "04dd36f978800fe22f9bc00bea090736",
            "project_id": "04dd36f978800fe22f9bc00bea090736",
            "device_id": "f738c464-b5c2-45df-86c0-7f436620cd54",
            "device_owner": "compute:xx-xxxx-4a",
            "security_groups": [
                "a10dfc31-0055-4b84-b36e-1291b918125c",
                "7a233393-5be2-4dff-8360-1558dd950f6e"
            ],
            "extra_dhcp_opts": [],
            "allowed_address_pairs": [],
```

```
            "binding:vnic_type": "normal",
            "binding:vif_details": {
                "primary_interface": true
            },
            "binding:profile": {},
            "port_security_enabled": true,
            "created_at": "2019-11-12T17:17:51",
            "updated_at": "2019-11-12T17:17:51"
        }
    ]
}
```

- Step 2: Use the subnet ID and IP address obtained in ▪ **Step 1** to add a backend server.
  POST https://{Endpoint}/v2.0/lbaas/pools/5a9a3e9e-d1aa-448e-af37-a70171f2a332/members

```
{
    "member": {
        "subnet_id": "33d8b01a-bbe6-41f4-bc45-78a1d284d503",
        "protocol_port": 88,
        "name": "member-jy-tt-1",
        "address": "192.168.44.11"
    }
}
```

Example Response

- Example response

```
{
    "member": {
        "name": "member-jy-tt-1",
        "weight": 1,
        "admin_state_up": true,
        "subnet_id": "33d8b01a-bbe6-41f4-bc45-78a1d284d503",
        "tenant_id": "145483a5107745e9b3d80f956713e6a3",

        "address": "192.168.44.11",
        "protocol_port": 88,
        "operating_status": "ONLINE",
        "id": "c0042496-e220-44f6-914b-e6ca33bab503"
    }
}
```

Status Code

For details, see **Status Codes**.

7.1.4.2 Querying Backend Servers

Function

This API is used to query backend servers in a specific backend server group. Filter query and pagination query are supported. Unless otherwise specified, exact match is applied.

Constraints

Parameters **marker**, **limit**, and **page_reverse** are used for pagination query. Parameters **marker** and **page_reverse** take effect only when they are used together with parameter **limit**.

URI

GET /v2.0/lbaas/pools/{pool_id}/members

Table 7-104 Parameter description

Parameter	Mandatory	Type	Description
pool_id	Yes	String	Specifies the ID of the backend server group.

Request

Table 7-105 Parameter description

Parameter	Mandatory	Type	Description
marker	No	String	Specifies the ID of the backend server from which pagination query starts, that is, the ID of the last backend server on the previous page. If this parameter is not specified, the first page will be queried. This parameter must be used together with **limit**.
limit	No	Integer	Specifies the number of backend servers on each page. If this parameter is not set, all backend servers are queried by default.
page_reverse	No	Boolean	Specifies the page direction. The value can be **true** or **false**, and the default value is **false**. The last page in the list requested with **page_reverse** set to **false** will not contain the "next" link, and the last page in the list requested with **page_reverse** set to **true** will not contain the "previous" link. This parameter must be used together with **limit**.

Parameter	Mandatory	Type	Description
id	No	String	Specifies the backend server ID. **NOTE** The value of this parameter is not the ID of the server but an ID automatically generated for the backend server that has already associated with the load balancer.
tenant_id	No	String	Specifies the ID of the project where the backend server is used. The value contains a maximum of 255 characters.
name	No	String	Specifies the backend server name. The value contains a maximum of 255 characters. **NOTE** The value of this parameter is not the name of server. It is the name automatically generated for the backend server associated with the load balancer.
address	No	String	Specifies the private IP address of the backend server. The value contains a maximum of 64 characters.
protocol_port	No	Integer	Specifies the port used by the backend server.
subnet_id	No	String	Specifies the ID of the subnet where the backend server works.
admin_state_up	No	Boolean	Specifies the administrative status of the backend server. This parameter is reserved, and the default value is **true**.
weight	No	Integer	Specifies the backend server weight.

Response

Table 7-106 Response parameters

Parameter	Type	Description
members	Array	Lists the backend servers in the backend server group. For details, see **Table 7-107**.

Parameter	Type	Description
members_links	Array	Provides links to the previous or next page during pagination query, respectively. This parameter exists only in the response body of pagination query. For details, see **Table 7-108**.

Table 7-107 members parameter description

Parameter	Type	Description
id	String	Specifies the backend server ID. **NOTE** The value of this parameter is not the ID of the server but an ID automatically generated for the backend server that has already associated with the load balancer.
tenant_id	String	Specifies the ID of the project where the backend server is used. The value contains a maximum of 255 characters.
name	String	Specifies the backend server name. The value contains a maximum of 255 characters.
address	String	Specifies the private IP address of the backend server. This IP address must be in the subnet specified by **subnet_id**. This parameter can be set only to the IP address of the primary NIC, for example, 192.168.3.11. The value contains a maximum of 64 characters.
protocol_port	Integer	Specifies the port used by the backend server. The port number ranges from 1 to 65535.
subnet_id	String	Specifies the ID of the subnet where the backend server works. The private IP address of the backend server is in this subnet. IPv6 subnets are not supported.

Parameter	Type	Description
admin_state_up	Boolean	Specifies the administrative status of the backend server. This parameter is reserved. The value can be **true** or **false**. ● **true**: Enabled ● **false**: Disabled
weight	Integer	Specifies the backend server weight. The value ranges from **0** to **100**. If the value is **0**, the backend server will not accept new requests. The default value is **1**.
operating_status	String	Specifies the operating status of the load balancer. This parameter is reserved, and its value can be **ONLINE** or **FROZEN**.

Table 7-108 members_links parameter description

Parameter	Type	Description
href	String	Provides links to the previous or next page during pagination query, respectively.
rel	String	Specifies the prompt of the previous or next page. The value can be **next** or **previous**. ● **next**: indicates the URL of the next page. ● **previous**: indicates the URL of the previous page.

Example Request

- Example request 1: Querying all backend servers
  GET https://{Endpoint}/v2.0/lbaas/pools/5a9a3e9e-d1aa-448e-af37-a70171f2a332/members

- Example request 2: Querying the backend cloud server whose IP address is 10.0.0.8 and port number is 80
  GET https://{Endpoint}/v2.0/lbaas/pools/5a9a3e9e-d1aa-448e-af37-a70171f2a332/members?
  address=10.0.0.8&protocol_port=80

Example Response

- Example response 1

```
{
    "members": [
        {
            "address": "10.0.0.8",
            "admin_state_up": true,
            "id": "9a7aff27-fd41-4ec1-ba4c-3eb92c629313",
            "protocol_port": 80,
            "subnet_id": "013d3059-87a4-45a5-91e9-d721068ae0b2",
            "tenant_id": "1a3e005cf9ce40308c900bcb08e5320c",
```

```
         "weight": 1,
         "operating_status": "ONLINE",
         "name": "member-name"
      }
   ]
}
```

- Example response 2

```
{
   "members": [
      {
         "address": "10.0.0.8",
         "admin_state_up": true,
         "id": "9a7aff27-fd41-4ec1-ba4c-3eb92c629313",
         "protocol_port": 80,
         "subnet_id": "013d3059-87a4-45a5-91e9-d721068ae0b2",
         "tenant_id": "1a3e005cf9ce40308c900bcb08e5320c",

         "weight": 1,
         "operating_status": "ONLINE",
         "name": "member-name"
      }
   ]
}
```

Status Code

For details, see **Status Codes**.

7.1.4.3 Querying Details of a Backend Server

Function

This API is used to query details about a backend server.

URI

GET /v2.0/lbaas/pools/{pool_id}/members/{member_id}

Table 7-109 Parameter description

Parameter	Mandatory	Type	Description
pool_id	Yes	String	Specifies the ID of the backend server group.
member_id	Yes	String	Specifies the backend server ID. **NOTE** - The value of this parameter is not the ID of the server but an ID automatically generated for the backend server that has already associated with the load balancer. - You can obtain this value by calling the API described in **Querying Backend Servers**.

Request

None

Response

Table 7-110 Response parameters

Parameter	Type	Description
member	Object	Lists the backend servers. For details, see **Table 7-111**.

Table 7-111 **member** parameter description

Parameter	Type	Description
id	String	Specifies the backend server ID. **NOTE** The value of this parameter is not the ID of the server but an ID automatically generated for the backend server that has already associated with the load balancer.
tenant_id	String	Specifies the ID of the project where the backend server is used. The value contains a maximum of 255 characters.
name	String	Specifies the backend server name. The value contains a maximum of 255 characters.
address	String	Specifies the private IP address of the backend server. This IP address must be in the subnet specified by **subnet_id**. This parameter can be set only to the IP address of the primary NIC, for example, 192.168.3.11. The value contains a maximum of 64 characters.
protocol_port	Integer	Specifies the port used by the backend server. The port number ranges from 1 to 65535.
subnet_id	String	Specifies the ID of the subnet where the backend server works. The private IP address of the backend server is in this subnet. IPv6 subnets are not supported.

Parameter	Type	Description
admin_state_up	Boolean	Specifies the administrative status of the backend server. This parameter is reserved. The value can be **true** or **false**. ● **true**: Enabled ● **false**: Disabled
weight	Integer	Specifies the backend server weight. The value ranges from **0** to **100**. If the value is **0**, the backend server will not accept new requests. The default value is **1**.
operating_status	String	Specifies the health check result of the backend server. The value can be one of the following: ● **ONLINE**: The backend server is running normally. ● **NO_MONITOR**: No health check is configured for the backend server group that the backend server belongs to. ● **OFFLINE**: The cloud server used as the backend server is stopped or does not exist.

Example Request

- Example request: Querying details of a backend server
  GET https://{Endpoint}/v2.0/lbaas/pools/5a9a3e9e-d1aa-448e-af37-a70171f2a332/members/
  cf024846-7516-4e3a-b0fb-6590322c836f

Example Response

- Example response

```
{
    "member": {
        "name": "",
        "weight": 1,
        "admin_state_up": true,
        "subnet_id": "823d5866-6e30-45c2-9b1a-a1ebc3757fdb",
        "tenant_id": "145483a5107745e9b3d80f956713e6a3",

        "address": "192.172.3.100",
        "protocol_port": 8080,
        "operating_status": "ONLINE",
        "id": "e58f5bfa-0e46-4bc5-951c-8473d3e5f24a"
    }
}
```

Status Code

For details, see **Status Codes**.

7.1.4.4 Updating a Backend Server

Function

This API is used to update a backend server. You can modify its name and weight. You can set a larger weight for backend servers that can receive more traffic.

Constraints

If the provisioning status of the associated load balancer is not **ACTIVE**, the backend server cannot be updated.

URI

PUT /v2.0/lbaas/pools/{pool_id}/members/{member_id}

Table 7-112 Parameter description

Paramet er	Mand atory	Type	Description
pool_id	Yes	String	Specifies the ID of the backend server group.
member_ id	Yes	String	Specifies the backend server ID. **NOTE** ● The value of this parameter is not the ID of the server but an ID automatically generated for the backend server that has already associated with the load balancer. ● You can obtain this value by calling the API described in **Querying Backend Servers**.

Request

Table 7-113 Parameter description

Parameter	Mandatory	Type	Description
member	Yes	Object	Specifies the backend server. For details, see **Table 7-114**.

Table 7-114 member parameter description

Parameter	Mand atory	Type	Description
name	No	String	Specifies the backend server name. The value contains a maximum of 255 characters.

Parameter	Mandatory	Type	Description
admin_state_up	No	Boolean	Specifies the administrative status of the backend server. This parameter is reserved, and the default value is **true**.
weight	No	Integer	Specifies the backend server weight. The value ranges from **0** to **100**. If the value is **0**, the backend server will not accept new requests. The default value is **1**.

Response

Table 7-115 Response parameters

Parameter	Type	Description
member	Object	Specifies the backend server. For details, see **Table 7-116**.

Table 7-116 member parameter description

Parameter	Type	Description
id	String	Specifies the backend server ID. **NOTE** The value of this parameter is not the ID of the server but an ID automatically generated for the backend server that has already associated with the load balancer.
tenant_id	String	Specifies the ID of the project where the backend server is used. The value contains a maximum of 255 characters.
name	String	Specifies the backend server name. The value contains a maximum of 255 characters.
address	String	Specifies the private IP address of the backend server. This IP address must be in the subnet specified by **subnet_id**. This parameter can be set only to the IP address of the primary NIC, for example, 192.168.3.11. The value contains a maximum of 64 characters.

Paramet er	Type	Description
protocol_ port	Integer	Specifies the port used by the backend server. The port number ranges from 1 to 65535.
subnet_i d	String	Specifies the ID of the subnet where the backend server works. The private IP address of the backend server is in this subnet. IPv6 subnets are not supported.
admin_st ate_up	Boolean	Specifies the administrative status of the backend server. This parameter is reserved. The value can be **true** or **false**. ● **true**: Enabled ● **false**: Disabled
weight	Integer	Specifies the backend server weight. The value ranges from **0** to **100**. If the value is **0**, the backend server will not accept new requests. The default value is **1**.
operatin g_status	String	Specifies the health check result of the backend server. The value can be one of the following: ● **ONLINE**: The backend server is running normally. ● **NO_MONITOR**: No health check is configured for the backend server group that the backend server belongs to. ● **OFFLINE**: The cloud server used as the backend server is stopped or does not exist.

Example Request

- Example request: Updating the name and weight of a backend server

```
PUT https://{Endpoint}/v2.0/lbaas/pools/5a9a3e9e-d1aa-448e-af37-a70171f2a332/members/
c0042496-e220-44f6-914b-e6ca33bab503

{
    "member": {
        "name": "member create test",
        "weight": 10
    }
}
```

Example Response

- Example response

```
{
    "member": {
        "name": "member-jy-tt-1",
        "weight": 1,
        "admin_state_up": true,
        "subnet_id": "33d8b01a-bbe6-41f4-bc45-78a1d284d503",
        "tenant_id": "145483a5107745e9b3d80f956713e6a3",
        "address": "192.168.44.11",
```

```
        "protocol_port": 88,
        "operating_status": "ONLINE",
        "id": "c0042496-e220-44f6-914b-e6ca33bab503"
    }
}
```

Status Code

For details, see **Status Codes**.

7.1.4.5 Removing a Backend Server

Function

This API is used to remove a backend server by its ID.

Constraints

After you remove a backend server, new connections to this server will not be established. However, long connections that have been established will be maintained.

URI

DELETE /v2.0/lbaas/pools/{pool_id}/members/{member_id}

Table 7-117 Parameter description

Parameter	Mandatory	Type	Description
pool_id	Yes	String	Specifies the ID of the backend server group.
member_id	Yes	String	Specifies the backend server ID. **NOTE** ● The value of this parameter is not the ID of the server but an ID automatically generated for the backend server that has already associated with the load balancer. ● You can obtain this value by calling the API described in **Querying Backend Servers**.

Request

None

Response

None

Example Request

- Example request: Removing a backend server

  DELETE https://{Endpoint}/v2.0/lbaas/pools/5a9a3e9e-d1aa-448e-af37-a70171f2a332/members/
  cf024846-7516-4e3a-b0fb-6590322c836f

Example Response

- Example response

  None

Status Code

For details, see **Status Codes**.

7.1.5 Health Check

7.1.5.1 Configuring a Health Check

Function

This API is used to configure a health check for a backend server group to check
the status of backend servers. If the health check result is **OFFLINE**, backend
servers are considered unhealthy. You need to check the server configuration.

Constraints

The security group must allow access from 100.125.0.0/16. Otherwise, the health
check cannot be performed.

If UDP is used for the health check, the protocol of the backend server group must
be UDP.

URI

POST /v2.0/lbaas/healthmonitors

Request

Table 7-118 Parameter description

Parameter	Mandatory	Type	Description
healthmonito r	Yes	Object	Specifies the health check. For details, see **Table 7-119**.

Table 7-119 healthmonitor parameter description

Parameter	Mand atory	Type	Description
tenant_id	No	String	Specifies the ID of the project where the health check is performed. The value must be the same as the value of **project_id** in the token. The value contains a maximum of 255 characters.
name	No	String	Specifies the health check name. The value contains a maximum of 255 characters.
delay	Yes	Integer	Specifies the maximum time between health checks in the unit of second. The value ranges from **1** to **50**.
max_retries	Yes	Integer	Specifies the number of consecutive health checks when the health check result of a backend server changes from **OFFLINE** to **ONLINE**. The value ranges from **1** to **10**.
max_retries_down	No	Integer	Specifies the number of consecutive health checks when the health check result of a backend server changes from **ONLINE** to **OFFLINE**. The value ranges from **1** to **10**.
pool_id	Yes	String	Specifies the ID of the backend server group. Only one health check can be configured for each backend server group.
admin_state_up	No	Boolean	Specifies the administrative status of the health check. This parameter is reserved, and the default value is **true**.
timeout	Yes	Integer	Specifies the health check timeout duration in the unit of second. The value ranges from **1** to **50**. **NOTE** You are advised to set the value less than that of parameter **delay**.

Parameter	Mandatory	Type	Description
type	Yes	String	Specifies the health check protocol. The value can be **TCP**, **UDP_CONNECT**, or **HTTP**. The relationships between the health check protocol and the protocol used by the backend server group are as follows: • If the protocol of the backend server group is UDP, the parameter value can only be **UDP_CONNECT**. • If the protocol of the backend server group is TCP, the parameter value can be **TCP** or **HTTP**. • If the protocol of the backend server group is HTTP, the parameter value can be **TCP** or **HTTP**.
monitor_port	No	Integer	Specifies the health check port. The port number ranges from 1 to 65535. The value is left blank by default, indicating that the port of the backend server is used as the health check port.
domain_name	No	String	Specifies the domain name of HTTP requests during the health check. This parameter is valid only when the value of **type** is set to **HTTP**. The value is left blank by default, indicating that the private IP address of the load balancer is used as the destination address of HTTP requests. The value can contain only digits, letters, hyphens (-), and periods (.) and must start with a digit or letter, for example, **www.test.com**. The value contains a maximum of 100 characters.

Parameter	Mand atory	Type	Description
url_path	No	String	Specifies the HTTP request path for the health check. The default value is **/**, and the value must start with a slash (/). This parameter is valid only when the value of **type** is set to **HTTP**. An example value is **/test**. The value contains a maximum of 255 characters.
expected_codes	No	String	Specifies the expected HTTP status code. The following options are available: A single value, such as **200** A list of values, such as **200,202** A value range, such as **200–204** This parameter is valid only when the value of **type** is set to **HTTP**. The value contains a maximum of 64 characters. **NOTE** This parameter is reserved.
http_method	No	String	Specifies the HTTP request method. The default value is **GET**. The value can be **GET**, **HEAD**, **POST**, **PUT**, **DELETE**, **TRACE**, **OPTIONS**, **CONNECT**, or **PATCH**. This parameter is valid only when the value of **type** is set to **HTTP**. **NOTE** This parameter is reserved.

Response

Table 7-120 Response parameters

Parameter	Type	Description
healthmonitor	Object	Specifies the health check. For details, see **Table 7-121**.

Table 7-121 healthmonitor parameter description

Parameter	Type	Description
id	String	Specifies the health check ID.
tenant_id	String	Specifies the ID of the project where the health check is performed.
name	String	Specifies the health check name.
delay	Integer	Specifies the maximum time between health checks in the unit of second. The value ranges from **1** to **50**.
max_retries	Integer	Specifies the number of consecutive health checks when the health check result of a backend server changes from **OFFLINE** to **ONLINE**. The value ranges from **1** to **10**.
max_retries_down	Integer	Specifies the number of consecutive health checks when the health check result of a backend server changes from **ONLINE** to **OFFLINE**. The value ranges from **1** to **10**.
pools	Array	Specifies the ID of the backend server group associated with the health check. For details, see **Table 7-122**.
admin_state_up	Boolean	Specifies the administrative status of the health check. This parameter is reserved. The value can be **true** or **false**. ● **true**: Enabled ● **false**: Disabled
timeout	Integer	Specifies the health check timeout duration in the unit of second. The value ranges from **1** to **50**. **NOTE** You are advised to set the value less than that of parameter **delay**.
type	String	Specifies the health check protocol. The value can be **TCP**, **UDP_CONNECT**, or **HTTP**. The relationships between the value of this parameter and the protocol of the backend server group are as follows: ● If the protocol of the backend server group is UDP, the parameter value can only be **UDP_CONNECT**. ● If the protocol of the backend server group is TCP, the parameter value can be **TCP** or **HTTP**. ● If the protocol of the backend server group is HTTP, the parameter value can be **TCP** or **HTTP**.

Parameter	Type	Description
monitor_port	Integer	Specifies the health check port. The port number ranges from 1 to 65535. The value is left blank by default, indicating that the port of the backend server is used as the health check port.
expected_codes	String	Specifies the expected HTTP status code. The following options are available: A single value, such as **200** A list of values, such as **200,202** A value range, such as **200–204** This parameter is valid only when the value of **type** is set to **HTTP**. Currently, this parameter is not supported and is fixed at **200**.
domain_name	String	Specifies the domain name of HTTP requests during the health check. This parameter is valid only when the value of **type** is set to **HTTP**. The value is left blank by default, indicating that the private IP address of the load balancer is used as the destination address of HTTP requests. The value can contain only digits, letters, hyphens (-), and periods (.) and must start with a digit or letter, for example, **www.test.com**.
url_path	String	Specifies the HTTP request path for the health check. The default value is **/**, and the value must start with a slash (/). This parameter is valid only when the value of **type** is set to **HTTP**. An example value is **/test**.
http_method	String	Specifies the HTTP request method. The default value is **GET**. The value can be **GET**, **HEAD**, **POST**, **PUT**, **DELETE**, **TRACE**, **OPTIONS**, **CONNECT**, or **PATCH**. This parameter is valid only when the value of **type** is set to **HTTP**. NOTE This parameter is reserved.

Table 7-122 pools parameter description

Parameter	Type	Description
id	String	Specifies the ID of the associated backend server group.

Example Request

- Example request: Configuring a health check
  POST https://{Endpoint}/v2.0/lbaas/healthmonitors

```
{
  "healthmonitor": {
    "admin_state_up": true,
    "pool_id": "bb44bffb-05d9-412c-9d9c-b189d9e14193",
    "domain_name": "www.test.com",
    "delay": 10,
    "max_retries": 10,
    "max_retries_down": 5,
    "timeout": 10,
    "type": "HTTP"
  }
}
```

Example Response

- Example response

```
{
  "healthmonitor": {
    "name": "",
    "admin_state_up": true,
    "tenant_id": "145483a5107745e9b3d80f956713e6a3",
    "domain_name": "www.test.com",
    "delay": 10,
    "max_retries": 10,
    "expected_codes": "200",
    "max_retries_down": 5,
    "http_method": "GET",
    "timeout": 10,
    "pools": [
      {
        "id": "bb44bffb-05d9-412c-9d9c-b189d9e14193"
      }
    ],
    "url_path": "/",
    "type": "HTTP",
    "id": "2dca3867-98c5-4cde-8f2c-b89ae6bd7e36",
    "monitor_port": 112
  }
}
```

Status Code

For details, see **Status Codes**.

7.1.5.2 Querying Health Checks

Function

This API is used to query the health checks. Filter query and pagination query are supported. Unless otherwise specified, exact match is applied.

URI

GET /v2.0/lbaas/healthmonitors

Constraints

Parameters **marker**, **limit**, and **page_reverse** are used for pagination query. Parameters **marker** and **page_reverse** take effect only when they are used together with parameter **limit**.

Request

Table 7-123 Parameter description

Parameter	Manda tory	Type	Description
marker	No	String	Specifies the ID of the health check from which pagination query starts, that is, the ID of the last health check on the previous page. This parameter must be used together with **limit**.
limit	No	Integer	Specifies the number of health checks on each page. If this parameter is not set, all health checks are queried by default.
page_reverse	No	Boolea n	Specifies the page direction. The value can be **true** or **false**, and the default value is **false**. The last page in the list requested with **page_reverse** set to **false** will not contain the "next" link, and the last page in the list requested with **page_reverse** set to **true** will not contain the "previous" link. This parameter must be used together with **limit**.
id	No	String	Specifies the health check ID.
tenant_id	No	String	Specifies the ID of the project where the health check is performed. The value contains a maximum of 255 characters.

Parameter	Manda tory	Type	Description
name	No	String	Specifies the health check name. The value contains a maximum of 255 characters.
delay	No	Integer	Specifies the maximum time between health checks in the unit of second. The value ranges from **1** to **50**.
max_retries	No	Integer	Specifies the number of consecutive health checks when the health check result of a backend server changes from **OFFLINE** to **ONLINE**. The value ranges from **1** to **10**.
max_retries_dow n	No	Integer	Specifies the number of consecutive health checks when the health check result of a backend server changes from **ONLINE** to **OFFLINE**. The value ranges from **1** to **10**.
admin_state_up	No	Boolea n	Specifies the administrative status of the health check. This parameter is reserved, and the default value is **true**.
timeout	No	Integer	Specifies the health check timeout duration in the unit of second. The value ranges from **1** to **50**. **NOTE** You are advised to set the value less than that of parameter **delay**.
type	No	String	Specifies the health check protocol. The value can be **TCP**, **UDP_CONNECT**, or **HTTP**.
monitor_port	No	Integer	Specifies the port used for the health check. The value is left blank by default, indicating that the port of the backend server is used as the health check port.

Parameter	Mandatory	Type	Description
expected_codes	No	String	Specifies the expected HTTP status code. The following options are available: A single value, such as **200** A list of values, such as **200,202** A value range, such as **200–204** This parameter is valid only when the value of **type** is set to **HTTP**. The value contains a maximum of 64 characters. **NOTE** This parameter is reserved.
domain_name	No	String	Specifies the domain name of HTTP requests during the health check. This parameter is valid only when the value of **type** is set to **HTTP**. The value is left blank by default, indicating that the private IP address of the load balancer is used as the destination address of HTTP requests. The value can contain only digits, letters, hyphens (-), and periods (.) and must start with a digit or letter, for example, **www.test.com**. The value contains a maximum of 100 characters.
url_path	No	String	Specifies the HTTP request path for the health check. The default value is **/**, and the value must start with a slash (/). This parameter is valid only when the value of **type** is set to **HTTP**. An example value is **/test**. The value contains a maximum of 255 characters.
http_method	No	String	Specifies the HTTP request method. The default value is **GET**. The value can be **GET**, **HEAD**, **POST**, **PUT**, **DELETE**, **TRACE**, **OPTIONS**, **CONNECT**, or **PATCH**. This parameter is valid only when the value of **type** is set to **HTTP**. **NOTE** This parameter is reserved.

Response

Table 7-124 Response parameters

Parameter	Type	Description
healthmonitors	Array	Lists the health checks. For details, see **Table 7-125**.
healthmonitors _links	Array	Provides links to the previous or next page during pagination query, respectively. This parameter exists only in the response body of pagination query. For details, see **Table 7-127**.

Table 7-125 **healthmonitors** parameter description

Parameter	Type	Description
id	String	Specifies the health check ID.
tenant_id	String	Specifies the ID of the project where the health check is performed.
name	String	Specifies the health check name. The value contains a maximum of 255 characters.
delay	Integer	Specifies the maximum time between health checks in the unit of second. The value ranges from **1** to **50**.
max_retries	Integer	Specifies the number of consecutive health checks when the health check result of a backend server changes from **OFFLINE** to **ONLINE**. The value ranges from **1** to **10**.
max_retries_do wn	Integer	Specifies the number of consecutive health checks when the health check result of a backend server changes from **ONLINE** to **OFFLINE**. The value ranges from **1** to **10**.
pools	Array	Lists the IDs of backend server groups associated with the health check.

Parameter	Type	Description
admin_state_up	Boolean	Specifies the administrative status of the health check. This parameter is reserved. The value can be **true** or **false**. ● **true**: Enabled ● **false**: Disabled
timeout	Integer	Specifies the health check timeout duration in the unit of second. The value ranges from **1** to **50**. NOTE You are advised to set the value less than that of parameter **delay**.
type	String	Specifies the health check protocol. The value can be **TCP**, **UDP_CONNECT**, or **HTTP**.
monitor_port	Integer	Specifies the health check port. The port number ranges from 1 to 65535. The value is left blank by default, indicating that the port of the backend server is used as the health check port.
expected_codes	String	Specifies the expected HTTP status code. The following options are available: A single value, such as **200** A list of values, such as **200,202** A value range, such as **200–204** This parameter is valid only when the value of **type** is set to **HTTP**. The value contains a maximum of 64 characters.
domain_name	String	Specifies the domain name of HTTP requests during the health check. This parameter is valid only when the value of **type** is set to **HTTP**. The value is left blank by default, indicating that the private IP address of the load balancer is used as the destination address of HTTP requests. The value can contain only digits, letters, hyphens (-), and periods (.) and must start with a digit or letter, for example, **www.test.com**. The value contains a maximum of 100 characters.

Parameter	Type	Description
url_path	String	Specifies the HTTP request path for the health check. The default value is **/**, and the value must start with a slash (/). This parameter is valid only when the value of **type** is set to **HTTP**. An example value is **/test**. The value contains a maximum of 255 characters.
http_method	String	Specifies the HTTP request method. The default value is **GET**. The value can be **GET**, **HEAD**, **POST**, **PUT**, **DELETE**, **TRACE**, **OPTIONS**, **CONNECT**, or **PATCH**. This parameter is valid only when the value of **type** is set to **HTTP**. **NOTE** This parameter is reserved.

Table 7-126 pools parameter description

Parameter	Type	Description
id	String	Specifies the ID of the associated backend server group.

Table 7-127 healthmonitors_links parameter description

Parameter	Type	Description
href	String	Provides links to the previous or next page during pagination query, respectively.
rel	String	Specifies the prompt of the previous or next page. The value can be **next** or **previous**. The value **next** indicates the href containing the URL of the next page, and **previous** indicates the href containing the URL of the previous page.

Example Request

- Example request 1: Querying all health checks
  GET https://{Endpoint}/v2.0/lbaas/healthmonitors

- Example request 2: Querying HTTP health checks
  GET https://{Endpoint}/v2.0/lbaas/healthmonitors?type=HTTP

Example Response

- Example response 1

```
{
    "healthmonitors": [
        {
            "monitor_port": null,
            "name": "",
            "admin_state_up": true,
            "tenant_id": "601240b9c5c94059b63d484c92cfe308",

            "domain_name": null,
            "delay": 5,

            "max_retries": 3,
            "max_retries_down": 5,
            "http_method": "GET",
            "timeout": 10,
            "pools": [
                {
                    "id": "caef8316-6b65-4676-8293-cf41fb63cc2a"
                }
            ],
            "url_path": "/",
            "type": "HTTP",
            "id": "1b587819-d619-49c1-9101-fe72d8b361ef"
        }
    ]
}
```

- Example response 2

```
{
    "healthmonitors": [
        {
            "monitor_port": null,
            "name": "",
            "admin_state_up": true,
            "tenant_id": "601240b9c5c94059b63d484c92cfe308",
            "domain_name": null,
            "delay": 5,
            "expected_codes": "200-204,300-302,401",
            "max_retries": 3,
            "max_retries_down": 5,
            "http_method": "GET",
            "timeout": 10,
            "pools": [
                {
                    "id": "caef8316-6b65-4676-8293-cf41fb63cc2a"
                }
            ],
            "url_path": "/",
            "type": "HTTP",
            "id": "1b587819-d619-49c1-9101-fe72d8b361ef"
        }
    ]
}
```

Status Code

For details, see **Status Codes**.

7.1.5.3 Querying Details of a Health Check

Function

This API is used to query details about a health check using its iD.

URI

GET /v2.0/lbaas/healthmonitors/{healthmonitor_id}

Table 7-128 Parameter description

Parameter	Mandatory	Type	Description
healthmonitor_id	Yes	String	Specifies the health check ID.

Request

None

Response

Table 7-129 Response parameters

Parameter	Type	Description
healthmonitor	Object	Specifies the health check. For details, see **Table 7-130**.

Table 7-130 healthmonitor parameter description

Parameter	Type	Description
id	String	Specifies the health check ID.
tenant_id	String	Specifies the ID of the project where the health check is performed.
name	String	Specifies the health check name.
delay	Integer	Specifies the maximum time between health checks in the unit of second. The value ranges from **1** to **50**.
max_retries	Integer	Specifies the number of consecutive health checks when the health check result of a backend server changes from **OFFLINE** to **ONLINE**. The value ranges from **1** to **10**.

Parameter	Type	Description
max_retries_down	Integer	Specifies the number of consecutive health checks when the health check result of a backend server changes from **ONLINE** to **OFFLINE**. The value ranges from **1** to **10**.
pools	Array	Specifies the ID of the backend server group associated with the health check. For details, see **Table 7-122**.
admin_state_up	Boolean	Specifies the administrative status of the health check. This parameter is reserved. The value can be **true** or **false**. ● **true**: Enabled ● **false**: Disabled
timeout	Integer	Specifies the health check timeout duration in the unit of second. The value ranges from **1** to **50**. NOTE You are advised to set the value less than that of parameter **delay**.
type	String	Specifies the health check protocol. The value can be **TCP**, **UDP_CONNECT**, or **HTTP**. The relationships between the value of this parameter and the protocol of the backend server group are as follows: ● If the protocol of the backend server group is UDP, the parameter value can only be **UDP_CONNECT**. ● If the protocol of the backend server group is TCP, the parameter value can be **TCP** or **HTTP**. ● If the protocol of the backend server group is HTTP, the parameter value can be **TCP** or **HTTP**.
monitor_port	Integer	Specifies the health check port. The port number ranges from 1 to 65535. The value is left blank by default, indicating that the port of the backend server is used as the health check port.

Parameter	Type	Description
expected_co des	String	Specifies the expected HTTP status code. The following options are available: A single value, such as **200** A list of values, such as **200,202** A value range, such as **200–204** This parameter is valid only when the value of **type** is set to **HTTP**. Currently, this parameter is not supported and is fixed at **200**.
domain_na me	String	Specifies the domain name of HTTP requests during the health check. This parameter is valid only when the value of **type** is set to **HTTP**. The value is left blank by default, indicating that the private IP address of the load balancer is used as the destination address of HTTP requests. The value can contain only digits, letters, hyphens (-), and periods (.) and must start with a digit or letter, for example, **www.test.com**.
url_path	String	Specifies the HTTP request path for the health check. The default value is **/**, and the value must start with a slash (/). This parameter is valid only when the value of **type** is set to **HTTP**. An example value is **/test**.
http_metho d	String	Specifies the HTTP request method. The default value is **GET**. The value can be **GET**, **HEAD**, **POST**, **PUT**, **DELETE**, **TRACE**, **OPTIONS**, **CONNECT**, or **PATCH**. This parameter is valid only when the value of **type** is set to **HTTP**. **NOTE** This parameter is reserved.

Table 7-131 pools parameter description

Parameter	Type	Description
id	String	Specifies the ID of the associated backend server group.

Example Request

- Example request: Querying details of a health check
  GET https://{Endpoint}/v2.0/lbaas/healthmonitors/b7633ade-24dc-4d72-8475-06aa22be5412

Example Response

- Example response

```
{
  "healthmonitor": {
    "name": "",
    "admin_state_up": true,
    "tenant_id": "145483a5107745e9b3d80f956713e6a3",
    "domain_name": null,
    "delay": 10,
    "expected_codes": "200-204,300-302,401",
    "max_retries": 10,
    "max_retries_down": 5,
    "http_method": "GET",
    "timeout": 10,
    "pools": [
      {
        "id": "bb44bffb-05d9-412c-9d9c-b189d9e14193"
      }
    ],
    "url_path": "/",
    "type": "HTTP",
    "id": "61c24cba-19bb-45c1-a013-7565e5f98872",
    "monitor_port": 112
  }
}
```

Status Code

For details, see **Status Codes**.

7.1.5.4 Updating a Health Check

Function

This API is used to update a health check.

Constraints

If **provisioning_status** of the load balancer for which the health check is
configured is not **ACTIVE**, the health check cannot be updated.

URI

PUT /v2.0/lbaas/healthmonitors/{healthmonitor_id}

Table 7-132 Parameter description

Parameter	Manda tory	Type	Description
healthmoni tor_id	Yes	String	Specifies the health check ID.

Request

Table 7-133 Parameter description

Parameter	Mandatory	Type	Description
healthmonitor	Yes	Object	Specifies the health check. For details, see **Table 7-134**.

Table 7-134 healthmonitor parameter description

Parameter	Mandatory	Type	Description
name	No	String	Specifies the health check name. The value contains a maximum of 255 characters.
delay	No	Integer	Specifies the maximum time between health checks in the unit of second. The value ranges from **1** to **50**.
max_retries	No	Integer	Specifies the number of consecutive health checks when the health check result of a backend server changes from **OFFLINE** to **ONLINE**. The value ranges from **1** to **10**.
max_retries_down	No	Integer	Specifies the number of consecutive health checks when the health check result of a backend server changes from **ONLINE** to **OFFLINE**. The value ranges from **1** to **10**.
admin_state_up	No	Boolean	Specifies the administrative status of the health check. This parameter is reserved, and the default value is **true**.
timeout	No	Integer	Specifies the health check timeout duration in the unit of second. The value ranges from **1** to **50**. **NOTE** You are advised to set the value less than that of parameter **delay**.
type	No	String	Specifies the health check protocol. The value can be **TCP**, **UDP_CONNECT**, or **HTTP**.

Parameter	Mandatory	Type	Description
monitor_port	No	Integer	Specifies the health check port. The port number ranges from 1 to 65535. The value is left blank by default, indicating that the port of the backend server is used as the health check port.
expected_codes	No	String	Specifies the expected HTTP status code. The following options are available: A single value, such as **200** A list of values, such as **200,202** A value range, such as **200–204** This parameter is valid only when the value of **type** is set to **HTTP**.
domain_name	No	String	Specifies the domain name of HTTP requests during the health check. This parameter is valid only when the value of **type** is set to **HTTP**. The value is left blank by default, indicating that the private IP address of the load balancer is used as the destination address of HTTP requests. The value can contain only digits, letters, hyphens (-), and periods (.) and must start with a digit or letter, for example, **www.test.com**. The value contains a maximum of 100 characters.
url_path	No	String	Specifies the HTTP request path for the health check. The default value is **/**, and the value must start with a slash (/). This parameter is valid only when the value of **type** is set to **HTTP**. An example value is **/test**. The value contains a maximum of 255 characters.

Parameter	Mandatory	Type	Description
http_method	No	String	Specifies the HTTP request method. The default value is **GET**. The value can be **GET**, **HEAD**, **POST**, **PUT**, **DELETE**, **TRACE**, **OPTIONS**, **CONNECT**, or **PATCH**. This parameter is valid only when the value of **type** is set to **HTTP**. **NOTE** This parameter is reserved.

Response

Table 7-135 Response parameters

Parameter	Type	Description
healthmonitor	Object	Specifies the health check. For details, see **Table 7-136**.

Table 7-136 healthmonitor parameter description

Parameter	Type	Description
id	String	Specifies the health check ID.
tenant_id	String	Specifies the ID of the project where the health check is performed.
name	String	Specifies the health check name.
delay	Integer	Specifies the maximum time between health checks in the unit of second. The value ranges from **1** to **50**.
max_retries	Integer	Specifies the number of consecutive health checks when the health check result of a backend server changes from **OFFLINE** to **ONLINE**. The value ranges from **1** to **10**.
max_retries_down	Integer	Specifies the number of consecutive health checks when the health check result of a backend server changes from **ONLINE** to **OFFLINE**. The value ranges from **1** to **10**.
pools	Array	Specifies the ID of the backend server group associated with the health check. For details, see **Table 7-122**.

Parameter	Type	Description
admin_state _up	Boolean	Specifies the administrative status of the health check. This parameter is reserved. The value can be **true** or **false**. ● **true**: Enabled ● **false**: Disabled
timeout	Integer	Specifies the health check timeout duration in the unit of second. The value ranges from **1** to **50**. NOTE You are advised to set the value less than that of parameter **delay**.
type	String	Specifies the health check protocol. The value can be **TCP**, **UDP_CONNECT**, or **HTTP**. The relationships between the value of this parameter and the protocol of the backend server group are as follows: ● If the protocol of the backend server group is UDP, the parameter value can only be **UDP_CONNECT**. ● If the protocol of the backend server group is TCP, the parameter value can be **TCP** or **HTTP**. ● If the protocol of the backend server group is HTTP, the parameter value can be **TCP** or **HTTP**.
monitor_por t	Integer	Specifies the health check port. The port number ranges from 1 to 65535. The value is left blank by default, indicating that the port of the backend server is used as the health check port.
expected_co des	String	Specifies the expected HTTP status code. The following options are available: A single value, such as **200** A list of values, such as **200,202** A value range, such as **200–204** This parameter is valid only when the value of **type** is set to **HTTP**. Currently, this parameter is not supported and is fixed at **200**.

Parameter	Type	Description
domain_na me	String	Specifies the domain name of HTTP requests during the health check. This parameter is valid only when the value of **type** is set to **HTTP**. The value is left blank by default, indicating that the private IP address of the load balancer is used as the destination address of HTTP requests. The value can contain only digits, letters, hyphens (-), and periods (.) and must start with a digit or letter, for example, **www.test.com**.
url_path	String	Specifies the HTTP request path for the health check. The default value is **/**, and the value must start with a slash (/). This parameter is valid only when the value of **type** is set to **HTTP**. An example value is **/test**.
http_metho d	String	Specifies the HTTP request method. The default value is **GET**. The value can be **GET**, **HEAD**, **POST**, **PUT**, **DELETE**, **TRACE**, **OPTIONS**, **CONNECT**, or **PATCH**. This parameter is valid only when the value of **type** is set to **HTTP**. **NOTE** This parameter is reserved.

Table 7-137 pools parameter description

Parameter	Type	Description
id	String	Specifies the ID of the associated backend server group.

Example Request

- Example request: Updating a health check

```
PUT https://{Endpoint}/v2.0/lbaas/healthmonitors/b7633ade-24dc-4d72-8475-06aa22be5412

{
  "healthmonitor": {
    "delay": 15,
    "name": "health-xx",
    "timeout": 12
  }
}
```

Example Response

- Example response

```
{
  "healthmonitor": {
    "name": "health-xx",
    "admin_state_up": true,
    "tenant_id": "145483a5107745e9b3d80f956713e6a3",
    "domain_name": null,
    "delay": 15,
    "expected_codes": "200",
    "max_retries": 10,
    "max_retries_down": 5,
    "http_method": "GET",
    "timeout": 12,
    "pools": [
      {
        "id": "bb44bffb-05d9-412c-9d9c-b189d9e14193"
      }
    ],
    "url_path": "/",
    "type": "HTTP",
    "id": "2dca3867-98c5-4cde-8f2c-b89ae6bd7e36",
    "monitor_port": 112
  }
}
```

Status Code

For details, see **Status Codes**.

7.1.5.5 Deleting a Health Check

Function

This API is used to delete a health check.

Constraints

If **provisioning_status** of the load balancer for which the health check is configured is not **ACTIVE**, the health check cannot be deleted.

URI

DELETE /v2.0/lbaas/healthmonitors/{healthmonitor_id}

Table 7-138 Parameter description

Parameter	Mandat ory	Type	Description
healthmonit or_id	Yes	String	Specifies the health check ID.

Request

None

Response

None

Example Request

- Example request: Deleting a health check
  DELETE https://{Endpoint}/v2.0/lbaas/healthmonitors/b7633ade-24dc-4d72-8475-06aa22be5412

Example Response

- Example response
  None

Status Code

For details, see **Status Codes**.

7.1.6 Forwarding Policy

7.1.6.1 Adding a Forwarding Policy

Function

This API is used to add a forwarding policy. The listener and forwarding policy determine how traffic is forwarded to backend servers.

- By matching the URL or domain name specified in the forwarding policy when **action** is set to **REDIRECT_TO_POOL**, the load balancer distributes the traffic to backend servers in a specific backend server group.

- When **action** is set to **REDIRECT_TO_LISTENER**, the HTTP listener is redirected to an HTTPS listener, and requests are routed by the HTTPS listener.

Constraints

Currently, only redirects from an HTTP listener to an HTTPS listener are supported. When **action** is set to **REDIRECT_TO_LISTENER**, the listener specified by **listener_id** can only be an HTTP listener, and the listener specified by **redirect_listener_id** can only be an HTTPS listener.

The load balancer of the HTTPS listener to which traffic is redirected must be the same as that of the HTTP listener.

URI

POST /v2.0/lbaas/l7policies

Request

Table 7-139 Parameter description

Parameter	Mandatory	Type	Description
l7policy	Yes	Object	Specifies the forwarding policy. For details, see **Table 7-140**.

Table 7-140 **l7policy** parameter description

Parameter	Mandatory	Type	Description
tenant_id	No	String	Specifies the ID of the project where the forwarding policy is used. The value must be the same as the value of **tenant_id** in the token. The value contains a maximum of 255 characters.
name	No	String	Specifies the forwarding policy name. The value contains a maximum of 255 characters.
admin_state_up	No	Boolean	Specifies the administrative status of the forwarding policy. This parameter is reserved, and the default value is **true**.
description	No	String	Provides supplementary information about the forwarding policy. The value contains a maximum of 255 characters.
listener_id	Yes	String	Specifies the ID of the listener to which the forwarding policy is added. ● When **action** is set to **REDIRECT_TO_POOL**, forwarding policies can be added to a listener with **protocol** set to **HTTP** or **TERMINATED_HTTPS**. ● When **action** is set to **REDIRECT_TO_LISTENER**, forwarding policies can be added to a listener with **protocol** set to **HTTP**.

Parameter	Mandatory	Type	Description
action	Yes	String	Specifies whether requests are forwarded to another backend server group or redirected to an HTTPS listener. The value can be one of the following: • **REDIRECT_TO_POOL**: Requests are forwarded to the backend server group specified by **redirect_pool_id**. • **REDIRECT_TO_LISTENER**: Requests are redirected from the HTTP listener specified by **listener_id** to the HTTPS listener specified by **redirect_listener_id**.
redirect_pool _id	No	String	Specifies the ID of the backend server group to which traffic is forwarded. The default value is **null**. This parameter is mandatory when **action** is set to **REDIRECT_TO_POOL**. This parameter cannot be specified when **action** is set to **REDIRECT_TO_LISTENER**. The backend server group must meet the following requirements: • Cannot be the default backend server group of the listener. • Cannot be the backend server group used by forwarding policies of other listeners.
redirect_liste ner_id	No	String	Specifies the ID of the listener to which the traffic is redirected. The default value is **null**. This parameter cannot be specified when **action** is set to **REDIRECT_TO_POOL**. This parameter is mandatory when **action** is set to **REDIRECT_TO_LISTENER**, and the listener must meet the following requirements: • Can only be an HTTPS listener. • Can only be a listener of the same load balancer.

Parameter	Mandatory	Type	Description
redirect_url	No	String	Specifies the URL to which traffic is redirected. The default value is **null**. This parameter is reserved. The value contains a maximum of 255 characters.
position	No	Integer	Specifies the forwarding priority. The value ranges from **1** to **100**. The default value is **100**. This parameter is reserved.
rules	No	Array	Lists the forwarding rules of the forwarding policy. For details, see **Table 7-141**. The list contains a maximum of two rules, and the **type** parameter of each rule must be unique.

Table 7-141 rules parameter description

Parameter	Mandatory	Type	Description
admin_state_up	No	Boolean	Specifies the administrative status of the forwarding rule. This parameter is reserved, and the default value is **true**.
type	Yes	String	Specifies the match type of a forwarding rule. The value range varies depending on the protocol of the backend server group: ● **HOST_NAME**: matches the domain name in the request. ● **PATH**: matches the path in the request. The match type of forwarding rules in a forwarding policy must be unique.

Parameter	Mandatory	Type	Description
compare_type	Yes	String	Specifies the match mode. The options are as follows: When **type** is set to **HOST_NAME**, the value of this parameter can only be the following: ● **EQUAL_TO**: indicates exact match. When **type** is set to **PATH**, the value of this parameter can be one of the following: ● **REGEX**: indicates regular expression match. ● **STARTS_WITH**: indicates prefix match. ● **EQUAL_TO**: indicates exact match.
invert	No	Boolean	Specifies whether reverse matching is supported. The value can be **true** or **false**. The default value is **false**. This parameter is reserved.
key	No	String	Specifies the key of the match content. The default value is **null**. This parameter is reserved.
value	Yes	String	Specifies the value of the match content. The value cannot contain spaces. ● When **type** is set to **HOST_NAME**, the value can contain a maximum of 100 characters that contain only letters, digits, hyphens (-), and periods (.), and must start with a letter or digit. ● When **type** is set to **PATH**, the value can contain a maximum of 128 characters. When **compare_type** is set to **STARTS_WITH** or **EQUAL_TO**, the value must start with a slash (/) and can contain only letters, digits, and special characters _~';@^-%#&$.* +?,=!:|\/()[]{}

Response

Table 7-142 Response parameters

Parameter	Type	Description
l7policy	Object	Specifies the forwarding policy. For details, see **Table 7-143**.

Table 7-143 l7policy parameter description

Parameter	Type	Description
id	String	Specifies the forwarding policy ID.
tenant_id	String	Specifies the ID of the project where the forwarding policy is used.
name	String	Specifies the forwarding policy name.
admin_state_up	Boolean	Specifies the administrative status of the forwarding policy. This parameter is reserved. The value can be **true** or **false**. **true**: Enabled **false**: Disabled
description	String	Provides supplementary information about the forwarding policy.
listener_id	String	Specifies the ID of the listener to which the forwarding policy is added.
action	String	Specifies whether requests are forwarded to another backend server group or redirected to an HTTPS listener. The value can be one of the following: **REDIRECT_TO_POOL**: Requests are forwarded to the backend server group specified by **redirect_pool_id**. **REDIRECT_TO_LISTENER**: Requests are redirected from the HTTP listener specified by **listener_id** to the HTTPS listener specified by **redirect_listener_id**.
redirect_pool_id	String	Specifies the ID of the backend server group to which traffic is forwarded.
redirect_listener_id	String	Specifies the ID of the listener to which the traffic is redirected.

Parameter	Type	Description
redirect_url	String	Specifies the URL to which traffic is redirected. This parameter is reserved.
rules	Array	Lists the forwarding rules of the forwarding policy. For details, see **Table 7-144**.
position	Integer	Specifies the forwarding priority. The value ranges from **1** to **100**. The default value is **100**. This parameter is reserved.
provisioning_status	String	This parameter is reserved, and its value can only be **ACTIVE**. It specifies the provisioning status of the forwarding policy.

Table 7-144 rules parameter description

Parameter	Type	Description
id	String	Lists the IDs of the forwarding rules in the forwarding policy.

Example Request

- Example request 1: Adding a forwarding policy
  POST https://{Endpoint}/v2.0/lbaas/l7policies

```
{
    "l7policy": {
        "name": "niubiao_yaqing_api-2",
        "listener_id": "3e24a3ca-11e5-4aa3-abd4-61ba0a8a18f1",
        "action": "REDIRECT_TO_POOL",
        "redirect_pool_id": "6460f13a-76de-43c7-b776-4fefc06a676e",
        "rules": [
            {
                "type": "PATH",
                "compare_type": "EQUAL_TO",
                "value": "/test"
            },
            {
                "type": "HOST_NAME",
                "compare_type": "EQUAL_TO",
                "value": "www.test.com"
            }
        ]
    }
}
```

Example Response

- Example response 1
```
{
    "l7policy": {
```

```
                    "redirect_pool_id": "6460f13a-76de-43c7-b776-4fefc06a676e",
                    "description": "",
                    "admin_state_up": true,
                    "rules": [
                        {
                            "id": "742600d9-2a14-4808-af69-336883dbb590"
                        },
                        {
                            "id": "3251ed77-0d52-412b-9310-733636bb3fbf"
                        }
                    ],
                    "tenant_id": "573d73c9f90e48d0bddfa0eb202b25c2",
                    "listener_id": "3e24a3ca-11e5-4aa3-abd4-61ba0a8a18f1",
                    "redirect_url": null,
                    "redirect_listener_id": null,
                    "action": "REDIRECT_TO_POOL",
                    "position": 100,
                    "provisioning_status": "ACTIVE",

                    "id": "65d6e115-f179-4bcd-9bbb-1484e5f8ee81",
                    "name": "niubiao_yaqing-_api-2"
                }
    }
```

Status Code

For details, see **Status Codes**.

7.1.6.2 Querying Forwarding Policies

Function

This API is used to query the forwarding policies. Filter query and pagination query are supported. Unless otherwise specified, exact match is applied.

Constraints

Parameters **marker**, **limit**, and **page_reverse** are used for pagination query. Parameters **marker** and **page_reverse** take effect only when they are used together with parameter **limit**.

URI

GET /v2.0/lbaas/l7policies

Request

Table 7-145 Parameter description

Parameter	Mandatory	Type	Description
marker	No	String	Specifies the ID of the forwarding policy from which pagination query starts, that is, the ID of the last forwarding policy on the previous page. This parameter must be used together with **limit**.

Parameter	Mandatory	Type	Description
limit	No	Integer	Specifies the number of forwarding policies on each page. If this parameter is not set, all forwarding policies are queried by default.
page_reverse	No	Boolean	Specifies the page direction. The value can be **true** or **false**, and the default value is **false**. The last page in the list requested with **page_reverse** set to **false** will not contain the "next" link, and the last page in the list requested with **page_reverse** set to **true** will not contain the "previous" link. This parameter must be used together with **limit**.
id	No	String	Specifies the forwarding policy ID.
tenant_id	No	String	Specifies the ID of the project where the forwarding policy is used. The value contains a maximum of 255 characters.
name	No	String	Specifies the forwarding policy name. The value contains a maximum of 255 characters.
admin_state_up	No	Boolean	Specifies the administrative status of the forwarding policy. This parameter is reserved, and the default value is **true**.
description	No	String	Provides supplementary information about the forwarding policy. The value contains a maximum of 255 characters.
listener_id	No	String	Specifies the ID of the listener to which the forwarding policy is added.

Parameter	Mandatory	Type	Description
action	No	String	Specifies whether requests are forwarded to another backend server group or redirected to an HTTPS listener. The value can be one of the following: ● **REDIRECT_TO_POOL**: Requests are forwarded to the backend server group specified by **redirect_pool_id**. ● **REDIRECT_TO_LISTENER**: Requests are redirected from the HTTP listener specified by **listener_id** to the HTTPS listener specified by **redirect_listener_id**.
redirect_po ol_id	No	String	Specifies the ID of the backend server group to which traffic is forwarded.
redirect_list ener_id	No	String	Specifies the ID of the listener to which the traffic is redirected.
redirect_url	No	String	Specifies the URL to which traffic is redirected. This parameter is reserved. The value contains a maximum of 255 characters.
position	No	Integer	Specifies the forwarding priority. The value ranges from **1** to **100**. The default value is **100**. This parameter is reserved.
provisionin g_status	No	String	This parameter is reserved, and its value can only be **ACTIVE**. It specifies the provisioning status of the forwarding policy.
display_all_ rules	No	Boolean	Specifies whether to display all forwarding rules added to the forwarding policy. Value options: **false**: Forwarding rules will not be displayed, and only IDs are displayed. **true**: Forwarding rules will be displayed.

Response

Table 7-146 Response parameters

Parameter	Type	Description
l7policies	Array	Lists the forwarding policies. For details, see **Table 7-147**.
l7policies_links	Array	Provides links to the previous or next page during pagination query, respectively. This parameter exists only in the response body of pagination query. For details, see **Table 7-149**.

Table 7-147 l7policy parameter description

Parameter	Type	Description
id	String	Specifies the forwarding policy ID.
tenant_id	String	Specifies the ID of the project where the forwarding policy is used.
name	String	Specifies the forwarding policy name.
admin_state_up	Boolean	Specifies the administrative status of the forwarding policy. This parameter is reserved. The value can be **true** or **false**. ● **true**: Enabled ● **false**: Disabled
description	String	Provides supplementary information about the forwarding policy.
listener_id	String	Specifies the ID of the listener to which the forwarding policy is added.
action	String	Specifies whether requests are forwarded to another backend server group or redirected to an HTTPS listener. The value can be one of the following: ● **REDIRECT_TO_POOL**: Requests are forwarded to the backend server group specified by **redirect_pool_id**. ● **REDIRECT_TO_LISTENER**: Requests are redirected from the HTTP listener specified by **listener_id** to the HTTPS listener specified by **redirect_listener_id**.

Parameter	Type	Description
redirect_pool_id	String	Specifies the ID of the backend server group to which traffic is forwarded.
redirect_listener_id	String	Specifies the ID of the listener to which the traffic is redirected.
redirect_url	String	Specifies the URL to which traffic is redirected. This parameter is reserved.
rules	Array	Lists the forwarding rules of the forwarding policy. For details, see **Table 7-144**.
position	Integer	Specifies the forwarding priority. The value ranges from **1** to **100**. The default value is **100**. This parameter is reserved.
provisioning_status	String	This parameter is reserved, and its value can only be **ACTIVE**. It specifies the provisioning status of the forwarding policy.

Table 7-148 rules parameter description

Parameter	Type	Description
id	String	Lists the IDs of the forwarding rules in the forwarding policy.

Table 7-149 l7policies_links parameter description

Parameter	Type	Description
href	String	Provides links to the previous or next page during pagination query, respectively.
rel	String	Specifies the prompt of the previous or next page. The value can be **next** or **previous**. The value **next** indicates the href containing the URL of the next page, and **previous** indicates the href containing the URL of the previous page.

Example Request

- Example request 1: Querying all forwarding policies
  ```
  GET https://{Endpoint}/v2.0/lbaas/l7policies
  ```

- Example request 2: Querying forwarding policies through which requests are forwarded to the backend server group
  ```
  GET https://{Endpoint}/v2.0/lbaas/l7policies?action=REDIRECT_TO_POOL
  ```

Example Response

- Example response 1
  ```
  {
      "l7policies": [
          {
              "redirect_pool_id": "431a03eb-81bb-408e-ae37-7ce19023692b",
              "redirect_listener_id": null,
              "description": "",
              "admin_state_up": true,
              "rules": [
                  {
                      "id": "67d8a8fa-b0dd-4bd4-a85b-671db19b2ef3"
                  },
                  {
                      "id": "f02b3bca-69d2-4335-a3fa-a8054e996213"
                  }
              ],
              "tenant_id": "a31d2bdcf7604c0faaddb058e1e08819",

              "listener_id": "26058b64-6185-4e06-874e-4bd68b7633d0",
              "redirect_url": null,
              "action": "REDIRECT_TO_POOL",
              "position": 2,
              "provisioning_status": "ACTIVE",
              "id": "5ae0e1e7-5f0f-47a1-b39f-5d4c428a1586",
              "name": ""
          },
          {
              "redirect_pool_id": "59eebd7b-c68f-4f8a-aa7f-e062e84c0690",
              "redirect_listener_id": null,
              "description": "",
              "admin_state_up": true,
              "rules": [
                  {
                      "id": "f4499f48-de3d-4efe-926d-926aa4d6aaf5"
                  }
              ],
              "tenant_id": "a31d2bdcf7604c0faaddb058e1e08819",
              "listener_id": "e1310063-00de-4867-ab55-ccac4d9db364",
              "redirect_url": null,
              "action": "REDIRECT_TO_POOL",
              "position": 1,
              "provisioning_status": "ACTIVE",
              "id": "6cfd9d89-1d7e-4d84-ae1f-a8c5ff126f72",
              "name": ""
          }
      ],
      "l7policies_links": [
          {
          "href": "https://{Endpoint}/v2.0/lbaas/l7policies/061f461c-c7cf-47ab-9583-09be5076cd09/rules?marker=167c1a31-bc12-4c3d-9ad1-c9bf450df4ce&page_reverse=True",
              "rel": "previous"
          }
      ]
  }
  ```

- Example response 2
  ```
  {
      "l7policies": [
  ```

```
        {
            "redirect_pool_id": "431a03eb-81bb-408e-ae37-7ce19023692b",
            "redirect_listener_id": null,
            "description": "",
            "admin_state_up": true,
            "rules": [
                {
                    "id": "67d8a8fa-b0dd-4bd4-a85b-671db19b2ef3"
                },
                {
                    "id": "f02b3bca-69d2-4335-a3fa-a8054e996213"
                }
            ],
            "tenant_id": "a31d2bdcf7604c0faaddb058e1e08819",

            "listener_id": "26058b64-6185-4e06-874e-4bd68b7633d0",
            "redirect_url": null,
            "action": "REDIRECT_TO_POOL",
            "position": 2,
            "provisioning_status": "ACTIVE",
            "id": "5ae0e1e7-5f0f-47a1-b39f-5d4c428a1586",
            "name": ""
        },
        {
            "redirect_pool_id": "59eebd7b-c68f-4f8a-aa7f-e062e84c0690",
            "redirect_listener_id": null,
            "description": "",
            "admin_state_up": true,
            "rules": [
                {
                    "id": "f4499f48-de3d-4efe-926d-926aa4d6aaf5"
                }
            ],
            "tenant_id": "a31d2bdcf7604c0faaddb058e1e08819",

            "listener_id": "e1310063-00de-4867-ab55-ccac4d9db364",
            "redirect_url": null,
            "action": "REDIRECT_TO_POOL",
            "position": 1,
            "provisioning_status": "ACTIVE",
            "id": "6cfd9d89-1d7e-4d84-ae1f-a8c5ff126f72",
            "name": ""
        }
    ],
    "l7policies_links": [
        {
        "href": "https://{Endpoint}/v2.0/lbaas/l7policies/061f461c-c7cf-47ab-9583-09be5076cd09/rules?
marker=167c1a31-bc12-4c3d-9ad1-c9bf450df4ce&page_reverse=True",
        "rel": "previous"
        }
    ]
}
```

Status Code

For details, see **Status Codes**.

7.1.6.3 Querying Details of a Forwarding Policy

Function

This API is used to query details about a forwarding policy.

URI

GET /v2.0/lbaas/l7policies/{l7policy_id}

Table 7-150 Parameter description

Parameter	Manda tory	Type	Description
l7policy_id	Yes	String	Specifies the forwarding policy ID.

Request

None

Response

Table 7-151 Parameter description

Parameter	Type	Description
l7policy	Object	Specifies the forwarding policy. For details, see **Table 7-152**.

Table 7-152 l7policy parameter description

Parameter	Type	Description
id	String	Specifies the forwarding policy ID.
tenant_id	String	Specifies the ID of the project where the forwarding policy is used.
name	String	Specifies the forwarding policy name.
admin_state_up	Boolean	Specifies the administrative status of the forwarding policy. This parameter is reserved. The value can be **true** or **false**. **true**: Enabled **false**: Disabled
description	String	Provides supplementary information about the forwarding policy.
listener_id	String	Specifies the ID of the listener to which the forwarding policy is added.

Parameter	Type	Description
action	String	Specifies whether requests are forwarded to another backend server group or redirected to an HTTPS listener. The value can be one of the following: ● **REDIRECT_TO_POOL**: Requests are forwarded to the backend server group specified by **redirect_pool_id**. ● **REDIRECT_TO_LISTENER**: Requests are redirected from the HTTP listener specified by **listener_id** to the HTTPS listener specified by **redirect_listener_id**.
redirect_pool_id	String	Specifies the ID of the backend server group to which traffic is forwarded.
redirect_listener_id	String	Specifies the ID of the listener to which the traffic is redirected.
redirect_url	String	Specifies the URL to which traffic is redirected. This parameter is reserved.
rules	Array	Lists the forwarding rules of the forwarding policy. For details, see **Table 7-144**.
position	Integer	Specifies the forwarding priority. The value ranges from **1** to **100**. The default value is **100**. This parameter is reserved.
provisioning_status	String	This parameter is reserved, and its value can only be **ACTIVE**. It specifies the provisioning status of the forwarding policy.

Table 7-153 rules parameter description

Parameter	Type	Description
id	String	Lists the IDs of the forwarding rules in the forwarding policy.

Example Request

● Example request: Querying details of a forwarding policy

GET https://{Endpoint}/v2.0/lbaas/l7policies/5ae0e1e7-5f0f-47a1-b39f-5d4c428a1586

Example Response

- Example response

```
{
    "l7policy": {
        "redirect_pool_id": "431a03eb-81bb-408e-ae37-7ce19023692b",
        "redirect_listener_id": null,
        "description": "",
        "admin_state_up": true,
        "rules": [
            {
                "id": "67d8a8fa-b0dd-4bd4-a85b-671db19b2ef3"
            },
            {
                "id": "f02b3bca-69d2-4335-a3fa-a8054e996213"
            }
        ],
        "tenant_id": "a31d2bdcf7604c0faaddb058e1e08819",
        "listener_id": "26058b64-6185-4e06-874e-4bd68b7633d0",
        "redirect_url": null,
        "provisioning_status": "ACTIVE",
        "action": "REDIRECT_TO_POOL",
        "position": 1,
        "id": "5ae0e1e7-5f0f-47a1-b39f-5d4c428a1586",
        "name": "l7policy-garry-1"
    }
}
```

Status Code

For details, see **Status Codes**.

7.1.6.4 Updating a Forwarding Policy

Function

This API is used to update a forwarding policy. You can select another backend server group or redirect to another HTTPS listener.

URI

PUT /v2.0/lbaas/l7policies/{l7policy_id}

Table 7-154 Parameter description

Parameter	Mandatory	Type	Description
l7policy_id	Yes	Object	Specifies the forwarding policy ID.

Request

Table 7-155 Parameter description

Parameter	Mandatory	Type	Description
l7policy	Yes	Object	Specifies the forwarding policy. For details, see **Table 7-156**.

Table 7-156 **l7policy** parameter description

Parameter	Mandatory	Type	Description
name	No	String	Specifies the forwarding policy name. The value contains a maximum of 255 characters.
description	No	String	Provides supplementary information about the forwarding policy. The value contains a maximum of 255 characters.
redirect_pool_id	No	String	Specifies the ID of the backend server group to which traffic is forwarded. The default value is **null**. This parameter is mandatory when **action** is set to **REDIRECT_TO_POOL**. This parameter cannot be specified when **action** is set to **REDIRECT_TO_LISTENER**. The backend server group must meet the following requirements: ● Cannot be the default backend server group of the listener. ● Cannot be the backend server group used by forwarding policies of other listeners.

Parameter	Mand atory	Type	Description
redirect_liste ner_id	No	String	Specifies the ID of the listener to which the traffic is redirected. The default value is **null**. This parameter is mandatory when **action** is set to **REDIRECT_TO_LISTENER**. This parameter cannot be specified when **action** is set to **REDIRECT_TO_POOL**. The listener must meet the following requirements: • Can only be an HTTPS listener. • Can only be a listener of the same load balancer.
admin_state _up	No	Boolean	Specifies the administrative status of the forwarding policy. This parameter is reserved, and the default value is **true**.

Response

Table 7-157 Response parameters

Parameter	Mandat ory	Type	Description
l7policy	Yes	Object	Specifies the forwarding policy. For details, see **Table 7-158**.

Table 7-158 l7policy parameter description

Parameter	Type	Description
id	String	Specifies the forwarding policy ID.
tenant_id	String	Specifies the ID of the project where the forwarding policy is used.
name	String	Specifies the forwarding policy name.

Parameter	Type	Description
admin_state_up	Boolean	Specifies the administrative status of the forwarding policy. This parameter is reserved. The value can be **true** or **false**. • **true**: Enabled • **false**: Disabled
description	String	Provides supplementary information about the forwarding policy.
listener_id	String	Specifies the ID of the listener to which the forwarding policy is added.
action	String	Specifies whether requests are forwarded to another backend server group or redirected to an HTTPS listener. The value can be one of the following: • **REDIRECT_TO_POOL**: Requests are forwarded to the backend server group specified by **redirect_pool_id**. • **REDIRECT_TO_LISTENER**: Requests are redirected from the HTTP listener specified by **listener_id** to the HTTPS listener specified by **redirect_listener_id**.
redirect_pool_id	String	Specifies the ID of the backend server group to which traffic is forwarded.
redirect_listener_id	String	Specifies the ID of the listener to which the traffic is redirected.
redirect_url	String	Specifies the URL to which traffic is redirected. This parameter is reserved.
rules	Array	Lists the forwarding rules of the forwarding policy. For details, see **Table 7-144**.
position	Integer	Specifies the forwarding priority. The value ranges from **1** to **100**. The default value is **100**. This parameter is reserved.
provisioning_status	String	This parameter is reserved, and its value can only be **ACTIVE**. It specifies the provisioning status of the forwarding policy.

Table 7-159 rules parameter description

Parameter	Type	Description
id	String	Lists the IDs of the forwarding rules in the forwarding policy.

Example Request

- Example request: Updating a forwarding policy
```
PUT https://{Endpoint}/v2.0/lbaas/l7policies/5ae0e1e7-5f0f-47a1-b39f-5d4c428a1586

{
    "l7policy": {
        "name": "test"
    }
}
```

Example Response

- Example response
```
{
    "l7policy": {
        "redirect_pool_id": "431a03eb-81bb-408e-ae37-7ce19023692b",
        "redirect_listener_id": null,
        "description": "",
        "admin_state_up": true,
        "rules": [
            {
                "id": "67d8a8fa-b0dd-4bd4-a85b-671db19b2ef3"
            },
            {
                "id": "f02b3bca-69d2-4335-a3fa-a8054e996213"
            }
        ],

        "tenant_id": "a31d2bdcf7604c0faaddb058e1e08819",

        "listener_id": "26058b64-6185-4e06-874e-4bd68b7633d0",
        "redirect_url": null,
        "action": "REDIRECT_TO_POOL",
        "provisioning_status": "ACTIVE",
        "position": 2,
        "id": "5ae0e1e7-5f0f-47a1-b39f-5d4c428a1586",
        "name": "test"
    }
}
```

Status Code

For details, see **Status Codes**.

7.1.6.5 Deleting a Forwarding Policy

Function

This API is used to delete a specific forwarding policy.

URI

DELETE /v2.0/lbaas/l7policies/{l7policy_id}

Table 7-160 Parameter description

Parameter	Mandatory	Type	Description
l7policy_id	Yes	Object	Specifies the forwarding policy ID.

Request

None

Response

None

Example Request

- Example request: Deleting a forwarding policy
  DELETE https://{Endpoint}/v2.0/lbaas/l7policies/5ae0e1e7-5f0f-47a1-b39f-5d4c428a1586

Example Response

- Example response
  None

Status Code

For details, see **Status Codes**.

7.1.7 Forwarding Rule

7.1.7.1 Adding a Forwarding Rule

Function

This API is used to add a forwarding rule. After you add a forwarding rule, the load balancer matches the domain name and path in the request and distributes the traffic to the backend server group specified by **redirect_pool_id** of the associated forwarding policy.

Constraints

The match type of forwarding rules in a forwarding policy must be unique.

URI

POST /v2.0/lbaas/l7policies/{l7policy_id}/rules

Table 7-161 Parameter description

Parameter	Mandatory	Type	Description
l7policy_id	Yes	String	Specifies the forwarding policy ID.

Request

Table 7-162 Parameter description

Parameter	Mandatory	Type	Description
rule	Yes	Object	Specifies the forwarding rule. For details, see **Table 7-163**.

Table 7-163 rule parameter description

Parameter	Mandatory	Type	Description
tenant_id	No	String	Specifies the ID of the project where the forwarding rule is used. The value must be the same as the value of **project_id** in the token. The value contains a maximum of 255 characters.
admin_state_up	No	Boolean	Specifies the administrative status of the forwarding rule. This parameter is reserved, and the default value is **true**.
type	Yes	String	Specifies the match type of a forwarding rule. The value can be one of the following: ● **HOST_NAME**: matches the domain name in the request. ● **PATH**: matches the path in the request. The match type of forwarding rules in a forwarding policy must be unique.

Parameter	Mandatory	Type	Description
compare_type	Yes	String	Specifies the match mode. The options are as follows: When **type** is set to **HOST_NAME**, the value of this parameter can only be the following: ● **EQUAL_TO**: indicates exact match. When **type** is set to **PATH**, the value of this parameter can be one of the following: ● **REGEX**: indicates regular expression match. ● **STARTS_WITH**: indicates prefix match. ● **EQUAL_TO**: indicates exact match.
invert	No	Boolean	Specifies whether reverse matching is supported. The value can be **true** or **false**. The default value is **false**. This parameter is reserved.
key	No	String	Specifies the key of the match content. The default value is **null**. This parameter is reserved. The value contains a maximum of 255 characters.
value	Yes	String	Specifies the value of the match content. The value cannot contain spaces. The value contains a maximum of 128 characters. ● When **type** is set to **HOST_NAME**, the value can contain a maximum of 100 characters that contain only letters, digits, hyphens (-), and periods (.), and must start with a letter or digit. ● When **type** is set to **PATH**, the value can contain a maximum of 128 characters. When **compare_type** is set to **STARTS_WITH** or **EQUAL_TO**, the value must start with a slash (/) and can contain only letters, digits, and special characters _~';@^-%#&$.*+?,=!:| \/()[]{}

Response

Table 7-164 Response parameters

Parameter	Type	Description
rule	Object	Specifies the forwarding rule. For details, see **Table 7-165**.

Table 7-165 rule parameter description

Parameter	Type	Description
id	String	Specifies the forwarding rule ID.
tenant_id	String	Specifies the ID of the project where the forwarding rule is used. The value contains a maximum of 255 characters.
admin_state_up	Boolean	Specifies the administrative status of the forwarding rule. This parameter is reserved. The value can be **true** or **false**. ● **true**: Enabled ● **false**: Disabled
type	String	Specifies the match type of a forwarding rule. The value can be one of the following: ● **HOST_NAME**: matches the domain name in the request. ● **PATH**: matches the path in the request.
compare_type	String	Specifies the match mode. The options are as follows: When **type** is set to **HOST_NAME**, the value of this parameter can only be the following: ● **EQUAL_TO**: indicates exact match. When **type** is set to **PATH**, the value of this parameter can be one of the following: ● **REGEX**: indicates regular expression match. ● **STARTS_WITH**: indicates prefix match. ● **EQUAL_TO**: indicates exact match.

Parameter	Type	Description
invert	Boolean	Specifies whether reverse matching is supported. The value can be **true** or **false**. The default value is **false**. This parameter is reserved.
key	String	Specifies the key of the match content. The default value is **null**. This parameter is reserved. The value contains a maximum of 255 characters.
value	String	Specifies the value of the match content. The value contains a maximum of 128 characters. ● When **type** is set to **HOST_NAME**, the value can contain a maximum of 100 characters that contain only letters, digits, hyphens (-), and periods (.), and must start with a letter or digit. ● When **type** is set to **PATH**, the value can contain a maximum of 128 characters. When **compare_type** is set to **STARTS_WITH** or **EQUAL_TO**, the value must start with a slash (/) and can contain only letters, digits, and special characters _~';@^-%#&$.*+?,=!:| \/()[]{}
provisioning_st atus	String	This parameter is reserved, and its value can only be **ACTIVE**. It specifies the provisioning status of the forwarding rule.

Example Request

● Example request: Adding a forwarding rule
POST https://{Endpoint}/v2.0/lbaas/l7policies/5ae0e1e7-5f0f-47a1-b39f-5d4c428a1586/rules

```
{
    "rule": {
        "compare_type": "EQUAL_TO",
        "type": "PATH",
        "value": "/bbb.html"
    }
}
```

Example Response

● Example response
```
{
    "rule": {
```

```
          "compare_type": "EQUAL_TO",
          "admin_state_up": true,
          "provisioning_status": "ACTIVE",
          "tenant_id": "a31d2bdcf7604c0faaddb058e1e08819",

          "invert": false,
          "value": "/bbb.html",
          "key": null,
          "type": "PATH",
          "id": "c6f457b8-bf6f-45d7-be5c-a3226945b7b1"
      }
  }
```

Status Code

For details, see **Status Codes**.

7.1.7.2 Querying Forwarding Rules

Function

This API is used to query forwarding rules. Filter query and pagination query are supported. Unless otherwise specified, exact match is applied.

Constraints

Parameters **marker**, **limit**, and **page_reverse** are used for pagination query. Parameters **marker** and **page_reverse** take effect only when they are used together with parameter **limit**.

URI

GET /v2.0/lbaas/l7policies/{l7policy_id}/rules

Table 7-166 Parameter description

Parameter	Mandatory	Type	Description
l7policy_id	Yes	String	Specifies the forwarding policy ID.

Request

Table 7-167 Parameter description

Parameter	Mandatory	Type	Description
marker	No	String	Specifies the ID of the forwarding rule from which pagination query starts, that is, the ID of the last forwarding rule on the previous page. This parameter must be used together with **limit**.

Parameter	Mandatory	Type	Description
limit	No	Integer	Specifies the number of forwarding rules on each page. If this parameter is not set, all forwarding rules are queried by default.
page_reverse	No	Boolean	Specifies the page direction. The value can be **true** or **false**, and the default value is **false**. The last page in the list requested with **page_reverse** set to **false** will not contain the "next" link, and the last page in the list requested with **page_reverse** set to **true** will not contain the "previous" link. This parameter must be used together with **limit**.
id	No	String	Specifies the forwarding rule ID.
tenant_id	No	String	Specifies the ID of the project where the forwarding rule is used. The value contains a maximum of 255 characters.
admin_state_up	No	Boolean	Specifies the administrative status of the forwarding rule. This parameter is reserved, and the default value is **true**.
type	No	String	Specifies the match type of a forwarding rule. The value can be one of the following: ● **HOST_NAME**: matches the domain name in the request. ● **PATH**: matches the path in the request. The match type of forwarding rules in a forwarding policy must be unique.
compare_type	No	String	Specifies the match mode. The options are as follows: When **type** is set to **HOST_NAME**, the value of this parameter can only be the following: ● **EQUAL_TO**: indicates exact match. When **type** is set to **PATH**, the value of this parameter can be one of the following: ● **REGEX**: indicates regular expression match. ● **STARTS_WITH**: indicates prefix match. ● **EQUAL_TO**: indicates exact match.

Paramet er	Mand atory	Type	Description
invert	No	Boolea n	Specifies whether reverse matching is supported. The value can be **true** or **false**. The default value is **false**. This parameter is reserved.
key	No	String	Specifies the key of the match content. The default value is **null**. This parameter is reserved. The value contains a maximum of 255 characters.
value	No	String	Specifies the value of the match content. The value contains a maximum of 128 characters. ● When **type** is set to **HOST_NAME**, the value can contain a maximum of 100 characters that contain only letters, digits, hyphens (-), and periods (.), and must start with a letter or digit. ● When **type** is set to **PATH**, the value can contain a maximum of 128 characters. When **compare_type** is set to **STARTS_WITH** or **EQUAL_TO**, the value must start with a slash (/) and can contain only letters, digits, and special characters _~';@^-%#&$.*+?,=!:| \/()[]{}
provision ing_statu s	No	String	This parameter is reserved, and its value can only be **ACTIVE**. It specifies the provisioning status of the forwarding rule.

Response

Table 7-168 Response parameters

Parameter	Type	Description
rules	Array	Lists the forwarding rules. For details, see **Table 7-169**.
rules_links	Array	Provides links to the previous or next page during pagination query, respectively. This parameter exists only in the response body of pagination query. For details, see **Table 7-170**.

Table 7-169 rules parameter description

Parameter	Type	Description
id	String	Specifies the forwarding rule ID.
tenant_id	String	Specifies the ID of the project where the forwarding rule is used. The value contains a maximum of 255 characters.
admin_state_up	Boolean	Specifies the administrative status of the forwarding rule. This parameter is reserved. The value can be **true** or **false**. • **true**: Enabled • **false**: Disabled
type	String	Specifies the match type of a forwarding rule. The value can be one of the following: • **HOST_NAME**: matches the domain name in the request. • **PATH**: matches the path in the request.
compare_type	String	Specifies the match mode. The options are as follows: When **type** is set to **HOST_NAME**, the value of this parameter can only be the following: • **EQUAL_TO**: indicates exact match. When **type** is set to **PATH**, the value of this parameter can be one of the following: • **REGEX**: indicates regular expression match. • **STARTS_WITH**: indicates prefix match. • **EQUAL_TO**: indicates exact match.
invert	Boolean	Specifies whether reverse matching is supported. The value can be **true** or **false**. The default value is **false**. This parameter is reserved.
key	String	Specifies the key of the match content. The default value is **null**. This parameter is reserved. The value contains a maximum of 255 characters.

Parameter	Type	Description
value	String	Specifies the value of the match content.
		The value contains a maximum of 128 characters.
		● When **type** is set to **HOST_NAME**, the value can contain a maximum of 100 characters that contain only letters, digits, hyphens (-), and periods (.), and must start with a letter or digit.
		● When **type** is set to **PATH**, the value can contain a maximum of 128 characters. When **compare_type** is set to **STARTS_WITH** or **EQUAL_TO**, the value must start with a slash (/) and can contain only letters, digits, and special characters _~';@^-%#&$.*+?,=!:| \/()[]{}
provisioning_s tatus	String	This parameter is reserved, and its value can only be **ACTIVE**.
		It specifies the provisioning status of the forwarding rule.

Table 7-170 **rules_links** parameter description

Parameter	Type	Description
href	String	Provides links to the previous or next page during pagination query, respectively.
rel	String	Specifies the prompt of the previous or next page.
		The value can be **next** or **previous**. The value **next** indicates the href containing the URL of the next page, and **previous** indicates the href containing the URL of the previous page.

Example Request

● Example request: Querying all forwarding rules of a specific forwarding policy
GET https://{Endpoint}/v2.0/lbaas/l7policies/5ae0e1e7-5f0f-47a1-b39f-5d4c428a1586/rules

Example Response

● Example response
```
{
    "rules": [
        {
            "compare_type": "EQUAL_TO",
            "provisioning_status": "ACTIVE",
            "admin_state_up": true,
```

```
                "tenant_id": "a31d2bdcf7604c0faaddb058e1e08819",

                "invert": false,
                "value": "www.test.com",
                "key": null,
                "type": "HOST_NAME",
                "id": "67d8a8fa-b0dd-4bd4-a85b-671db19b2ef3"
            },
            {
                "compare_type": "EQUAL_TO",
                "provisioning_status": "ACTIVE",
                "admin_state_up": true,
                "tenant_id": "a31d2bdcf7604c0faaddb058e1e08819",

                "invert": false,
                "value": "/aaa.html",
                "key": null,
                "type": "PATH",
                "id": "f02b3bca-69d2-4335-a3fa-a8054e996213"
            }
        ]
        "rules_links": [
            {
            "href": "https://{Endpoint}/v2.0/lbaas/l7policies/061f461c-c7cf-47ab-9583-09be5076cd09/rules?
marker=167c1a31-bc12-4c3d-9ad1-c9bf450df4ce&page_reverse=True",
            "rel": "previous"
            }
        ]
}
```

Status Code

For details, see **Status Codes**.

7.1.7.3 Querying Details of a Forwarding Rule

Function

This API is used to query details about a forwarding rule using its ID.

URI

GET /v2.0/lbaas/l7policies/{l7policy_id}/rules/{l7rule_id}

Table 7-171 Parameter description

Parameter	Mandatory	Type	Description
l7policy_id	Yes	String	Specifies the forwarding policy ID.
l7rule_id	Yes	String	Specifies the forwarding rule ID.

Request

None

Response

Table 7-172 Response parameters

Parameter	Type	Description
rule	Object	Specifies the forwarding rule. For details, see **Table 7-173**.

Table 7-173 rule parameter description

Parameter	Type	Description
id	String	Specifies the forwarding rule ID.
tenant_id	String	Specifies the ID of the project where the forwarding rule is used. The value contains a maximum of 255 characters.
admin_state_up	Boolean	Specifies the administrative status of the forwarding rule. This parameter is reserved. The value can be **true** or **false**. ● **true**: Enabled ● **false**: Disabled
type	String	Specifies the match type of a forwarding rule. The value can be one of the following: ● **HOST_NAME**: matches the domain name in the request. ● **PATH**: matches the path in the request.
compare_type	String	Specifies the match mode. The options are as follows: When **type** is set to **HOST_NAME**, the value of this parameter can only be the following: ● **EQUAL_TO**: indicates exact match. When **type** is set to **PATH**, the value of this parameter can be one of the following: ● **REGEX**: indicates regular expression match. ● **STARTS_WITH**: indicates prefix match. ● **EQUAL_TO**: indicates exact match.

Parameter	Type	Description
invert	Boolean	Specifies whether reverse matching is supported. The value can be **true** or **false**. The default value is **false**. This parameter is reserved.
key	String	Specifies the key of the match content. The default value is **null**. This parameter is reserved. The value contains a maximum of 255 characters.
value	String	Specifies the value of the match content. The value contains a maximum of 128 characters. ● When **type** is set to **HOST_NAME**, the value can contain a maximum of 100 characters that contain only letters, digits, hyphens (-), and periods (.), and must start with a letter or digit. ● When **type** is set to **PATH**, the value can contain a maximum of 128 characters. When **compare_type** is set to **STARTS_WITH** or **EQUAL_TO**, the value must start with a slash (/) and can contain only letters, digits, and special characters _~';@^-%#&$.*+?,=!:| \/()[]{}
provisioning_status	String	This parameter is reserved, and its value can only be **ACTIVE**. It specifies the provisioning status of the forwarding rule.

Example Request

● Example request: Querying details of a forwarding rule
GET https://{Endpoint}/v2.0/lbaas/l7policies/5ae0e1e7-5f0f-47a1-b39f-5d4c428a1586/rules/67d8a8fa-b0dd-4bd4-a85b-671db19b2ef3

Example Response

● Example response
```
{
    "rule": {
        "compare_type": "EQUAL_TO",
        "provisioning_status": "ACTIVE",
        "admin_state_up": true,
        "tenant_id": "a31d2bdcf7604c0faaddb058e1e08819",

        "invert": false,
        "value": "/index.html",
```

```
        "key": null,
        "type": "PATH",
        "id": "67d8a8fa-b0dd-4bd4-a85b-671db19b2ef3"
    }
}
```

Status Code

For details, see **Status Codes**.

7.1.7.4 Updating a Forwarding Rule

Function

This API is used to update a forwarding rule. You can change the mode that how traffic is distributed by updating the forwarding rule.

URI

PUT /v2.0/lbaas/l7policies/{l7policy_id}/rules/{l7rule_id}

Table 7-174 Parameter description

Parameter	Mandatory	Type	Description
l7policy_id	Yes	String	Specifies the forwarding policy ID.
l7rule_id	Yes	String	Specifies the forwarding rule ID.

Request

Table 7-175 Parameter description

Parameter	Mandatory	Type	Description
rule	Yes	Object	Specifies the forwarding rule. For details, see **Table 7-176**.

Table 7-176 rule parameter description

Parameter	Mandatory	Type	Description
compare_type	No	String	Specifies the match mode. The options are as follows: When **type** is set to **HOST_NAME**, the value of this parameter can only be the following: ● **EQUAL_TO**: indicates exact match. When **type** is set to **PATH**, the value of this parameter can be one of the following: ● **REGEX**: indicates regular expression match. ● **STARTS_WITH**: indicates prefix match. ● **EQUAL_TO**: indicates exact match.
admin_state_up	No	Boolean	Specifies the administrative status of the forwarding rule. This parameter is reserved, and the default value is **true**.
invert	No	Boolean	Specifies whether reverse matching is supported. The value can be **true** or **false**. The default value is **false**. This parameter is reserved.
key	No	String	Specifies the key of the match content. The default value is **null**. This parameter is reserved. The value contains a maximum of 255 characters.

Parameter	Mandat ory	Type	Description
value	No	String	Specifies the value of the match content. The value cannot contain spaces. The value contains a maximum of 128 characters. ● When **type** is set to **HOST_NAME**, the value can contain a maximum of 100 characters that contain only letters, digits, hyphens (-), and periods (.), and must start with a letter or digit. ● When **type** is set to **PATH**, the value can contain a maximum of 128 characters. When **compare_type** is set to **STARTS_WITH** or **EQUAL_TO**, the value must start with a slash (/) and can contain only letters, digits, and special characters _~';@^-%#&$.* +?,=!:| \/()[]{}

Response

Table 7-177 Response parameters

Parameter	Type	Description
rule	Object	Specifies the forwarding rule. For details, see **Table 7-178**.

Table 7-178 rule parameter description

Parameter	Type	Description
id	String	Specifies the forwarding rule ID.
tenant_id	String	Specifies the ID of the project where the forwarding rule is used. The value contains a maximum of 255 characters.
admin_state_u p	Boolean	Specifies the administrative status of the forwarding rule. This parameter is reserved. The value can be **true** or **false**. ● **true**: Enabled ● **false**: Disabled

Parameter	Type	Description
type	String	Specifies the match type of a forwarding rule. The value can be one of the following: ● **HOST_NAME**: matches the domain name in the request. ● **PATH**: matches the path in the request.
compare_type	String	Specifies the match mode. The options are as follows: When **type** is set to **HOST_NAME**, the value of this parameter can only be the following: ● **EQUAL_TO**: indicates exact match. When **type** is set to **PATH**, the value of this parameter can be one of the following: ● **REGEX**: indicates regular expression match. ● **STARTS_WITH**: indicates prefix match. ● **EQUAL_TO**: indicates exact match.
invert	Boolean	Specifies whether reverse matching is supported. The value can be **true** or **false**. The default value is **false**. This parameter is reserved.
key	String	Specifies the key of the match content. The default value is **null**. This parameter is reserved. The value contains a maximum of 255 characters.
value	String	Specifies the value of the match content. The value contains a maximum of 128 characters. ● When **type** is set to **HOST_NAME**, the value can contain a maximum of 100 characters that contain only letters, digits, hyphens (-), and periods (.), and must start with a letter or digit. ● When **type** is set to **PATH**, the value can contain a maximum of 128 characters. When **compare_type** is set to **STARTS_WITH** or **EQUAL_TO**, the value must start with a slash (/) and can contain only letters, digits, and special characters _~';@^-%#&$.*+?,=!:| \/()[]{}

Parameter	Type	Description
provisioning_status	String	This parameter is reserved, and its value can only be **ACTIVE**. It specifies the provisioning status of the forwarding rule.

Example Request

- Example request: Updating a forwarding rule

```
PUT https://{Endpoint}/v2.0/lbaas/l7policies/5ae0e1e7-5f0f-47a1-b39f-5d4c428a1586/rules/c6f457b8-
bf6f-45d7-be5c-a3226945b7b1


{
    "rule": {
        "compare_type": "STARTS_WITH",
        "value": "/ccc.html"
    }
}
```

Example Response

- Example response

```
{
    "rule": {
        "compare_type": "STARTS_WITH",
        "provisioning_status": "ACTIVE",
        "admin_state_up": true,
        "tenant_id": "a31d2bdcf7604c0faaddb058e1e08819",

        "invert": false,
        "value": "/ccc.html",
        "key": null,
        "type": "PATH",
        "id": "c6f457b8-bf6f-45d7-be5c-a3226945b7b1"
    }
}
```

Status Code

For details, see **Status Codes**.

7.1.7.5 Deleting a Forwarding Rule

Function

This API is used to delete a specific forwarding rule.

URI

DELETE /v2.0/lbaas/l7policies/{l7policy_id}/rules/{l7rule_id}

Table 7-179 Parameter description

Parameter	Mand atory	Type	Description
l7policy_id	Yes	String	Specifies the forwarding policy ID.
l7rule_id	Yes	String	Specifies the forwarding rule ID.

Request

None

Response

None

Example Request

- Example request: Deleting a forwarding rule
  DELETE https://{Endpoint}/v2.0/lbaas/l7policies/5ae0e1e7-5f0f-47a1-b39f-5d4c428a1586/rules/
  c6f457b8-bf6f-45d7-be5c-a3226945b7b1

Example Response

- Example response
  None

Status Code

For details, see **Status Codes**.

7.1.8 Whitelist

7.1.8.1 Adding a Whitelist

Function

This API is used to add a whitelist to control access to a specific listener. After a whitelist is added, only IP addresses in the whitelist can access the listener.

URI

POST /v2.0/lbaas/whitelists

Request

Table 7-180 Parameter description

Parameter	Manda tory	Type	Description
whitelist	Yes	Object	Specifies the whitelist. For details, see **Table 7-181**.

Table 7-181 whitelist parameter description

Parameter	Mand atory	Type	Description
tenant_id	No	String	Specifies the ID of the project where the whitelist is used. The value must be the same as the value of **project_id** in the token. The value contains a maximum of 255 characters.
listener_id	Yes	String	Specifies the listener ID. Only one whitelist can be created for a listener.
enable_whitelist	No	Boolean	Specifies whether to enable access control. **true**: Access control is enabled. **false**: Access control is disabled. The default value is **true**.
whitelist	No	String	Specifies the IP addresses in the whitelist. Use commas (,) to separate multiple IP addresses. You can specify an IP address, for example, 192.168.11.1. You can also specify an IP address range, for example, 192.168.0.1/24. The default value is an empty string, that is, **""**.

Response

Table 7-182 Response parameters

Parameter	Type	Description
whitelist	Object	Specifies the whitelist. For details, see **Table 7-183**.

Table 7-183 whitelist parameter description

Parameter	Type	Description
id	String	Specifies the whitelist ID.
tenant_id	String	Specifies the ID of the project where the whitelist is used. The value contains a maximum of 255 characters.
listener_id	String	Specifies the ID of the listener to which the whitelist is added.
enable_whitelist	Boolean	Specifies whether to enable access control. **true**: Access control is enabled. **false**: Access control is disabled.
whitelist	String	Specifies the IP addresses in the whitelist.

Example Request

- Example request: Adding a whitelist
  POST https://{Endpoint}/v2.0/lbaas/whitelists

```
{
    "whitelist": {
        "listener_id": "eabfefa3fd1740a88a47ad98e132d238",
        "enable_whitelist": true,
        "whitelist": "192.168.11.1,192.168.0.1/24,192.168.201.18/8,100.164.0.1/24"
    }
}
```

Example Response

- Example response
```
{
    "whitelist": {
        "id": "eabfefa3fd1740a88a47ad98e132d238",
        "listener_id": "eabfefa3fd1740a88a47ad98e132d238",
        "tenant_id": "eabfefa3fd1740a88a47ad98e132d238",
        "enable_whitelist": true,
        "whitelist": "192.168.11.1,192.168.0.1/24,192.168.201.18/8,100.164.0.1/24"
    }
}
```

Status Code

For details, see **Status Codes**.

7.1.8.2 Querying Whitelists

Function

This API is used to query the whitelists. Filter query and pagination query are supported. Unless otherwise specified, exact match is applied.

Constraints

Parameters **marker**, **limit**, and **page_reverse** are used for pagination query. Parameters **marker** and **page_reverse** take effect only when they are used together with parameter **limit**.

URI

GET /v2.0/lbaas/whitelists

Request

Table 7-184 Parameter description

Parameter	Mandatory	Type	Description
marker	No	String	Specifies the ID of the whitelist from which pagination query starts, that is, the ID of the last whitelist on the previous page. This parameter must be used together with **limit**.
limit	No	Integer	Specifies the number of whitelists on each page. If this parameter is not set, all whitelists are queried by default.
page_reverse	No	Boolean	Specifies the page direction. The value can be **true** or **false**, and the default value is **false**. The last page in the list requested with **page_reverse** set to **false** will not contain the "next" link, and the last page in the list requested with **page_reverse** set to **true** will not contain the "previous" link. This parameter must be used together with **limit**.

Parameter	Mandatory	Type	Description
id	No	String	Specifies the whitelist ID.
tenant_id	No	String	Specifies the ID of the project where the whitelist is used. The value contains a maximum of 255 characters.
listener_id	No	String	Specifies the ID of the listener to which the whitelist is added.
enable_whitelist	No	Boolean	Specifies whether to enable access control. **true**: Access control is enabled. **false**: Access control is disabled.
whitelist	No	String	Specifies the IP addresses in the whitelist.

Response

Table 7-185 Response parameters

Parameter	Type	Description
whitelists	Array	Lists the whitelists. For details, see **Table 7-186**.
whitelists_links	Array	Provides links to the previous or next page during pagination query, respectively. This parameter exists only in the response body of pagination query. For details, see **Table 7-187**.

Table 7-186 whitelist parameter description

Parameter	Type	Description
id	String	Specifies the whitelist ID.
tenant_id	String	Specifies the ID of the project where the whitelist is used. The value contains a maximum of 255 characters.
listener_id	String	Specifies the ID of the listener to which the whitelist is added.

Parameter	Type	Description
enable_whitelist	Bool	Specifies whether to enable access control. **true**: Access control is enabled. **false**: Access control is disabled.
whitelist	String	Specifies the IP addresses in the whitelist.

Table 7-187 whitelists_links parameter description

Parameter	Type	Description
href	String	Provides links to the previous or next page during pagination query, respectively.
rel	String	Specifies the prompt of the previous or next page. The value can be **next** or **previous**. The value **next** indicates the href containing the URL of the next page, and **previous** indicates the href containing the URL of the previous page.

Example Request

- Example request 1: Querying all whitelists
  ```
  GET https://{Endpoint}/v2.0/lbaas/whitelists
  ```

- Example request 2: Querying the whitelists added to listener eabfefa3fd1740a88a47ad98e132d230
  ```
  GET https://{Endpoint}/v2.0/lbaas/whitelists?listener_id=eabfefa3fd1740a88a47ad98e132d230
  ```

Example Response

- Example response 1
  ```
  {
      "whitelists": [
          {
              "id": "eabfefa3fd1740a88a47ad98e132d238",
              "listener_id": "eabfefa3fd1740a88a47ad98e132d238",
              "tenant_id": "eabfefa3fd1740a88a47ad98e132d238",
              "enable_whitelist": true,
              "whitelist": "192.168.11.1,192.168.0.1/24,192.168.201.18/8,100.164.0.1/24"
          },
          {
              "id": "eabfefa3fd1740a88a47ad98e132d326",
              "listener_id": "eabfefa3fd1740a88a47ad98e132d327",
              "tenant_id": "eabfefa3fd1740a88a47ad98e132d436",
              "enable_whitelist": true,
              "whiltelist": "192.168.12.1,192.168.1.1/24,192.168.203.18/8,100.164.5.1/24"
          }
      ]
  }
  ```

- Example response 2
  ```
  {
      "whitelists": [
          {
  ```

```
        "id": "eabfefa3fd1740a88a47ad98e132d238",
        "listener_id": "eabfefa3fd1740a88a47ad98e132d230",
        "tenant_id": "eabfefa3fd1740a88a47ad98e132d239",
        "enable_whitelist": true,
        "whitelist": "192.168.11.1,192.168.0.1/24,192.168.201.18/8,100.164.0.1/24"
      },
      {
        "id": "eabfefa3fd1740a88a47ad98e132d326",
        "listener_id": "eabfefa3fd1740a88a47ad98e132d327",
        "tenant_id": "eabfefa3fd1740a88a47ad98e132d439",
        "enable_whitelist": true,
        "whiltelist": "192.168.12.1,192.168.1.1/24,192.168.203.18/8,100.164.5.1/24"
      }
    ]
}
```

Status Code

For details, see **Status Codes**.

7.1.8.3 Querying Details of a Whitelist

Function

This API is used to query details about a whitelist using its ID.

URI

GET /v2.0/lbaas/whitelists/{whitelist_id}

Table 7-188 Parameter description

Parameter	Mandatory	Type	Description
whitelist_id	Yes	String	Specifies the whitelist ID.

Request

None

Response

Table 7-189 Response parameters

Parameter	Type	Description
whitelist	Object	Specifies the whitelist. For details, see **Table 7-190**.

Table 7-190 whitelist parameter description

Parameter	Type	Description
id	String	Specifies the whitelist ID.
tenant_id	String	Specifies the ID of the project where the forwarding rule is used. The value contains a maximum of 255 characters.
listener_id	String	Specifies the ID of the listener to which the whitelist is added.
enable_whitelist	Boolean	Specifies whether to enable access control. **true**: Access control is enabled. **false**: Access control is disabled.
whitelist	String	Specifies the IP addresses in the whitelist.

Example Request

- Example request: Querying details of a whitelist
  ```
  GET https://{Endpoint}/v2.0/lbaas/whitelists/09e64049-2ab0-4763-a8c5-f4207875dc3e
  ```

Example Response

- Example response
  ```
  {
      "whitelist": {
          "id": "eabfefa3fd1740a88a47ad98e132d238",
          "listener_id": "eabfefa3fd1740a88a47ad98e132d238",
          "tenant_id": "eabfefa3fd1740a88a47ad98e132d238",
          "enable_whitelist": true,
          "whitelist": "192.168.11.1,192.168.0.1/24,192.168.201.18/8,100.164.0.1/24"
      }
  }
  ```

Status Code

For details, see **Status Codes**.

7.1.8.4 Updating a Whitelist

Function

This API is used to update a whitelist. You can enable or disable the whitelist function or change IP addresses in the whitelist. If you change IP addresses in the whitelist, it will be deleted, and a new one is generated.

URI

PUT /v2.0/lbaas/whitelists/{whitelist_id}

Table 7-191 Parameter description

Parameter	Mandatory	Type	Description
whitelist_id	Yes	String	Specifies the whitelist ID.

Request

Table 7-192 Parameter description

Parameter	Mandatory	Type	Description
whitelist	Yes	Object	Specifies the whitelist. For details, see **Table 7-193**.

Table 7-193 **whitelist** parameter description

Parameter	Mandatory	Type	Description
enable_whitelist	No	Boolean	Specifies whether to enable access control. **true**: Access control is enabled. **false**: Access control is disabled. The default value is **true**.
whitelist	No	String	Specifies the IP addresses in the whitelist. Use commas (,) to separate multiple IP addresses. You can specify an IP address, for example, 192.168.11.1. You can also specify an IP address range, for example, 192.168.0.1/24. The default value is an empty string, that is, **""**.

Response

Table 7-194 Parameter description

Parameter	Type	Description
whitelist	Object	Specifies the whitelist. For details, see **Table 7-195**.

Table 7-195 whitelist parameter description

Parameter	Type	Description
id	String	Specifies the whitelist ID.
tenant_id	String	Specifies the ID of the project where the whitelist is used. The value contains a maximum of 255 characters.
listener_id	String	Specifies the ID of the listener to which the whitelist is added.
enable_whitelist	Boolean	Specifies whether to enable access control. **true**: Access control is enabled. **false**: Access control is disabled.
whitelist	String	Specifies the IP addresses in the whitelist.

Example Request

- Example request: Updating a whitelist
```
PUT https://{Endpoint}/v2.0/lbaas/whitelists/dcaf46f1-037c-4f63-a31f-e0c4c18032c7

{
    "whitelist": {
        "enable_whitelist": true,
        "whitelist": "192.168.11.1,192.168.0.1/24,192.168.201.18/8,100.164.0.1/24"
    }
}
```

Example Response

- Example response
```
{
    "whitelist": {
        "id": "eabfefa3fd1740a88a47ad98e132d238",
        "listener_id": "eabfefa3fd1740a88a47ad98e132d238",
        "tenant_id": "eabfefa3fd1740a88a47ad98e132d238",
        "enable_whitelist": true,
        "whitelist": "192.168.11.1,192.168.0.1/24,192.168.201.18/8,100.164.0.1/24"
    }
}
```

Status Code

For details, see **Status Codes**.

7.1.8.5 Deleting a Whitelist

Function

This API is used to delete a specific whitelist.

URI

DELETE /v2.0/lbaas/whitelists/{whitelist_id}

Table 7-196 Parameter description

Parameter	Mandatory	Type	Description
whitelist_id	Yes	String	Specifies the whitelist ID.

Request

None

Response

None

Example Request

- Example request: Deleting a whitelist
  DELETE https://{Endpoint}/v2.0/lbaas/whitelists/35cb8516-1173-4035-8dae-0dae3453f37f

Example Response

- Example response 1

None

Status Code

For details, see **Status Codes**.

7.1.9 Certificate

7.1.9.1 Creating a Certificate

Function

This API is used to create a certificate. After a certificate is bound to a listener, the load balancer authenticates the client using this certificate, and backend servers can establish secure and reliable HTTP connections with the client.

URI

POST /v2.0/lbaas/certificates

Request

Table 7-197 Parameter description

Parameter	Manda tory	Type	Description
tenant_id	No	Strin g	Specifies the ID of the project where the certificate is used. The value must be the same as the value of **project_id** in the token. The value contains a maximum of 255 characters.
admin_state_u p	No	Bool ean	Specifies the administrative status of the certificate. This parameter is reserved, and the default value is **true**.
name	No	Strin g	Specifies the certificate name. The value contains a maximum of 255 characters.
description	No	Strin g	Provides supplementary information about the certificate. The value contains a maximum of 255 characters.
type	No	Strin g	Specifies the certificate type. The default value is **server**. The value can be one of the following: ● **server**: indicates the server certificate. ● **client**: indicates the CA certificate.

Parameter	Mandatory	Type	Description
domain	No	String	Specifies the domain name associated with the server certificate. The default value is **null**. The value contains a maximum of 100 characters. The value can be one of the following: ● A common domain name contains 0 to 100 characters and consists of several labels separated by dots (.). Each label can contain a maximum of 63 characters, including letters, digits, and hyphens (-), and must start and end with a letter or digit. ● In addition to the requirements for common domain names, a wildcard domain name can start with an asterisk (*). **NOTE** This parameter is valid only when **type** is set to **server**.
private_key	No	String	Specifies the private key of the server certificate. The value must be PEM encoded. ● This parameter will be ignored if **type** is set to **client**. A CA server can still be created and used normally. This parameter will be left blank even if you enter a private key that is not PEM encoded. ● This parameter is valid and mandatory only when **type** is set to **server**. If you enter an invalid private key, an error is returned.
certificate	Yes	String	Specifies the public key of the server certificate or CA certificate used to authenticate the client. The value of parameter **type** determines whether a public key or CA certificate is required. The public key is in PEM format.

Response

Table 7-198 Parameter description

Parameter	Type	Description
id	String	Specifies the certificate ID.
tenant_id	String	Specifies the ID of the project where the certificate is used. The value contains a maximum of 255 characters.
admin_state_up	Boolean	Specifies the administrative status of the certificate. This parameter is reserved. The value can be **true** or **false**. ● **true**: Enabled ● **false**: Disabled
name	String	Specifies the certificate name. The value contains a maximum of 255 characters.
description	String	Provides supplementary information about the certificate. The value contains a maximum of 255 characters.
type	String	Specifies the certificate type. The value can be one of the following: ● **server**: indicates the server certificate. ● **client**: indicates the CA certificate.
domain	String	Specifies the domain name associated with the server certificate. The value contains a maximum of 100 characters.
private_key	String	Specifies the private key of the server certificate in PEM format.
certificate	String	Specifies the public key of the server certificate or CA certificate used to authenticate the client. The value of parameter **type** determines whether a public key or CA certificate is required. Both types of certificates are in PEM format.
expire_time	String	Specifies the time when the certificate expires. The UTC time is in *YYYY-MM-DDTHH:MM:SS* format.

Parameter	Type	Description
create_time	String	Specifies the time when the certificate was created. The UTC time is in *YYYY-MM-DDTHH:MM:SS* format.
update_time	String	Specifies the time when the certificate was updated. The UTC time is in *YYYY-MM-DDTHH:MM:SS* format.

Example Request

- Example request: Creating a certificate

POST https://{Endpoint}/v2.0/lbaas/certificates

```
{
    "name": "https_certificate",
    "description": "description for certificate",
    "type": "server",
    "domain": "www.elb.com",
    "private_key":
"-----BEGIN PRIVATE KEY-----
\nMIIEvgIBADANBgkqhkiG9w0BAQEFAASCBKgwggSkAgEAAoIBAQDQVAbOLe5xNf4M
\n253Wn9vhdUzojetjv4J+B7kYwsMhRcgdcJ8KCnX1nfzTvI2ksXlTQ2o9BkpStnPe\ntB4s32ZiJRMlk
+61iUUMNsHwK2WBX57JT3JgmyVbH8GbmRY0+H3sH1i72luna7rM
\nMD30gLh6QoP3cq7PGWcuZKV7hjd1tjCTQukwMvqV8Icq39buNpIgDOWzEP5AzqXt
\nCOFYn6RTH5SRug4hKNN7sT1eYMslHu7wtEBDKVgrLjOCe/W2f8rLT1zEsoAW2Chl\nZAPYUBkl/
0XuTWRg3CohPPcI+UtlRSfvLDeeQ460swjbwgS/RbJh3sIwlCRLU08k\nEo04Z9H/
AgMBAAECggEAEIeaQqHCWZk/HyYN0Am/GJSGFa2tD60SXY2fUieh8/Hl
\nfvCArftGgMaYWPSNCJRMXB7tPwpQu19esjz4Z/cR2Je4fTLPrffGUsHFgZjv5OQB
\nZVe4a5Hj1OcgJYhwCqPs2d9i2wToYNBbcfgh8lSETq8YaXngBO6vES9LMhHkNKKr
\nciu9YkInNEHu6uRJ5g/eGGX3KQynTvVIhnOVGAJvjTXcoU6fm7gYdHAD6jk9lc9M
\nEGpfYI6AdHIwFZcT/RNAxhP82lg2gUJSgAu66FfDjMwQXKbafKdP3zq4Up8a7Ale\nkrguPtfV1vWklg
+bUFhgGaiAEYTpAUN9t2DVIiijgQKBgQDnYMMsaF0r557CM1CT
\nXUqgCZo8MKeV2jf2drlxRRwRl33SksQbzAQ/qrLdT7GP3sCGqvkxWY2FPdFYf8kx
\nGcCeZPcleZYCQAM41pjtsaM8tVbLWVR8UtGBuQoPSph7JNF3Tm/JH/fbwjpjP7dt
\nJ7n8EzkRUNE6aIMHOFEeych/PQKBgQDmf1bMogx63rTcwQ0PEZ9Vt7mTgKYK4aLr
\niWgTWHXPZxUQaYhpjXo6+lMI6DpExiDgBAkMzJGIvS7yQiYWU+wthAr9urbWYdGZ
\nlS6VjoTkF6r7VZoILXX0fbuXh6lm8K8IQRfBpJff56p9phMwaBpDNDrfpHB5utBU
\nxs40yIdp6wKBgQC69Cp/xUwTX7GdxQzEJctYiKnBHKcspAg38zJf3bGSXU/jR4eB
\n1lVQhELGI9CbKSdzKM71GyEImix/T7FnJSHIWlho1qVo6AQyduNWnAQD15pr8KAd
\nXGXAZZ1FQcb3KYa+2fflERmazdOTwjYZ0tGqZnXkEeMdSLkmqlCRigWhGQKBgDak\n/
735uP20KKqhNehZpC2dJei7OiIgRhCS/dKASUXHSW4fptBnUxACYocdDxtY4Vha\nfI7FPMdvGl8ioYbvlHFh
+X0Xs9r1S8yeWnHoXMb6eXWmYKMJrAoveLa+2cFm1Agf
\n7nLhA4R4lqm9IpV6SKegDUkR4fxp9pPyodZPqBLLAoGBAJkD4wHW54Pwd4Ctfk9o
\njHjWB7pQlUYpTZO9dm+4fpcCMn9Okf43AE2yAOaaP94GdzdDJkxfciXKcsYr9IIuk
\nfaoXgjKR7p1zERiWZuFF63SB4aiyX1H7IX0MwHDZQO38a5gZaOm/BUlGKMWXzuEd\n3fy
+1rCUwzOp9LSjtJYf4ege\n-----END PRIVATE KEY-----",
    "certificate":
"-----BEGIN CERTIFICATE-----
\nMIIC4TCCAcmgAwIBAgICEREwDQYJKoZIhvcNAQELBQAwFzEVMBMGA1UEAxMMTXlD
\nb21wYW55IENBMB4XDTE4MDcwMjEzMjU0NloXDTQ1MTExNzEzMjU0NowFDESMBAG
\nA1UEAwwJbG9jYWxob3N0MIIBIjANBgkqhkiG9w0BAQEFAAOCAQ8AMIIBCgKCAQEA\n0FQGzi3ucTX
+DNud1p/
b4XVM6I3rY7+Cfge5GMLDIUXIHXCfCgp19Z3807yNpLF5\nU0NqPQZKUrZz3rQeLN9myiUTJZPutYlFDDb
B8CtlgV+eyU9yYJslWx/
Bm5kWNPh9\n7B9Yu9pbp2u6zDA99IC4ekKD93KuzxlnLmSle4Y3dbYwk0LpMDL6lfCHKt/W7jaS
\nIAzlsxD+QM6l7QjhWJ+kUx+UkboOISjTe7E9XmDLJR7u8LRAQyIYKy4zgnv1tn/K
\nny09cxLKAFtgoZWQD2FAZJf9F7k1kYNwqITz3CPlLZUUn7yw3nkOOtLMI28IEv0Wy
\nYd7CMJQkS1NPJBKNOGfR/wIDAQABozowODAhBgNVHREEGjAYggpkb21haW4uY29t
\nhwQKuUvJhwR/AAABMBMGA1UdJQQMMAoGCCsGAQUFBwMBMA0GCSqGSIb3DQEBCwUA
```

\nA4IBAQA8lMQJxaTey7EjXtRLSVlEAMftAQPG6jijNQuvIBQYUDauDT4W2XUZ5wAn
\njiOyQ83va672K1G9s8n6xlH+xwwdSNnozaKzC87vwSeZKIOdl9I5I98TGKI6OoDa
\nezmzCwQYtHBMVQ4c7Ml8554Ft1mWSt4dMAK2rzNYjvPRLYlzp1HMnI6hkjPk4PCZ
\nwKnha0dlScati9CCt3UzXSNJOSLalKdHErH08Iqd+1BchScxCfk0xNITn1HZZGml\n
+vbmunok3A2lucI14rnsrcbkGYqxGikySN6B2cRLBDK4Y3wChiW6NVYtVqcx5/mZ\niYsGDVN
+9QBd0eYUHce+77s96i3l\n-----END CERTIFICATE-----"
}

Example Response

- Example response

```
{
    "domain": "www.elb.com",
    "expire_time": "2045-11-17 13:25:47",
    "update_time": "2017-12-04 06:49:13",
    "create_time": "2017-12-04 06:49:13",
    "id": "3d8a7a02f87a40ed931b719edfe75451",
    "admin_state_up": true,
    "private_key": "-----BEGIN PRIVATE KEY-----
\nMIIEvgIBADANBgkqhkiG9w0BAQEFAASCBKgwggSkAgEAAoIBAQDQVAbOLe5xNf4M
\n253Wn9vhdUzojetjv4J+B7kYwsMhRcgdcJ8KCnX1nfzTvI2ksXlTQ2o9BkpStnPe\ntB4s32ZiJRMlk
+61iUUMNsHwK2WBX57JT3JgmyVbH8GbmRY0+H3sH1i72luna7rM
\nMD30gLh6QoP3cq7PGWcuZKV7hjd1tjCTQukwMvqV8Icq39buNpIgDOWzEP5AzqXt
\nCOFYn6RTH5SRug4hKNN7sT1eYMslHu7wtEBDKVgrLjOCe/W2f8rLT1zEsoAW2Chl\nZAPYUBkl/
0XuTWRg3CohPPcl+UtlRSfvLDeeQ460swjbwgS/RbJh3sIwlCRLU08k\nEo04Z9H/
AgMBAAECggEAEIeaQqHCWZk/HyYN0Am/GJSGFa2tD60SXY2fUieh8/Hl
\nfvCArftGgMaYWPSNCJRMXB7tPwpQu19esjz4Z/cR2Je4fTLPrffGUsHFgZjv5OQB
\nZVe4a5Hj1OcgJYhwCqPs2d9i2wToYNBbcfgh8lSETq8YaXngBO6vES9LMhHkNKKr
\nciu9YkInNEHu6uRJ5g/eGGX3KQynTvVIhnOVGAJvjTXcoU6fm7gYdHAD6jk9lc9M
\nEGpfYI6AdHIwFZcT/RNAxhP82lg2gUJSgAu66FfDjMwQXKbafKdP3zq4Up8a7Ale\nkrguPtfV1vWklg
+bUFhgGaiAEYTpAUN9t2DVIiijgQKBgQDnYMMsaF0r557CM1CT
\nXUqgCZo8MKeV2jf2drlxRRwRl33SksQbzAQ/qrLdT7GP3sCGqvkxWY2FPdFYf8kx
\nGcCeZPcIeZYCQAM41pjtsaM8tVbLWVR8UtGBuQoPSph7JNF3Tm/JH/fbwjpjP7dt
\nJ7n8EzkRUNE6aIMHOFEeych/PQKBgQDmf1bMogx63rTcwQ0PEZ9Vt7mTgKYK4aLr
\niniWgTWHXPZxUQaYhpjXo6+lMI6DpExiDgBAkMzJGIvS7yQiYWU+wthAr9urbWYdGZ
\nlS6VjoTkF6r7VZoILXX0fbuXh6lm8K8IQRfBpJff56p9phMwaBpDNDrfpHB5utBU
\nxs40yIdp6wKBgQC69Cp/xUwTX7GdxQzEJctYiKnBHKcspAg38zJf3bGSXU/jR4eB
\n1lVQhELGI9CbKSdzKM71GyEImix/T7FnJSHIWlho1qVo6AQyduNWnAQD15pr8KAd
\nXGXAZZ1FQcb3KYa+2fflERmazdOTwjYZ0tGqZnXkEeMdSLkmqlCRigWhGQKBgDak\n/
735uP20KKqhNehZpC2dJei7OiIgRhCS/dKASUXHSW4fptBnUxACYocdDxtY4Vha\nfI7FPMdvGl8ioYbvlHFh
+X0Xs9r1S8yeWnHoXMb6eXWmYKMJrAoveLa+2cFm1Agf
\n7nLhA4R4lqm9IpV6SKegDUkR4fxp9pPyodZPqBLLAoGBAJkD4wHW54Pwd4Ctfk9o
\njHjWB7pQlUYpTZO9dm+4fpCMn9Okf43AE2yAOaAP94GdzdDJkxfciXKcsYr9IIuk
\nfaoXgjKR7p1zERiWZuFF63SB4aiyX1H7IX0MwwHDZQO38a5gZaOm/BUlGKMWXzuEd\n3fy
+1rCUwzOp9LSjtJYf4ege\n-----END PRIVATE KEY-----",
    "tenant_id": "930600df07ac4f66964004041bd3deaf",
    "type": "server",
    "certificate": "-----BEGIN CERTIFICATE-----
\nMIIC4TCCAcmgAwIBAgICEREwDQYJKoZIhvcNAQELBQAwFzEVMBMGA1UEAxMMTXlD
\nb21wYW55IENBMB4XDTE4MDcwMjEzMjU0N1oXDTQ1MTExNzEzMjU0N1owFDESMBAG
\nA1UEAwwJbG9jYWxob3N0MIIBIjANBgkqhkiG9w0BAQEFAAOCAQ8AMIIBCgKCAQEA\n0FQGzi3ucTX
+DNud1p/
b4XVM6I3rY7+Cfge5GMLDIUXIHXCfCgp19Z3807yNpLF5\nU0NqPQZKUrZz3rQeLN9mYiUTJZPutYlFDDb
B8CtlgV+eyU9yYJslWx/
Bm5kWNPh9\n7B9Yu9pbp2u6zDA99IC4ekKD93KuzxlnLmSle4Y3dbYwk0LpMDL6lfCHKt/W7jaS
\nIAzlsxD+QM6l7QjhWJ+kUx+UkboOISjTe7E9XmDLJR7u8LRAQylYKy4zgnv1tn/K
\nny09cxLKAFtgoZWQD2FAZJf9F7k1kYNwqITz3CPlLZUUn7yw3nkOOtLMI28IEv0Wy
\nYd7CMJQkS1NPJBKNOGfR/wIDAQABozowODAhBgNVHREEGjAYggpkb21haW4uY29t
\nhwQKuUvJhwR/AAABMBMGA1UdJQQMMAoGCCsGAQUFBwMBMA0GCSqGSIb3DQEBCwUA
\nA4IBAQA8lMQJxaTey7EjXtRLSVlEAMftAQPG6jijNQuvIBQYUDauDT4W2XUZ5wAn
\njiOyQ83va672K1G9s8n6xlH+xwwdSNnozaKzC87vwSeZKIOdl9I5I98TGKI6OoDa
\nezmzCwQYtHBMVQ4c7Ml8554Ft1mWSt4dMAK2rzNYjvPRLYlzp1HMnI6hkjPk4PCZ
\nwKnha0dlScati9CCt3UzXSNJOSLalKdHErH08Iqd+1BchScxCfk0xNITn1HZZGml\n
+vbmunok3A2lucI14rnsrcbkGYqxGikySN6B2cRLBDK4Y3wChiW6NVYtVqcx5/mZ\niYsGDVN
+9QBd0eYUHce+77s96i3l\n-----END CERTIFICATE-----",
    "name": "https_certificate",
    "description": "description for certificate"
}
```

Status Code

For details, see **Status Codes**.

7.1.9.2 Querying Certificates

Function

This API is used to query all the certificates. Filter query and pagination query are supported. Unless otherwise specified, exact match is applied.

Constraints

Parameters **marker**, **limit**, and **page_reverse** are used for pagination query. Parameters **marker** and **page_reverse** take effect only when they are used together with parameter **limit**.

URI

GET /v2.0/lbaas/certificates

Request

Table 7-199 Parameter description

Parameter	Mandatory	Type	Description
marker	No	String	Specifies the ID of the certificate from which pagination query starts, that is, the ID of the last certificate on the previous page. This parameter must be used together with **limit**.
limit	No	Integer	Specifies the number of certificates on each page. If this parameter is not set, all certificates are queried by default.
page_reverse	No	Boolean	Specifies the page direction. The value can be **true** or **false**, and the default value is **false**. The last page in the list requested with **page_reverse** set to **false** will not contain the "next" link, and the last page in the list requested with **page_reverse** set to **true** will not contain the "previous" link. This parameter must be used together with **limit**.

Parameter	Mandatory	Type	Description
id	No	String	Specifies the certificate ID.
name	No	String	Specifies the certificate name. The value contains a maximum of 255 characters.
description	No	String	Provides supplementary information about the certificate. The value contains a maximum of 255 characters.
type	No	String	Specifies the certificate type. The default value is **server**. The value can be one of the following: • **server**: indicates the server certificate. • **client**: indicates the CA certificate.
domain	No	String	Specifies the domain name associated with the server certificate. The default value is **null**. The value contains a maximum of 100 characters. The value can be one of the following: • A common domain name contains 0 to 100 characters and consists of several labels separated by dots (.). Each label can contain a maximum of 63 characters, including letters, digits, and hyphens (-), and must start and end with a letter or digit. • In addition to the requirements for common domain names, a wildcard domain name can start with an asterisk (*). • This parameter is valid only when **type** is set to **server**.

Parameter	Mandatory	Type	Description
private_key	No	String	Specifies the private key of the server certificate. The value must be PEM encoded. • This parameter will be ignored if **type** is set to **client**. A CA server can still be created and used normally. This parameter will be left blank even if you enter a private key that is not PEM encoded. • This parameter is valid and mandatory only when **type** is set to **server**. If you enter an invalid private key, an error is returned.
certificate	No	String	Specifies the public key of the server certificate or CA certificate used to authenticate the client. The value of parameter **type** determines whether a public key or CA certificate is required. Both types of certificates are in PEM format.
create_time	No	String	Specifies the time when the certificate was created. The UTC time is in *YYYY-MM-DD HH:MM:SS* format.
update_time	No	String	Specifies the time when the certificate was updated. The UTC time is in *YYYY-MM-DD HH:MM:SS* format.

Response

Table 7-200 Parameter description

Parameter	Type	Description
certificates	Array	Lists the certificates. For details, see **Table 7-201**.
instance_num	Integer	Specifies the number of certificates.

Table 7-201 certificates parameter description

Parameter	Type	Description
id	String	Specifies the certificate ID.
tenant_id	String	Specifies the ID of the project where the certificate is used. The value contains a maximum of 255 characters.
admin_state_up	Boolean	Specifies the administrative status of the certificate. This parameter is reserved. The value can be **true** or **false**. ● **true**: Enabled ● **false**: Disabled
name	String	Specifies the certificate name. The value contains a maximum of 255 characters.
description	String	Provides supplementary information about the certificate. The value contains a maximum of 255 characters.
type	String	Specifies the certificate type. The value can be one of the following: ● **server**: indicates the server certificate. ● **client**: indicates the CA certificate.
domain	String	Specifies the domain name associated with the server certificate. The value contains a maximum of 100 characters.
private_key	String	Specifies the private key of the server certificate in PEM format.
certificate	String	Specifies the public key of the server certificate or CA certificate used to authenticate the client. The value of parameter **type** determines whether a public key or CA certificate is required. Both types of certificates are in PEM format.
expire_time	String	Specifies the time when the certificate expires. The UTC time is in *YYYY-MM-DD HH:MM:SS* format.

Parameter	Type	Description
create_time	String	Specifies the time when the certificate was created. The UTC time is in *YYYY-MM-DD HH:MM:SS* format.
update_time	String	Specifies the time when the certificate was updated. The UTC time is in *YYYY-MM-DD HH:MM:SS* format.

Example Request

- Request example 1: Querying all certificates
  GET https://{Endpoint}/v2.0/lbaas/certificates

- Example 2: Querying a certificate whose ID is
  ef4d341365754a959556576501791b19 or
  ed40e8ea9957488ea82de025e35b74c0
  GET https://{Endpoint}/v2.0/lbaas/certificates?
  id=ef4d341365754a959556576501791b19&id=ed40e8ea9957488ea82de025e35b74c0

Example Response

- Example response 1

```
{
    "certificates": [
        {
            "certificate": "-----BEGIN CERTIFICATE-----
\nMIIC4TCCAcmgAwIBAgICEREwDQYJKoZIhvcNAQELBQAwFzEVMBMGA1UEAxMMTXlD
\nb21wYW55IENBMB4XDTE4MDcwMjEzMjU0N1oXDTQ1MTExNzEzMjU0N1owFDESMBAG
\nA1UEAwwJbG9jYWxob3N0MIIBIjANBgkqhkiG9w0BAQEFAAOCAQ8AMIIBCgKCAQEA\n0FQGzi3ucTX
+DNud1p/
b4XVM6I3rY7+Cfge5GMLDIUXIHXCfCgp19Z3807yNpLF5\nU0NqPQZKUrZz3rQeLN9mYiUTJZPutYlFDDb
B8CtlgV+eyU9yYJslWx/
Bm5kWNPh9\n7B9Yu9pbp2u6zDA99IC4ekKD93KuzxlnLmSle4Y3dbYwk0LpMDL6lfCHKt/W7jaS
\nIAzlsxD+QM6l7QjhWJ+kUx+UkboOISjTe7E9XmDLJR7u8LRAQylYKy4zgnv1tn/K
\ny09cxLKAFtgoZWQD2FAZJf9F7k1kYNwqITz3CPlLZUUn7yw3nkOOtLMI28IEv0Wy
\nYd7CMJQkS1NPJBKNOGfR/wIDAQABozowODAhBgNVHREEGjAYggpkb21haW4uY29t
\nhwQKuUvJhwR/AAABMBMGA1UdJQQMMAoGCCsGAQUFBwMBMA0GCSqGSIb3DQEBCwUA
\nA4IBAQA8lMQJxaTey7EjXtRLSVlEAMftAQPG6jijNQuvIBQYUDauDT4W2XUZ5wAn
\njiOyQ83va672K1G9s8n6xlH+xwwdSNnozaKzC87vwSeZKIOdl9I5I98TGKI6OoDa
\nnezmzCwQYtHBMVQ4c7Ml8554Ft1mWSt4dMAK2rzNYjvPRLYlzp1HMnI6hkjPk4PCZ
\nwKnha0dlScati9CCt3UzXSNJOSLalKdHErH08Iqd+1BchScxCfk0xNITn1HZZGmI\n
+vbmunok3A2lucI14rnsrcbkGYqxGikySN6B2cRLBDK4Y3wChiW6NVYtVqcx5/mZ\niYsGDVN
+9QBd0eYUHce+77s96i3l\n-----END CERTIFICATE-----",
            "create_time": "2017-02-25 09:35:27",
            "expire_time": "2045-11-17 13:25:47",
            "description": "description for certificate",
            "domain": "www.elb.com",
            "id": "23ef9aad4ecb463580476d324a6c71af",
            "admin_state_up": true,
            "tenant_id": "a31d2bdcf7604c0faaddb058e1e08819",
            "name": "https_certificate",
            "private_key":
"-----BEGIN PRIVATE KEY-----
\nMIIEvgIBADANBgkqhkiG9w0BAQEFAASCBKgwggSkAgEAAoIBAQDQVAbOLe5xNf4M
\nn253Wn9vhdUzojetjv4J+B7kYwsMhRcgdcJ8KCnX1nfzTvI2ksXlTQ2o9BkpStnPe\ntB4s32ZiJRMlk
+61iUUMNsHwK2WBX57JT3JgmyVbH8GbmRY0+H3sH1i72luna7rM
\nMD30gLh6QoP3cq7PGWcuZKV7hjd1tjCTQukwMvqV8Icq39buNpIgDOWzEP5AzqXt
```

\nCOFYn6RTH5SRug4hKNN7sT1eYMslHu7wtEBDKVgrLjOCe/W2f8rLT1zEsoAW2Chl\nZAPYUBkl/
0XuTWRg3CohPPcI+UtlRSfvLDeeQ460swjbwgS/RbJh3slwlCRLU08k\nEo04Z9H/
AgMBAAECggEAEleaQqHCWZk/HyYN0Am/GJSGFa2tD60SXY2fUieh8/Hl
\nfvCArftGgMaYWPSNCJRMXB7tPwpQu19esjz4Z/cR2Je4fTLPrffGUsHFgZjv5OQB
\nZVe4a5Hj1OcgJYhwCqPs2d9i2wToYNBbcfgh8lSETq8YaXngBO6vES9LMhHkNKKr
\nciu9YklnNEHu6uRJ5g/eGGX3KQynTvVIhnOVGAJvjTXcoU6fm7gYdHAD6jk9lc9M
\nEGpfYI6AdHIwFZcT/RNAxhP82lg2gUJSgAu66FfDjMwQXKbafKdP3zq4Up8a7Ale\nkrguPtfV1vWklg
+bUFhgGaiAEYTpAUN9t2DVIiijgQKBgQDnYMMsaF0r557CM1CT
\nXUqgCZo8MKeV2jf2drlxRRwRl33SksQbzAQ/qrLdT7GP3sCGqvkxWY2FPdFYf8kx
\nGCeZPcIeZYCQAM41pjtsaM8tVbLWVR8UtGBuQoPSph7JNF3Tm/JH/fbwjpjP7dt
\nJ7n8EzkRUNE6aIMHOFEeych/PQKBgQDmf1bMogx63rTcwQ0PEZ9Vt7mTgKYK4aLr
\niWgTWHXPZxUQaYhpjXo6+lMI6DpExiDgBAkMzJGIvS7yQiYWU+wthAr9urbWYdGZ
\nlS6VjoTkF6r7VZoILXX0fbuXh6lm8K8IQRfBpJff56p9phMwaBpDNDrfpHB5utBU
\nxs40yIdp6wKBgQC69Cp/xUwTX7GdxQzEJctYiKnBHKcspAg38zJf3bGSXU/jR4eB
\n1lVQhELGI9CbKSdzKM71GyEImix/T7FnJSHIWlho1qVo6AQyduNWnAQD15pr8KAd
\nXGXAZZ1FQcb3KYa+2fflERmazdOTwjYZ0tGqZnXkEeMdSLkmqlCRigWhGQKBgDak\n/
735uP20KKqhNehZpC2dJei7OiIgRhCS/dKASUXHSW4fptBnUxACYocdDxtY4Vha\nfI7FPMdvGl8ioYbvlHFh
+X0Xs9r1S8yeWnHoXMb6eXWmYKMJrAoveLa+2cFm1Agf
\n7nLhA4R4lqm9IpV6SKegDUkR4fxp9pPyodZPqBLLAoGBAJkD4wHW54Pwd4Ctfk9o
\njHjWB7pQIUYpTZO9dm+4fpCMn9Okf43AE2yAOaAP94GdzdDJkxfciXKcsYr9IIuk
\nfaoXgjKR7p1zERiWZuFF63SB4aiyX1H7IX0MwHDZQO38a5gZaOm/BUlGKMWXzuEd\n3fy
+1rCUwzOp9LSjtJYf4ege\n-----END PRIVATE KEY-----",
            "type": "server",
            "update_time": "2017-02-25 09:35:27"
        }
    ],
    "instance_num": 1
}

- Example response 2

```
{
    "certificates": [
        {
            "description": "Push by SSL Certificate Manager",
            "domain": null,
            "id": "ed40e8ea9957488ea82de025e35b74c0",
            "name": "certForSonar9",
            "certificate": "-----BEGIN CERTIFICATE-----
```
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d3cuZGlnaWNlcnQuQ29tMS0wKwYDVQQDEyRFbmNyeXB0aW9uIEV2ZXJ5d2hlcmUg
RFYgVExTIENBIC0gRzEwHhcNMTgwNzEwMDAwMDAwWhcNMTkwNzEwMTIwMDAwWjAU
MRIwEAYDVQQDEwlpY2UxMjMudGSwggEiMA0GCSqGSIb3DQEBAQUAA4IBDwAwggEK
AoIBAQCtTDlQMoAvyInR6X1dihhNwbdGesbMW6NZX7ffpj9XrB3KCqqlxzI4VmH9
PntvrpLJNeolgLqDZZc4zKbUkmqxY1dvGDs41coKzdtc9Ig23GVK48wfesnk5r50
afyU52R1JlSHDOhiDhHOSyhrOzc2GreLrByWKFUaAue6rTnyMbzQaSPtrTAqsURZ
wcmJ6R3A6JwokOgxXBSu41ufPQiFkMgxygKxEBLzIJLjRqCXQHYoxbsTyolb6jwp
w4H6vcRIEcFAgs98ApWRoEKjy7eOP3UUm05F+OkOvXhrlxEqIPm/rlwE0PmVlmm9
DgBafYb3xT/MtT2VRSfCJQHgIcsdAgMBAAGjggJ9MIICeTAfBgNVHSMEGDAWgBRV
dE+yck/1YLpQ0dfmUVyaAYca1zAdBgNVHQ4EFgQUEFavzYXBNbIHBchbaKcUKad+
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cnQuQ29tL0NQUzAIBgZngQwBAgEwgYEGCCsGAQUFBwEBBHUwczAlBggrBgEFBQcw
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L2NhY2VydHMuZGlnaWNlcnQuQ29tL0VuY3J5cHRpb25FdmVyeXdoZXJlRFZUTFND
QS1HMS5jcnQwCQYDVR0TBAIwADCCAQQGCisGAQQB1nkCBAIEgfUEgfIA8AB2AKS5
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-----END CERTIFICATE-----
-----BEGIN CERTIFICATE-----

MIIEqjCCA5KgAwIBAgIQAnmsRYvBskWr+YBTzSybsTANBgkqhkiG9w0BAQsFADBh
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QTAeFw0xNzExMjcxMjQ2MTBaFw0yNzExMjcxMjQ2MTBaMG4xCzAJBgNVBAYTAlVT
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pp1yr7IB6Y4zv72Ee/PlZ/6rK6InC6WpK0nPVOYR7n9iDuPe1E4IxUMBH/T33+3h
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Y2VydC5jb20wQgYDVR0fBDswOTA3oDWgM4YxaHR0cDovL2NybDMuZGlnaWNlcnQu
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sNE2DpRVMnL8J6xBRdjmOsC3N6cQuKuRXbzByVBjCqAA8t1L0I+9wXJerLPyErjy
rMKWaBFLmfK/AHNF4ZihwPGOc7w6UHczBZXH5RFzJNnww+WnKuTPl0HfnVH8lg==
-----END CERTIFICATE-----",
         "type": "server",
         "create_time": "2019-03-03 16:32:30",
         "private_key": "-----BEGIN RSA PRIVATE KEY-----

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E0B/p8J5i3oo5Rucv4DOfB+01wXGAVyx5/zce+NZdhyrivkj3hHV55SxGhVWzWhj
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QKk4cfOxJYStQfxptz8QBPVeLajDN67zJ0Rk8AB50HHHcNSU8uFkaO8KxsyVjbLS
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",
         "update_time": "2019-03-03 16:32:30",
         "admin_state_up": true,
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         "expire_time": "2019-07-10 12:00:00"
      },
      {
         "description": null,
         "domain": "www.elb.com",
         "id": "ef4d341365754a959556576501791b19",
         "name": "certificate_28b824c8bbee419992fb7974b2911c72",
         "certificate": "-----BEGIN CERTIFICATE-----

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CQYDVQQLDAJ4eDELMAkGA1UEAwwCeHgxGTAXBgkqhkiG9w0BCQEWCnh4QDE2My5j
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CwwCeHgxCzAJBgNVBAMMAnh4MRkwFwYJKoZIhvcNAQkBFgp4eEAxNjMuY29tMIIB
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2s8tZ/6LC3X82fajpVsYqF1xqEuUDndDXVD09E4u83MS6HO6a3bIVQDp6/klnYld
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FoAUo5A2tIu+bcUfvGTD7wmEkhXKFjcwDAYDVR0TBAUwAwEB/zANBgkqhkiG9w0B
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c8Tdr8lDDNqoUtMD8BrUCJi+7lmMXRcC3Qi3oZJW76ja+kZA5mKVFPd1ATih8TbA
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i1YhgnQbn5E0hz55OLu5jvOkKQjPCW+8Kg==
-----END CERTIFICATE-----",
          "type": "server",
          "create_time": "2018-09-28 03:00:47",
          "private_key": "-----BEGIN RSA PRIVATE KEY-----
MIIEowIBAAKCAQEAwZ5UJULAjWr7p6FVwGRQRjFN2s8tZ/6LC3X82fajpVsYqF1x
qEuUDndDXVD09E4u83MS6HO6a3bIVQDp6/klnYldiE6Vp8HH5BSKaCWKVg8lGWg1
UM9wZFnlryi14KgmpIFmcu9nA8yV/6MZAe6RSDmb3iyNBmiZ8aZhGw2pI1YwR+15
MVqFFGB+7ExkziROi7L8CFCyCezK2/oOOvQsH1dzQ8z1JXWdg8/9Zx7Ktvgwu5PQ
M3cJtSHX6iBPOkMU8Z8TugLlTqQXKZOEgwajwvQ5mf2DPkVgM08XAgaLJcLigwD5
13koAdtJd5v+9irw+5LAuO3JclqwTvwy7u/YwwIDAQABAoIBACU9S5fjD9/jTMXA
DRs08A+gGgZUxLn0xk+NAPX3LyB1tfdkCaFB8BccLzO6h3KZuwQOBPv6jkdvEDbx
Nwyw3eA/9GJsIvKiHc0rejdvyPymaw9I8MA7NbXHaJrY7KpqDQyk6sx+aUTcy5jg
iMXLWdwXYHhJ/1HVOo603oZyiS6HZeYU089NDUcX+1SJi3e5Ke0gPVXEqCq1O11/
rh24bMxnwZo4PKBWdcMBN5Zf/4ij9vrZE+fFzW7vGBO48A5lvZxWU2U5t/OZQRtN
1uLOHmMFa0FIF2aWbTVfwdUWAFsvAOkHj9VV8BXOUwKOUuEktdkfAlvrxmsFrO/H
yDeYYPkCgYEA/S55CBbR0sMXpSZ56uRn8JHApZJhgkgvYr+FqDUq/e92nAzf01P
RoEBUajwrnf1ycevN/SDfbtWzq2XJGqhWdJmtpO16b7KBsC6BdRcH6dnOYh31jgA
vABMIP3wzI4zSVTyxRE8LDuboytF1mSCeV5tHYPQTZNwrplDnLQhywcCgYEAw8Yc
Uk/eiFr3hfH/ZohMfV5p82Qp7DNIGRzw8YtVG/3+vNXrAXW1VhugNhQY6L+zLtJC
aKn84ooup0m3YCg0hvINqJuvzfsuzQgtjTXyaE0cEwsjUusOmiuj09vVx/3U7siK
Hdjd2ICPCvQ6Q8tdi8jV320gMs05AtaBkZdsiWUCgYEAtLw4Kk4f+xTKDFsrLUNf
75wcqhWVBiwBp7yQ7UX4EYsJPKZcHMRTk0EEcAbpyaJZE3I44vjp5ReXIHNLMfPs
uvl34J4Rfot0LN3n7cFrAi2+wpNo+MOBwrNzpRmijGP2uKKrq4JiMjFbKV/6utGF
Up7VxfwS904JYpqGaZctiIECgYA1A6nZtF0riY6ry/uAdXpZHL8ONNqRZtWoT0kD
79otSVu5ISiRbaGcXsDExC52oKrSDAgFtbqQUiEOFg09UcXfoR6HwRkba2CiDwve
yHQLQI5Qrdxz8Mk0gIrNrSM4FAmcW9vi9z4kCbQyoC5C+4gqeUIJRpDIkQBWP2Y4
2ct/bQKBgHv8qCsQTZphOxc31BJPa2xVhuv18cEU3XLUrVfUZ/1f43JhLp7gynS2
ep++LKUi9D0VGXY8bqvfJjbECoCeu85vl8NpCXwe/LoVoIn+7KaVIZMwqoGMfgNl
nEqm7HWkNxHhf8A6En/IjleuddS1sf9e/x+TJN1Xhnt9W6pe7Fk1
-----END RSA PRIVATE KEY-----",
          "update_time": "2018-09-28 03:00:47",
          "admin_state_up": true,
          "tenant_id": "601240b9c5c94059b63d484c92cfe308",
          "expire_time": "2020-12-03 03:42:49"
      }
  ],
  "instance_num": 2
}

Status Code

For details, see **Status Codes**.

7.1.9.3 Querying Details of a Certificate

Function

This API is used to query details about a certificate.

URI

GET /v2.0/lbaas/certificates/{certificate_id}

Table 7-202 Parameter description

Parameter	Mandat ory	Type	Description
certificate_i d	Yes	String	Specifies the certificate ID.

Request

None

Response

Table 7-203 Parameter description

Parameter	Type	Description
id	String	Specifies the certificate ID.
tenant_id	String	Specifies the ID of the project where the certificate is used. The value contains a maximum of 255 characters.
admin_state_u p	Boolean	Specifies the administrative status of the certificate. This parameter is reserved. The value can be **true** or **false**. ● **true**: Enabled ● **false**: Disabled
name	String	Specifies the certificate name. The value contains a maximum of 255 characters.
description	String	Provides supplementary information about the certificate. The value contains a maximum of 255 characters.
type	String	Specifies the certificate type. The value can be one of the following: ● **server**: indicates the server certificate. ● **client**: indicates the CA certificate.

Parameter	Type	Description
domain	String	Specifies the domain name associated with the server certificate. The value contains a maximum of 100 characters.
private_key	String	Specifies the private key of the server certificate in PEM format.
certificate	String	Specifies the public key of the server certificate or CA certificate used to authenticate the client. The value of parameter **type** determines whether a public key or CA certificate is required. Both types of certificates are in PEM format.
expire_time	String	Specifies the time when the certificate expires. The UTC time is in *YYYY-MM-DDTHH:MM:SS* format.
create_time	String	Specifies the time when the certificate was created. The UTC time is in *YYYY-MM-DDTHH:MM:SS* format.
update_time	String	Specifies the time when the certificate was updated. The UTC time is in *YYYY-MM-DDTHH:MM:SS* format.

Example Request

- Example request: Querying details of a certificate

```
GET https://{Endpoint}/v2.0/lbaas/certificates/23ef9aad4ecb463580476d324a6c71af
```

Example Response

- Example response

```
{
    "certificate":
"-----BEGIN CERTIFICATE-----
\nMIIC4TCCAcmgAwIBAgICEREwDQYJKoZIhvcNAQELBQAwFzEVMBMGA1UEAxMMTXlD
\nb21wYW55IENBMB4XDTE4MDcwMjEzMjU0N1oXDTQ1MTExNzEzMjU0N1owFDESMBAG
\nA1UEAwwJbG9jYWxob3N0MIIBIjANBgkqhkiG9w0BAQEFAAOCAQ8AMIIBCgKCAQEA
\n0FQGzi3ucTX+DNud1p/b4XVM6I3rY7+Cfge5GMLDIUXIHXCfCgp19Z3807yNpLF5
\nU0NqPQZKUrZz3rQeLN9mYiUTJZPutYlFDDbB8CtlgV+eyU9yYJslWx/Bm5kWNPh9
\n7B9Yu9pbp2u6zDA99IC4ekKD93KuzxlnLmSle4Y3dbYwk0LpMDL6lfCHKt/W7jaS
\nIAzlsxD+QM6l7QjhWJ+kUx+UkboOISjTe7E9XmDLJR7u8LRAQylYKy4zgnv1tn/K
\nny09cxLKAFtgoZWQD2FAZJf9F7k1kYNwqITz3CPlLZUUn7yw3nkOOtLMI28IEv0Wy
\nYd7CMJQkS1NPJBKNOGfR/wIDAQABozowODAhBgNVHREEGjAYggpkb21haW4uY29t
\nhhwQKuUvJhwR/AAABMBMGA1UdJQQMMAoGCCsGAQUFBwMBMA0GCSqGSIb3DQEBCwUA
\nA4IBAQA8lMQJxaTey7EjXtRLSVlEAMftAQPG6jijNQuvIBQYUDauDT4W2XUZ5wAn
\njiOyQ83va672K1G9s8n6xlH+xwwdSNnozaKzC87vwSeZKIOdl9I5I98TGKI6OoDa
\nnezmzCwQYtHBMVQ4c7Ml8554Ft1mWSt4dMAK2rzNYjvPRLYlzp1HMnI6hkjPk4PCZ
\nnwKnha0dlScati9CCt3UzXSNJOSLalKdHErH08Iqd+1BchScxCfk0xNITn1HZZGml
\n+vbmunok3A2lucI14rnsrcbkGYqxGikySN6B2cRLBDK4Y3wChiW6NVYtVqcx5/mZ
```

\niYsGDVN+9QBd0eYUHce+77s96i3I
\n-----END CERTIFICATE-----",
    "create_time": "2017-02-25 09:35:27",
    "expire_time": "2045-11-17 13:25:47",
    "description": "description for certificate",
    "domain": "www.elb.com",
    "id": "23ef9aad4ecb463580476d324a6c71af",
    "tenant_id": "a31d2bdcf7604c0faaddb058e1e08819",
    "admin_state_up": true,
    "name": "https_certificate",
    "private_key":
"-----BEGIN PRIVATE KEY-----
\nMIIEvgIBADANBgkqhkiG9w0BAQEFAASCBKgwggSkAgEAAoIBAQDQVAbOLe5xNf4M
\n253Wn9vhdUzojetjv4J+B7kYwsMhRcgdcJ8KCnX1nfzTvI2ksXlTQ2o9BkpStnPe
\ntB4s32ZiJRMlk+61iUUMNsHwK2WBX57JT3JgmyVbH8GbmRY0+H3sH1i72luna7rM
\nMD30gLh6QoP3cq7PGWcuZKV7hjd1tjCTQukwMvqV8Icq39buNpIgDOWzEP5AzqXt
\nCOFYn6RTH5SRug4hKNN7sT1eYMslHu7wtEBDKVgrLjOCe/W2f8rLT1zEsoAW2Chl
\nZAPYUBkl/0XuTWRg3CohPPcI+UtlRSfvLDeeQ460swjbwgS/RbJh3sIwlCRLU08k
\nEo04Z9H/AgMBAAECggEAEIeaQqHCWZk/HyYN0Am/GJSGFa2tD60SXY2fUieh8/Hl
\nfvCArftGgMaYWPSNCJRMXB7tPwpQu19esjz4Z/cR2Je4fTLPrffGUsHFgZjv5OQB
\nZVe4a5Hj1OcgJYhwCqPs2d9i2wToYNBbcfgh8lSETq8YaXngBO6vES9LMhHkNKKr
\nnciu9YkInNEHu6uRJ5g/eGGX3KQynTvVIhnOVGAJvjTXcoU6fm7gYdHAD6jk9lc9M
\nEGpfYI6AdHIwFZcT/RNAxhP82lg2gUJSgAu66FfDjMwQXKbafKdP3zq4Up8a7Ale
\nkrguPtfV1vWklg+bUFhgGaiAEYTpAUN9t2DVIiijgQKBgQDnYMMsaF0r557CM1CT
\nXUqgCZo8MKeV2jf2drlxRRwRl33SksQbzAQ/qrLdT7GP3sCGqvkxWY2FPdFYf8kx
\nGcCeZPcIeZYCQAM41pjtsaM8tVbLWVR8UtGBuQoPSph7JNF3Tm/JH/fbwjpjP7dt
\nJ7n8EzkRUNE6aIMHOFEeych/PQKBgQDmf1bMogx63rTcwQ0PEZ9Vt7mTgKYK4aLr
\niWgTWHXPZxUQaYhpjXo6+lMI6DpExiDgBAkMzJGlvS7yQiYWU+wthAr9urbWYdGZ
\nnlS6VjoTkF6r7VZoILXX0fbuXh6lm8K8IQRfBpJff56p9phMwaBpDNDrfpHB5utBU
\nnxs40yIdp6wKBgQC69Cp/xUwTX7GdxQzEJctYiKnBHKcspAg38zJf3bGSXU/jR4eB
\nn1lVQhELGI9CbKSdzKM71GyEImix/T7FnJSHIWlho1qVo6AQyduNWnAQD15pr8KAd
\nXGXAZZ1FQcb3KYa+2fflERmazdOTwjYZ0tGqZnXkEeMdSLkmqlCRigWhGQKBgDak
\n/735uP20KKqhNehZpC2dJei7OiIgRhCS/dKASUXHSW4fptBnUxACYocdDxtY4Vha
\nfI7FPMdvGl8ioYbvlHFh+X0Xs9r1S8yeWnHoXMb6eXWmYKMJrAoveLa+2cFm1Agf
\n7nLhA4R4lqm9IpV6SKegDUkR4fxp9pPyodZPqBLLAoGBAJkD4wHW54Pwd4Ctfk9o
\njHjWB7pQlUYpTZO9dm+4fpCMn9Okf43AE2yAOaAP94GdzdDJkxfciXKcsYr9Iluk
\nfaoXgjKR7p1zERiWZuFF63SB4aiyX1H7IX0MwHDZQO38a5gZaOm/BUlGKMWXzuEd
\n3fy+1rCUwzOp9LSjtJYf4ege
\n-----END PRIVATE KEY-----",
    "type": "server",
    "update_time": "2017-02-25 09:35:27"
}

Status Code

For details, see **Status Codes**.

7.1.9.4 Updating a Certificate

Function

This API is used to update a certificate.

URI

PUT /v2.0/lbaas/certificates/{certificate_id}

Table 7-204 Parameter description

Parameter	Manda tory	Type	Description
certificate_i d	Yes	String	Specifies the certificate ID.

Request

Table 7-205 Parameter description

Parameter	Mand atory	Type	Description
admin_state_u p	No	Boolean	Specifies the administrative status of the certificate. This parameter is reserved, and the default value is **true**.
name	No	String	Specifies the certificate name. The value contains a maximum of 255 characters.
description	No	String	Provides supplementary information about the certificate. The value contains a maximum of 255 characters.
domain	No	String	Specifies the domain name associated with the server certificate. The default value is **null**. The value contains a maximum of 100 characters. The value can be one of the following: ● A common domain name contains 0 to 100 characters and consists of several labels separated by dots (.). Each label can contain a maximum of 63 characters, including letters, digits, and hyphens (-), and must start and end with a letter or digit. ● In addition to the requirements for common domain names, a wildcard domain name can start with an asterisk (*). **NOTE** This parameter is valid only when **type** is set to **server**.

Parameter	Mand atory	Type	Description
private_key	No	String	Specifies the private key of the server certificate. The value must be PEM encoded. ● This parameter will be ignored if **type** is set to **client**. A CA server can still be created and used normally. This parameter will be left blank even if you enter a private key that is not PEM encoded. ● This parameter is valid and mandatory only when **type** is set to **server**. If you enter an invalid private key, an error is returned.
certificate	No	String	Specifies the public key of the server certificate or CA certificate used to authenticate the client. The value of parameter **type** determines whether a public key or CA certificate is required. The public key is in PEM format.

Response

Table 7-206 Parameter description

Parameter	Type	Description
id	String	Specifies the certificate ID.
tenant_id	String	Specifies the ID of the project where the certificate is used. The value contains a maximum of 255 characters.
admin_state_u p	Boolean	Specifies the administrative status of the certificate. This parameter is reserved. The value can be **true** or **false**. ● **true**: Enabled ● **false**: Disabled
name	String	Specifies the certificate name. The value contains a maximum of 255 characters.

Parameter	Type	Description
description	String	Provides supplementary information about the certificate. The value contains a maximum of 255 characters.
type	String	Specifies the certificate type. The value can be one of the following: ● **server**: indicates the server certificate. ● **client**: indicates the CA certificate.
domain	String	Specifies the domain name associated with the server certificate. The value contains a maximum of 100 characters.
private_key	String	Specifies the private key of the server certificate in PEM format.
certificate	String	Specifies the public key of the server certificate or CA certificate used to authenticate the client. The value of parameter **type** determines whether a public key or CA certificate is required. Both types of certificates are in PEM format.
expire_time	String	Specifies the time when the certificate expires. The UTC time is in *YYYY-MM-DDTHH:MM:SS* format.
create_time	String	Specifies the time when the certificate was created. The UTC time is in *YYYY-MM-DDTHH:MM:SS* format.
update_time	String	Specifies the time when the certificate was updated. The UTC time is in *YYYY-MM-DDTHH:MM:SS* format.

Example Request

● Example request: Updating a certificate

```
PUT https://{Endpoint}/v2.0/lbaas/certificates/23ef9aad4ecb463580476d324a6c71af

{
    "certificate":
"-----BEGIN CERTIFICATE-----
\nMIIC4TCCAcmgAwIBAgICEREwDQYJKoZIhvcNAQELBQAwFzEVMBMGA1UEAxMMTXlD
\nb21wYW55IENBMB4XDTE4MDcwMjEzMjU0N1oXDTQ1MTExNzEzMjU0N1owFDESMBAG
\nA1UEAwwJbG9jYWxob3N0MIIBIjANBgkqhkiG9w0BAQEFAAOCAQ8AMIIBCgKCAQEA
\nn0FQGzi3ucTX+DNud1p/b4XVM6I3rY7+Cfge5GMLDIUXlHXCfCgp19Z3807yNpLF5
\nU0NqPQZKUrZz3rQeLN9mYiUTJZPutYlFDDbB8CtlgV+eyU9yYJslWx/Bm5kWNPh9
```

\n7B9Yu9pbp2u6zDA99IC4ekKD93KuzxlnLmSle4Y3dbYwk0LpMDL6lfCHKt/W7jaS
\nIAzlsxD+QM6l7QjhWJ+kUx+UkboOISjTe7E9XmDLJR7u8LRAQylYKy4zgnv1tn/K
\ny09cxLKAFtgoZWQD2FAZJf9F7k1kYNwqITz3CPlLZUUn7yw3nkOOtLMI28IEv0Wy
\nYd7CMJQkS1NPJBKNOGfR/wIDAQABozowODAhBgNVHREEGjAYggpkb21haW4uY29t
\nhwQKuUvJhwR/AAABMBMGA1UdJQQMMAoGCCsGAQUFBwMBMA0GCSqGSIb3DQEBCwUA
\nA4IBAQA8lMQJxaTey7EjXtRLSVlEAMftAQPG6jijNQuvIBQYUDauDT4W2XUZ5wAn
\njiOyQ83va672K1G9s8n6xlH+xwwdSNnozaKzC87vwSeZKIOdl9I5I98TGKI6OoDa
\nezmzCwQYtHBMVQ4c7Ml8554Ft1mWSt4dMAK2rzNYjvPRLYlzp1HMnI6hkjPk4PCZ
\nwKnha0dlScati9CCt3UzXSNJOSLalKdHErH08Iqd+1BchScxCfk0xNITn1HZZGmI
\n+vbmunok3A2lucI14rnsrcbkGYqxGikySN6B2cRLBDK4Y3wChiW6NVYtVqcx5/mZ
\niYsGDVN+9QBd0eYUHce+77s96i3I
\n-----END CERTIFICATE-----",
    "description": "description for certificate",
    "domain": "www.elb.com",
    "name": "https_certificate",
    "private_key":
"-----BEGIN PRIVATE KEY-----
\nMIIEvgIBADANBgkqhkiG9w0BAQEFAASCBKgwggSkAgEAAoIBAQDQVAbOLe5xNf4M
\n253Wn9vhdUzojetjv4J+B7kYwsMhRcgdcJ8KCnX1nfzTvI2ksXlTQ2o9BkpStnPe
\ntB4s32ZiJRMlk+61iUUMNsHwK2WBX57JT3JgmyVbH8GbmRY0+H3sH1i72luna7rM
\nMD30gLh6QoP3cq7PGWcuZKV7hjd1tjCTQukwMvqV8Icq39buNpIgDOWzEP5AzqXt
\nCOFYn6RTH5SRug4hKNN7sT1eYMslHu7wtEBDKVgrLjOCe/W2f8rLT1zEsoAW2Chl
\nZAPYUBkl/0XuTWRg3CohPPcI+UtlRSfvLDeeQ460swjbwgS/RbJh3sIwlCRLU08k
\nEo04Z9H/AgMBAAECggEAEIeaQqHCWZk/HyYN0Am/GJSGFa2tD60SXY2fUieh8/Hl
\nfvCArftGgMaYWPSNCJRMXB7tPwpQu19esjz4Z/cR2Je4fTLPrffGUsHFgZjv5OQB
\nZVe4a5Hj1OcgJYhwCqPs2d9i2wToYNBbcfgh8lSETq8YaXngBO6vES9LMhHkNKKr
\nciu9YkInNEHu6uRJ5g/eGGX3KQynTvVIhnOVGAJvjTXcoU6fm7gYdHAD6jk9lc9M
\nEGpfYI6AdHIwFZcT/RNAxhP82lg2gUJSgAu66FfDjMwQXKbafKdP3zq4Up8a7Ale
\nkrguPtfV1vWklg+bUFhgGaiAEYTpAUN9t2DVIiijgQKBgQDnYMMsaF0r557CM1CT
\nXUqgCZo8MKeV2jf2drlxRRwRl33SksQbzAQ/qrLdT7GP3sCGqvkxWY2FPdFYf8kx
\nGcCeZPcIeZYCQAM41pjtsaM8tVbLWVR8UtGBuQoPSph7JNF3Tm/JH/fbwjpjP7dt
\nJ7n8EzkRUNE6aIMHOFEeych/PQKBgQDmf1bMogx63rTcwQ0PEZ9Vt7mTgKYK4aLr
\nniWgTWHXPZxUQaYhpjXo6+lMI6DpExiDgBAkMzJGlvS7yQiYWU+wthAr9urbWYdGZ
\nlS6VjoTkF6r7VZoILXX0fbuXh6lm8K8IQRfBpJff56p9phMwaBpDNDrfpHB5utBU
\nxs40yIdp6wKBgQC69Cp/xUwTX7GdxQzEJctYiKnBHKcspAg38zJf3bGSXU/jR4eB
\n1lVQhELGI9CbKSdzKM71GyEImix/T7FnJSHIWlho1qVo6AQyduNWnAQD15pr8KAd
\nXGXAZZ1FQcb3KYa+2fflERmazdOTwjYZ0tGqZnXkEeMdSLkmqlCRigWhGQKBgDak
\n/735uP20KKqhNehZpC2dJei7OiIgRhCS/dKASUXHSW4fptBnUxACYocdDxtY4Vha
\nfI7FPMdvGl8ioYbvlHFh+X0Xs9r1S8yeWnHoXMb6eXWmYKMJrAoveLa+2cFm1Agf
\nn7nLhA4R4lqm9IpV6SKegDUkR4fxp9pPyodZPqBLLAoGBAJkD4wHW54Pwd4Ctfk9o
\njHjWB7pQlUYpTZO9dm+4fpCMn9Okf43AE2yAOaAP94GdzdDJkxfciXKcsYr9IIuk
\nfaoXgjKR7p1zERiWZuFF63SB4aiyX1H7IX0MwHDZQO38a5gZaOm/BUlGKMWXzuEd
\n3fy+1rCUwzOp9LSjtJYf4ege
\n-----END PRIVATE KEY-----"
}

Example Response

- Example response

{
    "certificate": "-----BEGIN CERTIFICATE-----
\nMIIC4TCCAcmgAwIBAgICEREwDQYJKoZIhvcNAQELBQAwFzEVMBMGA1UEAxMTXlD
\nb21wYW55IENBMB4XDTE4MDcwMjEzMjU0N1oXDTQ1MTExNzEzMjU0N1owFDESMBAG
\nA1UEAwwJbG9jYWxob3N0MIIBIjANBgkqhkiG9w0BAQEFAAOCAQ8AMIIBCgKCAQEA\n0FQGzi3ucTX
+DNud1p/
b4XVM6I3rY7+Cfge5GMLDIUXIHXCfCgp19Z3807yNpLF5\nU0NqPQZKUrZz3rQeLN9mYiUTJZPutYlFDDb
B8CtlgV+eyU9yYJslWx/
Bm5kWNPh9\n7B9Yu9pbp2u6zDA99IC4ekKD93KuzxlnLmSle4Y3dbYwk0LpMDL6lfCHKt/W7jaS
\nIAzlsxD+QM6l7QjhWJ+kUx+UkboOISjTe7E9XmDLJR7u8LRAQylYKy4zgnv1tn/K
\ny09cxLKAFtgoZWQD2FAZJf9F7k1kYNwqITz3CPlLZUUn7yw3nkOOtLMI28IEv0Wy
\nYd7CMJQkS1NPJBKNOGfR/wIDAQABozowODAhBgNVHREEGjAYggpkb21haW4uY29t
\nhwQKuUvJhwR/AAABMBMGA1UdJQQMMAoGCCsGAQUFBwMBMA0GCSqGSIb3DQEBCwUA
\nA4IBAQA8lMQJxaTey7EjXtRLSVlEAMftAQPG6jijNQuvIBQYUDauDT4W2XUZ5wAn
\njiOyQ83va672K1G9s8n6xlH+xwwdSNnozaKzC87vwSeZKIOdl9I5I98TGKI6OoDa
\nezmzCwQYtHBMVQ4c7Ml8554Ft1mWSt4dMAK2rzNYjvPRLYlzp1HMnI6hkjPk4PCZ
\nwKnha0dlScati9CCt3UzXSNJOSLalKdHErH08Iqd+1BchScxCfk0xNITn1HZZGmI\n
+vbmunok3A2lucI14rnsrcbkGYqxGikySN6B2cRLBDK4Y3wChiW6NVYtVqcx5/mZ\niYsGDVN
+9QBd0eYUHce+77s96i3I\n-----END CERTIFICATE-----",
    "expire_time": "2045-11-17 13:25:47",

```
    "create_time": "2017-02-25 09:35:27",
    "description": "description for certificate",
    "domain": "www.elb.com",
    "id": "23ef9aad4ecb463580476d324a6c71af",
    "admin_state_up": true,
    "tenant_id": "a31d2bdcf7604c0faaddb058e1e08819",
    "name": "https_certificate",
    "private_key": "-----BEGIN PRIVATE KEY-----
\nMIIEvgIBADANBgkqhkiG9w0BAQEFAASCBKgwggSkAgEAAoIBAQDQVAbOLe5xNf4M
\n253Wn9vhdUzojetjv4J+B7kYwsMhRcgdcJ8KCnX1nfzTvl2ksXlTQ2o9BkpStnPe
\ntB4s32ZiJRMlk+61iUUMNsHwK2WBX57JT3JgmyVbH8GbmRY0+H3sH1i72luna7rM
\nMD30gLh6QoP3cq7PGWcuZKV7hjd1tjCTQukwMvqV8Icq39buNpIgDOWzEP5AzqXt
\nCOFYn6RTH5SRug4hKNN7sT1eYMslHu7wtEBDKVgrLjOCe/W2f8rLT1zEsoAW2Chl
\nZAPYUBkl/0XuTWRg3CohPPcI+UtlRSfvLDeeQ460swjbwgS/RbJh3slwlCRLU08k
\nEo04Z9H/AgMBAAECggEAEIeaQqHCWZk/HyYN0Am/GJSGFa2tD60SXY2fUieh8/Hl
\nfvCArftGgMaYWPSNCJRMXB7tPwpQu19esjz4Z/cR2Je4fTLPrffGUsHFgZjv5OQB
\nnZVe4a5Hj1OcgJYhwCqPs2d9i2wToYNBbcfgh8lSETq8YaXngBO6vES9LMhHkNKKr
\nciu9YkInNEHu6uRJ5g/eGGX3KQynTvVIhnOVGAJvjTXcoU6fm7gYdHAD6jk9lc9M
\nEGpfYI6AdHIwFZcT/RNAxhP82lg2gUJSgAu66FfDjMwQXKbafKdP3zq4Up8a7Ale
\nkrguPtfV1vWklg+bUFhgGaiAEYTpAUN9t2DVIiijgKQBgQDnYMMsaF0r557CM1CT
\nXUqgCZo8MKeV2jf2drlxRRwRl33SksQbzAQ/qrLdT7GP3sCGqvkxWY2FPdFYf8kx
\nGcCeZPcIeZYCQAM41pjtsaM8tVbLWVR8UtGBuQoPSph7JNF3Tm/JH/fbwjpjP7dt
\nJ7n8EzkRUNE6aIMHOFEeych/PQKBgQDmf1bMogx63rTcwQ0PEZ9Vt7mTgKYK4aLr
\niWgTWHXPZxUQaYhpjXo6+lMI6DpExiDgBAkMzJGIvS7yQiYWU+wthAr9urbWYdGZ
\nlS6VjoTkF6r7VZoILXX0fbuXh6lm8K8IQRfBpJff56p9phMwaBpDNDrfpHB5utBU
\nxs40yIdp6wKBgQC69Cp/xUwTX7GdxQzEJctYiKnBHKcspAg38zJf3bGSXU/jR4eB
\n1lVQhELGI9CbKSdzKM71GyEImix/T7FnJSHIWlho1qVo6AQyduNWnAQD15pr8KAd
\nXGXAZZ1FQcb3KYa+2fflERmazdOTwjYZ0tGqZnXkEeMdSLkmqlCRigWhGQKBgDak
\n/735uP20KKqhNehZpC2dJei7OiIgRhCS/dKASUXHSW4fptBnUxACYocdDxtY4Vha
\nfI7FPMdvGl8ioYbvlHFh+X0Xs9r1S8yeWnHoXMb6eXWmYKMJrAoveLa+2cFm1Agf
\n7nLhA4R4lqm9IpV6SKegDUkR4fxp9pPyodZPqBLLAoGBAJkD4wHW54Pwd4Ctfk9o
\njHjWB7pQlUYpTZO9dm+4fpCMn9Okf43AE2yAOaAP94GdzdDJkxfciXKcsYr9IIuk
\nfaoXgjKR7p1zERiWZuFF63SB4aiyX1H7IX0MwHDZQO38a5gZaOm/BUlGKMWXzuEd
\n3fy+1rCUwzOp9LSjtJYf4ege
\n-----END PRIVATE KEY-----",
    "type": "server",
    "update_time": "2017-02-25 09:38:27"
}
```

Status Code

For details, see **Status Codes**.

7.1.9.5 Deleting a Certificate

Function

This API is used to delete a specific certificate.

Constraints

If the target certificate is used by a listener, the certificate cannot be deleted, and 409 code will be displayed.

URI

DELETE /v2.0/lbaas/certificates/{certificate_id}

Table 7-207 Parameter description

Parameter	Mand atory	Type	Description
certificate_ id	Yes	String	Specifies the certificate ID.

Request

- Request parameters

    None

Response

- Response parameters

    None

Example Request

- Example request: Deleting a certificate

    DELETE https://{Endpoint}/v2.0/lbaas/certificates/23ef9aad4ecb463580476d324a6c71af

Example Response

- Example response 1

    None

Status Code

For details, see **Status Codes**.

7.2 Querying Versions

Function

Queries all available versions.

If there is no version added to the URL, all available versions are returned.

URI

GET /

Request

None

Response

None

Example

- Example request

  GET /

- Example response

```
{
  "versions": [
    {
      "status": "CURRENT",
      "id": "v2.0",
      "links": [
      {
        "href": "http://192.168.82.231:9696/v2.0",
        "rel": "self"
      }
    ]
    }
  ]
}
```

7.3 Getting Started

7.3.1 Creating a Load Balancer

Scenarios

Assume that you have created a VPC and several ECSs on the cloud platform. To ensure high performance and availability of ECSs, a load balancer is required to distribute requests to different backend ECSs.

This section describes how to invoke the API to create a load balancer.

□□ **NOTE**

The validity period of a token obtained from IAM is 24 hours. If you want to use a token for authentication, cache it to avoid frequently calling the IAM API.

Involved APIs

If you use a token for authentication, you must obtain the token and add **X-Auth-Token** to the request header of the ELB API when making an API call.

- IAM API used to obtain the token
- ELB API used to create a load balancer

Procedure

1. Obtain the token by referring to **Authentication**.
2. Send **POST https://ELB endpoint/v2.0/lbaas/loadbalancers**.
3. Add **X-Auth-Token** to the request header.
4. Specify the following parameters in the request body:

```
{
  "loadbalancer": {
    "name": "loadbalancer1", //Load balancer name
    "description": "simple lb", //Load balancer description
    "vip_subnet_id": "58077bdb-d470-424b-8c45-2e3c65060a5b", //ID of the load balancer subnet
```

```
          "vip_address": "10.0.0.4" //IP address of the load balancer
      }
  }
```

If the request is successful, the response body is returned.

If the request fails, an error code and error information are returned. For details, see **Status Codes**.

8 Change History

Released On	Description
2022-04-12	This issue is the first official release.