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容器服务

开发指南

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>	多级菜单递进。	设置 > 网络 > 设置网络类型
粗体	表示按键、菜单、页面名称等UI元素。	单击 **确定**。
`courier` 字体	命令。	执行 `cd /d C:/windows` 命令，进入Windows系统文件夹。
斜体	表示参数、变量。	`bae log list --instanceid` *`Instance_ID`*
[]或者[a|b]	表示可选项，至多选择一个。	`ipconfig` *`[-all|-t]`*
{}或者{a|b}	表示必选项，至多选择一个。	`swich` *`{stand | slave}`*

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1 Swarm SDK reference

1.1 Cluster SDK

1.1.1 JAVA SDK

You can write codes based on Alibaba Cloud SDK to call an Alibaba Cloud API so as to flexibly deploy and quickly operate Alibaba Cloud products and services.

Note:

AccessKey is needed in the using process. You can create and manage the AccessKey on the *AccessKey Management page*.

Environment preparations

You can query and download the latest SDK at *https://oss.sonatype.org/#nexus-search;gav~com.aliyun~aliyun-java-sdk-*~~~*.

You can download the source codes from GitHub: *https://github.com/aliyun/aliyun-openapi-java-sdk/*

Maven

```
<repositories>
        <repository>
            <id>sonatype-nexus-staging</id>
            <name>Sonatype Nexus Staging</name>
            <url>https://oss.sonatype.org/service/local/staging/deploy
/maven2/</url>
            <releases>
                <enabled>true</enabled>
            </releases>
            <snapshots>
                <enabled>true</enabled>
            </snapshots>
        </repository>
    </repositories>
    <dependencies>
        <dependency>
            <groupId>com.aliyun</groupId>
            <artifactId>aliyun-java-sdk-core</artifactId>
            <version>2.3.3</version>
        </dependency>
        <dependency>
            <groupId>com.aliyun</groupId>
            <artifactId>aliyun-java-sdk-cs</artifactId>
            <version>2.0.2</version>
        </dependency>
```

```
    </dependencies>
```

Sample

```
public static void main(String[] argc) throws Exception {
        String accessKeyID = "xx";
        String accessKeySecret = "xx";
        String region="cn-shenzhen"; // or other
        DescribeApiVersionRequest describeApiVersionRequest = new
DescribeApiVersionRequest();
        IClientProfile profile = DefaultProfile.getProfile(region,
accessKeyID, accessKeySecret);
        IAcsClient client = new DefaultAcsClient(profile);
        try {
            HttpResponse httpResponse
                    = client.doAction(describeApiVersionRequest);
            System.out.println(httpResponse.getUrl());
            System.out.println(new String(httpResponse.getContent()));
        } catch (ClientException e) {
            e.printStackTrace();
```

1.1.2 PHP SDK

You can write codes based on Alibaba Cloud SDK to call an Alibaba Cloud API so as to flexibly deploy and quickly operate Alibaba Cloud products and services.

Obtain AccessKey of a RAM user

AccessKey is needed in the using process. To guarantee the security of cloud service, create a Resource Access Management (RAM) user that can access Container Service resources. Obtain the AccessKey of this RAM user, and use this RAM user and SDK to manage Container Service.

Follow these steps to obtain the AccessKey of the RAM user:

1. *Create a RAM user and create the AccessKey of this user*.
2. *Grant permissions to this RAM user*. Grant the RAM user the permissions to manage Container Service resources.

Environment preparations

PHP 5.3 or later versions.

Download SDK

Download the source codes of PHP SDK from GitHub: *https://github.com/AliyunContainerService/aliyun-openapi-php-sdk*

Sample

https://github.com/AliyunContainerService/aliyun-openapi-php-sdk/blob/master/aliyun-php-sdk-demo/CsDemo.php

2 Use Container Service by using CLI

2.1 Overview

Alibaba Cloud Command Line Interface (CLI) is a tool to manage Alibaba Cloud resources. It is written in Go and built based on Alibaba Cloud APIs. After downloading and configuring this tool, you can use multiple Alibaba Cloud products by using command lines.

For more information about the introduction and installation of the Alibaba Cloud CLI, see *Alibaba Cloud Command Line Interface*.

Container Service APIs are RESTful APIs. Currently, Container Service supports two scheduling modes: swarm and Kubernetes. The list of APIs that Container Service supports is as follows.

Note:
For more information about the APIs that Alibaba Cloud Container Service supports, see *Container Service API reference*.

API	Description	Scope
View all clusters	View all the clusters you have created in Container Service, including swarm clusters and Kubernetes clusters.	Swarm clusters and Kubernetes clusters.
View a cluster	View the cluster details according to the cluster ID.	Swarm clusters and Kubernetes clusters.
Create a cluster	Create a cluster with a specified number of new nodes .	Swarm clusters.
Expand a cluster	Increase the number of nodes in the cluster.	Swarm clusters.
Add existing ECS instances to a cluster	Add existing Elastic Compute Service (ECS) instances to a cluster.	Swarm clusters and Kubernetes clusters.
Remove a node from a cluster	Remove a node from a cluster according to the cluster ID and node IP address.	Swarm clusters.

API	Description	Scope
View image list	View the list of supported images in the currently supported regions.	Swarm clusters.
Reset a node	Reset a node in the cluster.	Swarm clusters.
Delete a cluster	Delete a cluster according to the cluster ID and release all node resources of the cluster.	Swarm clusters and Kubernetes clusters.
Obtain cluster certificate	Obtain the cluster certificate according to the cluster ID.	Swarm clusters.

2.2 View all clusters

View all the clusters you have created in Container Service, including swarm clusters and Kubernetes clusters. For more information about the API description, see *Container Service API reference*.

Scope

Swarm clusters and Kubernetes clusters.

API request and response

Request format

```
aliyun cs GET /clusters
```

Response results

```
        "agent_version": "string",
        "cluster_id": "string",
        "created": "datetime",
        "external_loadbalancer_id": "string",
        "master_url": "string",
        "name": "string",
        "network_mode": "string",
        "region_id": "string",
        "security_group_id": "string",
        "size": "numbers",
        "state": "string",
        "updated": "datetime",
        "vpc_id": "string",
        "vswitch_id": "string"
```

```
```

2.3 View a cluster

View the cluster details according to the cluster ID. For more information about the API description, see *Container Service API reference*.

Scope

Swarm clusters and Kubernetes clusters.

API request and response

Request format

```
aliyun cs GET /clusters/<cluster_id>
```

Response results

```
{
    "Agent_version": "string ",
    "cluster_id": "string",
    "created": "datetime",
    "external_loadbalancer_id": "string",
    "master_url": "string",
    "name": "string",
    "network_mode": "string",
    "region_id": "string",
    "security_group_id": "string",
    "size": "numbers",
    "state": "string",
    "updated": "datetime",
    "vpc_id": "string",
    "vswitch_id": "string"
}
```

2.4 Create a cluster

Create a cluster with a specified number of new nodes. For more information about the API description, see *Container Service API reference*.

Scope

Swarm clusters.

API request and response

Request format

```
aliyun cs POST /clusters --header "Content-Type=application/json" --
body "$(cat create.json)"
```

Parameter description:

- Specify **`Content-Type`** as `application/json` in `--header`.
- `--body` is the body to be sent to the server, which can be read from a local file and must be in the valid JSON format. The `create.json` contents are as follows:

```
        "password": "password used to log on to the Elastic Compute
Service (ECS) instance by using SSH",
        "region_id": "region ID",
        "instance_type": "ECS instance type",
        "name": "cluster name",
        "size": "number of nodes",
        "network_mode": "network type, currently only supports Virtual
 Private Cloud (VPC)",
        "vpc_id": "VPC instance ID",
        "vswitch_id": "VSwitch ID of the VPC instance",
        "subnet_cidr": "container Classless Inter-Domain Routing (CIDR
) block",
        "data_disk_category": "disk category",
        "data_disk_size": "disk size",
        "need_slb": "whether or not to create the Server Load Balancer
 instance",
        "io_optimized": "whether or not to be I/O optimized, which is
yes by default in the VPC environment",
        "ecs_image_id": "image ID",
        "release_eip_flag": "whether or not to release Elastic IP (EIP
) after configuring the cluster"
```

Response results

```
    "cluster_id": "c61cf530524474386a7ab5a1c192a0d57",
    "request_id": "348D4C9C-9105-4A1B-A86E-B58F0F875575",
    "task_id": "T-5ad724ab94a2b109e8000004"
```

2.5 Expand a cluster

Increase the number of nodes in the cluster. For more information about the API description, see *Container Service API reference*.

Scope

Swarm clusters.

API request and response

Request format

```
aliyun cs PUT /clusters/<cluster_id> --header "Content-Type=applicatio
n/json" --body "$(cat scale.json)"
```

Parameter description:

- Specify **`Content-Type`** as `application/json` in `--header`.

- `--body` is the body to be sent to the server, which can be read from a local file and must be in the valid JSON format. The `scale.json` contents are as follows:

```
        "password": "password used to log on to the Elastic Compute
Service (ECS) instance by using SSH",
        "instance_type": "ECS instance type",
        "size": "number of nodes after expansion",
        "data_disk_category": "disk category",
        "data_disk_size": "disk size",
        "io_optimized": "whether or not to be I/O optimized, which is
yes by default in the VPC environment",
        "ecs_image_id": "image ID",
        "release_eip_flag": "whether or not to release Elastic IP (EIP
) after configuring the cluster"
```

Response results

```
    "cluster_id": "c61cf530524474386a7ab5a1c192a0d57",
    "request_id": "348D4C9C-9105-4A1B-A86E-B58F0F875575",
    "task_id": "T-5ad724ab94a2b109e8000004"
```

2.6 Add existing ECS instances to a cluster

Add existing Elastic Compute Service (ECS) instances to a cluster. For more information about the API description, see *Container Service API reference*.

Scope

Swarm clusters and Kubernetes clusters.

API request and response

Request format

```
aliyun cs POST /clusters/<cluster_id>/attach --header "Content-Type=
application/json" --body "$(cat attach.json)"
```

Parameter description:

- Specify **`Content-Type`** as `application/json` in `--header`.
- `--body` is the body to be sent to the server, which can be read from a local file and must be in the valid JSON format. The `attach.json` contents are as follows:

```
        "password": "password used to log on to the ECS instance by
using SSH",
        "instances": "the ECS instance array to be added",
        "ecs_image_id": "image ID",
```

```
        "release_eip_flag": "whether or not to release Elastic IP (EIP
) after configuring the cluster"
```

Response results

```
    "list": [

            "code": "200",
            "instanceId": "i-2zee3oiwcyoz7kwdo8bt",
            "message": "successful"


            "code": "200",
            "instanceId": "i-2ze0lgm3y6iylcbtcypf",
            "message": "successful"


    "task_id": "T-5a544aff80282e39ea000039"
```

2.7 Remove a node from a cluster

Remove a node from a cluster according to the cluster ID and node IP address. For more information about the API description, see *Container Service API reference*.

Scope

Swarm clusters.

API request and response

Request format

```
aliyun cs DELETE /clusters/<cluster_id>/ip/<ip>? releaseInstance=true
```

Parameter description:

- **`releaseInstance`**: Whether or not to release the Elastic Compute Service (ECS) instance when removing the node.

Response results

None.

2.8 View image list

View the list of supported images in the currently supported regions. For more information about the API description, see *Container Service API reference*.

API request and response

Request format

```
aliyun cs GET /images
```

Response results

```
    "<RegionID>": {
        "items": [

                "text": "<ImageName>",
                "value": "<ImageID>"


                "text": "<ImageName>",
                "value": "<ImageID>"
```

2.9 Reset a node

Reset a node in the cluster. For more information about the API description, see *Container Service API reference*.

Scope

Swarm clusters.

API request and response

Request format

```
aliyun cs POST /clusters/<cluster_id>/instances/<instance_id>/reset --
header "Content-Type=application/json" --body "$(cat reset.json)"
```

Parameter description:

- Specify **`Content-Type`** as `application/json` in `--header`.
- `--body` is the body to be sent to the server, which can be read from a local file and must be in the valid JSON format. The `reset.json` contents are as follows:

```
        "password": "password used to log on to the Elastic Compute
Service (ECS) instance by using SSH",
        "ecs_image_id": "image ID",
```

```
        "release_eip_flag": "whether or not to release Elastic IP (EIP
) after configuring the cluster"
```

Response results

```
    "cluster_id": "c61cf530524474386a7ab5a1c192a0d57",
    "request_id": "348D4C9C-9105-4A1B-A86E-B58F0F875575",
    "task_id": "T-5ad724ab94a2b109e8000004"
```

2.10 Delete a cluster

Delete a cluster according to the cluster ID and release all node resources of the cluster. For more information about the API description, see *Container Service API reference*.

Scope

Swarm clusters and Kubernetes clusters.

API request and response

Request format

```
aliyun cs DELETE /clusters/<cluster_id>
```

Response results

None.

2.11 Obtain cluster certificate

Obtain the cluster certificate according to the cluster ID. For more information about the API description, see *Container Service API reference*.

Scope

Swarm clusters.

API request and response

Request format

```
aliyun cs GET /clusters/<cluster_id>/certs
```

Response results

```
    "ca": "string",
    "cert": "string",
    "key": "string"
```

3 Developer tools

3.1 ECS Driver overview

Docker Machine is an application tool that helps developers create Docker operating environment on their local computers or platforms of cloud service providers. Alibaba Cloud Elastic Compute Service (ECS) Driver is an extension for Docker Machine, which simplifies the deployment of Docker operating environment under the Alibaba Cloud environment and facilitates developers to manage distributed Docker hosts.

Docker Machine, in combination with Alibaba Cloud ECS Driver, provides the following features:

- Quick creation

  With simple installation configurations, you can automatically create the Docker host environment or Docker clusters on Alibaba Cloud.
- Unified experience

  You can use Docker Machine to manage Docker hosts in local and on the cloud.
- Seamless integration

  Docker Machine integrates with Alibaba Cloud container Hub and Container Service seamlessly, provides complete container development experience, and is necessary in the process of development and operation & maintenance (O&M).

To customize the modifications of ECS Driver, obtain the source codes from GitHub and compile the Docker Machine that contains ECS Driver.

Address: *https://github.com/denverdino/docker-machine-driver-aliyunecs*

3.2 Installation method

Install Docker Machine

The simplest way is to install the Docker *Toolbox*, which includes Docker Engine, Docker Machine, and other tools.

To install Docker Machine independently, see *Install Docker Machine*.

Obtain ECS Driver

You can download the compiled results of Alibaba Cloud ECS Driver directly. The following versions can be used together with Docker Machine 0.5 or later versions:

- Windows 64 bit: *docker-machine-driver-aliyunecs_windows-amd64.tgz*
- Linux 64 bit: *docker-machine-driver-aliyunecs_linux-amd64.tgz*
- Mac OSX 64 bit: *docker-machine-driver-aliyunecs_darwin-amd64.tgz*

Install ECS Driver

Docker Machine requires that the binary file of ECS Driver is in the system path (for Mac OSX, the path included in `$PATH`). Change the file name to *`docker-machine-driver-aliyunecs`* and add the execute permission to the file. Then, Docker Machine can directly access ECS Driver.

The installation command on Mac OSX is to copy the binary file of ECS Driver to the */usr/local/bin* directory. The command on Mac OSX is as follows:

```
mkdir docker-machine
# Download and unzip Alibaba Cloud ECS Driver
curl -L https://docker-machine-drivers.oss-cn-beijing.aliyuncs.com/
docker-machine-driver-aliyunecs_darwin-amd64.tgz > driver-aliyunecs.
tgz && tar xzvf driver-aliyunecs.tgz -C docker-machine && rm driver-
aliyunecs.tgz
mv docker-machine/bin/* /usr/local/bin
mv /usr/local/bin/docker-machine-driver-aliyunecs.darwin-amd64 /usr/
local/bin/docker-machine-driver-aliyunecs && chmod +x /usr/local/bin/
docker-machine-driver-aliyunecs
```

3.3 Usage

Configure environment variables

To simplify the parameters that are used each time a Docker Machine command is run, configure the environment variables as follows:

```
export DEBUG=true
export ECS_ACCESS_KEY_ID=<your_access_key_id>
export ECS_ACCESS_KEY_SECRET=<your_access_key_secret>
export ECS_REGION=<your_ecs_region>
export ECS_SSH_PASSWORD=<your_ssh_password>
export MACHINE_DOCKER_INSTALL_URL= http://acs-public-mirror.oss-cn-
hangzhou.aliyuncs.com/docker-engine/internet
# Optional for VPC only
export ECS_VPC_ID=<your_vpc_id>
export ECS_VSWITCH_ID=<your_vswitchid>
```

Note:

- `ECS_REGION` indicates the region in which your Elastic Compute Service (ECS) instance resides, such as cn-beijing, cn-hangzhou, and cn-qingdao.
- `ECS_SSH_PASSWORD` indicates the password you set for logging on to your ECS instance by means of SSH. The password is 8 – 30 characters long and must contain uppercase letters/

lowercase letters, numbers, and special characters at the same time. However, the password does not support backward slash (\) or double quotation mark (“). For more information, see the ECS instance document *CreateInstance*.

- Configure the `MACHINE_DOCKER_INSTALL_URL` environment variable to the preceding Alibaba Cloud image site because the access to the Docker Engine official repository from China is unstable. Otherwise, errors such as `Error Creating machine: Error running provisioning: error installing docker` may be returned when you create an ECS instance. You can use *http://acs-public-mirror.oss-cn-hangzhou.aliyuncs.com/docker-engine/intranet* as the installation image of Docker Engine in the Alibaba Cloud intranet.
- Do not configure the `ECS_VPC_ID` or `ECS_VSWITCH_ID` environment variables unless you have VPC configurations. If you have a VPC-related account, make sure that your current `ECS_REGION` supports VPC configurations.

Use ECS Driver to create and delete ECS instances

After environment variables are configured, most parameters can be replaced by those environment variables by default.

You can create an ECS instance that contains the Docker environment by running the following command.

```
docker-machine create -d aliyunecs dev1
```

The example output is as follows:

```
$ docker-machine create -d aliyunecs dev1
Running pre-create checks...
Creating machine...
Waiting for machine to be running, this may take a few minutes...
Machine is running, waiting for SSH to be available...
Detecting operating system of created instance...
Provisioning created instance...
Copying certs to the local machine directory...
Copying certs to the remote machine...
Setting Docker configuration on the remote daemon...
To see how to connect Docker to this machine, run: docker-machine env
dev1
```

Run the **`docker-machine ls`** command to view the created ECS instance that contains the Docker environment.

```
$ docker-machine ls
NAME ACTIVE DRIVER STATE URL SWARM
```

```
dev1 - aliyunecs Running tcp://1.2.7.2:9376
```

Run the **`docker-machine kill`** command to stop the ECS instance and view the instance status.

```
$ docker-machine kill dev1
$ docker-machine ls
NAME ACTIVE DRIVER STATE URL SWARM
dev1 - aliyunecs Stopped tcp://1.2.7.2:9376
```

Run the **`docker-machine rm`** command to delete the ECS instance and view the instance information (you can directly run this command without running the docker-machine kill command first).

```
$ docker-machine rm dev1
Successfully removed dev1
$ docker-machine ls
NAME ACTIVE DRIVER STATE URL SWARM
```

For more **`docker-machine`** commands, see *Docker Machine command-line reference*.

3.4 Supported command parameters

Run the following command to display all possible configuration parameters of Elastic Compute Service (ECS) Driver.

```
docker-machine create -d aliyunecs
```

Parts of the command parameters supported by ECS Driver are as follows (for more information, see *docker-machine-driver-aliyunecs.md*):

- **`--aliyunecs-access-key-id`**: Required. Your AccessKey ID for Alibaba Cloud ECS API. By default, the Alibaba Cloud AccessKey ID uses ECS_ACCESS_KEY_ID environment variable.
- **`--aliyunecs-access-key-secret`**: Required. Your AccessKey Secret for Alibaba Cloud ECS API. By default, the Alibaba Cloud AccessKey Secret uses the ECS_ACCESS_KEY_SECRET environment variable.
- **`--aliyunecs-disk-size`**: The data disk size (in GB) for /var/lib/docker directory.
- **`--aliyunecs-tag`**: Tag for the ECS instance.
- **`--aliyunecs-vpc-id`**: Required for VPC only. Your VPC ID used to create the ECS instance.
- **`--aliyunecs-vswitch-id`**: Required for VPC only. Your VSwitch ID used to create the ECS instance.

- **`--aliyunecs-zone`**: The zone used to create the ECS instance.

You must have knowledge about the Alibaba Cloud ECS product APIs before configuring the preceding parameters. For more information, see *ECS API document*.

4 Kubernetes API reference

4.1 Cluster API call method

4.1.1 Overview

The call to Container Service API interfaces is performed by sending HTTP requests to the server address of the Container Service APIs and adding corresponding request parameters to the requests according to the interface instructions. The system returns the results according to the processing results of the requests.

1. *Request structure*
2. *Common parameters*
3. *Return results*
4. *Signature*

4.1.2 Common parameters

Public request headers

Public request parameters are the request parameters that each interface must use.

Parameter	Description	Options
Authorization	The authentication information used to verify the validity of a request. Format: `AccessKeyId:Signature`.	Required
Content-Length	The content length of an HTTP request, which is defined in RFC 2616.	Required
Content-Type	The content type of an HTTP request, which is defined in RFC 2616.	Required
Content-MD5	The Base64-encoded results converted from 128-bit MD5 hash value of the HTTP message body. We recommend that you add this message to all requests to	Required

Parameter	Description	Options
	prevent requests from being tampered.	
Date	The construction time of a request. Currently, only the GMT format is supported. If the difference between the construction time and the MNS server time exceeds 15 minutes, invalid request is returned.	Required
Host	The host access value, for example, `diku.aliyuncs.com`.	Required
Accept	The return type required by the client. `application/json` and `application/xml` are supported.	Required
x-acs-version	The API version. The current version is `2015-12-15`.	Required
x-acs-region-id	A region indicates the physical location of an Elastic Compute Service (ECS) instance.	Required
x-acs-signature-nonce	The unique random number used to prevent network replay attacks. Different random numbers must be used for different requests.	Required
x-acs-signature-method	The method of user signature. Currently only `HMAC-SHA1` is supported.	Required

Examples

```
GET /clusters HTTP/1.1
Host: cs.aliyuncs.com
Accept: application/json
User-Agent: cs-sdk-python/0.0.1 (Darwin/15.2.0/x86_64;2.7.10)
x-acs-signature-nonce: f63659d4-10ac-483b-99da-ea8fde61eae3
Authorization: acs ACSbW2iBbyX0Pk9N:mp/6Wdr18V3qAc5gbgsqMe/iB0c
x-acs-signature-version: 1.0
Date: Wed, 16 Dec 2015 11:18:47 GMT
x-acs-signature-method: HMAC-SHA1
```

```
Content-Type: application/json;charset=utf-8
X-Acs-Region-Id: cn-beijing
Content-Length: 0
```

Public response headers

Each time you send a request to call an interface, the system returns a unique identifier (RequestId), no matter the request is successful or not.

Examples

XML example:

```
<? xml version="1.0" encoding="UTF-8"? >
<!—Result Root Node-->
<Interface name+Response>
 | <!—Return request tag-->
 | <RequestId>4C467B38-3910-447D-87BC-AC049166F216</RequestId>
 | <!—Return result data-->
</Interface name+Response>
```

JSON example:

```
{
    "RequestId": "4C467B38-3910-447D-87BC-AC049166F216"
    /* Response data */
}
```

4.1.3 Request structure

Service address

The access address of Alibaba Cloud Container Service API is cs.aliyuncs.com.

Communication protocol

The system supports request communication by using the HTTP or HTTPS channel. We recommend that you use the HTTPS channel to send requests for more security.

Request methods

Use HTTP methods such as PUT, POST, GET, and DELETE to send different requests.

Request parameters

Each request must contain the public request parameters and the request parameters unique to specified operations.

Request encoding

Both requests and returned results are encoded by using the UTF-8 character set.

4.1.4 Return results

After the API service is called, data is returned in a unified format. The returned HTTP status code `2xx` indicates that the call is successful. The returned HTTP status code `4xx`or `5xx` indicates that the call fails. When the call is successful, data can be returned mainly in two formats: XML and JSON. When a request is sent, an external system can pass in a parameter to define the format of the returned data. The default format is XML.

Examples of returned results in this document are formatted for ease of viewing. The actual results returned are not formatted with line breaks or indentation.

4.1.5 Signature

Introduction

The Access Key ID and Access Key Secret are officially issued to you by Alibaba Cloud (you can apply for and manage them on the Alibaba Cloud official website). The Access Key ID is used to identify your identity. The Access Key Secret is the key used to encrypt the signature string and verify the signature string on the server side. You must keep the Access Key Secret confidential. Only you and Alibaba Cloud can know it.

Container Service verifies each access request it receives. Therefore, all requests sent to Container Service must contain signature information. Container Service performs symmetric encryption by using the Access Key ID and Access Key Secret to verify the identity of request senders. If the calculated verification code is the same as the one provided, the request is considered as valid. Otherwise, Container Service rejects the request and returns the HTTP 403 error.

You can add the authorization header in the HTTP request to contain the signature information, indicating that the message has been authorized.

Container Service requires to contain the signature in the HTTP header in the format of `Authorization: acs [Access Key ID]:[Signature]`.

The `signature` calculation method is as follows:

```
Signature = base64(hmac-sha1(VERB + "\n"
            + ACCEPT + "\n" +
            + Content-MD5 + "\n"
            + Content-Type + "\n"
            + Date + "\n"
            + CanonicalizedHeaders + "\n"
```

```
            + CanonicalizedResource))
```

- `VERB` indicates the HTTP method, for example, `PUT`.
- `Accept` indicates the return type required by the client, which can be application/json or application/xml.
- `Content-MD5` indicates the MD5 value of the requested content.
- `Content-Type` indicates the type of the requested content.
- `Date` indicates the operation time, which cannot be empty. For example, `Thu, 17 Mar 2012 18:49:58 GMT`. Currently, only the GMT format is supported. If the difference between the request time and the CAS server time exceeds 15 minutes, CAS considers the request as invalid and returns error 400.
- `CanonicalizedHeaders` indicates a combination of fields started with `x-acs-` in the HTTP request.
- `CanonicalizedResource` indicates the uniform resource identifier (URI) of the resource in the HTTP request. For example, `/clusters? name=my-clusters&resource=new`。

Note:

Conform to the following specifications for `CanonicalizedHeaders` (headers started with `x-acs-`) before signature verification:

1. Convert the names of all HTTP request headers started with `x-acs-` to lowercase letters. For example, convert `X-ACS-Meta-Name: TaoBao` to `x-acs-meta-name: TaoBao`. The names of request headers are case-insensitive according to Alibaba Cloud specifications. However, we recommend that you use the lowercase letters.
2. If the value part of a public request header is too long, replace the `\t`, `\n`, `\r`, and `\f` separators with spaces.
3. Sort all HTTP request headers that are obtained from the preceding step and compliant with Alibaba Cloud specifications in the lexicographically ascending order.
4. Delete any space at either side of a separator between request header and content. For example, convert `x-acs-meta-name: TaoBao,Alipay` to `x-acs-meta-name:TaoBao,Alipay`.
5. Separate all headers and contents with the `\n` separator to form the final CanonicalizedHeaders.

Note:

The format specification for `CanonicalizedResource`: `CanonicalizedResource` indicates the standard description of the resource you want to access. Sort sub-resources and query in the lexicographically ascending order and separate them by using the & separator to generate a sub-resource string (all parameters after `?`).

```
http://cs.aliyuncs.com/clusters?name=my-clusters&resource=new
```

The `CanonicalizedResource` format is:

```
/clusters? name=my-clusters&resource=new
```

Signature example

Overview

The following example shows the signature process.

In the example, the Access Key ID and Access Key Secret are `access_key_id` and `access_key_secret` respectively. We recommend that you use your own API call program to calculate the signature string in the following example. Then, compare your signature string with the example result.

The request example is as follows:

```
POST http://cs.aliyuncs.com/clusters?param1=value1&param2=value2 HTTP/
1.1
Accept-Encoding: identity
Content-Length: 210
Content-MD5: 6U4ALMkKSj0PYbeQSHqgmA==
x-acs-version: 2015-12-15
Accept: application/json
User-Agent: cs-sdk-python/0.0.1 (Darwin/15.2.0/x86_64;2.7.10)
x-acs-signature-nonce: fbf6909a-93a5-45d3-8b1c-3e03a7916799
x-acs-signature-version: 1.0
Date: Wed, 16 Dec 2015 12:20:18 GMT
x-acs-signature-method: HMAC-SHA1
Content-Type: application/json;charset=utf-8
X-Acs-Region-Id: cn-beijing
Authorization: acs access_key_id:/uA9QF5CHrr1FK3siBA4xLMTWE0=
```

Request construction process

Calculate `Content-Length` and `Content-MD5`

`Content-Length`: The length of the body content.

Note:

No space or line break is at the beginning of the example body.

```
body: {"password": "Just$test","instance_type": "ecs.m2.medium","
name": "my-test-cluster-97082734","size": 1,"network_mode": "vpc","
data_disk_category": "cloud","data_disk_size": 10,"ecs_image_id": "m-
253llee3l"}
Content-Length: 210
```

`Content-MD5`: The MD5 calculation process.

```
body: {"password": "Just$test","instance_type": "ecs.m2.medium","
name": "my-test-cluster-97082734","size": 1,"network_mode": "vpc","
data_disk_category": "cloud","data_disk_size": 10,"ecs_image_id": "m-
253llee3l"}
# Calculate the MD5 value of the body.
md5(body): e94e002cc90a4a3d0f61b790487aa098
# Convert the MD5 value to a byte array. Convert every two hexadecimal
 symbols of the MD5 value to a byte.
# For example, e9 -> 11111111111111111111111111101001 -> -23
bytes(md5(body)): {[-23], [78], [0], [44], [-55], [10], [74], [61], [
15], [97], [-73], [-112], [72], [122], [-96], [-104]}
# Convert the obtained byte array to a Base64 string.
base64(bytes(md5(body))): 6U4ALMkKSj0PYbeQSHqgmA==
Content-MD5: 6U4ALMkKSj0PYbeQSHqgmA==
```

Process `CanonicalizedHeaders`

```
# List all headers started with 'x-acs-'.
x-acs-version: 2015-12-15
x-acs-signature-nonce: ca480402-7689-43ba-acc4-4d2013d9d8d4
x-acs-signature-version: 1.0
x-acs-signature-method: HMAC-SHA1
X-Acs-Region-Id: cn-beijing
# Convert the request name to lowercase letters, delete the spaces at
 the beginning and end of each line, and sort in the lexicographical
order. Delete any space at either side of a separator between request
header and content.
# Note: No line break is in the last line.
x-acs-region-id:cn-beijing
x-acs-signature-method:HMAC-SHA1
x-acs-signature-nonce:fbf6909a-93a5-45d3-8b1c-3e03a7916799
x-acs-signature-version:1.0
x-acs-version:2015-12-15
```

Calculate `CanonicalizedResource`

In the example, the length of `CanonicalizedResource` is 27.

Note:

An `\n` line break is at the end of the first line.

```
/clusters? param1=value1&param2=value2
```

Calculate `Signature`

Assemble `SignatureString`. In the example, the length of the signature string is 307. An `\n` line break is at the end of all lines except the last line.

```
POST
application/json
6U4ALMkKSj0PYbeQSHqgmA==
application/json;charset=utf-8
Wed, 16 Dec 2015 12:20:18 GMT
x-acs-region-id:cn-beijing
x-acs-signature-method:HMAC-SHA1
x-acs-signature-nonce:fbf6909a-93a5-45d3-8b1c-3e03a7916799
x-acs-signature-version:1.0
x-acs-version:2015-12-15
/clusters? param1=value1&param2=value2
```

Calculate `Signature`

```
# Use Access Key Secret to encrypt the signature string. In the
example, the Access Key Secret is access_key_secret.
hmac-sha1(SignatureString): fee03d405e421ebaf514adec881038c4b313584d
# Convert the encrypted string to a byte array, similar to the Content
-MD5 calculation method.
# Convert the byte array to a Base64 string to get the final signature
 string.
base64(bytes(hmac-sha1(SignatureString))): ZmVlMDNkNDA1ZTQyMWVi
YWY1MTRhZGVjODgxMDM4YzRiMzEzNTg0ZA==
Signature: ZmVlMDNkNDA1ZTQyMWViYWY1MTRhZGVjODgxMDM4YzRiMzEzNTg0ZA==
```

Finish

After the preceding processing, add some other header information to construct the final HTTP request as follows:

```
POST http://cs.aliyuncs.com/clusters?param1=value1&param2=value2 HTTP/
1.1
Accept-Encoding: identity
Content-Length: 210
Content-MD5: 6U4ALMkKSj0PYbeQSHqgmA==
x-acs-version: 2015-12-15
Accept: application/json
User-Agent: cs-sdk-python/0.0.1 (Darwin/15.2.0/x86_64;2.7.10)
x-acs-signature-nonce: fbf6909a-93a5-45d3-8b1c-3e03a7916799
x-acs-signature-version: 1.0
Date: Wed, 16 Dec 2015 12:20:18 GMT
x-acs-signature-method: HMAC-SHA1
Content-Type: application/json;charset=utf-8
X-Acs-Region-Id: cn-beijing
```

```
Authorization: acs access_key_id:/uA9QF5CHrr1FK3siBA4xLMTWE0=
```

4.2 Cluster API list

4.2.1 Create a Kubernetes cluster

Create a Kubernetes cluster with a specified number of new nodes.

Request information

Request Line requestline

```
POST /clusters HTTP/1.1
```

Special request header requesthead

None. See *Public request headers*.

Request body (RequestBody)

```
{
    "disable_rollback": "whether or not to roll back if the cluster
fails to be created",
    "Name": "cluster name ",
    "Maid": cluster creation timeout,
    "cluster_type": "cluster type, Kubernetes",
    "region_id": "region",
    "vpcid": "Virtual Private Cloud (VPC) ID",
    "zoneid": "zone",
    "vswitchid": "VSwitch ID",
    "container_cidr": "pod Classless Inter-Domain Routing (CIDR)",
    "service_cidr": "service CIDR",
    "ssh_flags": "whether or not to enable SSH access for Internet",

    "cloud_monitor_flags":"whether or not to install the cloud
monitoring plug-in",
    "login_password": "password used to log on to the node by using
SSH. Use either this parameter or the key_pair.",
    "key_pair":"key pair name. Use either this parameter or login_pass
word.",
    "master_instance_type": "instance type of master nodes",
    "master_system_disk_category": "system disk type of master nodes",
    "master_system_disk_size":"system disk size of master nodes",
    "worker_instance_type": "instance type of worker nodes",
    "worker_system_disk_category": "system disk type of worker nodes",
    "worker_system_disk_size": "system disk size of worker nodes",
    "num_of_nodes": "number of worker nodes",
    "snat_entry": "whether or not to configure the SNATEntry",
}
```

Request body explanation

Name	Parameters	Required	Description
Disable_rollback	bool	No	Whether or not to roll back if the cluster

Name	Parameters	Required	Description
			fails to be created. `true` indicates to not roll back and `false` indicates to roll back. Resources generated in the creation process are released if you select to roll back. We do not recommend that you use `false`.
name	string	Yes	The cluster name, which can contain uppercase English letters, lowercase English letters, Chinese characters, numbers, and hyphens (-).
Timeout_mins	integer	No	The timeout (in minutes) for creating the cluster resource stack. The default value is `60`.
Region_id	string	Yes	The ID of the region in which the cluster resides.
zoneid	string	Yes	The zone of the region in which the cluster resides.
vpcid	string	No	The VPC ID, which can be empty. If left empty, the system automatically creates a VPC. The CIDR block of the automatically created VPC is 192.168.0.0/16. The **vpcid** and **vswitchid** must

Name	Parameters	Required	Description
			be empty or have a certain value at the same time.
vswitchid	string	No	The VSwitch ID, which can be empty. If left empty, the system automatically creates a VSwitch. The CIDR block of the automatically created VSwitch is 192.168.0.0/16.
container_cidr	string	No	The pod CIDR block, which cannot conflict with the VPC CIDR block. If you select to allow the system to automatically create a VPC, use the CIDR block 172.16.0.0/16 by default.
Service_cidr	string	No	A service segment cannot conflict with a VPC segment and a container segment. If you select to allow the system to automatically create a VPC, use the 172.19.0.0/20 CIDR block by default.
master_instance_type	string	Yes	The Elastic Compute Service (ECS) instance type code of the master nodes. For more information, see *Instance type families*.
Master_system_disk_category	string	Yes	The system disk type of the master nodes.

Name	Parameters	Required	Description
master_system_disk_size	integer	No	The system disk size of the master nodes.
worker_instance_type	string	Yes	The Elastic Compute Service (ECS) instance type code of the worker nodes. For more details, see.
Worker_system_disk_category	string	Yes	The system disk type of the worker nodes.
Worker_system_disk_size	integer	No	The system disk size of the worker nodes.
login_password	string	Yes	The SSH logon password, which is 8－30 characters long and must contain uppercase letters/ lowercase letters, numbers, and special characters at the same time. Use either this parameter or the **key_pair**.
key_pair	string	Yes	The key pair name. Use either this parameter or **login_password**.
num_of_nodes	integer	No	The number of worker nodes. The value range is [0,300].
snat_entry	bool	Yes	Whether or not to configure the SNAT for VPC. This parameter must be set to `true` if you select to allow the system to automatically create a VPC. Configure the parameter value according to the

Name	Parameters	Required	Description
			outbound capability if you select to use an existing VPC to create the cluster.
ssh_flags	bool	No	Whether or not to enable SSH access for Internet.
cloud_monitor_flags	bool	No	Whether or not to install the cloud monitoring plug-in.

Response information

Returns the row responseline

```
HTTP/1.1 202 accepted
```

Special return head responsehead

None. See *Public response headers*.

Response body (ResponseBody)

```
{
    "cluster_id":"string",
    "request_id":"string",
    "task_id":"string"
}
```

Example

Request example

```
POST /clusters HTTP/1.1
<Public request header>
{
    "Maid": True,
    "name": "my-test-Kubernetes-cluster",
    "Maid": 60,
    "cluster_type": "Kubernetes",
    "region_id": "cn-beijing",
    "zoneid": "cn-beijing-f",
    "vpcid": "",
    "vswitchid": "",
    "num_of_nodes": 1,
    "container_cidr": "172.16.0.0/16",
    "service_cidr": "172.19.0.0/20",
    "cloud_monitor_flags": true,
    "master_instance_type": "ecs.sn1ne.large",
    "master_system_disk_category": "cloud_efficiency",
```

```
    "master_system_disk_size": 40,
    "worker_instance_type": "ecs.sn1ne.large",
    "worker_system_disk_category": "cloud_efficiency",
    "Maid": 40,
    "snat_entry": true,
    "ssh_flags": true,
    "login_password": "Hello1234"
}
```

Returns an example

```
HTTP/1.1 202 Accepted
<Public response headers>
{
    "cluster_id": "cb95aa626a47740afbf6aa099b650d7ce",
    "request_id": "687C5BAA-D103-4993-884B-C35E4314A1E1",
    "task_id": "T-5a54309c80282e39ea00002f"
}
```

4.2.2 Scale out or in a cluster

Add or remove the worker nodes to or from the cluster (this operation only applies to the resources created by Resource Orchestration Service (ROS)).

Request Information

Request line (RequestLine)

```
PUT /clusters/{cluster_id} HTTP/1.1
```

Request line parameter (URI Param)

Name	Type	Required or not	Description
cluster_id	string	Yes.	The cluster ID.

Special request header (RequestHead)

None. Refer to *Public request headers*.

Request body requestbody

```
{
    "disable_rollback": "whether or not to roll back if the cluster
fails to be scaled out or in",
    "timeout_mins": "timeout for creating the cluster",
    "worker_instance_type": "instance type of worker nodes",
    "worker_system_disk_category": "system disk type of worker nodes",
    "worker_system_disk_size": "system disk size of worker nodes",
    "login_password": "password used to log on to the node by using
SSH",
    "num_of_nodes": "number of worker nodes"
```

```
}
```

Request body explanation

Name	Type	Required	Description
disable_rollback	bool	Yes	Whether or not to roll back if the cluster fails to be scaled out or in. `true` indicates to not roll back and `false` indicates to roll back. Resources generated in the creation process are released if you select to roll back. We do not recommend that you use `false`.
timeout_mins	int	Yes	The timeout (in minutes) for creating the cluster resource stack. The default value is `60`.
worker_instance_type	string	Yes	The Elastic Compute Service (ECS) instance type code of the worker nodes. For more details, see *Instance type families*.
worker_system_disk_category	string	Yes	Worker node System Tray type.
worker_system_disk_size	int	Yes	The system disk size of the worker nodes.
login_password	string	Yes	The SSH logon password, which is 8－30 characters long and must contain uppercase letters/ lowercase letters, numbers, and special characters at the same time. This password must be the same as

Name	Type	Required	Description
			that specified when you create the cluster.
num_of_nodes	int	Yes	The number of worker nodes. The value range is [0,300]. To scale out a cluster, this value must be larger than the number of existing worker nodes in the cluster. To scale in a cluster, this value must be smaller than the number of existing worker nodes in the cluster.

Returns Information

Returns the row responseline

```
HTTP/1.1 202 accepted
```

Special return head responsehead

None. See *Public response headers*.

Response body (ResponseBody)

```
{
    "cluster_id":"string",
    "request_id":"string",
    "task_id":"string"
}
```

Examples

Request example

```
PUT /clusters/Cccfd68c474454665ace07efce924f75f HTTP/1.1
<Public request headers>
{
    "disable_rollback": true,
    "timeout_mins": 60,
    "num_of_nodes": 8,
    "worker_instance_type": "ecs.sn1ne.large",
    "worker_system_disk_category": "cloud_efficiency",
    "worker_system_disk_size": 40,
    "login_password": "Hello1234"
```

```
}
```

Returns an example

```
HTTP/1.1 202 Accepted
<Public response headers>
{
    "cluster_id": "Cccfd68c474454665ace07efce924f75f",
    "request_id": "687C5BAA-D103-4993-884B-C35E4314A1E1",
    "task_id": "T-5a54309c80282e39ea00002f"
}
```

4.2.3 Create multi-availability kubernetes Cluster

Creates a new high-availability kubernetes cluster instance across the availability area, and creates a new specified number of nodes.

Request Information

Request Line requestline

```
POST /clusters HTTP/1.1
```

Special request header requesthead

None. Refer to *Public request headers*.

Request body (RequestBody)

```
{
    "Maid": "whether the failure rolls back ",
    "Name": "cluster name ",
    "Maid": cluster creation timeout,
    "Cluster_type": "kubernetes ",
    "Region_id": "region"
    "Multi_az": True,
    "Vpcid": "vpc id ",
    "Maid": "CIDR container ",
    "Service_cidr": "service CIDR ",
    "Maid": "First available zone switch ID ",
    "Maid": "second usable zone switch ID ",
    "Maid": "third usable zone switch ID ",
    "Maid": "First available Zone master node instance specification
 ",
    "Maid": "second available area master node instance specification
 ",
    "Maid": "third available area master node instance specification
 ",
    "Maid": "master node System Disk Type ",
    "Maid": "master node System Disk size ",
    "Maid": "First available zone worker node instance specification
 ",
    "Maid": "second available area worker node instance specification
 ",
    "Maid": "third available area worker node instance specification
 ",
    "Maid": "worker node System Tray type ",
```

```
    "Maid": "worker node System Disk size ",
    "Maid: the number of worker nodes in the first available area ",
    MAID: the number of worker nodes in the second available area ",
    MAID: the number of worker nodes in the third available area ",
    "Maid": "whether or not to open public-network SSH Login ",
    "Login_password": "SSH Login Password", "maid ": "Whether the
cloud monitor plug-in is installed"
}
```

Request body explanation

Name	Parameters	Required	Description
Disable_rollback	bool	No	Whether the failure is rolled back or not, true to indicate that the failure is not rolled back, false Failed rollback. If the selection fails to roll back, the resources produced during the creation are released , and false is not recommended
Name	string	Yes	Cluster name. The cluster name can be in case English letters , Chinese, numbers, and dashes.
Timeout_mins	integer	No	The cluster resource stack creation time-out, in minutes, is the default of 60.
Region_id	string	Yes	Location ID of the Cluster
Multi_az	bool	Yes	Highly Available Cluster type, fixed to true
Vpcid	string	Yes	Vpcid
Container_cidr	string	No	Container segment, cannot conflict with VPC segment. When you select a system

Name	Parameters	Required	Description
			to automatically create a VPC, by default, use the LDO .0.0/16 network segment
Service_cidr	string	No	A service segment cannot conflict with a VPC segment and a container segment . When you select a system to automatica lly create a VPC, the default is to use the FIG/20 network segment
Vswitch_id_a	string	Yes	Switch ID of the first usable Zone
Vswitch_id_ B	string	Yes	Switch ID of the second usable Zone
Vswitch_id_c	string	Yes	Switch ID of the third usable area
Master_ins tance_type_a	string	Yes	The first available Zone master node ECs specification Type code. For more information, see *Instance type families*.
Master_ins tance_type_ B	string	Yes	The second usable Zone master node ECs specification Type code. For more information, see *Instance type families*.
Master_ins tance_type_c	string	Yes	The third available Zone master node ECs specification Type code. For more information, see *Instance type families*.

Name	Parameters	Required	Description
Master_system_disk_category	string	Yes	Master node system disk type.
Master_system_disk_size	integer	No	Master node System Disk size
Worker_instance_type_a	string	Yes	The first available zone worker node ECs specification Type code. For more details, see.
Worker_instance_type_ B	string	Yes	The first available zone worker node ECs specification Type code. For more details, see.
Worker_instance_type_c	string	Yes	The first available zone worker node ECs specification Type code. For more details, see.
Worker_system_disk_category	string	Yes	Worker node System Tray type.
Worker_system_disk_size	integer	No	Worker node System Disk size
Num_of_nodes_a	integer	No	The first number of free zone worker nodes. Scope is [1,300]
Num_of_nodes_ B	integer	No	The first number of free zone worker nodes. Scope is [1,300]
Num_of_nodes_c	integer	No	The first number of free zone worker nodes. Scope is [1,300]
Login_password	string	Yes	SSH Login Password. Password rule is 8-30 Two characters,

Name	Parameters	Required	Description
			including three (large , lower-case letters, numbers, and special symbols). Key_pair Two, one.
Prosupport pair	string	Yes	The keypair name. And login_password.
Ssh_flags	bool	No	Do you want to open public network SSH login Login?
Cloud_monitor_flags	bool	No	Do you want to install the cloud monitoring plug-in?

API Usage Note

- You first need to include at least 3 switches under the unified VPC, in order to ensure high availability, it is recommended that three switches be distributed in different available zones.
- The switch to be used by the cluster must have access capability (SNAT rules can be configured using the NAT Gateway) or use ECs as the network agent. It is recommended that you configure SNAT rules using a NAT Gateway)

Returns Information

Returns the row responseline

```
HTTP/1.1 202 accepted
```

Special return head responsehead

None. See *Public response headers*.

Response body (ResponseBody)

```
{
    "cluster_id":"string",
    "request_id":"string",
    "task_id":"string"
```

```
}
```

Example

Request example

```
POST /clusters HTTP/1.1
<Public request header>
{
    "Maid": True,
    "Name": "mulit-Az-cluster ",
    "Maid": 60,
    "Cluster_type": "kubernetes ",
    "Region_id": "CN-Shanghai ",
    "Multi_az": True,
    "Maid": "10.4.0.0/16 ",
    "service_cidr": "10.3.0.0/20",
    "vpcid": "vpc-mytestvpc",
    "vswitch_id_a": "vsw-a",
    "vswitch_id_b": "vsw-b",
    "vswitch_id_c": "vsw-c",
    "master_instance_type_a": "ecs.c5.large",
    "master_instance_type_b": "ecs.d1.2xlarge",
    "master_instance_type_c": "ecs.c4.xlarge",
    "master_system_disk_category": "cloud_efficiency",
    "master_system_disk_size": 40,
    "worker_instance_type_a": "ecs.c5.large",
    "worker_instance_type_b": "ecs.d1.2xlarge",
    "worker_instance_type_c": "ecs.c4.xlarge",
    "worker_system_disk_category": "cloud_efficiency",
    "Maid": 40,
    "num_of_nodes_a": 2,
    "num_of_nodes_b": 2,
    "num_of_nodes_c": 2,
    "ssh_flags": true,
    "login_password": "Hello1234",
    "cloud_monitor_flags": true
}
```

Returns an example

```
HTTP/1.1 202 Accepted
<Public response headers>
{
    "cluster_id": "cb95aa626a47740afbf6aa099b650d7ce",
    "request_id": "687C5BAA-D103-4993-884B-C35E4314A1E1",
    "task_id": "T-5a54309c80282e39ea00002f"
```

```
}
```

4.2.4 Obtain cluster certificate

Download the certificate used by the current logon user to access the cluster.

Request information

Request line (RequestLine)

```
GET /clusters/:clusterid/certs
```

Special request header (RequestHead)

None. See *Public request headers*.

Response information

Response line (ResponseLine)

```
HTTP/1.1 200 OK
```

Special response header (ResponseHead)

None. See *Public response headers*.

Response body (ResponseBody)

```
    "ca": "string",
    "cert": "string",
    "key": "string"
```

Response body explanation

Name	Type	Description
ca	string	The certificate issued by the Certification Authority (CA), which is used by the current logon user to access the cluster.
cert	string	The public key certificate used by the current logon user to access the cluster.
key	string	The private key certificate used by the current logon user to access the cluster.

Example

Request example

```
GET /clusters/C5b5e80b0b64a4bf6939d2d8fbbc5ded7/certs HTTP/1.1
<Public request headers>
```

Response example

```
HTTP/1.1 200 Ok
<Public response headers>

    "ca": "xxxxxxxx",
    "cert": "xxxxxxxx",
    "key": "xxxxxxxxxx"
```

4.2.5 Obtain cluster kubeconfig interface

Return the Kubernetes cluster access kubeconfig that contains the identity information of the current logon user.

Request information

Request line (RequestLine)

```
GET /k8s/:clusterid/user_config
```

Special request header (RequestHead)

None. See *Public request headers*.

Response information

Response line (ResponseLine)

```
HTTP/1.1 200 OK
```

Special response header (ResponseHead)

None. See *Public response headers*.

Response body (ResponseBody)

```
    "config": "string"
```

Response body explanation

Name	Type	Description
config	string	The cluster access kubeconfig of the current logon user.

Example

Request example

```
GET /k8s/c5b5e80b0b64a4bf6939d2d8fbbc5ded7/user_config HTTP/1.1
<Public request headers>
```

Response example

```
HTTP/1.1 200 Ok
<Public response headers>

     "config": "xxxxxxxx"
```

4.2.6 Add existing ECS instances to a cluster

Add existing Elastic Compute Service (ECS) instances to a cluster.

Note:

The system disk is replaced in the process of adding ECS instances. Therefore, back up the data in advance.

Request information

Request line (RequestLine)

```
POST /clusters/{cluster_id}/attach HTTP/1.1
```

Request line parameter (URI Param)

Name	Type	Required	Description
cluster_id	string	Yes	The cluster ID.

Special request header (RequestHead)

None. See *Public request headers*.

Request body (RequestBody)

```
    "password": "password of the root account that is used to log on
to the ECS instance",
```

```
    "instances": "the array of instances to be added"
```

Request body explanation

Name	Type	Required	Description
password	string	Yes	The password of the ECS instance, which is 8 – 30 characters long and must contain uppercase letters/ lowercase letters, numbers, and special characters at the same time.
instances	array	Yes	The array of existing ECS instances.

Response information

Response line (ResponseLine)

```
HTTP/1.1 202 OK
```

Special response header (ResponseHead)

None. See *Public response headers*.

Response body (ResponseBody)

```
    "list": [

            "code": "200",
            "instanceId": "i-2zee3oiwcyoz7kwdo8bt",
            "message": "successful"


            "code": "200",
            "instanceId": "i-2ze0lgm3y6iylcbtcypf",
            "message": "successful"


    "task_id": "T-5a544aff80282e39ea000039"
```

Example

Request example

```
POST /clusters/Cccfd68c474454665ace07efce924f75f/attach HTTP/1.1
<Public request headers>
```

```
    "password": "Hello1234",
    "instances": [
        "i-xxxx",
        "i-yyyy"
```

Response example

```
HTTP/1.1 202 Accepted
<Public response headers>

    "list": [

            "code": "200",
            "instanceId": "i-xxxx",
            "message": "successful"


            "code": "200",
            "instanceId": "i-yyyy",
            "message": "successful"


    "task_id": "T-5a544aff80282e39ea000039"
```

4.2.7 View a cluster

View the cluster details according to the cluster ID.

Request information

Request line (RequestLine)

```
GET /clusters/{cluster_id} HTTP/1.1
```

Request line parameter (URI Param)

Name	Parameters	Required	Description
cluster_id	string	Yes	Custer ID

Special request header (RequestHead)

None. See *Public request headers*.

Request body requestbody

None.

Return information

Response line (ResponseLine)

```
HTTP/1.1 200 OK
```

Special response header (ResponseHead)

None. See *Public response headers*.

Response body (ResponseBody)

```
{
    "agent_version": "string",
    "cluster_id": "string",
    "created": "datetime",
    "external_loadbalancer_id": "string",
    "master_url": "string",
    "name": "string",
    "network_mode": "string",
    "region_id": "string",
    "security_group_id": "string",
    "size": "numbers",
    "state": "string",
    "updated": "datetime",
    "vpc_id": "string",
    "vswitch_id": "string"
}
```

Response body explanation

Cluster format

Name	Type	Description
agent_version	string	The Agent version.
cluster_id	string	The cluster ID, which is the unique identifier of the cluster.
created	string	The creation time of the cluster .
external_loadbalancer_id	string	The Server Load Balancer instance ID of the cluster.
master_url	string	The master address of the cluster, which is used to connect to the cluster to perform operations. For more information, see *Connect to a cluster by using Docker tools*.

Name	Type	Description
name	string	The cluster name, which is specified when you create the cluster and is unique for each account.
network_mode	string	The network mode of the cluster (Virtual Private Cloud (VPC)).
region_id	string	The ID of the region where the cluster is located.
security_group_id	string	The security group ID.
size	string	The number of nodes.
state	string	The cluster status. For more information, see *Cluster lifecycle*.
updated	string	The last update time.
vpc_id	string	The VPC ID.
vswitch_id	string	The VSwitch ID.

Examples

Request example

```
GET /clusters/C5b5e80b0b64a4bf6939d2d8fbbc5ded7 HTTP/1.1
<Public request header>
```

Response example

```
HTTP/1.1 200 OK
<Public response header>
{
    "agent_version": "0.5-e56dab3",
    "cluster_id": "c978ca3eaacd3409a9437db07598f1f69",
    "created": "2015-12-11T03:52:40Z",
    "external_loadbalancer_id": "1518f2b7e4c-cn-beijing-btc-a01",
    "master_url": "https://182.92.245.56:17589",
    "name": "my-python-cluster-039de960",
    "network_mode": "vpc",
    "region_id": "cn-beijing",
    "security_group_id": "sg-25yqjuxhz",
    "size": 5,
    "state": "running",
    "updated": "2015-12-15T15:01:58Z",
    "vpc_id": "",
    "vswitch_id": ""
```

```
}
```

4.2.8 View all clusters

View all the clusters you have created in Container Service, including swarm clusters and Kubernetes clusters.

Request information

Request line (RequestLine)

```
GET /clusters HTTP/1.1
```

Special request header (RequestHead)

None. See *Public request headers*.

Request body (RequestBody)

None.

Response information

Response line (ResponseLine)

```
HTTP/1.1 200 OK
```

Special response header (ResponseHead)

None. See *Public response headers*.

Response body (ResponseBody)

```
        "agent_version": "string",
        "cluster_id": "string",
        "created": "datetime",
        "external_loadbalancer_id": "string",
        "master_url": "string",
        "name": "string",
        "network_mode": "string",
        "region_id": "string",
        "security_group_id": "string",
        "size": "numbers",
        "state": "string",
        "updated": "datetime",
        "vpc_id": "string",
        "vswitch_id": "string"
```

Response body explanation

Cluster format

Name	Type	Description
agent_version	string	The Agent version.
cluster_id	string	The cluster ID, which is the unique identifier of the cluster.
created	string	The created time of the cluster.
external_loadbalancer_id	string	The Server Load Balancer instance ID of the cluster.
master_url	string	The master address of the cluster, which is used to connect to the cluster to perform operations. For more information, see *Connect to a cluster by using Docker tools*.
name	string	The cluster name, which is specified when you create the cluster and is unique for each account.
network_mode	string	The network mode of the cluster (Virtual Private Cloud (VPC)).
region_id	string	The ID of the region in which the cluster resides. For more information, see *Regions*.
security_group_id	string	The security group ID.
size	string	The number of nodes.
state	string	The cluster status. For more information, see *Cluster lifecycle*.
updated	string	Last updated time.
vpc_id	string	VPC ID.
vswitch_id	string	VSwitch ID.

Example

Request example

```
GET /clusters HTTP/1.1
```

```
<Public request headers>
```

Response example

```
HTTP/1.1 200 OK
<Public response headers>


        "agent_version": "0.5-e56dab3",
        "cluster_id": "c978ca3eaacd3409a9437db07598f1f69",
        "created": "2015-12-11T03:52:40Z",
        "external_loadbalancer_id": "1518f2b7e4c-cn-beijing-btc-a01",
        "master_url": "https://182.92.245.56:17589",
        "name": "my-python-cluster-039de960",
        "network_mode": "vpc",
        "region_id": "cn-beijing",
        "security_group_id": "sg-25yqjuxhz",
        "size": 5,
        "state": "running",
        "updated": "2015-12-15T15:01:58Z",
        "vpc_id": "",
        "vswitch_id": ""


        "agent_version": "0.5-e56dab3",
        "cluster_id": "c1eb19e0093204cbb86c3a80334d2129e",
        "created": "2015-12-15T14:26:58Z",
        "external_loadbalancer_id": "151a6099de1-cn-beijing-btc-a01",
        "master_url": "https://182.92.245.56:11905",
        "name": "my-test-cluster-002b3f3d",
        "network_mode": "vpc",
        "region_id": "cn-beijing",
        "security_group_id": "sg-25rg2ws9f",
        "size": 1,
        "state": "running",
        "updated": "2015-12-15T14:43:55Z",
        "vpc_id": "",
        "vswitch_id": ""
```

4.2.9 Delete a cluster

Delete a cluster according to the cluster ID, and release all node resources of the cluster.

Request information

Request line (RequestLine)

```
DELETE /clusters/{cluster_id} HTTP/1.1
```

Request line parameter (URI Param)

Name	Type	Required	Description
cluster_id	string	Yes	The cluster ID.

Special request header (RequestHead)

None. See *Public request headers*.

Request body (RequestBody)

None.

Response information

Response line (ResponseLine)

```
HTTP/1.1 202 Accepted
```

Special response header (ResponseHead)

None. See *Public response headers*.

Response body (ResponseBody)

None.

Example

Request example

```
DELETE /clusters/Cccfd68c474454665ace07efce924f75f HTTP/1.1
<Public request headers>
```

Response example

```
HTTP/1.1 202 Accepted
<Public response headers>
```

5 Swarm API reference

5.1 Application API call method

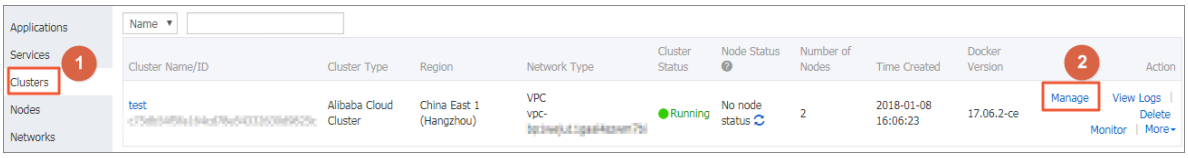
5.1.1 Call methods

The REST API of application management needs to point to the cluster access point address and interact with the cluster by using the HTTPS request of self-signed certificate.

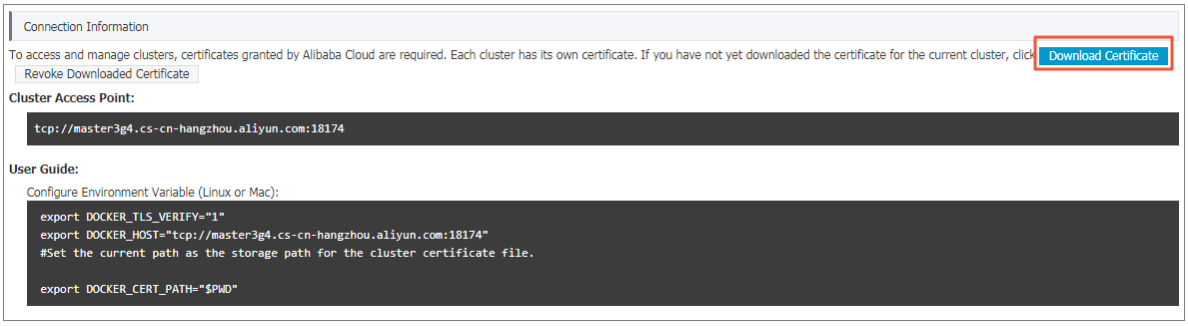
Obtain access point and certificate of the cluster

Obtain in Container Service console

1. Log on to the *Container Service console*.
2. Click **Clusters** in the left-side navigation pane.
3. Click **Manage** at the right of the cluster.



4. View the cluster access point and click **Download Certificate** to download the cluster certificate.



To use API access, change the tcp in the command of the preceding figure to https.

Obtain by programming

Obtain the following items by using the cluster management API:

1. The `master_url` field value of the cluster. For more information, see *View a cluster*.
2. The cluster certificate. For more information, see *Obtain cluster certificate*.

The API returned results:

```
{
```

```
    "ca": "string", ##Certificate issued by the Certification
Authority, ca.pem
    "cert": "string", ##Your public key certificate, cert.pem
    "key": "string" ##Your private key certificate, key.pem
}
```

We recommend that you save the three strings in the returned results as three files, namely, *ca.pem*, *cert.pem*, and *key.pem* in one directory. For most tools or programming frameworks, the HTTPS certificate is loaded as a file.

Call application management API

Assume that your cluster name is `ClusterName`, the preceding three certificates are saved to the *~/.docker/aliyun/ClusterName* directory, and the obtained `master_url` address is `https://123.123.123.123:1234`.

Application API list

For more information, see *View application list*.

The following example describes how to view application list interfaces (the `context path` is `/projects/`).

CURL

```
# Note: You may need to upgrade your CURL to the correct version.
curl --insecure --cert ~/.docker/aliyun/ClusterName/cert.pem --key
 ~/.docker/aliyun/ClusterName/key.pem https://123.123.123.123:1234/
projects/
```

PHP

```
<? php
     $ch = curl_init();
     curl_setopt($ch, CURLOPT_URL, "https://123.123.123.123:1234/
projects/");
     curl_setopt($ch, CURLOPT_SSLKEY, "~/.docker/aliyun/ClusterName/
key.pem");
     curl_setopt($ch, CURLOPT_CAINFO, "~/.docker/aliyun/ClusterName/ca
.pem");
     curl_setopt($ch, CURLOPT_SSLCERT, "~/.docker/aliyun/ClusterName/
cert.pem");
     $result=curl_exec($ch);
     echo $result;
     curl_close($ch);
? >
```

Python

```
import requests
res = requests.get('https://123.123.123.123:1234/projects/', verify
='~/.docker/aliyun/ClusterName/ca.pem', cert=('~/.docker/aliyun/
ClusterName/cert.pem', '~/.docker/aliyun/ClusterName/key.pem'))
```

```
print res.content
```

Java

Add Maven dependency

```
<dependency>
            <groupId>org.apache.httpcomponents</groupId>
            <artifactId>httpclient</artifactId>
            <version>4.5.1</version>
        </dependency>
        <dependency>
            <groupId>org.bouncycastle</groupId>
            <artifactId>bcpkix-jdk15on</artifactId>
            <version>1.52</version>
        </dependency>
```

Code sample:

```
import java.nio.file.Path;
        import java.nio.charset.Charset;
        import java.nio.file.Files;
        import java.nio.file.Paths;
        import java.security.KeyFactory;
        import java.security.KeyStore;
        import java.security.PrivateKey;
        import java.security.cert.Certificate;
        import java.security.cert.CertificateFactory;
        import java.security.spec.PKCS8EncodedKeySpec;
        import javax.net.ssl.SSLContext;
        import org.bouncycastle.openssl.PEMKeyPair;
        import org.bouncycastle.openssl.PEMParser;
        import org.apache.http.client.methods.CloseableHttpResponse;
        import org.apache.http.client.methods.HttpGet;
        import org.apache.http.conn.ssl.SSLConnectionSocketFactory;
        import org.apache.http.impl.client.CloseableHttpClient;
        import org.apache.http.impl.client.HttpClients;
        import org.apache.http.ssl.SSLContexts;
        import org.apache.http.util.EntityUtils;
        public class Test {
            public static void main(String[] argc) throws Exception {
                final char[] KEY_STORE_PASSWORD = "".toCharArray();
                //Obtain the certificate address
                Path caCertPath = Paths.get("~/.docker/aliyun/
ClusterName/ca.pem");
                Path clientCertPath = Paths.get("~/.docker/aliyun/
ClusterName/cert.pem");
                Path clientKeyPath = Paths.get("~/.docker/aliyun/
ClusterName/key.pem");
                final CertificateFactory cf = CertificateFactory.
getInstance("X. 509");
                final Certificate caCert = cf.generateCertificate(
Files.newInputStream(caCertPath));
                final Certificate clientCert = cf.generateCertificate(
                        Files.newInputStream(clientCertPath));
                final PEMKeyPair clientKeyPair = (PEMKeyPair) new
PEMParser(
                        Files.newBufferedReader(clientKeyPath,
                                Charset.defaultCharset()))
                        .readObject();
```

```
                final PKCS8EncodedKeySpec spec = new PKCS8Encod
edKeySpec(
                        clientKeyPair.getPrivateKeyInfo().getEncoded
());
                final KeyFactory kf = KeyFactory.getInstance("RSA");
                final PrivateKey clientKey = kf.generatePrivate(spec);
                //Set the trusted certificate
                final KeyStore trustStore = KeyStore.getInstance(
KeyStore.getDefaultType());
                trustStore.load(null, null);
                trustStore.setEntry("ca", new KeyStore.TrustedCer
tificateEntry(caCert), null);
                // Set the private key
                final KeyStore keyStore = KeyStore.getInstance(
KeyStore.getDefaultType());
                keyStore.load(null, null);
                keyStore.setCertificateEntry("client", clientCert);
                keyStore.setKeyEntry("key", clientKey, KEY_STORE_
PASSWORD, new Certificate[]{clientCert});
                SSLContext sslContext = SSLContexts.custom()
                        .loadTrustMaterial(trustStore, null)
                        .loadKeyMaterial(keyStore, KEY_STORE_PASSWORD)
                        .build();
                SSLConnectionSocketFactory sslsf = new SSLConnect
ionSocketFactory(
                        sslContext,
                        SSLConnectionSocketFactory.getDefault
HostnameVerifier());
                //httpclient connection
                CloseableHttpClient httpclient = HttpClients.custom()
                        .setSSLSocketFactory(sslsf)
                        .build();
                try {
                    Httpget = new httpget ("https: // 123.123.123.123
: 1234/projects /");
                    CloseableHttpResponse response = httpclient.
execute(httpget);
                    try {
                        System.out.println
("----------------------------------------");
                        String bodyAsString = EntityUtils.toString(
response.getEntity());
                        System.out.println(bodyAsString);
                    } finally {
                        response.close();
                    }
                } finally {
                    httpclient.close();
                }
            }
```

```
        }
```

5.2 Application API list

5.2.1 View application list

View the list of all your created applications in a container cluster.

Request information

Request line (RequestLine)

```
GET /projects/ HTTP/1.1
```

Request line parameter (URI Param)

Name	Type	Required	Description
q	string	No	The application name.
services	boolean	No	Whether or not includes the application service information. The default value is `true`.
containers	boolean	No	Whether or not includes the service container information. The default value is `true`.

Special request header (RequestHead)

None.

Request body (RequestBody)

None.

Response information

Response line (ResponseLine)

```
HTTP/1.1 200 OK
```

Special response header (ResponseHead)

None.

Response body (ResponseBody)

```
        "name": "string",
        "description": "string",
        "template": "string",
        "version": "string",
        "created": "datetime",
        "updated": "datetime",
        "desired_state": "string",
        "current_state": "string",
        "environment": {
           "key": "value",


        "services": [
```

Response body explanation

Project format

Name	Type	Description
name	string	The application name.
description	string	The application description.
template	string	The application Compose template.
version	string	The application version.
created	datetime	The created time of the application.
updated	datetime	The updated time of the application.
desired_state	string	The expected status (if the current status is the intermedia te status, the expected status indicates the final status of the change).
current_state	string	The current status.
environment	map	The environment variable key/ value.
services	array	The service list.

Example

Request example

```
GET /projects HTTP/1.1
```

Response example

```
HTTP/1.1 200 OK
Content-Type:application/json;charset=UTF-8


    "name": "test",
    "description": "This is a test application",
    "template": "...",
    "version": "1.0",
    "environment": {
      "COMPOSE_PROJECT_NAME": "test"

    "created": "2016-02-02T07:45:13.113833319Z",
    "updated": "2016-02-02T07:45:16.03142154Z",
    "desired_state": "running",
    "current_state": "running",
    "services": [
```

5.2.2 Create an application

Create an application.

Request Information

Request line (RequestLine)

```
POST /projects/ HTTP/1.1
```

Request line parameter (URI Param)

None.

Special request header (RequestHead)

```
Content-Type: application/json
```

Request body (RequestBody)

JSON object

```
    "name": "string",
    "description": "string",
    "template": "string",
```

```
    "version": "string",
    "environment": {
       "key": "value",

    }
```

Request body explanation

Name	Type	Required	Description
name	string	Yes	The application name, which can be 1-64 characters long and contain numbers, English letters, and hyphens (-), but cannot start with hyphens (-).
description	string	No	The application description.
template	string	Yes	The application Compose yaml template in the format of strings, which must be escaped in the JSON format.
version	string	No	The application version. The default value is 1.0.
environment	map	No	key/value used to replace the variable parameter in the Compose template.
latest_image	bool	No	Whether or not to update the image before creating an application.

Response information

Response line (ResponseLine)

```
HTTP/1.1 201 Created
```

Special response header (ResponseHead)

```
Location /projects/<name>
```

Example

Request example

```
POST /projects HTTP/1.1
Content-Type: application/json

  "name": "test",
  "description": "This is a test application",
  "template": "web:\r\n image: nginx",
  "version": "1.0",
  "environment": {
    "USER": "abc",
    "PWD": "password"
```

Response example

```
HTTP/1.1 201 Created
Location /projects/test
```

5.2.3 Delete an application

Delete an application according to the application name.

Request information

Request line (RequestLine)

```
DELETE /projects/{name}? force={force}&v={volume} HTTP/1.1
```

Request line parameter (URI Param)

Name	Type	Required	Description
name	string	Yes	The application name.
force	string	No	Whether or not to force the deletion. Optional values: `true` (`1`) and `false` (`0`).

Name	Type	Required	Description
			The default value is `false` .
`volume`	string	No	Whether or not to force the deletion. Optional values: `true` (`1`) and `false` (`0`). The default value is `false`.

Special request header (RequestHead)

None.

Request body (RequestBody)

None.

Response information

Response line (ResponseLine)

```
HTTP/1.1 200 OK
```

Special response header (ResponseHead)

None.

Response body (ResponseBody)

None.

Example

Request example

```
DELETE /projects/test HTTP/1.1
```

Response example

```
HTTP/1.1 200 OK
```

5.2.4 View an application

View the application details according to the application name.

Request information

Request line (RequestLine)

```
GET /projects/{name} HTTP/1.1
```

Request line parameter (URI Param)

Name	Type	Required	Description
name	string	Yes	Application name

Special request header (RequestHead)

None.

Request body (RequestBody)

None.

Response information

Response line (ResponseLine)

```
HTTP/1.1 200 OK
```

Special response header (ResponseHead)

None.

Response body (ResponseBody)

```
    "name": "string",
    "description": "string",
    "template": "string",
    "version": "string",
    "created": "datetime",
```

```
    "updated": "datetime",
    "desired_state": "string",
    "current_state": "string",
    "environment": {
       "key": "value",


    "services": [
```

Response body explanation

Application format

Name	Type	Description
name	string	The application name.
description	string	The application description.
template	string	The application Compose template.
version	string	The application version.
created	datetime	The created time of the application.
updated	datetime	The updated time of the application.
desired_state	string	The expected status (if the current status is the intermedia te status, the expected status indicates the final status of the change).
current_state	string	The current status.
environment	map	The environment variable key/ value.
services	array	The service list.

Example

Request example

```
GET /projects/test HTTP/1.1
```

Response example

```
HTTP/1.1 200 Ok
```

```
Content-Type:application/json;charset=UTF-8

  "name": "test",
  "description": "This is a test application",
  "template": "...",
  "version": "1.0",
  "environment": {
    "COMPOSE_PROJECT_NAME": "test"

  "created": "2016-02-02T07:45:13.113833319Z",
  "updated": "2016-02-02T07:45:16.03142154Z",
  "desired_state": "running",
  "current_state": "running",
  "services": [
```

5.2.5 Start an application

Start an application according to the service dependency order.

Request information

Request line (RequestLine)

```
POST /projects/{name}/start HTTP/1.1
```

Request line parameter (URI Param)

Name	Type	Required	Description
name	string	Yes	Application name

Special request header (RequestHead)

None.

Request body (RequestBody)

None.

Response information

Response line (ResponseLine)

```
HTTP/1.1 200 OK
```

Special response header (ResponseHead)

None.

Response body (ResponseBody)

None.

Example

Request example

```
POST /projects/test/start HTTP/1.1
```

Response example

HTTP/1.1 200 OK

5.2.6 Terminate an application

Send signals to all the containers in an application in a reverse order of service dependencies.

The default signal terminates all the containers.

Request information

Request line (RequestLine)

```
Post/projects/{name}/kill? Signal = {signal} HTTP/1.1
```

Request line parameter (URI Param)

Name	Type	Required or not	Description
name	string	Yes	The application name.
Signal	String	No	The default value is KILL.

Special request header (RequestHead)

N/A

Request body (RequestBody)

None

Response information

Response line (ResponseLine)

```
HTTP/1.1 200 OK
```

Special response header (ResponseHead)

None

Response body (ResponseBody)

None

Example

Request example

```
Post/projects/test/kill HTTP/1.1
```

Response example

```
HTTP/1.1 200 OK
```

5.2.7 Stop an application

Stop all the containers in an application in a reverse order of service dependencies.

Request Information

Request line (RequestLine)

```
POST /projects/{name}/stop? t={timeout} HTTP/1.1
```

Request line parameter (URI Param)

Name	Type	Required	Description
name	string	Yes	The application name.
timeout	int	No	The timeout time (in seconds) for stopping containers. The default value is 10.

Special request header (RequestHead)

None.

Request body (RequestBody)

None.

Response information

Response line (ResponseLine)

```
HTTP/1.1 200 OK
```

Special response header (ResponseHead)

None.

Response body (ResponseBody)

None.

Example

Request example

```
POST /projects/test/stop HTTP/1.1
```

Response example

```
HTTP/1.1 200 OK
```

5.2.8 Redeploy an application

Redeploy an application.

Request information

Request line (RequestLine)

```
POST /projects/{name}/redeploy HTTP/1.1
```

Request line parameter (URI Param)

Name	Type	Required	Description
name	string	Yes	Application name

Special request header (RequestHead)

None.

Request body (RequestBody)

None.

Response information

Response line (ResponseLine)

```
HTTP/1.1 200 OK
```

Special response header (ResponseHead)

None.

Response body (ResponseBody)

None.

Example

Request example

```
POST /projects/test/redeploy HTTP/1.1
```

Response example

```
HTTP/1.1 200 OK
```

5.2.9 Update application configurations

Update the application configurations.

Request information

Request line (RequestLine)

```
POST /projects/{name}/update HTTP/1.1
```

Request line parameter (URI Param)

Name	Type	Required	Description
name	string	Yes	Application name

Special request header (RequestHead)

```
Content-Type: application/json
```

Request body (RequestBody)

JSON object

```
    "description": "string",
    "template": "string",
    "version": "string",
    "latest_image": true,
    "environment": {
       "key": "value",

    }
```

Request body explanation

Name	Type	Required	Description
description	string	No	The updated application description.

Name	Type	Required	Description
template	string	Yes	The updated Compose yaml template, which must be escaped in the JSON format.
version	string	No	The updated application version. The updated version must be different from the original version. Otherwise, HTTP code 409 is returned.
latest_image	bool	No	Whether or not to pull the latest image.
environment	map	Environment variable	Key/value used to replace the environment variable in the Compose template.

Response information

Response line (ResponseLine)

```
HTTP/1.1 202 Accepted
```

Special response header (ResponseHead)

None.

Response body (ResponseBody)

None.

Example

Request example

```
POST /projects/test/update HTTP/1.1
Content-Type: application/json

  "description": "This is a test application",
  "template": "web:\r\n image: nginx",
  "version": "2.0",
  "latest_image": true,
  "environment": {
    "USER": "abc",
```

```
    "PWD": "newpwd"
```

Response example

```
HTTP/1.1 202 Accepted
```

5.2.10 Update an application in blue-green release

Update an application in blue-green release.

Request information

Request line (RequestLine)

```
POST /projects/{name}/update HTTP/1.1
```

Request line parameter (URI Param)

Name	Type	Required	Description
name	string	Yes	Application name

Special request header (RequestHead)

```
Content-Type: application/json
```

Request body (RequestBody)

JSON object

```
    "update_method": "string",
    "description": "string",
    "template": "string",
    "version": "string",
    "latest_image": true,
    "environment": {
       "key": "value",

    }
```

Request body explanation

Name	Type	Required	Description
update_method	string	Yes	The update method of the application. Use `blue-green` as the string.

Name	Type	Required	Description
description	string	No	The description of the updated application.
template	string	Yes	The updated Docker Compose yaml template, which must be escaped in the JSON format.
version	string	Yes	The updated application version. The updated version must be different from the original version. Otherwise, the HTTP code 409 is returned.
latest_image	bool	No	Set whether to pull the latest image.
environment	map	Environment variable	Use key/value pairs to replace the environment variables in the Compose template.

Response information

Response line (ResponseLine)

```
HTTP/1.1 202 Accepted
```

Special response header (ResponseHead)

None.

Response body (ResponseBody)

None.

Example

Request example

```
POST /projects/test_01/update HTTP/1.1
Content-Type: application/json

  "update_method": "blue-green",
```

```
  "description": "This is a test_01 application",
  "template": "web:\r\n image: nginx",
  "version": "2.0",
  "latest_image": true,
  "environment": {
    "USER": "abc",
    "PWD": "newpwd"
```

Response example

```
HTTP/1.1 202 Accepted
```

5.2.11 Confirm the blue-green release

Confirm the blue-green release of an application.

Request information

Request line (RequestLine)

```
POST /projects/{name}/confirm-update? force=(true or false) HTTP/1.1
```

Request line parameter (URI Param)

Name	Type	Required	Description
name	string	Yes	Application name.
confirm-update	bool	Yes	With `true` passed, the route weights of the current application and the old application are set as 100% and 0% respectively when the rollback is finished. With `false` passed, the weight settings are ignored when the rollback is finished. The route weight is subject to the weight settings of the customers.

Special request header (RequestHead)

None.

Request body (RequestBody)

None.

Request body explanation

None.

Response information

Response line (ResponseLine)

```
HTTP/1.1 202 Accepted
```

Special response header (ResponseHead)

None.

Response body (ResponseBody)

None.

Example

Request example

```
POST /projects/test_01/confirm-update? force=true HTTP/1.1
```

Response example

```
HTTP/1.1 202 Accepted
```

5.2.12 Roll back the blue-green release

Roll back a blue-green release application.

Request information

Request line (RequestLine)

```
POST /projects/{name}/rollback-update? force=(true or false) HTTP/1.1
```

Request line parameter (URI Param)

Name	Type	Required	Description
name	string	Yes	Application name.
rollback-update	bool	Yes	Currently passing true is OK.

Special request header (RequestHead)

None.

Request body (RequestBody)

None.

Request body explanation

None.

Response information

Response line (ResponseLine)

```
HTTP/1.1 202 Accepted
```

Special response header (ResponseHead)

None.

Response body (ResponseBody)

None.

Example

Request example

```
POST /projects/test_01/rollback-update? force=true HTTP/1.1
```

Response example

```
HTTP/1.1 202 Accepted
```

5.2.13 View service list

View the list of all your created services in a container cluster.

Request information

Request line (RequestLine)

```
GET /services/ HTTP/1.1
```

Request line parameter (URI Param)

Name	Type	Required	Description
q	string	No	The service name.

Name	Type	Required	Description
`containers`	boolean	No	Whether or not to include the service container information. The default value is `true`.

Special request header (RequestHead)

None.

Request body (RequestBody)

None.

Response information

Response line (ResponseLine)

```
HTTP/1.1 200 OK
```

Special response header (ResponseHead)

None.

Response body (ResponseBody)

```
      "id": "string",
      "name": "string",
      "project": "string",
      "description": "string",
      "created": "datetime",
      "updated": "datetime",
      "desired_state": "string",
      "current_state": "string",
      "definition": {
         "key": "value",


      "extensions": {
         "key": "value",


      "containers": {
         "key": "value",
```

Response body explanation

Service format

Name	Type	Description
id	string	The service ID.
name	string	The service name.
project	string	The application name.
created	datetime	The created time of the service .
updated	datetime	The updated time of the service.
desired_state	string	The expected status (if the current status is the intermedia te status, the expected status indicates the final status of the change).
current_state	string	The current status.
definition	map	The service definition key/ value in Compose.
extensions	map	The service extension key/ value in the Container Service Compose.
containers	map	The container key (container ID)/value (attribute) in the service.

Example

Request example

```
GET /services/ HTTP/1.1
```

Response example

```
HTTP/1.1 200 Ok
Content-Type:application/json;charset=UTF-8


    "id": "wordpress_db",
    "name": "db",
    "project": "wordpress",
    "definition": {
      "environment": [
        "MYSQL_ROOT_PASSWORD=password"
```

```
      "image": "mysql:5.7",
      "restart": "always"

    "extensions": {
      "scale": 1,
      "logs": [
        "/var/log/mysql"


    "created": "2016-04-21T13:36:32.440646459Z",
    "updated": "2016-04-21T13:36:33.270308958Z",
    "desired_state": "running",
    "current_state": "running",
    "containers": {
      "5616f05d27516b3502a391fd2ca9d312cabffa5ad431bf261ea81f4ceabd
476e": {
        "name": "/wordpress_db_1",
        "node": "10.246.2.3",
        "ip": "10.0.0.2",
        "running": true,
        "status": "running",
        "health": "success"
```

5.2.14 View a service

View the service details according to the service ID.

Request information

Request line (RequestLine)

```
GET /services/{service_id} HTTP/1.1
```

Request line parameter (URI Param)

Name	Type	Required	Description
service_id	string	Yes	The service ID in the format of {project_name}_{service_name}.

Special request header (RequestHead)

None.

Request body (RequestBody)

None.

Response information

Response line (ResponseLine)

```
HTTP/1.1 200 OK
```

Special response header (ResponseHead)

None.

Response body (ResponseBody)

```
    "id": "string",
    "name": "string",
    "project": "string",
    "description": "string",
    "created": "datetime",
    "updated": "datetime",
    "desired_state": "string",
    "current_state": "string",
    "definition": {
       "key": "value",


    "extensions": {
       "key": "value",


    "containers": {
       "key": "value",

    }
```

Response body explanation

Service format

Name	Type	Description
id	string	The service ID.
name	string	The service name.
project	string	The application name.
created	datetime	The created time of the service .
updated	datetime	The updated time of the service.
desired_state	string	The expected status (if the current status is the intermedia te status, the expected status

Name	Type	Description
		indicates the final status of the change).
current_state	string	The current status.
definition	map	The service definition key/value in Compose.
extensions	map	The service extension key/value in the Container Service Compose.
containers	map	The container key (container ID)/value (attribute) in the service.

Example

Request example

```
GET /services/wordpress_db HTTP/1.1
```

Response example

```
HTTP/1.1 200 Ok
Content-Type:application/json;charset=UTF-8

  "id": "wordpress_db",
  "name": "db",
  "project": "wordpress",
  "definition": {
    "environment": [
      "MYSQL_ROOT_PASSWORD=password"

    "image": "mysql:5.7",
    "restart": "always"

  "extensions": {
    "scale": 1,
    "logs": [
      "/var/log/mysql"


  "created": "2016-04-21T13:36:32.440646459Z",
  "updated": "2016-04-21T13:36:33.270308958Z",
  "desired_state": "running",
  "current_state": "running",
  "containers": {
    "5616f05d27516b3502a391fd2ca9d312cabffa5ad431bf261ea81f4ceabd476e
": {
      "name": "/wordpress_db_1",
      "node": "10.246.2.3",
      "ip": "10.0.0.2",
      "running": true,
```

```
      "status": "running",
      "health": "success"
```

5.2.15 Start a service

Start all the containers in a service.

Request Information

Request line (RequestLine)

```
POST /services/{service_id}/start HTTP/1.1
```

Request line parameter (URI Param)

Name	Type	Required	Description
service_id	string	Yes	The service ID in the format of {project_name}_{service_name}.

Special request header (RequestHead)

None.

Request body (RequestBody)

None.

Response information

Response line (ResponseLine)

```
HTTP/1.1 200 OK
```

Special response header (ResponseHead)

None.

Response body (ResponseBody)

None.

Example

Request example

```
POST /service/test_web/start HTTP/1.1
```

Response example

```
HTTP/1.1 200 OK
```

5.2.16 Stop a service

Stop all the containers in a service.

Request information

Request line (RequestLine)

```
POST /services/{service_id}/stop? t={timeout} HTTP/1.1
```

Request line parameter (URI Param)

Name	Type	Required	Description
service_id	string	Yes	The service ID in the format of {project_name}_{service_name}
timeout	int	No	The timeout time (in seconds) for stopping containers. The default value is `10`.

Special request header (RequestHead)

None.

Request body (RequestBody)

None.

Response information

Response line (ResponseLine)

```
HTTP/1.1 200 OK
```

Special response header (ResponseHead)

None.

Response body (ResponseBody)

None.

Example

Request example

```
POST /services/test_web/stop HTTP/1.1
```

Response example

```
HTTP/1.1 200 OK
```

5.2.17 Terminate a service

Send signals to all containers in a service. The default signal terminates all the containers.

Request information

Request line (RequestLine)

```
Post/services/{service_id}/kill? signal = {signal} HTTP/1.1
```

Request line parameter (URI Param)

Name	Type	Required	Description
service_id	string	Yes	The service ID in the format of {project_name}_{service_name}.
signal	string	No	The default value is KILL.

Special request header (RequestHead)

None.

Request body (RequestBody)

None.

Response information

Response line (ResponseLine)

```
HTTP/1.1 200 OK
```

Special response header (ResponseHead)

None.

Response body (ResponseBody)

None.

Example

Request example

```
Post/services/test_web/kill HTTP/1.1
```

Response example

```
HTTP/1.1 200 OK
```

5.2.18 Scale a service

Scale the containers in a service to a specific number.

Request information

Request line (RequestLine)

```
POST /services/{service_id}/scale HTTP/1.1
```

Request line parameter (URI Param)

Name	Type	Required	Description
service_id	string	Yes	The service ID in the format of {project_name}_{service_name}.

Special request header (RequestHead)

None.

Request body (RequestBody)

JSON object

```
    "type": "string",
```

```
    "value": "int"
```

Response information

Response line (ResponseLine)

```
HTTP/1.1 200 OK
```

Special response header (ResponseHead)

None.

Response body (ResponseBody)

None.

Example

Request example

Change the number of containers in `test_web` service to three.

```
POST /services/test_web/scale HTTP/1.1
Content-Type: application/json

    "type": "scale_to",
    "value": 3
```

Response example

```
HTTP/1.1 200 OK
```

5.2.19 Create a data volume

Create a data volume in the cluster.

Request information

Request line (RequestLine)

```
Post/volumes/create HTTP/1.1
```

Request line parameter (URI Param)

None.

Special request header (RequestHead)

```
Content-Type: application/json
```

Request body (RequestBody)

JSON object

```
    "name": "***",
    "driver": "***",
    "driverOpts": {
       "para1": "value",
       "para2": "value",

    }
```

Request body explanation

Name	Type	Required	Description
name	string	Yes	The data volume name, which can be 1 – 64 characters long, and contain numbers, English letters, and hyphens (-), but cannot start with a hyphen (-).
driver	string	Yes	The data volume type. Currently, Container Service supports the ossfs type.
driverOpts	DriverOptions	Yes	For Object Storage Service (OSS) data volumes, it is OSSOpts.

The definitions of OSSOpts data volume are as follows.

OSSOpts:

Name	Type	Required	Description
bucket	string	Yes	The OSS bucket name, which can be obtained in the OSS console.
ak_id	string	Yes	The AccessKey ID
ak_secret	string	Yes	The AccessKey Secret required to access the OSS resources.

Name	Type	Required	Description
url	string	Yes	The domain name provided by the OSS bucket. You can obtain the domain name in the OSS console.
no_stat_cache	string	Yes	File caching. To synchronize the changes of a file among different machines, disable caching.
other_opts	string	Yes	The configuration parameters for connecting to OSS.

Response information

Response line (ResponseLine)

```
HTTP/1.1 201 Created
```

Response body (ResponseBody)

JSON object

```
"Name": "volume",
"Driver": "***",
"Mountpoint": "/mnt/acs_mnt/**/***",
"Labels": null,
"Scope": ""
```

Response body explanation

Name	Type	Description
Name	string	The data volume name.
Driver	string	The type of the data volume driver: ossfs .
Mountpoint	string	The mount point of the data volume on the host: `/mnt/acs_mnt/**/***`.

Name	Type	Description
Labels	Map [String] string	The metadata information of the data volume.
Scope	string	The data volume management range. inside the host. `global` indicates the cluster level. `local` indicates inside the host.

OSS data volume example

Request example

```
    "name": "ossvolume",
    "driver": "ossfs",
    "driverOpts": {
       "bucket": "aliyun-docker",
       "ak_id": "*****",
       "ak_secret": "******",
       "url": "oss-cn-hangzhou.aliyuncs.com",
       "no_stat_cache": "true",
       "other_opts": "-o allow_other -o default_permission=666"
```

Response example

```
    "Name": "ossvolume",
    "Driver": "ossfs",
    "Mountpoint": "/mnt/acs_mnt/ossfs/aliyun-docker",
    "Labels": null,
    "Scope": ""
```

5.2.20 View a data volume

View the data volume details.

Request information

Request line (RequestLine)

```
Get /volumes/{name} HTTP/1.1
```

Request line parameter (URI Param)

None.

Special request header (RequestHead)

None.

Request body (RequestBody)

None.

Response information

Response line (ResponseLine)

```
HTTP/1.1 200 OK
```

Response body (ResponseBody)

JSON object

```
   "Name": "volume",
   "Driver": "***",
   "Mountpoint": "/mnt/acs_mnt/**/***",
   "Labels": null,
   "Scope": "",
   "Node": "***",
   "Refs": []
```

Name	Type	Description
Name	string	The data volume name.
Driver	string	The type of the data volume driver: ossfs.
Mountpoint	string	The mount point of the data volume on the host: `/mnt/acs_mnt/**/***`.
Labels	map[string]string	The metadata information of the data volume.
Scope	string	The data volume management range. `global` indicates the cluster level. `local` indicates inside the host.
Node	string	The host name of the node in which the data volume resides.
Refs	[]VolumeRef	The list of containers that use this data volume. For more information, see the definition of VolumeRef.

VolumeRef data type:

Name	Type	Description
Name	string	Container name
ID	string	Container ID

Example

Response example

```
   "Name": "volume",
   "Driver": "ossfs",
   "Mountpoint": "/mnt/acs_mnt/ossfs/bucket",
   "Labels": null,
   "Scope": "",
   "Node": "asd903233s23q-node1",
   "Refs": []
```

5.2.21 View data volume list

View all the data volumes of the current cluster.

Request information

Request line (RequestLine)

```
Get /volumes HTTP/1.1
```

Request line parameter (URI Param)

None.

Special request header (RequestHead)

None.

Request body (RequestBody)

None.

Response information

Response line (ResponseLine)

```
HTTP/1.1 200 OK
```

Response body (ResponseBody)

JSON object

```
   "Name": "volume",
```

```
    "Driver": "***",
    "Mountpoint": "/mnt/acs_mnt/**/***",
    "Labels": null,
    "Scope": "",
    "Node": "***",
    "Refs": []
```

Name	Type	Description
Name	string	The data volume name.
Driver	string	The type of the data volume driver: ossfs.
Mountpoint	string	The mount point of the data volume on the host: `/mnt/acs_mnt/**/***`.
Labels	map[string]string	The metadata information of the data volume.
Scope	string	Describes the data volume management scope. The data volume management range . global indicates the cluster level; local indicates inside the host.
Node	string	The host name of the node in which the data volume resides.
Refs	[]VolumeRef	The list of containers that use this data volume. For more information, see the definition of VolumeRef.

VolumeRef data type:

Name	Type	Description
Name	string	Container name
ID	string	Container ID

Example

Response example

```
"Volumes": [
    "Name": "docker2",
```

```
        "Driver": "ossfs",
        "Mountpoint": "/mnt/acs_mnt/ossfs/bucket2",
        "Labels": null,
        "Scope": "",
        "Node": "b347bcf0e68b",
        "Refs": []


        "Name": "docker1",
        "Driver": "ossfs",
        "Mountpoint": "/mnt/acs_mnt/ossfs/bucket1",
        "Labels": null,
        "Scope": "",
        "Node": "b347bcf0e68b",
        "Refs": []
```

5.2.22 Delete a data volume

Delete the specified data volume.

Request information

Request line (RequestLine)

```
Delete /volumes/{name} HTTP/1.1
```

Request line parameter (URI Param)

None.

Special request header (RequestHead)

None.

Request body (RequestBody)

None.

Response information

Response line (ResponseLine)

```
HTTP/1.1 204 No Content
```

Response body (ResponseBody)

None.

5.3 Triggers

5.3.4 Triggers

Introduction

A trigger is an API provided by Container Service for simple and fast redeployment and resource scaling.

The strict authentication is needed because standard APIs must guarantee the security. However, in scenarios where an API is integrated with a third-party system (for example, Jenkins or other continuous integration CI/CD system), the required permissions are limited, for example, messaging only. Therefore, to guarantee the security and convenience, APIs that have partial authentication policies and can be flexibly called are widely applied in scenarios requiring continuous integration and delivery.

Currently, Container Service provides redeployment trigger and resource scaling trigger.

- Redeployment trigger

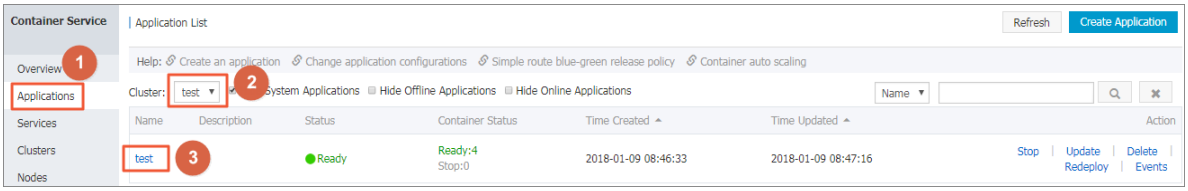
  You can integrate your APIs with your monitoring system and redeploy your applications when the system has exceptions. You can also integrate your APIs with container Hub, and then the application can be automatically redeployed by using the latest image after the new image is constructed.
- Resource scaling trigger

  You can call the resource scaling trigger to realize container scaling.

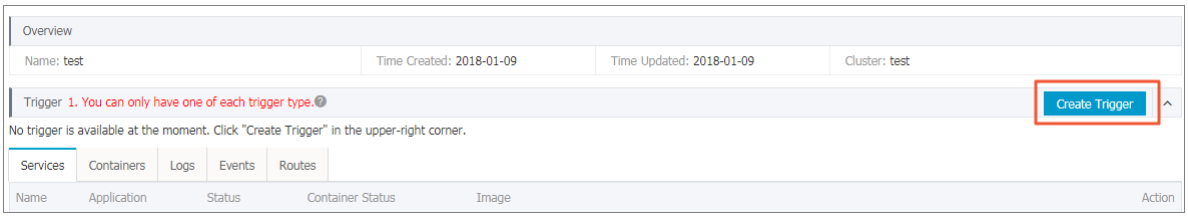
Create a trigger

Procedure

1. Log on to the *Container Service console*.
2. Click **Applications** in the left-side navigation pane.
3. Select the cluster in which the application resides from the Cluster list.
4. Click the application name. name.



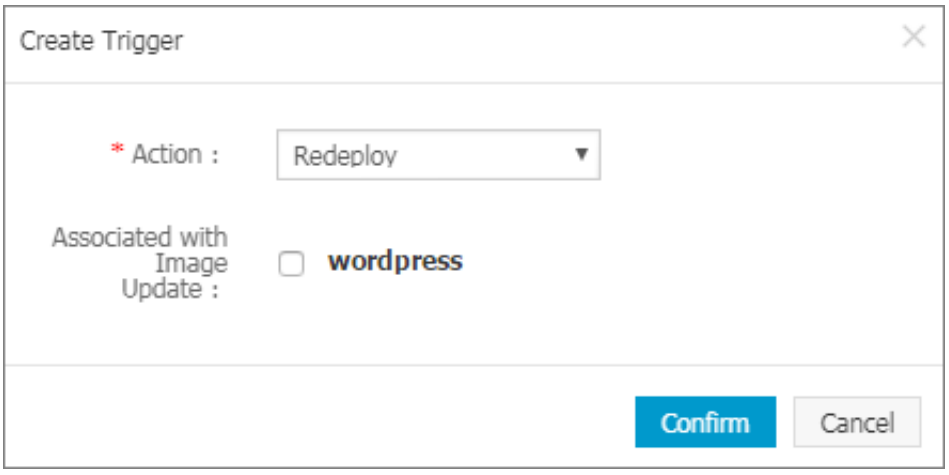
5. Click **Create Trigger** in the upper right corner.



6. The **Create Trigger** dialog box appears. Select **Redeploy** or **Resource Scaling** from the Action list and then click **Confirm**.

   - **Redeploy**

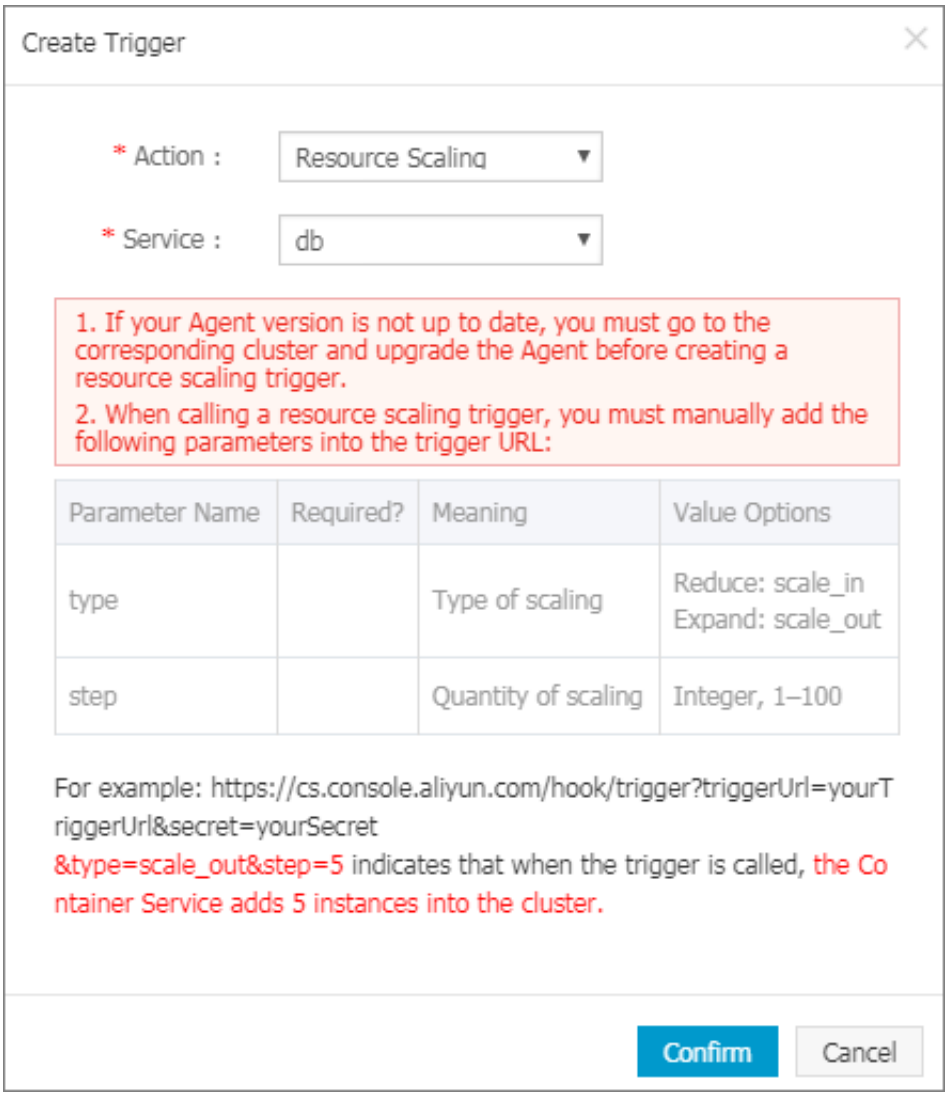
     If you have Write permission to the image used by the application, you can select the Associated with Image Update check box. Then, the application can be automatically redeployed by using the latest image after the new image is constructed. **Associated with Image Update** check box. Then, the application can be automatically redeployed by using the latest image after the new image is constructed.



   - **Resource scaling**

     Select the service that needs to set the resource scaling trigger from the **Service** list.

     Note:
     To use the resource scaling trigger, upgrade the cluster Agent to the latest version.



The generated trigger address is the API address.

Subsequent operations

You can call the trigger by using a third-party integration system or a GET or POST request. For example, you can run the **CURL** command to call the trigger.

Call the redeployment trigger:

```
curl 'https://cs.console.aliyun.com/hook/trigger?triggerUrl=YzI4YTk5NzFkZWZkYzQ2MTJiOWZkNTM1MzY2ZDU1M2NifGNvbGxlY3RkLWJlbmNobWFya3xyZWRlcGxv
```

```
eXwxOGlxbjc1Z25uMmVzfA==&secret=44586c6b466352395143584c397065
4ff5323d2509d546fdc1b33054b0928da8'
```

Call the resource scaling trigger:

Note:

When calling the resource scaling trigger, manually add the following parameters to the trigger URL.

Parameter name	Required	Meaning	Optional value
type	Yes	The scaling type.	Contract: `scale_in`. Expand: `scale_out`.
step	Yes	The scaling number.	Positive integer: 1-100 .

For example, calling the following trigger will add five containers to the service.

```
curl 'https://cs.console.aliyun.com/hook/trigger?triggerUrl=Y2IxZjI5Yz
hhYjIwMzRlMjBiYjc2OGUzYTlmZDgyNDAyfHdvcmRwcmVzcy10ZXN0fHNjYWxpbmd8MTkz
ZmEyMXFwZXVwMXw=&secret=53374142724e4e4a626f664a313131556e62c671
6cd0d97d096900b3ad42a9ad&type=scale_out&step=5'
```

5.5 Status table

Status	Description
Launching	The cluster is applying for corresponding cloud resources.
Running	The cluster is running.
Failed	The cluster fails to apply for cloud resources.
Starting	The cluster is starting.
Stopping	The cluster is being stopped.
Stopped	The cluster is stopped.
Restarting	The cluster is restarting.
Updating	The cluster is upgrading the server.
Scaling	Change the number of cluster nodes.
Deleting	The cluster is being deleted.
Deleted	The cluster is successfully deleted.

5.6 Introduction

You can use the APIs introduced in this document to perform relevant operations on Container Service.

Note:

Before using these interfaces, make sure that you fully understand the instructions, use agreement, and billing method of Container Service.

Terms

Term	Chinese	Description
Cluster	Cluster	Your container cluster. Multiple applications can be deployed in one cluster.
Node	Node	One node in your container cluster. Currently, only Elastic Compute Service (ECS) instances are supported.
Project	Application	A complex application is composed of multiple services. A simplest application might contain only one container.
Service	Service	A group of containers based on identical images and configurations function as a scalable microservice.
Container	Container	A runtime instance of Docker container.

5.7 API overview

Container Service APIs are mainly divided into three parts:

- Cluster interfaces
- Application interfaces
- Triggers

Cluster interfaces

Container Service provides some interfaces to manage clusters, for example, the interfaces used to create or delete clusters.

The list of cluster interfaces is as follows.

API	Description
GetClusterList	View all clusters.
CreateCluster	Create clusters.
DeleteCluster	Delete clusters.
GetClusterById	View clusters.
GetClusterCerts	Obtain the cluster certificate.
UpdateClusterSizeById	Update the number of cluster nodes.

Application interfaces

The application interfaces are compatible with the *Docker Remote API*. You can operate your Docker cluster in the same way as operating a single Docker Engine.

The list of application interfaces is as follows.

API	Description
List projects	View the application list.
Create project	Create applications.
Retrieve project	View applications.
Start project	Start applications.
Stop project	Stop applications.
Kill project	Terminate applications.
Update project	Update applications.
Delete project	Delete applications.
List services	View the service list.
Retrieve service	View services.
Start service	Start services.
Stop service	Stop services.
Kill service	Terminate services.

API	Description
Scale service	Scale services.
Create volume	Create data volumes.
View volume	View data volumes.
List volumes	View the data volume list.
Delete volume	Delete data volumes.

Triggers

A trigger is an API provided by Container Service for simple, fast, and continuous deployment. For more information, see *Triggers*.

5.8 Update history

Release date	Update	Description
2015-12-15	Determined the first version.	The basic cluster management interfaces were provided.
2016-02-04	Added application-related interfaces.	The basic application management interfaces were provided.

5.9 Cluster API call mode

5.9.1 Overview

The call to Container Service API interfaces is performed by sending HTTP requests to the server address of the Container Service APIs and adding corresponding request parameters to the requests according to the interface instructions. The system returns the results according to the processing results of the requests.

1. *Request structure*
2. *Public parameters*
3. *Returned results*
4. *Signature mechanism*

5.9.2 Request Structure

Endpoint

The access address of Alibaba Cloud Container Service API is cs.aliyuncs.com.

Communication protocol

The system supports request communication by using the HTTP or HTTPS channel. We recommend that you use the HTTPS channel to send requests for more security.

Request methods

Use HTTP methods such as PUT, POST, GET, and DELETE to send different requests.

Request Parameters

Each request must contain the public request parameters and the request parameters unique to specified operations.

Request encoding

Both requests and returned results are encoded by using the UTF-8 character set.

5.9.3 Public parameters

Public request headers

Public request parameters are the request parameters that each interface must use.

Parameter name	Description	Option
`Authorization`	The authentication information used to verify the validity of a request. Format: `AccessKeyId:Signature`.	Required
`Content-Length`	The content length of an HTTP request, which is defined in RFC 2616.	Required
`Content-Type`	The content type of an HTTP request, which is defined in RFC 2616.	Required
`Content-MD5`	The Base64-encoded results converted from 128-bit MD5 We recommend that you add this message to all requests to prevent requests from being tampered. hash value of the HTTP message body. We recommend that you add this message to all requests to	Required

Parameter name	Description	Option
	prevent requests from being tampered.	
Date	The construction time of a request. Currently, only the GMT format is supported. If the difference between the construction time and the MNS server time exceeds 15 minutes, invalid request is returned.	Required
Host	The host access value, for example, diku.aliyuncs.com.	Required
Accept	The return type required by the client. `application/json` and `application/xml` are supported.	Required
x-acs-version	The API version. The current version is 2015-12-15.	Required
x-acs-region-id	A region indicates the physical location of an Elastic Compute Service (ECS) instance. an Elastic Compute Service (ECS) instance.	Required
x-acs-signature-nonce	The unique random number used to prevent network replay attacks. Different random numbers must be used for different requests.	Required
x-acs-signature-method	The method of user signature. Currently only HMAC-SHA1 is supported.	Required

Example

```
GET /clusters HTTP/1.1
Host: cs.aliyuncs.com
Accept: application/json
User-Agent: cs-sdk-python/0.0.1 (Darwin/15.2.0/x86_64;2.7.10)
x-acs-signature-nonce: f63659d4-10ac-483b-99da-ea8fde61eae3
Authorization: acs ACSbW2iBbyX0Pk9N:mp/6Wdr18V3qAc5gbgsqMe/iB0c
x-acs-signature-version: 1.0
Date: Wed, 16 Dec 2015 11:18:47 GMT
```

```
x-acs-signature-method: HMAC-SHA1
Content-Type: application/json;charset=utf-8
X-Acs-Region-Id: cn-beijing
Content-Length: 0
```

Public response headers

Each time you send a request to call an interface, the system returns a unique identifier (RequestId), no matter the request is successful or not.

Example

XML example:

```
<? xml version="1.0" encoding="UTF-8"? >
<!—Result root node-->
<Interface name+Response>
 | <!—Return request tag-->
 | <RequestId>4C467B38-3910-447D-87BC-AC049166F216</RequestId>
 | <!—Return result data-->
</Interface name+Response>
```

JSON example:

```
    "RequestId": "4C467B38-3910-447D-87BC-AC049166F216"
    /* Return result data */
```

5.9.4 Returned results

After the API service is called, data is returned in a unified format. The returned HTTP status code `2xx` indicates that the call is successful. The returned HTTP status code `4xx` or `5xx` indicates that the call fails. When the call is successful, data can be returned mainly in two formats: XML and JSON. When a request is sent, an external system can pass in a parameter to define the format of the returned data. The default format is XML.

Examples of returned results in this document are formatted for ease of viewing. The actual results returned are not formatted with line breaks or indentation.

5.9.5 Signature mechanism

Introduction

The Access Key ID and Access Key Secret are officially issued to you by Alibaba Cloud (you can apply for and manage them on the Alibaba Cloud official website). The Access Key ID is used to identify your identity. The Access Key Secret is the key used to encrypt the signature string and

verify the signature string on the server side. You must keep the Access Key Secret confidential. Only you and Alibaba Cloud can know it.

Container Service verifies each access request it receives. Therefore, all requests sent to Container Service must contain signature information. Container Service performs symmetric encryption by using the Access Key ID and Access Key Secret to verify the identity of request senders. If the calculated verification code is the same as the one provided, the request is considered as valid. Otherwise, Container Service rejects the request and returns the HTTP 403 error.

You can add the authorization header in the HTTP request to contain the signature information, indicating that the message has been authorized.

Container Service requires to contain the signature in the HTTP header in the format of `Authorization: acs [Access Key ID]:[Signature]`.

The `Signature` calculation method is as follows:

```
Signature = base64(hmac-sha1(VERB + "\n"
            + ACCEPT + "\n" +
            + Content-MD5 + "\n"
            + Content-Type + "\n"
            + Date + "\n"
            + CanonicalizedHeaders + "\n"
            + CanonicalizedResource))
```

- `VERB` indicates the HTTP method, for example, `PUT`.
- `Accept` indicates the return type required by the client, which can be application/json or application/xml.
- `Content-MD5` indicates the MD5 value of the requested content.
- `Content-Type` indicates the type of the requested content.
- `Date` indicates the operation time, which cannot be null. Currently, only the GMT format is supported. If the difference between the request time and the CAS server time exceeds 15 minutes, CAS considers the request as invalid and returns error 400. For more information, see the 5th section. For example, `Thu, 17 Mar 2012 18:49:58 GMT`.
- `CanonicalizedHeaders` indicates a combination of fields started with `x-acs-` in the HTTP request.
- `CanonicalizedResource` indicates the uniform resource identifier (URI) of the resource in the HTTP request. For example, `/clusters? name=my-clusters&resource=new`.

Note:
Conform to the following specifications for `CanonicalizedHeaders` (headers started with `x-acs-`) before signature verification:

1. Convert the names of all HTTP request headers started with `x-acs-` to lowercase letters. For example, convert `X-ACS-Meta-Name: TaoBao` to `x-acs-meta-name: TaoBao`. The names of request headers are case-insensitive according to Alibaba Cloud specifications. However, we recommend that you use the lowercase letters.
2. If the value part of a public request header is too long, replace the `\t`, `\n`, `\r`, and `\f` separators with spaces.
3. Sort all HTTP request headers that are obtained from the preceding step and compliant with Alibaba Cloud specifications in the lexicographic ascending order.
4. Delete any space at either side of a separator between request header and content. For example, convert `x-acs-meta-name: TaoBao,Alipay` to `x-acs-meta-name:TaoBao,Alipay`.
5. Separate all headers and contents with the `\n` separator to form the final `CanonicalizedHeaders`.

Note:
The format specification for `CanonicalizedResource`: `CanonicalizedResource` indicates the standard description of the resource you want to access. Sort sub-resources and query in the lexicographically ascending order and separate them by using the `&` separator to generate a sub-resource string (all parameters after `?`).

```
http://cs.aliyuncs.com/clusters?name=my-clusters&resource=new
```

The `CanonicalizedResource` format is:

```
/clusters? name=my-clusters&resource=new
```

Signature example

Overview

The following example shows the signature process.

In the example, the Access Key ID and Access Key Secret are `access_key_id` and `access_key_secret` respectively. We recommend that you use your own API call program to

calculate the signature string in the following example. Then, compare your signature string with the example result.

The request example is as follows:

```
POST http://cs.aliyuncs.com/clusters?param1=value1&param2=value2 HTTP/
1.1
Accept-Encoding: identity
Content-Length: 210
Content-MD5: 6U4ALMkKSj0PYbeQSHqgmA==
x-acs-version: 2015-12-15
Accept: application/json
User-Agent: cs-sdk-python/0.0.1 (Darwin/15.2.0/x86_64;2.7.10)
x-acs-signature-nonce: fbf6909a-93a5-45d3-8b1c-3e03a7916799
x-acs-signature-version: 1.0
Date: Wed, 16 Dec 2015 12:20:18 GMT
x-acs-signature-method: HMAC-SHA1
Content-Type: application/json;charset=utf-8
X-Acs-Region-Id: cn-beijing
Authorization: acs access_key_id:/ZmVlMDNkNDA1ZTQyMWViYWY1MTRhZG
VjODgxMDM4YzRiMzEzNTg0ZA==
```

Request construction process

Calculate `Content-Length` and `Content-MD5`

`Content-Length`: The length of the body content.

Note:

No space or line break is at the beginning of the example body.

```
body: {"password": "Just$test","instance_type": "ecs.m2.medium","name
": "my-test-cluster-97082734","size": 1,"network_mode": "classic","
data_disk_category": "cloud","data_disk_size": 10,"ecs_image_id": "m-
253llee3l"}
Content-Length: 210
```

`Content-MD5`: The MD5 calculation process.

```
body: {"password": "Just$test","instance_type": "ecs.m2.medium","name
": "my-test-cluster-97082734","size": 1,"network_mode": "classic","
data_disk_category": "cloud","data_disk_size": 10,"ecs_image_id": "m-
253llee3l"}
# Calculate the MD5 value of the body.
md5(body): e94e002cc90a4a3d0f61b790487aa098
# Convert the MD5 value to a byte array. Convert every two hexadecimal
 symbols of the MD5 value to a byte.
# For example, e9 -> 11111111111111111111111111101001 -> -23
bytes(md5(body)): {[-23], [78], [0], [44], [-55], [10], [74], [61], [
15], [97], [-73], [-112], [72], [122], [-96], [-104]}
# Convert the obtained byte array to a Base64 string.
base64(bytes(md5(body))): 6U4ALMkKSj0PYbeQSHqgmA==
```

```
Content-MD5: 6U4ALMkKSj0PYbeQSHqgmA==
```

Process `CanonicalizedHeaders`

```
# List all headers started with 'x-acs-'.
x-acs-version: 2015-12-15
x-acs-signature-nonce: ca480402-7689-43ba-acc4-4d2013d9d8d4
x-acs-signature-version: 1.0
x-acs-signature-method: HMAC-SHA1
X-Acs-Region-Id: cn-beijing
# Convert the request name to lowercase letters, delete the spaces
at the beginning and end of each line, and sort the headers in the
lexicographically ascending order. Delete any space at either side of
a separator between request header and content.
# Note: No line break is in the last line.
x-acs-region-id:cn-beijing
x-acs-signature-method:HMAC-SHA1
x-acs-signature-nonce:fbf6909a-93a5-45d3-8b1c-3e03a7916799
x-acs-signature-version:1.0
x-acs-version:2015-12-15
```

Calculate `CanonicalizedResource`

In the example, the length of CanonicalizedResource is 27.

Note:

An `\n` line break is at the end of the first line.

```
/clusters? param1=value1&param2=value2
```

Calculate `Signature`

Assemble `SignatureString`. In the example, the length of the signature string is 307. An `\n` line break is at the end of all lines except the last line.

```
POST
application/json
6U4ALMkKSj0PYbeQSHqgmA==
application/json;charset=utf-8
Wed, 16 Dec 2015 12:20:18 GMT
x-acs-region-id:cn-beijing
x-acs-signature-method:HMAC-SHA1
x-acs-signature-nonce:fbf6909a-93a5-45d3-8b1c-3e03a7916799
x-acs-signature-version:1.0
x-acs-version:2015-12-15
/clusters? param1=value1&param2=value2
```

Calculate `Signature`

```
# Use Access Key Secret to encrypt the signature string. In the
example, the accessKeySecret is access_key_secret.
hmac-sha1(SignatureString): fee03d405e421ebaf514adec881038c4b313584d
# Convert the encrypted string to a byte array, similar to the Content
-MD5 calculation method.
```

```
# Convert the byte array into a Base64 string to get the final
signature string.
base64(bytes(hmac-sha1(SignatureString))): ZmVlMDNkNDA1ZTQyMWVi
YWY1MTRhZGVjODgxMDM4YzRiMzEzNTg0ZA==
Signature: ZmVlMDNkNDA1ZTQyMWViYWY1MTRhZGVjODgxMDM4YzRiMzEzNTg0ZA==
```

Finish

After the preceding processing, add some other header information to construct the final HTTP request as follows:

```
POST http://cs.aliyuncs.com/clusters?param1=value1&param2=value2 HTTP/
1.1
Accept-Encoding: identity
Content-Length: 210
Content-MD5: 6U4ALMkKSj0PYbeQSHqgmA==
x-acs-version: 2015-12-15
Accept: application/json
User-Agent: cs-sdk-python/0.0.1 (Darwin/15.2.0/x86_64;2.7.10)
x-acs-signature-nonce: fbf6909a-93a5-45d3-8b1c-3e03a7916799
x-acs-signature-version: 1.0
Date: Wed, 16 Dec 2015 12:20:18 GMT
x-acs-signature-method: HMAC-SHA1
Content-Type: application/json;charset=utf-8
X-Acs-Region-Id: cn-beijing
Authorization: acs access_key_id:/ZmVlMDNkNDA1ZTQyMWViYWY1MTRhZG
VjODgxMDM4YzRiMzEzNTg0ZA==
```

5.10 Cluster API list

5.10.1 Create a cluster instance

Create a cluster with a specified number of new nodes.

Request information

Request line (RequestLine)

```
POST /clusters HTTP/1.1
```

Request line parameter (URI Param)

None.

Special request header (RequestHead)

None. See *Public request headers*.

Request body (RequestBody)

```
{
    "password": "password of the root account to log on to the Elastic
 Compute Service (ECS) instance",
    "region_id": "RegionID",
    "instance_type": "ECS instance type",
```

```
    "name": "cluster name",
    "size": "number of nodes",
    "network_mode": "vpc",
    "vpc_id": "VPC_ID",
    "vswitch_id": "VSwitch ID",
    "subnet_cidr": "container Classless Inter-Domain Routing (CIDR)
block such as 172.28.1.0/24",
     "data_disk_category": "disk category",
    "data_disk_size": "disk size",
    "need_slb": "whether to create Server Load Balancer instance for
the cluster",
    "ecs_image_id": "operating system image",
    "io_optimized": "whether I/O to be optimized",
    "release_eip_flag": "whether to release Elastic IP (EIP) after
configuring the cluster"
    "rds_instances": "RDS instance ID"
}
```

Request body explanation

Name	Type	Required	Description
name	string	Yes	The cluster name, which can contain uppercase English letters, lowercase English letters, Chinese characters, numbers, and hyphens (-).
size	integer	Yes	The number of ECS instances in the cluster.
instance_type	string	Yes	The ECS instance type code. For more information, see *Instance type families*.
network_mode	string	Yes	The network mode of the cluster. Currently, only VPC is supported.
subnet_cidr	string	Yes	The CIDR block that can be used by the cluster, for example, 192.168.24.0/22. This field must be configured only when the network mode is VPC.

Name	Type	Required	Description
vpc_id	string	Yes	The VPC ID. This field must be configured only when the network mode is VPC. For more information, see *VPC overview*.
vswitch_id	string	Yes.	The VSwitch ID of the VPC. This field must be configured only when the network mode is VPC.
password	string	Yes	The password of the root account.
data_disk_ category	string	Yes	The disk category used by ECS. For more information, see *Disk category table*.
data_disk_size	number	Yes	The disk size shared by nodes.
ecs_image_id	string	No	The ID of the system image used by ECS. For more information, see *View image list* .
io_optimized	string	No	Determined according to the ECS instance rule. Optional values: `none` or `optimized` . We recommend that you pass in `optimized` because currently only VPC is supported as the network mode.
need_slb	bool	No	Whether to create the default simple routing Server Load Balancer instance for the cluster. The default value is `true`.

Name	Type	Required	Description
`release_eip_flag`	bool	No	Whether or not to release EIP after configuring the cluster. The default value is `false`.
`rds_instances`	array	No	Whether to add the IP address of the ECS instance to the RDS instance whitelist.

ecs_image_id list

See *View image list* to obtain the ecs_image_id list. To customize the ECS image ID of the cluster, make sure the ECS image meets the following requirements:

- Operating system: Ubuntu or CentOS.
- The Linux Kernel is 3.18 version or later, which is used to support overlayfs and overlay network.
- The */etc/docker/key.json* file is deleted from the image.

Response information

Response line (ResponseLine)

```
HTTP/1.1 202 Accepted
```

Special response header (ResponseHead)

None. See *Public response headers*.

Response body (ResponseBody)

```
{
    "cluster_id":"string",
    "request_id":"string",
    "task_id":"string"
}
```

Example

Request example

```
POST /clusters HTTP/1.1
<Public request headers>
{
    "password": "TestPwd124",
```

```
    "region_id": "cn-beijing",
    "instance_type": "ecs.n1.small",
    "name": "my-test-cluster",
    "size": 1,
    "network_mode": "vpc",
    "vpc_id":"vpc-xxxx",
    "vswitch_id":"vsw-xxxx",
    "subnet_cidr":"172.28.1.0/24",
    "data_disk_category": "cloud_ssd",
    "data_disk_size": 40,
    "need_slb":true,
    "ecs_image_id":"centos_7_04_64_20G_alibase_201701015",
    "io_optimized":"true",
    "release_eip_flag":false
}
```

Response example

```
HTTP/1.1 202 Accepted
<Public response headers>
{
    "cluster_id": "cb95aa626a47740afbf6aa099b650d7ce",
    "request_id": "687C5BAA-D103-4993-884B-C35E4314A1E1",
    "task_id": "T-5a54309c80282e39ea00002f"
}
```

5.10.2 Delete a cluster

Delete a cluster based on the cluster ID, and release all node resources of the cluster.

Request information

Request line (RequestLine)

```
DELETE /clusters/{cluster_id} HTTP/1.1
```

Request line parameter (URI Param)

Name	Type	Required	Description
cluster_id	string	Yes	Cluster ID

Special request header (RequestHead)

None. See *Public request headers*.

Request body (RequestBody)

None.

Response information

Response line (ResponseLine)

```
HTTP/1.1 202 Accepted
```

Special response header (ResponseHead)

None. See *Public response headers*.

Response body (ResponseBody)

None.

Example

Request example

```
DELETE /clusters/Cccfd68c474454665ace07efce924f75f HTTP/1.1
<Public request headers>
```

Response example

```
HTTP/1.1 202 Accepted
<Public response headers>
```

5.10.3 View a cluster

View the cluster details according to the cluster ID.

Request Information

Request line (RequestLine)

```
GET /clusters/{cluster_id} HTTP/1.1
```

Request line parameter (URI Param)

Name	Parameters	Required	Description
`cluster_id`	string	Yes.	Custer ID

Special request header (RequestHead)

None. See *Public request headers*.

Request body requestbody

None.

Returns Information

Response line (ResponseLine)

```
HTTP/1.1 200 OK
```

Special response header (ResponseHead)

None. See *Public response headers*.

Response body (ResponseBody)

```
{
    "agent_version": "string",
    "Cluster_id": "string ",
    "created": "datetime",
    "external_loadbalancer_id": "string",
    "master_url": "string",
    "name": "string",
    "network_mode": "string",
    "region_id": "string",
    "security_group_id": "string",
    "size": "numbers",
    "state": "string",
    "updated": "datetime",
    "vpc_id": "string",
    "vswitch_id": "string"
}
```

Response body explanation

Cluster format

Name	Type	Description
agent_version	string	The Agent version.
cluster_id	String	The cluster ID, which is the unique identifier of the cluster.
created	string	The creation time of the cluster .
external_loadbalancer_id	String	The Server Load Balancer instance ID of the cluster.
master_url	string	The master address of the cluster, which is used to connect to the cluster to perform operations. For more information, see *Connect to a cluster by using Docker tools*.

Name	Type	Description
name	string	The cluster name, which is specified when you create the cluster and is unique for each account.
network_mode	String	The network mode of the cluster (Classic or Virtual Private Cloud (VPC)).
region_id	String	The ID of the region where the cluster is located.
security_group_id	String	The security group ID.
size	String	The number of nodes.
state	String	The cluster status. For more information, see *Cluster lifecycle*.
updated	string	The last update time.
vpc_id	string	The VPC ID.
vswitch_id	string	The VSwitch ID.

Examples

Request example

```
GET /clusters/C5b5e80b0b64a4bf6939d2d8fbbc5ded7 HTTP/1.1
<Public request header>
```

Response example

```
HTTP/1.1 200 OK
<Public response headers>
{
    "agent_version": "0.5-e56dab3",
    "cluster_id": "c978ca3eaacd3409a9437db07598f1f69",
    "created": "2015-12-11T03:52:40Z",
    "external_loadbalancer_id": "1518f2b7e4c-cn-beijing-btc-a01",
    "master_url": "https://182.92.245.56:17589",
    "name": "my-python-cluster-039de960",
    "network_mode": "classic",
    "region_id": "cn-beijing",
    "security_group_id": "sg-25yqjuxhz",
    "size": 5,
    "state": "running",
    "updated": "2015-12-15T15:01:58Z",
    "vpc_id": "",
    "vswitch_id": ""
```

```
}
```

5.10.4 Expand a cluster

Increase the number of nodes in the cluster.

Request information

Request line (RequestLine)

```
PUT /clusters/{cluster_id} HTTP/1.1
```

Request line parameter (URI Param)

Name	Type	Required	Description
cluster_id	string	Yes	Cluster ID

Special request header (RequestHead)

None. See *Public request headers*.

Request body (RequestBody)

```
{
    "password": "password of the root account to log on to the Elastic
 Compute Service (ECS) instance",
    "instance_type": "ECS instance type",
     "size": "number of nodes after expansion",
     "data_disk_category": "disk category",
    "data_disk_size": "disk size",
    "ecs_image_id": "operating system image",
    "io_optimized": "whether I/O to be optimized",
    "release_eip_flag": "whether to release Elastic IP (EIP) after
configuring the cluster"
}
```

Request body explanation

Name	Type	Required	Description
password	string	Yes	The password of the ECS instance.
instance_type	string	Yes	Code indicating the ECS instance type. For more information, see *Instance type families*.
size	integer	Yes	The total number of nodes, which must be

Name	Type	Required	Description
			larger than the number of the existing nodes.
data_disk_category	string	No	The disk category used by ECS. For more information, see *Disk category table*.
data_disk_size	number	No	The disk size shared by nodes (unit: GB).
ecs_image_id	string	Yes	The ID of the system image used by ECS.
io_optimized	string	No	Determined according to the ECS instance rule. Optional values: `none` or `optimized`.
release_eip_flag	bool	No	Whether to release EIP after configuring the cluster. The default value is `false`.

ecs_image_id list

See *View image list* to obtain the ecs_image_id list. To customize the ECS image ID of the cluster, make sure the ECS image meets the following requirements:

- Operating system: Ubuntu or CentOS.
- The Linux Kernel is 3.18 version or later, which is used to support overlayfs and overlay network.
- The */etc/docker/key.json* file is deleted from the image.

Response information

Response line (ResponseLine)

```
HTTP/1.1 200 OK
```

Special response header (ResponseHead)

None. See *Public response headers*.

Response body (ResponseBody)

```
{
    "cluster_id":"string",
    "request_id":"string",
    "task_id":"string"
}
```

Example

Request example

```
PUT /clusters/Cccfd68c474454665ace07efce924f75f HTTP/1.1
<Public request headers>
{
  "password": "password",
  "instance_type": "ecs.s3.large",
  "size": 2,
  "data_disk_category": "cloud_ssd",
  "data_disk_size": 500,
  "ecs_image_id": "centos_7_2_64_40G_base_20170222.vhd",
  "io_optimized":"optimized",
  "release_eip_flag": false,
}
```

Response example

```
HTTP/1.1 202 Accepted
<Public response headers>
{
    "cluster_id": "cb95aa626a47740afbf6aa099b650d7ce",
    "request_id": "687C5BAA-D103-4993-884B-C35E4314A1E1",
    "task_id": "T-5a54309c80282e39ea00002f"
}
```

5.10.5 Add existing ECS instances to a cluster

Add existing Elastic Compute Service (ECS) instances to a cluster.

Note:

The system disk is replaced in the process of adding ECS instances. Therefore, back up the data in advance.

Request information

Request line (RequestLine)

```
POST /clusters/{cluster_id}/attach HTTP/1.1
```

Request line parameter (URI Param)

Name	Type	Required	Description
cluster_id	string	Yes	Cluster ID

Special request header (RequestHead)

None. See *Public request headers*.

Request body (RequestBody)

```
{
    "password": "password of the root account to log on to the ECS
instance",
    "instances": "the instance array to be added",
    "ecs_image_id": "operating system image",
    "release_eip_flag": "whether to release Elastic IP (EIP) after
configuring the cluster"
}
```

Request body explanation

Name	Type	Required	Description
password	string	Yes	The password of the ECS instance.
instances	array	Yes	The array of existing ECS instances.
ecs_image_id	string	Yes	The ID of the system image used by ECS.
release_eip_flag	bool	No	Whether to release EIP after configuring the cluster. The default value is `false`.

ecs_image_id list

See *View image list* to obtain ecs_image_id list. To customize the ECS image ID of the cluster, make sure the ECS image meets the following requirements:

- Operating system: Ubuntu or CentOS.
- The Linux Kernel version is equal to or later than 3.18, which is used to support overlayfs and overlay network.
- The */etc/docker/key.json* file is deleted from the image.

Response information

Response line (ResponseLine)

```
HTTP/1.1 202 OK
{
    "list": [
        {
            "code": "200",
            "instanceId": "i-xxx",
            "message": "successful"
        },
        {
            "code": "200",
            "instanceId": "i-yyy",
            "message": "successful"
        }
    ],
    "task_id": "T-5a544aff80282e39ea000039"
}
```

Special response header (ResponseHead)

None. See *Public response headers*.

Response body

```
{
    "list": [
        {
            "code": "200",
            "instanceId": "i-2zee3oiwcyoz7kwdo8bt",
            "message": "successful"
        },
        {
            "code": "200",
            "instanceId": "i-2ze0lgm3y6iylcbtcypf",
            "message": "successful"
        }
    ],
    "task_id": "T-5a544aff80282e39ea000039"
}
```

Example

Sample request

```
POST /clusters/Cccfd68c474454665ace07efce924f75f/attach HTTP/1.1
<Public request headers>
```

Response example

```
HTTP/1.1 202 Accepted
<Public response header>
{
    "list": [
        {
```

```
            "code": "200",
            "instanceId": "i-2zee3oiwcyoz7kwdo8bt",
            "message": "successful"
        },
        {
            "code": "200",
            "instanceId": "i-2ze0lgm3y6iylcbtcypf",
            "message": "successful"
        }
    ],
    "task_id": "T-5a544aff80282e39ea000039"
}
```

5.10.6 Remove nodes from clusters

Remove nodes from container clusters according to the cluster ID and node IP address.

Request information

Request line (RequestLine)

```
DELETE /clusters/{cluster_id}/ip/{ip}? releaseInstance=true|false HTTP
/1.1
```

Request line parameter (URI Param)

Name	Type	Required	Description
cluster_id	string	Yes	The cluster ID.
ip	string	Yes	The node IP address . The public IP for classic network, and intranet IP for Virtual Private Cloud (VPC).
releaseInstance	bool	No	Remove nodes and release Elastic Compute Service (ECS) instances (only Pay-As-You-Go ECS instances can be released).

Special request header (RequestHead)

None. See *Public request headers*.

Request body (RequestBody)

None.

Response information

Response line (ResponseLine)

```
HTTP/1.1 202 Accepted
```

Special response header (ResponseHead)

None. See *Public response headers*.

Response body (ResponseBody)

None.

Example

Request example

```
DELETE /clusters/Cccfd68c474454665ace07efce924f75f/ip/10.1.0.123?
releaseInstance=false HTTP/1.1
<Public request headers>
```

Response example

```
HTTP/1.1 202 Accepted
<Public response headers>
```

5.10.7 View image list

View the list of supported images in the currently supported regions.

Request information

Request line (RequestLine)

```
GET /images HTTP/1.1
```

Special request header (RequestHead)

None. See *Public request headers*.

Request body (RequestBody)

None.

Response information

Response line (ResponseLine)

```
HTTP/1.1 200 OK
```

Special response header (ResponseHead)

None, see *Public response headers*.

Response body

```
{
    "<RegionID>": {
        "items": [
            {
                "text": "<ImageName>",
                "value": "<ImageID>"
            },
            {
                "text": "<ImageName>",
                "value": "<ImageID>"
            }
        ]
    }
}
```

Response body explanation

Image format

Name	Type	Description
text	string	Image name
value	string	Image ID

Example

Request example

```
GET /images HTTP/1.1
<Public request headers>
```

Response example

```
HTTP/1.1 200 OK
<Public response headers>
{
    "ap-northeast-1": {
        "items": [
            {
                "text": "CentOS 7.4 64 bit",
                "value": "centos_7_04_64_20G_alibase_201701015.vhd"
            },
```

```
            {
                "text": "Ubuntu 16.04 64 bit",
                "value": "ubuntu_16_0402_64_20G_alibase_20170818.vhd"
            }
        ]
    },
    "ap-southeast-1": {
        "items": [
            {
                "text": "CentOS 7.4 64 bit",
                "value": "centos_7_04_64_20G_alibase_201701015.vhd"
            },
            {
                "text": "Ubuntu 16.04 64 bit",
                "value": "ubuntu_16_0402_64_20G_alibase_20170818.vhd"
            }
        ]
    },
    "ap-southeast-2": {
        "items": [
            {
                "text": "CentOS 7.4 64 bit",
                "value": "centos_7_04_64_20G_alibase_201701015.vhd"
            },
            {
                "text": "Ubuntu 16.04 64 bit",
                "value": "ubuntu_16_0402_64_20G_alibase_20170818.vhd"
            }
        ]
    },
    "ap-southeast-3": {
        "items": [
            {
                "text": "Ubuntu 16.04 64 bit",
                "value": "ubuntu_16_0402_64_20G_alibase_20170818.vhd"
            },
            {
                "text": "CentOS 7.4 64 bit",
                "value": "centos_7_04_64_20G_alibase_201701015.vhd"
            }
        ]
    },
    "cn-beijing": {
        "items": [
            {
                "text": "CentOS 7.4 64 bit",
                "value": "centos_7_04_64_20G_alibase_201701015.vhd"
            },
            {
                "text": "Ubuntu 16.04 64 bit",
                "value": "ubuntu_16_0402_64_20G_alibase_20170818.vhd"
            }
        ]
    },
    "cn-beijing-hpc": {
        "items": [
            {
                "text": "Ubuntu 16.04 64 bit",
                "value": "ubuntu_16_0402_64_20G_alibase_20170818.vhd"
            },
            {
                "text": "CentOS 7.4 64 bit",
```

```
                "value": "centos_7_04_64_20G_alibase_201701015.vhd"
            }
        ]
    },
    "cn-hangzhou": {
        "items": [
            {
                "text": "CentOS 7.4 64 bit",
                "value": "centos_7_04_64_20G_alibase_201701015.vhd"
            },
            {
                "text": "Ubuntu 16.04 64 bit",
                "value": "ubuntu_16_0402_64_20G_alibase_20170818.vhd"
            }
        ]
    },
    "cn-hongkong": {
        "items": [
            {
                "text": "CentOS 7.4 64 bit",
                "value": "centos_7_04_64_20G_alibase_201701015.vhd"
            },
            {
                "text": "Ubuntu 16.04 64 bit",
                "value": "ubuntu_16_0402_64_20G_alibase_20170818.vhd"
            }
        ]
    },
    "cn-huhehaote": {
        "items": [
            {
                "text": "Ubuntu 16.04 64 bit",
                "value": "ubuntu_16_0402_64_20G_alibase_20170818.vhd"
            },
            {
                "text": "CentOS 7.4 64 bit",
                "value": "centos_7_04_64_20G_alibase_201701015.vhd"
            }
        ]
    },
    "cn-qingdao": {
        "items": [
            {
                "text": "CentOS 7.4 64 bit",
                "value": "centos_7_04_64_20G_alibase_201701015.vhd"
            },
            {
                "text": "Ubuntu 16.04 64 bit",
                "value": "ubuntu_16_0402_64_20G_alibase_20170818.vhd"
            }
        ]
    },
    "cn-shanghai": {
        "items": [
            {
                "text": "CentOS 7.4 64 bit",
                "value": "centos_7_04_64_20G_alibase_201701015.vhd"
            },
            {
                "text": "Ubuntu 16.04 64 bit",
                "value": "ubuntu_16_0402_64_20G_alibase_20170818.vhd"
            }
```

```
        ]
    },
    "cn-shenzhen": {
        "items": [
            {
                "text": "CentOS 7.4 64 bit",
                "value": "centos_7_04_64_20G_alibase_201701015.vhd"
            },
            {
                "text": "Ubuntu 16.04 64 bit",
                "value": "ubuntu_16_0402_64_20G_alibase_20170818.vhd"
            }
        ]
    },
    "cn-zhangjiakou": {
        "items": [
            {
                "text": "CentOS 7.4 64 bit",
                "value": "centos_7_04_64_20G_alibase_201701015.vhd"
            },
            {
                "text": "Ubuntu 16.04 64 bit",
                "value": "ubuntu_16_0402_64_20G_alibase_20170818.vhd"
            }
        ]
    },
    "eu-central-1": {
        "items": [
            {
                "text": "CentOS 7.4 64 bit",
                "value": "centos_7_04_64_20G_alibase_201701015.vhd"
            },
            {
                "text": "Ubuntu 16.04 64 bit",
                "value": "ubuntu_16_0402_64_20G_alibase_20170818.vhd"
            }
        ]
    },
    "us-east-1": {
        "items": [
            {
                "text": "CentOS 7.4 64 bit",
                "value": "centos_7_04_64_20G_alibase_201701015.vhd"
            },
            {
                "text": "Ubuntu 16.04 64 bit",
                "value": "ubuntu_16_0402_64_20G_alibase_20170818.vhd"
            }
        ]
    },
    "us-west-1": {
        "items": [
            {
                "text": "CentOS 7.4 64 bit",
                "value": "centos_7_04_64_20G_alibase_201701015.vhd"
            },
            {
                "text": "Ubuntu 16.04 64 bit",
                "value": "ubuntu_16_0402_64_20G_alibase_20170818.vhd"
            }
        ]
    }
```

```
}
```

5.10.8 Reset a node

Reset a node in the cluster.

> **Note:**
> The system disk is replaced when the node is being reset. Therefore, back up the data in advance.

Request information

Request line (RequestLine)

```
POST /clusters/{cluster_id}/instances/{instance_id}/reset HTTP/1.1
```

Request line parameter (URI Param)

Name	Type	Required	Description
cluster_id	string	Yes	Cluster ID
instance_id	string	Yes	Elastic Compute Service (ECS) instance ID

Special request header (RequestHead)

None. See *Public request headers*.

Request body (RequestBody)

```
{
    "password": "password of the root account to log on to the Elastic
 Compute Service (ECS) instance",
    "ecs_image_id": "operating system image",
    "release_eip_flag": "whether to release Elastic IP (EIP) after
configuring the cluster"
}
```

Request body explanation

Name	Type	Required	Description
password	string	Yes	The password of the ECS instance.
ecs_image_id	string	Yes	The ID of the system image used by ECS.

Name	Type	Required	Description
`release_eip_flag`	bool	No	Whether to release EIP after configuring the cluster. The default value is `false`.

ecs_image_id list

See *View image list* to obtain the ecs_image_id list. To customize the ECS image ID of the cluster, make sure the ECS image meets the following requirements:

- Operating system: Ubuntu or CentOS.
- The Linux Kernel version is equal to or later than 3.18, which is used to support overlayfs and overlay network.
- The */etc/docker/key.json* file is deleted from the image.

Response information

Response line (ResponseLine)

```
HTTP/1.1 202 OK
```

Special response header (ResponseHead)

None. See *Public response headers*.

Response body (ResponseBody)

```
{
    "cluster_id": "string",
    "request_id": "string",
    "task_id": "string"
}
```

Example

Request example

```
POST /clusters/Cccfd68c474454665ace07efce924f75f/instances/i-xx/reset
HTTP/1.1
<Public request headers>
```

Response example

```
HTTP/1.1 202 Accepted
<Public response headers>
{
    "cluster_id": "c2ac959c94acc4e86aca4e68bdf7c1987",
    "request_id": "B145E765-2800-40E5-9167-9E999574ABF8",
```

```
    "task_id": "T-5a544d2b9645f75f2e00003d"
}
```

5.10.9 Obtain cluster certificate

Obtain the cluster certificate information based on the cluster ID. Use this certificate to access the cluster when you use Docker client to operate the cluster. For more information, see *Connect to a cluster by using Docker tools*.

Request information

Request line (RequestLine)

```
GET /clusters/{cluster_id}/certs HTTP/1.1
```

Request line parameter (URI Param)

Name	Type	Required	Description
`cluster_id`	string	Yes	Custer ID

Special request header (RequestHead)

None. See *Public request headers*.

Request body (RequestBody)

None.

Response information

Response line (ResponseLine)

```
HTTP/1.1 200 OK
```

Special response header (ResponseHead)

None. See *Public response headers*.

Response body (ResponseBody)

```
{
    "ca": "string",
    "cert": "string",
    "key": "string"
}
```

Response body explanation

Name	Type	Description
ca	string	The certificate issued by the Certification Authority (CA), *ca.pem*.
cert	string	Your public key certificate, *cert.pem*
key	string	Your private key certificate, *key.pem*

Example

Request example

```
GET /clusters/Cccfd68c474454665ace07efce924f75f/certs HTTP/1.1
<Public request headers>
```

Response example

```
HTTP/1.1 200 OK
<Public response headers>
{
    "ca": "-----BEGINCERTIFICATE-----ca content-----ENDCERTIFICATE
-----\n",
    "cert": "-----BEGINCERTIFICATE-----cert content-----ENDCERTIFICATE
-----\n",
    "key": "-----BEGINRSAPRIVATEKEY-----key content-----ENDRSAPRIV
ATEKEY-----\n"
}
```

5.10.10 View all the clusters

View all the clusters you have created in Container Service, including swarm clusters and Kubernetes clusters.

Request Information

Request line (RequestLine)

```
GET /clusters HTTP/1.1
```

Special request header (RequestHead)

None. See *Public request headers*.

Request body requestbody

None.

Returns Information

Response line (ResponseLine)

```
HTTP/1.1 200 OK
```

Special response header (ResponseHead)

None. See *Public response headers*.

Response body (ResponseBody)

```
[
    {
        "agent_version": "string",
        "cluster_id": "string",
        "created": "datetime",
        "external_loadbalancer_id": "string",
        "master_url": "string",
        "name": "string",
        "network_mode": "string",
        "region_id": "string",
        "security_group_id": "string",
        "size": "numbers",
        "state": "string",
        "updated": "datetime",
        "vpc_id": "string",
        "vswitch_id": "string"
    }
]
```

Response body explanation

Cluster format

Name	Type	Description
agent_version	string	The Agent version.
cluster_id	String	The cluster ID, which is the unique identifier of the cluster.
created	string	The creation time of the cluster .
external_loadbalancer_id	String	The Server Load Balancer instance ID of the cluster.
master_url	string	The master address of the cluster, which is used to connect to the cluster to perform operations. For more information, see *Connect to a cluster by using Docker tools*.

Name	Type	Description
name	string	The cluster name, which is specified when you create the cluster and is unique for each account.
network_mode	String	The network mode of the cluster (Virtual Private Cloud (VPC)).
region_id	String	The ID of the region where the cluster is located.
security_group_id	String	The security group ID.
size	String	The number of nodes.
state	String	The cluster status. For more information, see *Cluster lifecycle*.
updated	string	The last update time.
vpc_id	string	The VPC ID.
vswitch_id	string	The VSwitch ID.

Examples

Request example

```
GET /clusters HTTP/1.1
<Public request header>
```

Response example

```
HTTP/1.1 200 OK
<Public response header>
[
    {
        "agent_version": "0.5-e56dab3",
        "cluster_id": "c978ca3eaacd3409a9437db07598f1f69",
        "created": "2015-12-11T03:52:40Z",
        "external_loadbalancer_id": "1518f2b7e4c-cn-beijing-btc-a01",
        "master_url": "https://182.92.245.56:17589",
        "name": "my-python-cluster-039de960",
        "network_mode": "vpc",
        "region_id": "cn-beijing",
        "security_group_id": "sg-25yqjuxhz",
        "size": 5,
        "state": "running",
        "updated": "2015-12-15T15:01:58Z",
        "vpc_id": "",
        "vswitch_id": ""
```

```
    },
    {
        "agent_version": "0.5-e56dab3 ",
        "cluster_id": "c1eb19e0093204cbb86c3a80334d2129e",
        "created": "2015-12-15T14:26:58Z",
        "external_loadbalancer_id": "151a6099de1-cn-beijing-btc-a01",
        "master_url": "https://182.92.245.56:11905",
        "name": "my-test-cluster-002b3f3d",
        "network_mode": "vpc",
        "region_id": "cn-beijing",
        "security_group_id": "sg-25rg2ws9f",
        "size": 1,
        "state": "running",
        "updated": "2015-12-15T14:43:55Z",
        "vpc_id": "",
        "vswitch_id": ""
    }
]
```