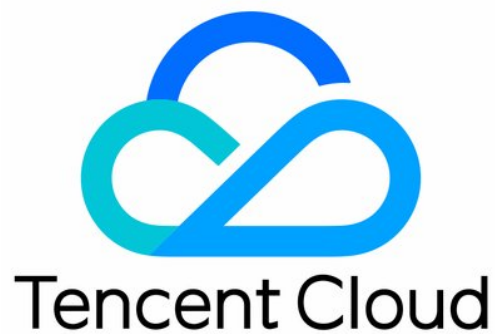


Tencent Kubernetes Engine

Edge Cluster Guide

Product Documentation



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Edge Cluster Guide

Edge Cluster Management

Creating a Cluster

Last updated : 2020-04-26 18:12:44

Scenario

This document describes how to create an edge cluster to use TKE Edge from the Tencent Cloud TKE console.

Prerequisites

- To use TKE Edge, [submit a ticket](#) to apply for it.
- Log in to the [CAM console](#) to activate the required permissions.

Notes on the Container Network

Edge TKE uses the node-side network to build the overlay network. Therefore, ensure that the cluster network and container network do not conflict with the node network on the edge server side.

Directions

1. Log in to the [Tencent Cloud TKE console](#) and click **Edge Clusters** in the left sidebar.
2. On the "Edge Clusters" page, click **Create** to go to the "Create Edge Cluster" page.
3. On the "Create Edge Cluster" page, create an edge cluster based on the following information.
 - **Cluster name:** indicates the name of the edge cluster to be created, with a maximum length of 60 characters.
 - **Kubernetes version:** Kubernetes version 1.16 is currently supported. This version will be updated when a newer Kubernetes version is published by the Kubernetes community.
 - **Region:** select the region that is closest to your location to minimize access latency and improve the download speed.

- **Cluster network:** assign a network for the cluster according to the internal network management of edge servers.
 - **Pod CIDR:** you need to assign a container network for the cluster according to the internal network management of edge servers. Therefore, plan the cluster size in advance to assign an IP range with sufficient IP addresses for the container network. **The pod CIDR block cannot overlap with IP ranges used by a VPC instance and existing Kubernetes clusters in the VPC instance. In addition, it cannot be modified once created.**
 - **Service CIDR:** you need to assign a service network for the cluster according to the internal network management of edge servers. Therefore, plan the cluster size in advance to assign an IP range with sufficient IP addresses for the service network. **The service CIDR block cannot overlap with IP ranges used by a VPC instance and existing Kubernetes clusters in the VPC instance. In addition, it cannot be modified once created.**
 - **Cluster description:** indicates information about the cluster, which is displayed on the **Cluster Information** page.
4. Click **Done** to finish creating the Master components of the cluster. You can check the progress of cluster creation on the "Edge Clusters" page.

Next Steps

Go to "Node Management" and add nodes to the created edge cluster.

Node Management

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Scenario

This document describes how to add nodes to the edge cluster that you created.


Prerequisites

Prepare as instructed below:

- Node source: you can use an existing server in the [CVM console](#) or the [ECM console](#), or a server on another platform or in your on-premises data center.
- Node processor: supports x86_64, ARM, and ARM64.
- The following operating systems of nodes are supported:
 - Ubuntu 18.04 and 16.04
 - CentOS 7.6, 7.5, and 7.4
 - Tencent Linux Release 2.4 and 2.2 (Final)
 - SUSE Linux Enterprise Server 12 SP3
 - Debian 9.0
- Ensure that `wget` , `systemctl` , and `iptables` have been installed on the node to be added.
- The node network must be able to actively access the internet.

Directions

1. Log in to the [Tencent Cloud TKE console](#) and click **Edge Clusters** in the left sidebar.
2. On the **Edge Clusters** page, click the cluster ID to go to the **Deployment** management page.
3. In the left sidebar, choose **Node Management** > **Node** to go to the **Node List** page.
4. On the **Node List** page, click **Add a node**.
5. In the **Add a node** window that appears, complete the following steps to obtain the node initialization script.
 - i. Obtain the initial configuration from the **Configure** step. You can modify the following parameters:
 - **Interface**: indicates the network interface used by the node to communicate within the private network.

- **nodeName**: indicates the name of the node in the cluster. This name must be unique in the cluster.
 - ii. Click **Next: install**. If you are prompted to enable public network access, click  to enable it.
 - iii. In the **Install** step, copy the script download command for downloading the node initialization script.
6. Log in to the prepared server, switch to the `root` account, and run the copied command.
 7. Run the following commands to execute the node initialization script.


```
chmod +x script.sh
```

```
./script.sh
```

8. After the script is successfully executed, go to the "Node List" page and refresh it to check that the newly added node exists.
You can also perform other node operations, such as draining, removing, cordoning, or uncordoning a node, and editing the node label.

Relevant Operations

Disabling public network access for a cluster

1. On the **Edge Clusters** page, click **View cluster credentials** for the cluster for which you want to disable public network access.
2. In the "Cluster Credentials" window that appears, click  for "public network access" to disable public network access for the cluster.

Connecting to a Cluster

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Scenario

This document describes how to connect a local client to an edge cluster through kubectl, which is the Kubernetes command-line tool.

Prerequisites

- The cURL software program has been installed.
- Select the appropriate way to obtain kubectl based on the operating system:

Replace `v1.8.13` in the command with the kubectl version required by your business.

◦ MacOS X

Run the following command to obtain kubectl:

```
curl -LO https://storage.googleapis.com/kubernetes-release/release/v1.8.13/bin/darwin/amd64/kubectl
```

◦ Linux

Run the following command to obtain kubectl:

```
curl -LO https://storage.googleapis.com/kubernetes-release/release/v1.8.13/bin/linux/amd64/kubectl
```

◦ Windows

Run the following command to obtain kubectl:

```
curl -LO https://storage.googleapis.com/kubernetes-release/release/v1.8.13/bin/windows/amd64/kubectl.exe
```

Directions

Installing kubectl

1. Install kubectl as instructed in [Installing and Setting Up kubectl](#).

- If you have already installed kubectl, skip this step.
- This step uses the Linux operating system as an example.

2. Run the following commands to grant permissions to use kubectl.

```
chmod +x ./kubectl  
  
sudo mv ./kubectl /usr/local/bin/kubectl
```

3. Run the following command to check the installation result.

```
kubectl version
```

If the output is similar to the following version information, the installation was successful.

```
Client Version: version.Info{Major:"1", Minor:"5", GitVersion:"v1.5.2", GitCommit:"08e099554f3c31f6e6f07b448ab3ed78d0520507", GitTreeState:"clean", BuildDate:"2017-01-12T04:57:25Z", GoVersion:"go1.7.4", Compiler:"gc", Platform:"linux/amd64"}
```

Obtaining cluster certificate information

1. Log in to the [Tencent Cloud TKE console](#) and click **Edge Clusters** in the left sidebar.
2. On the **Edge Clusters** page, click **View the cluster credential** for the cluster to be connected.
3. In the **Cluster Credential** window that appears, you can view, copy, and download the credential.

You can save the cluster access credential locally by clicking **Copy** or **Download** as needed.

4. In **Internet access**, click to enable internet access for the cluster. You can also see [Configuring kubectl autocomplete](#) for accessing with the cluster access credential.

Using kubectl to manipulate a cluster through certificate information

Request method

The kubectl command format is as follows:

```
--kubeconfig=<Local cluster access credential>
```

Example

Run the following command to view existing namespaces under the cluster.

```
kubectl get namespace --kubeconfig=cls-8ipgf8u4.kubeconfig
```

The cluster credential used in this example is `cls-8ipgf8u4.kubeconfig`. In real-life cases, replace it with the actual credential.

If a message similar to the following is returned, the request was successful.

```
NAME STATUS AGE
default Active 11d
kube-system Active 11d
```

Configuring kubectl autocomplete

You can configure kubectl autocomplete to improve usability by running the following command.

```
source <(kubectl completion bash)
```

Kubernetes Object Management

Workload Management

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Scenario

This document describes how to run your service through various workloads in an edge cluster.

Prerequisites

- You have an edge cluster that is in the Running state. For more information, see [Creating a Cluster](#).
- The cluster has an appropriate namespace that is in the Active state.
- The cluster has sufficient edge computing resources to run the workloads.

Workload Types

Deployment

A Deployment declares a template for a pod and a policy for controlling how the pod runs. It is used to deploy stateless applications. You can specify the number of replicas, scheduling policy, and update policy for a pod running in the Deployment as required.

StatefulSet

A StatefulSet is primarily used to manage stateful applications. Pods created will come with a persistent identifier according to the specification. The identifier will not change even if the pod is migrated or restarted after termination.

When persistent storage is required, you can use the identifiers to map to the corresponding storage volumes. If the application does not require persistent identifiers, we recommend that you use Deployment to deploy the application.

Job

A Job creates one or more pods and ensures that these pods run according to the specified rules until a specified number of them successfully terminate. Jobs can be used in many scenarios, such as batch computing and data analysis. You can specify the required number of completions,

concurrency (the number of pods running at any instant), and the restart policy as required.

When a Job is completed, no more pods are created, but existing pods will be retained. You can view the logs of the completed pods in **Logs**. Deleting a Job cleans up the pods it created, and the logs of these pods will be invisible.

CronJob

A CronJob object resembles one line of a crontab (cron table) file. It runs a Job periodically on a given schedule and uses the Cron format.

The cron format is as follows:

```
# File format description
# --minute (0 - 59)
# | --hour (0 - 23)
# | | --day (1 - 31)
# | | | --month (1 - 12)
# | | | | --day of week (0 - 6)
# | | | | |
# * * * * *
```

Directions

1. Log in to the [Tencent Cloud TKE console](#) and click **Edge Clusters** in the left sidebar.
2. On the "Edge Clusters" page that appears, click the ID of the cluster where the workload that you want to create is located to go to the "Deployment" page.
3. Click **Create** to go to the "Create Workload" page.
4. On the "Create Workload" page, enter a name for the workload and select the workload type.

For the specific parameter settings for each type of workload, see the following:

- [Deployment Management](#)
- [StatefulSet Management](#)
- [Job Management](#)
- [CronJob Management](#)

Service Management

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Scenario

This document describes how to expose workloads for access through Services.

Prerequisites

- You have an edge cluster that is in the Running state. For more information, see [Creating a Cluster](#).
- The cluster has an appropriate namespace that is in the Active state.

Service Types

Service

A Service defines a policy for gaining access to backend pods and provides a static virtual IP address for access. You can gain access to backend pods in load balancing mode through the Service.

Services support the following types:

- ClusterIP: provides an entry that is reachable by other Services or containers within the cluster. This type supports the TCP/UDP protocol. For example, it can be utilized by MySQL services to ensure network isolation. For more information, see [Kubernetes Service](#).
- NodePort: provides an access method by mapping a node port to a container. This type supports the TCP/UDP protocol. It is useful when you want to load-balance your businesses to nodes. For more information, see [Kubernetes Service](#).

Directions

For Service-related operations, see Service Management.

Intra-cluster access of edge clusters only supports Kubernetes native access methods. To use VPC instances on the computing resource side, you need to integrate the VPC solutions of your

cloud providers.