API Gateway

Best Practice

Product Documentation

Contents

Best Practice
API Gateway Providing the Access Capability for TKE

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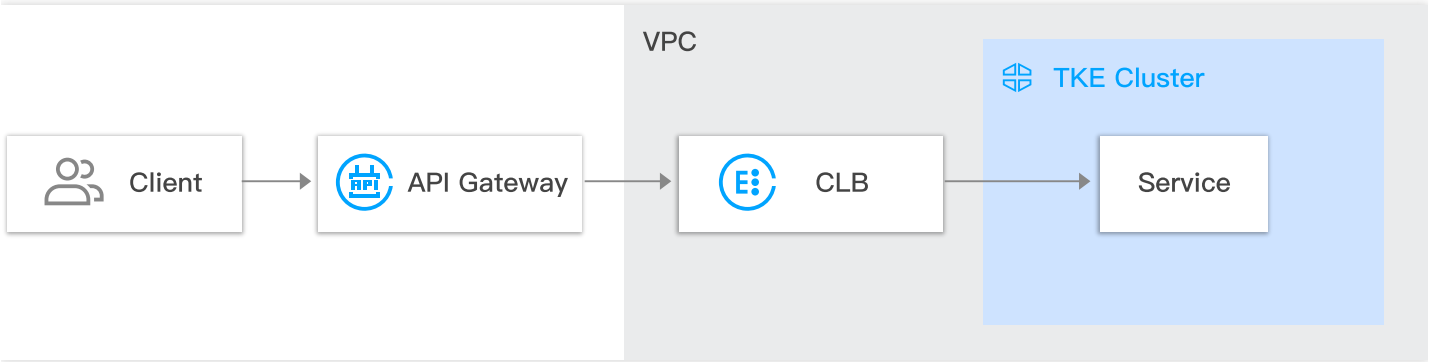
Introduction to TKE

Based on native Kubernetes, Tencent Kubernetes Engine (TKE) is a container-oriented, highly scalable, and high-performance container management service. Compared with a client's container service, TKE has core advantages such as its ease of use, flexible expansion, security, reliability, high efficiency, and low costs. For more information, see Tencent Kubernetes Engine.

Overview

As an open source platform for automated container operations, Kubernetes is a mainstream choice for developers. However, the access capability of Kubernetes clusters are not sufficient and cannot meet the requirements of large applications. Using API Gateway as the access layer of Kubernetes can significantly improve the access capability of Kubernetes clusters and empower Kubernetes clusters with advanced capabilities of API Gateway, adapting to more scenarios of more customers.



Prerequisites

You have activated Tencent Cloud services such as API Gateway, TKE, Cloud Load Balancer (CLB), Virtual Private Cloud (VPC), and Cloud Virtual Machine (CVM) and have permission to configure these

services, as they will be used during the configuration process.

Directions

Step 1: Create a VPC

1. Log in to the VPC console.
2. In the left sidebar, click **Virtual Private Cloud** to access the VPC list page.
3. Click **+ New**. In the pop-up dialog box, set the parameters to create a VPC.
   For more information, see Managing VPC Instances.

Step 2: Create a CVM

1. Log in to the CVM console.
2. In the left sidebar, click **Instances** to access the CVM instance list page.
3. Click **Create** to access the CVM purchase page.
4. Create a CVM by following the instructions in Creating Instances via the CVM Purchase Page.

> ⚠ **Note :**
>
> When creating a CVM, select the VPC and the subnet created in Step 1 and retain the default values for the other parameters. In this example, a standard S5 CVM instance is created.

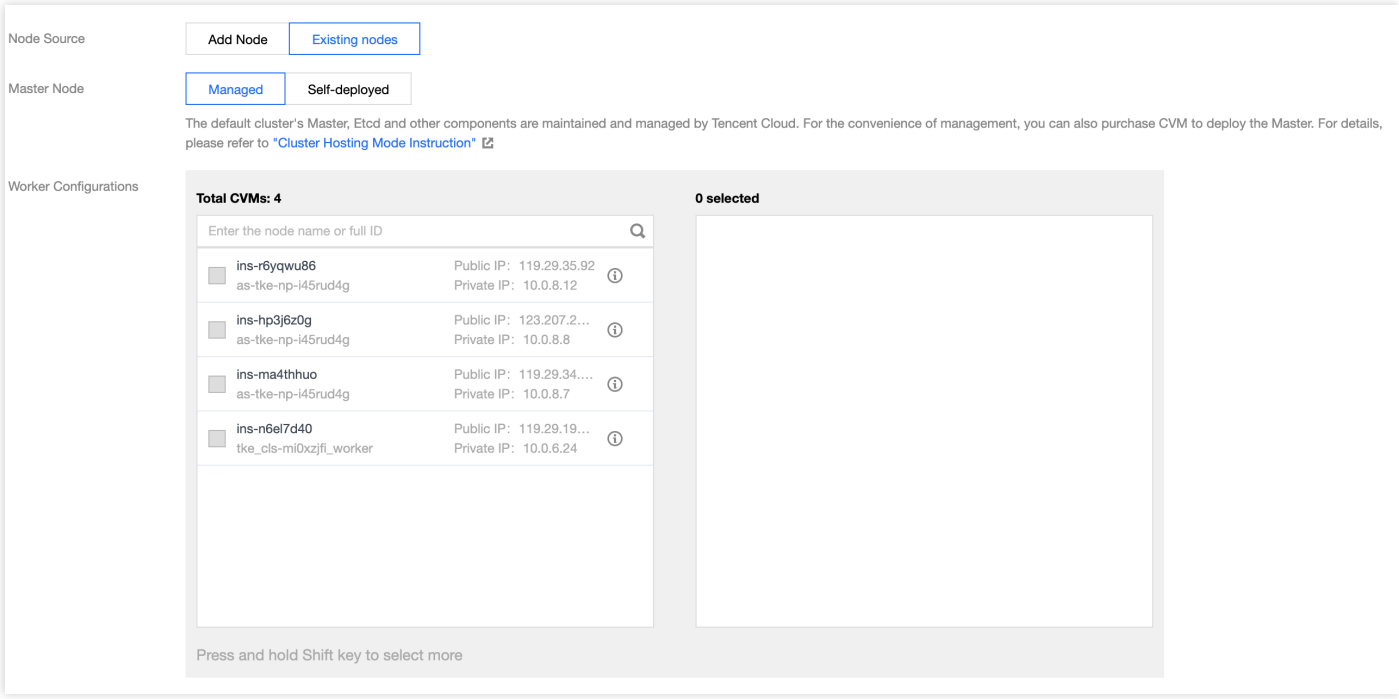
Step 3: Create a TKE cluster in the same VPC

1. Log in to the TKE console.

2. In the left sidebar, click **Cluster** to access the TKE cluster list page.

3. Click **Create** at the top of the TKE cluster list. On the **Create Cluster** page, create a TKE cluster by following the instructions in Creating a Cluster.

> ⚠ **Note :**
>
> - When configuring the cluster information, set **Cluster network** to the VPC created in Step 1.
> - When selecting a model, set **Node Source** to **Existing nodes** and **Master Node** to **Managed**, and select the CVM created in Step 2 in the **Worker Configurations** area.
> - Retain the default values for the other parameters.



Step 4: Create a nginx service in the TKE cluster

1. Log in to the TKE console. In the left sidebar, click **Cluster** to access the TKE cluster list page.
2. Click the ID of the TKE cluster created in Step 3 to access the cluster details page.
3. In the left sidebar, click **Workload** -> **Deployment** to access the deployment list page.
4. Click **Create** at the top of the deployment list page to access the workload creation page.
5. Set the parameters on the workload creation page by following the instructions in Creating a Simple Nginx Service.

> **⚠ Note :**
>
> - Select a DockerHub nginx image.
> - Set **Service Access** to **Via VPC**.
> - Set **Load Balancer** to **Automatic creation**.
> - In the **Port Mapping** area, set **Protocol** to **TCP**, and set both **Target Port** and **Port** to 80.

6. Click **Create Workload** to finish creating the Workload. TKE will automatically create the corresponding deployment and service.

Step 5: Create an API Gateway service

1. Log in to the API Gateway console.

2. In the left sidebar, click **Service** to access the service list page.
3. Click **Create** at the top of the service list. In the pop-up dialog box, create an API Gateway service by following the instructions in Creating Services.

Step 6: Create an API in the API Gateway service

1. In the API Gateway console, click **Service** in the left sidebar to access the service list page.
2. Click the name of the created API Gateway service to access the service details page.
3. Click the **Manage API** tab, and then click **Create** to access the API creation page.
4. Enter the frontend configuration, the backend configuration, and the response result, and click **Complete** to finish creating the API.

> ⚠ **Note :**
>
> When entering the backend configuration, set **Backend Type** to **HTTP**, **VPC Info** to the VPC created in Step 1, **VPC resources** to **CLB**, and **Backend Path** to **/**.

Step 7: Open the private IP ranges of API Gateway to the internet

1. Log in to the CVM console. In the left sidebar, click **Security Groups** to access the security group list page.

2. Select a region and click **+ New**. In the pop-up dialog box, set the parameters and click **OK** to create a security group.

3. In the security group list, click the name of the created security group to access the security group details page. Click the **Security Group Rule** tab and then the **Inbound rule** tab to access the inbound rule list.

4. Click **Add a Rule**. In the pop-up dialog box, enter the following 5 private IP ranges of API Gateway: **9.0.0.0/8**, **10.0.0.0/8**, **100.64.0.0/10**, **11.0.0.0/8**, and **30.0.0.0/8**. Set **Protocol port** to **ALL** and **Policy** to **Allow** for the 5 private IP ranges, and click **Completed** to add the 5 inbound rules.

5. Return to the security group details page. Click the **Associate with Instance** tab and then the **Cloud Virtual Machine** tab. Click **Add Instances**. In the pop-up dialog box, associate the created security group with the CVM created in Step 2 to open the private IP ranges of API Gateway to the internet.

Step 8: Publish and test the API Gateway service

1. In the API Gateway console, click **Service** in the left sidebar to access the service list page.
2. Click the name of the created API Gateway service to access the service details page.
3. Click the **Basic Configuration** tab, and click **Publish** in the upper right corner of the page to publish the service to the **Publish** environment.
4. Request the API created in Step 6. If the nginx page is displayed, the access is successful.

Integrating WAF to the API Gateway for Security Protection

Last updated : 2020-10-09 11:51:27

Overview

Tencent Cloud Web Application Firewall (WAF) is an AI-based one-stop web service protection solution.
This document describes how to integrate WAF to the API Gateway to protect your APIs.

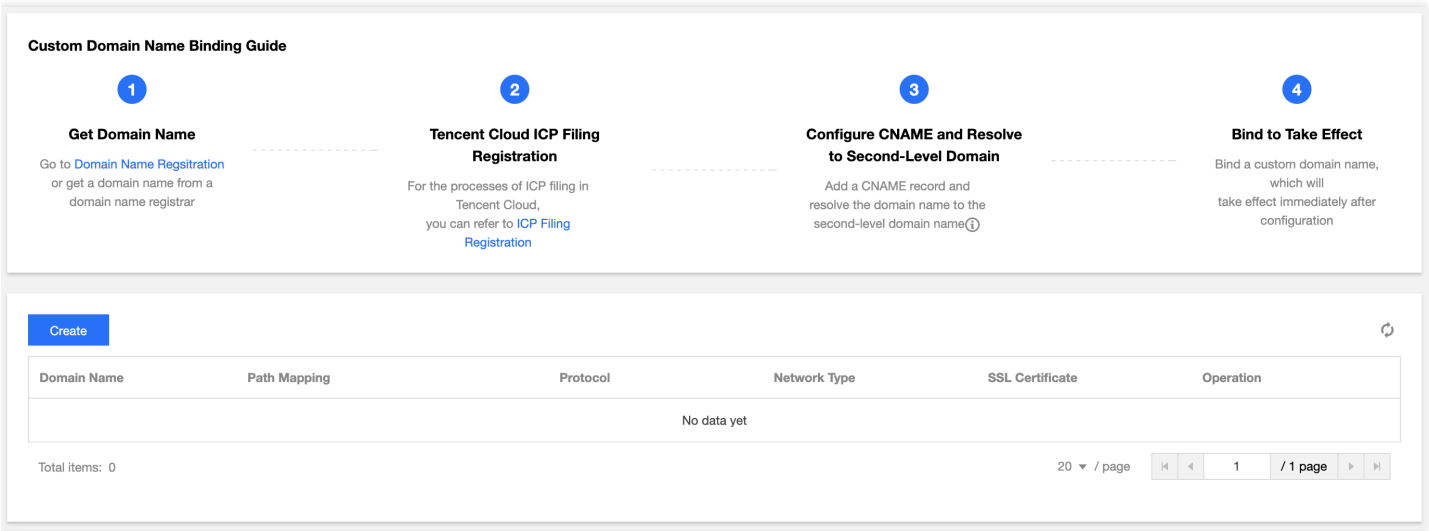
Prerequisites

- You have activated Web Application Firewall.
- You have published APIs using the API Gateway.

Directions

Step 1. Bind a custom domain name in the API Gateway console

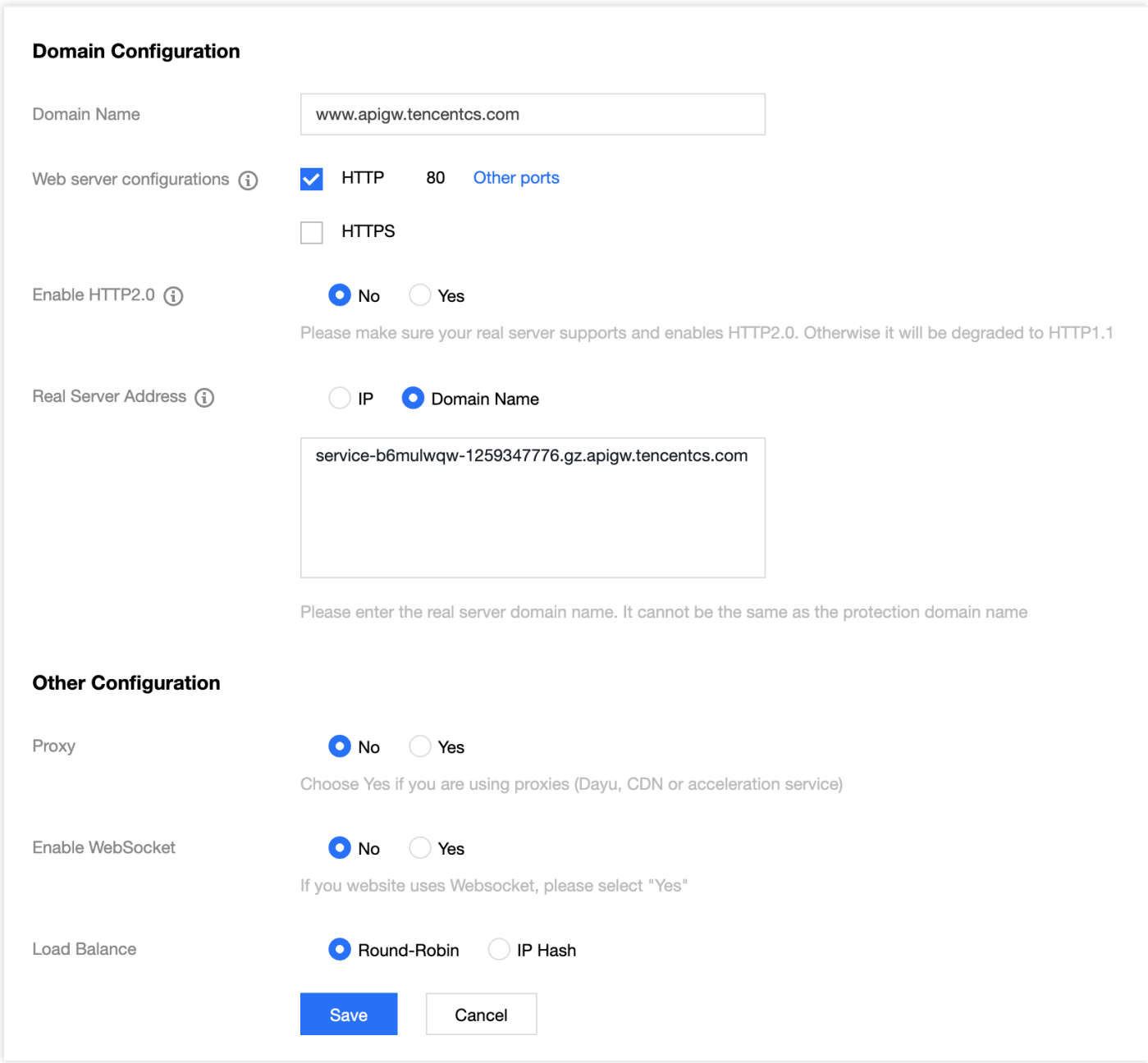
For more information about how to bind a custom domain name in the API Gateway console, refer to Custom Domain Name and Certificate.



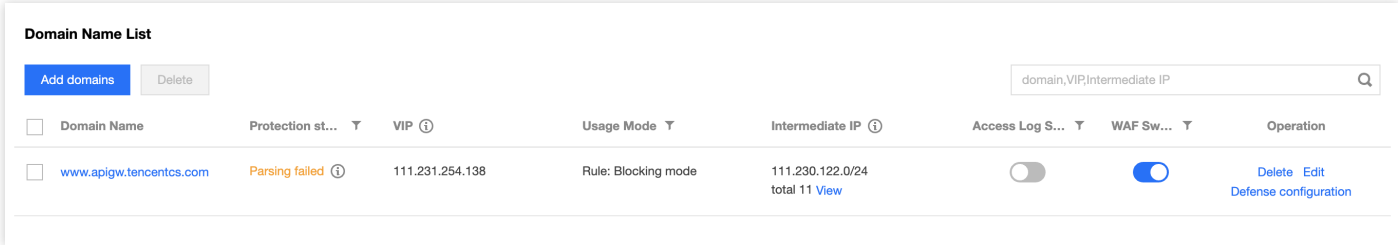
> ⚠ **Note :**
>
> When a custom domain name is bound to the API Gateway console, the system will check whether you have configured CNAME and resolved it to the service subdomain name. Be sure to first configure CNAME and resolve it to the subdomain name of the API Gateway, modify the CNAME record, and point the custom domain name to the WAF domain name.

Step 2. Configure WAF

1. Log in to the WAF console.
2. Click **Web Application Firewall** -> **Defense settings** in the left sidebar to access the domain name list page.
3. Click **Add domains** at the top of the **Domain Name List** module.
4. Enter the **Real Server Address** and the subdomain name of the API Gateway, and complete the other configurations.



5. Click **Save**. The domain name should now be in the “CNAME record not configured” status.



Step 3. Modify the CNAME record

1. Modify the CNAME record and resolve the custom domain name to the WAF domain name.
2. Log in to WAF console and click **Web Application Firewall** -> **Defense settings** in the left sidebar to access the domain name list page.
3. Click the refresh icon in the **Protection status** column. The status should change to **Normal protection**.

Using API Gateway Dedicated Instance to Access Resources in IDC

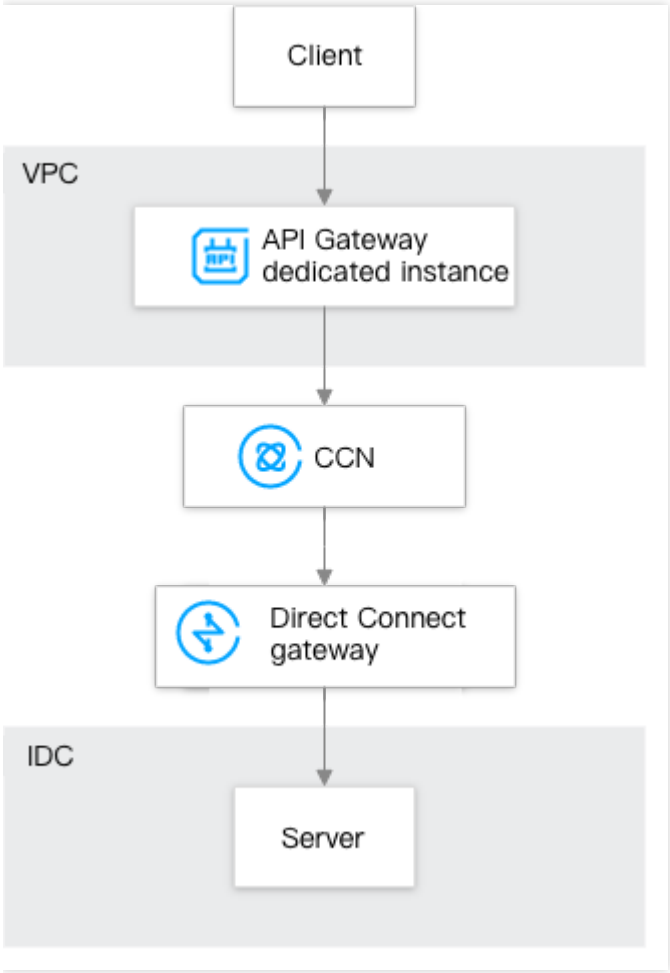
Last updated : 2021-08-13 11:24:13

Overview

When you use a hybrid cloud architecture, your business may be deployed in both public and private clouds, but a unified access layer is required, which serves as the ingress and egress of traffic and supports the processing of all non-business features such as authentication and traffic throttling.

An API Gateway dedicated instance runs in a VPC and supports forwarding client requests to various services deployed in the VPC or local IDC or on the public network. It is deeply integrated with common backend services to provide a productized connection method. Therefore, it is very suitable as a unified access layer in complex network environments. This document describes how to connect to backend resources in an IDC by using an API Gateway dedicated instance.

Scheme Advantages



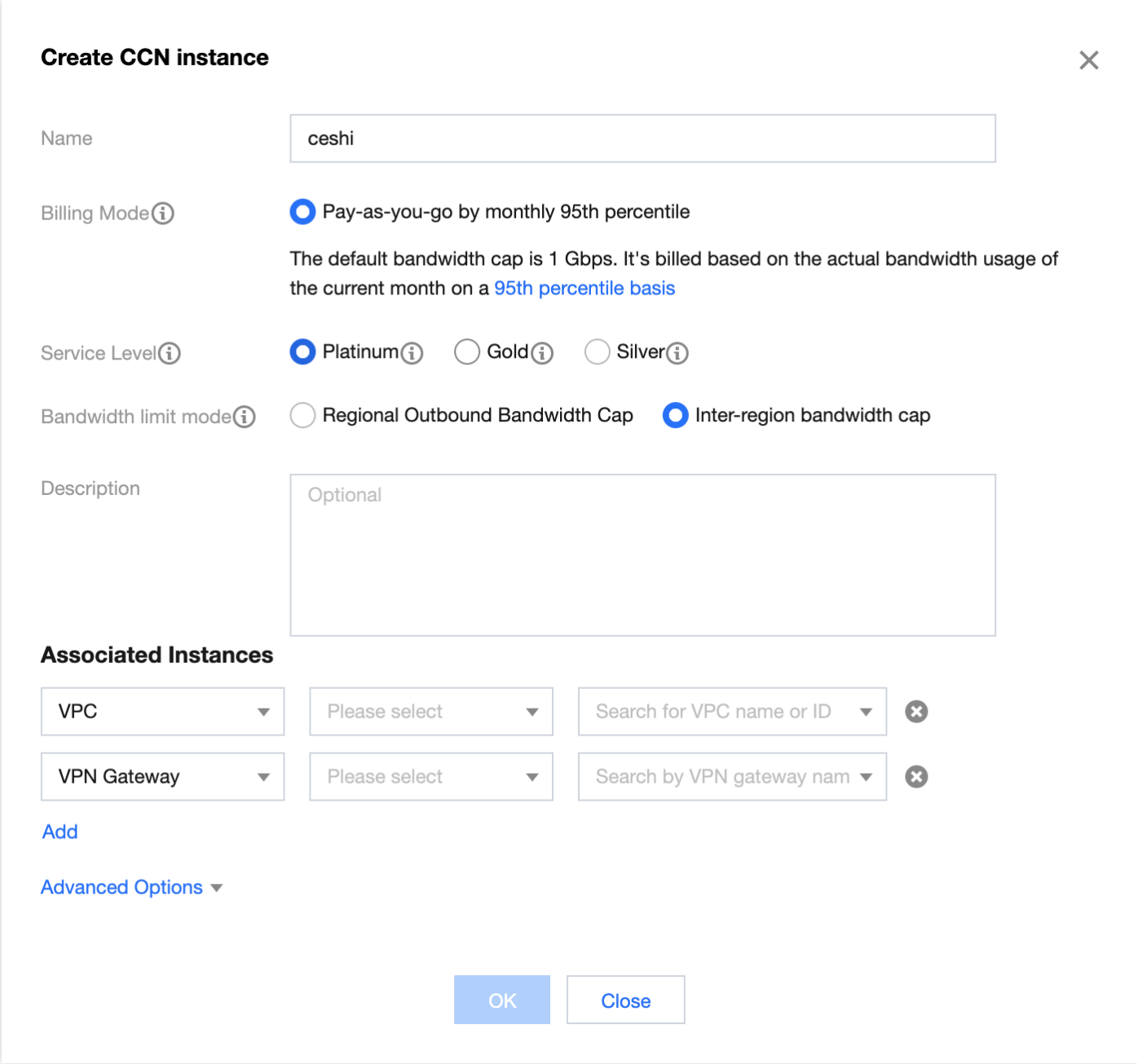
- The API Gateway dedicated instance can forward requests to the backend resources deployed in the VPC and local IDC and on the public network at the same time, seamlessly connecting the cloud and local systems and enabling smooth cloudification.
- The rich features provided by API Gateway can also be used, such as IP access control, traffic throttling, and log monitoring.
- Resources on the private network can be interconnected with each other through CCN, fine-grained routing is supported to guarantee the quality, and diversified tiered pricing is supported to reduce the costs.

Directions

Step 1. Create a CCN instance and associate it with a network instance

1. Log in to the VPC console.
2. On the left sidebar, click **Cloud Connect Network** to enter the CCN management page.
3. Click **+ New**.

4. In the pop-up window, enter the name and description of the CCN instance and select the billing mode, service level, and bandwidth limit mode.
5. Associate the IDC's Direct Connect gateway with the VPC.



Step 2. Purchase an API Gateway dedicated instance

1. Log in to the API Gateway console and select **Instance** on the left sidebar.
2. Click **Create** to enter the API Gateway dedicated instance purchase page.
3. Select and enter the instance configuration information.

> Note :
> The VPC configuration of the dedicated instance should be the same as that of the VPC instance associated with the CCN instance created in step 1.

4. Click **Buy Now** and make the payment.

Step 3. Create a service and API under the instance

1. Log in to the API Gateway console and select **Service** on the left sidebar.
2. Click **Create** and select **Dedicated** as the instance type.
3. In the pop-up window for instance selection, select the dedicated instance purchased in step 1 and click **Submit**.
4. Click the name of the created service in the service list to enter its API management page.
5. Click **Create** to enter the API creation page and set the configuration items. Select public URL/IP as the API backend type, enter the IDC's private IP, port, and path to be bound as the backend address, and click **Submit**.
6. Request the created API, and you will see that the backend resources in the IDC can be accessed through API Gateway.