Cloud Virtual Machine
Getting Started
Product Documentation
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Tencent Cloud provides the following billing methods for Cloud Virtual Machine (CVM) instances:

- **Pay as you go** is a flexible billing method for CVM instances. You can activate or terminate a CVM at any time, and you will be billed by the actual usage of the CVM. The billing granularity is accurate to second, and no up-front payment is required. A bill is generated every hour on the dot. This billing method is suitable for use cases such as an e-commerce flash sale where the demand for devices can fluctuate greatly.

- **Spot Instance** is a new way to use and pay for CVM instances. Similar to the pay-as-you-go method, you pay for spot instances in postpaid mode by the second, every hour. The price of spot instances fluctuates according to the market demand. You can receive a sizable discount for them when the demand is low (usually 10% to 20%). However, spot instances might be repossessed automatically by the system as the demand becomes high.

Both the pay-as-you-go and spot-instances billing methods can satisfy user requirements in different scenarios. For more information, see Pricing Modes.
Types of Instance

To meet the needs of different customers in various application scenarios, Tencent Cloud provides the following recommendations for selecting an instance type:

- **Personal Website**
  - **Standard** instances are recommended for general workloads, such as medium- and small-sized Web applications and databases.

- **Enterprise Website/E-commerce/App**
  - **Standard** instances are recommended for general workloads, such as medium- and small-sized Web applications and databases.

- **Relational Database/Distributed Cache**
  - **MEM Optimized** instances are recommended for scenarios that require extensive memory operations, searches, and computing.

- **NoSQL Database**
  - **High IO** instances are recommended for I/O-intensive scenarios that require high disk read/write performance and low latency, such as NoSQL databases (e.g. MongoDB) and clustered databases.

- **High Performance Compute**
  - **Computing** or **Computing Network Enhanced** instances are recommended for scenarios that require a large number of computing resources, such as large client games, high performance science and engineering applications, and video encoding/decoding.

- **High-Performance Client Games**
  - **Computing** or **Computing Network Enhanced** instances are recommended for scenarios that require a large number of computing resources, such as large client games, high performance science and engineering applications, and video encoding/decoding.
- Mobile/Browser Games

Computing or Computing Network Enhanced instances are recommended for scenarios that require a large number of computing resources, such as large client games, high performance science and engineering applications, and video encoding/decoding.

- LVB

Standard Network Enhanced or Computing Network Enhanced instances are recommended, which come with a 25 GB ENI that is 2.5 times faster than that of regular ten-gigabit data centers, providing a larger bandwidth and a lower latency.

- Finance

CDH Standard instances are recommended. Compared with standard instances, these instances provide exclusive physical servers, which ensures the isolation of resources. They are secure, controllable, and in full compliance with the strict regulations in the finance industry. Custom specifications are also supported.

- Scientific Computing

GPU Computing instances are recommended for deep learning, and scientific computing including computational fluid dynamics, computational finance, genomics research, environmental analysis, high-performance computing, and other server-side GPU computing workloads.

- Machine Learning

GPU Computing instances are recommended for deep learning, and scientific computing including computational fluid dynamics, computational finance, genomics research, environmental analysis, high-performance computing, and other server-side GPU computing workloads.

- Rendering

GPU Rendering instances are recommended for non-linear editing, video encoding/decoding, graphics acceleration visualization, and 3D design.

- Hadoop/Spark/Elastic Search
**Big Data** instances are recommended for distributed computing services like Hadoop (HDFS/MapReduce/Spark/Hive), massive parallel processing (MPP) data warehouses, B8 logs, data processing applications.
Select Cloud Disk

Last updated: 2019-10-10 17:50:47

To meet the needs of different customers in different application scenarios, Tencent Cloud provides the following recommendations for selecting a cloud disk:

**Local SSD Application Scenario**

- **Low latency**: Access latency within microseconds.

- **Logs for large online applications**: Large online applications produce a large amount of log data, which require high-performance storage with less demand on storage reliability.

- **Acts as temporary read cache**: Local SSD has excellent random read performance (4 KB/8 KB/16 KB random read) and is suitable for read-only slaves for relational databases such as MySQL and Oracle. Since the cost for using memories is still higher than using SSDs, a local SSD can also be used as the secondary cache of cache services such as Redis and Memcache.

- **Single point of failure (SPOF) risk**: If SPOF risk exists, it is recommended to implement data redundancy at the application layer to ensure data availability. It is recommended to use SSD cloud storage for core business.

**HDD Cloud Storage Application Scenario**

- **HDD cloud storage** has low storage cost, and the same level of data persistency as SSD cloud storage. It can be used as cold data backup and archive, with a maximum capacity of 16 TB for a single disk.

- **It is suitable for scenarios** that involve sequential reading and writing of large files, such as journal log, stream media service and data storage. It can satisfy the demands for offline analysis of massive data calculated in TBs under Hadoop framework.

- **It is not suitable for OLTP core business.**

**Premium Cloud Storage Application Scenario**

- **It is applicable to 90% of the I/O scenarios** with the highest possible quality under the lowest possible prices

- **It is suitable for medium to small sized databases, web servers and so on**, and provides consistent I/O performance
It meets the I/O demands for testing core businesses and developing integrated testing environments.

**SSD Cloud Storage Application Scenario**

- **High performance and high data reliability:** SSD cloud storage utilizes best-in-class NVMe solid state storage as the disk media. It is suitable for I/O-intensive businesses and can provide long-term and ultra-excellent single disk performance.
- **Medium and large databases:** Supports medium and large relational database applications containing tables with millions of rows, such as MySQL, Oracle, SQL Server, and MongoDB.
- **Core business systems:** I/O-intensive applications and other core business systems with high data reliability requirements.
- **Big data analysis:** Supports distributed processing of TB/PB-level data for applications such as data analysis, data mining, and business intelligence.

For more application scenarios, please see Cloud Storage Application Scenarios.
Network Planning

Determining the number of VPC instances

Features:
- VPC instances are region-specific. By default, CVMs in different regions cannot communicate with each other. If cross-region communication is required, establish a peering connection.
- By default, different VPC instances in the same region cannot communicate with each other. If cross-VPC communication is required, establish a peering connection.
- By default, different availability zones in the same VPC instance can communicate with each other.

Recommendations:
- If your business requires cross-region system deployment, multiple VPC instances are required. In this case, you can build a VPC instance that is close to the region where your customers are located to reduce access latency and improve the access speed.
- If you have deployed multiple businesses in the current region and want to implement network isolation among different businesses, you can build a VPC instance for each business in the current region.
- If you do not require cross-region business deployment or network isolation among businesses, you can use one VPC instance.

Determining subnet division

Features:
- Subnets are IP address blocks in a VPC instance. All cloud resources in a VPC instance must be deployed in subnets.
- In the same VPC instance, the IP ranges of subnets must not overlap.
- Tencent Cloud automatically assigns initial private IP addresses from VPC IP ranges. The Tencent Cloud VPC CIDR block can be any of the following VPC IP ranges. For an IP address within these ranges, its mask ranges from 16 to 28, and the actual mask is determined by the private network where the instance resides.
  - 10.0.0.0-10.255.255.255
- 172.16.0.0-172.31.255.255
- 192.168.0.0-192.168.255.255
- After a VPC instance is created, its IP range cannot be modified.

Recommendations:
- If only VPC subnets need to be divided and communication with the basic network or IDC is not involved, choose any of the preceding IP ranges to create a subnet.
- If communication with the basic network is required, establish a VPC instance with the IP range of 10.[0-47].0.0/16 and its subsets as required.
- If a VPN is required, the local IP range (of the VPC instance) and the peer IP range (of your IDC) cannot overlap. Therefore, do not use the peer IP range when creating a subnet.
- During subnet division, you also need to consider the number of available IP addresses within an IP range.
- We recommend that subnets be divided according to the business modules for businesses in the same VPC instance. For example, subnet A is used for the web layer, subnet B is used for the logic layer, and subnet C is used for the database layer. This facilitates access control and filtering by using the network ACL.

**Determining route policies**

Features:
- A route table consists of a series of routing rules that control the traffic flow of subnets in a VPC instance.
- Each subnet must be associated with only one route table.
- A single route table can be associated with multiple subnets.
- When a VPC instance is created, the system automatically generates a default route table for the instance, which defines that VPC instances can communicate with each other through the private network.

Recommendations:
- If you do not need to control the traffic flow of subnets and VPC instances are interconnected through the private network by default, you can use the default route table without needing to configure a custom routing policy.
- If you need to control the traffic flow of subnets, see Overview on the official website.

For more information on VPC instances, see VPC.
Configure Security Group

Last updated : 2020-04-24 13:58:52

This document uses security group creation as an example to describe how to configure security groups for the first time based on security group rules provided by Tencent Cloud when you customize instances. For other security-group-related operations, see the Security Group page in the CVM console. For more details on security groups, see Security Groups.

Configuring Security Groups

1. Select Create Security Group, as shown in the following figure.

   If you already have available security groups, you can select Existing Security Groups.

2. Select IP addresses or ports to be opened based on your actual requirements.

   Rules for a new security group are as follows:
   - ICMP: enable ICMP and allow the public network to ping the server.
   - TCP:80: open port 80 and allow web service access through HTTP.
   - TCP:22: open port 22 and allow SSH remote connection to the Linux CVM.
   - TCP:443: open port 443 and allow web service access through HTTPS.
   - TCP:3389: open port 3389 and allow RDP connection to the Windows CVM.
   - Private network: open the private network and allow intercommunication (IPv4-based) between different cloud resources through the private network.
Note:
- After you select the IP addresses or ports to be opened, the detailed inbound and outbound rules appear on the **Security Group Rule** tab page.
- To open other ports for your business, refer to security group use cases to create security groups. For security purposes, Tencent Cloud recommends that you only open required ports to prevent potential security risks.

3. Configure other information as prompted.

Security Group Rules

**Inbound rule**: allows traffic to CVMs associated with a security group.

**Outbound rule**: indicates outbound traffic from the CVMs.

- Rules in a security group are prioritized from the top down.
- When a CVM is bound to a security group without rules, all inbound and outbound traffic is rejected by default. If a rule is available, the rule prevails.
- When a CVM is bound to multiple security groups, the security groups with smaller numbers have higher priority.
- When a CVM is bound to multiple security groups, the rejection rule takes effect for the security group with the lowest priority by default.

Security Group Restrictions

For details, see Use Limits.
Estimate Costs

Other than your CVM model and VPC configuration, these factors also influence how much your service costs:

- Billing method
- Resource used
- Quantity

Billing method

- **Pay as you go** is a flexible billing method for CVM instances. You can launch/terminate a CVM at any time and are billed by the actual usage of the CVM. You pay by the second and no up-front payment is required. A bill is generated every hour on the dot. This billing method is suitable for use cases such as an e-commerce flash sale where the demand for resources can fluctuate greatly.

- **Spot Instance** is a new way to use and pay for CVM instances. Similar to Pay as you go, you pay for Spot Instances by the second, every hour. The price of Spot Instances fluctuates according to market demand. You get a sizable discount for them when the demand is low (usually 10 to 20%). However, they might be repossessed automatically by the system as the demand becomes high.

Resources used

- Region:
  - The price is the same for the same instance model in different regions in Mainland China.
  - The price might be the same for the same instance model in different regions outside Mainland China.

- Image:
  - Public images: all public images in Mainland China hosted by Tencent Cloud are free. Windows images outside Mainland China require licensing fees.
  - Custom image: creating custom images, importing custom images, and copying custom images across regions are free of charge.
  - Shared images: shared images from other Tencent Cloud users are free of charge.

- Network:
  - VPC, Subnet, Route Table, Network ACL, Security Group, Direct Connect Gateway, VPN Tunnel, and Customer Gateway are free of charge.
  - Bandwidth costs are not applicable to inter-instance communication within different subnets. Intra-region peering connections are free as well.
- Refer to this article for details on the public network billing method.
- For details on charges for NAT Gateway, VPN Gateway, and Cross-region Peering connection.
- Storage:
  For the prices of local disks and cloud disks, refer to this article

**Quantity**

The number of CVMs you purchase also affect the price you pay. More CVMs means a higher price.
This document introduces the custom configuration of a Linux CVM. Different from quick configuration, custom configuration provides full options, and you can choose the appropriate configuration based on your needs.

**Prerequisites**

1. Before starting the custom configuration, you need to complete Step 1 in [Getting Started with Linux CVM](#).
2. Go to the Tencent Cloud official website, select **Products** -> **Cloud Compute & Network** -> **Cloud Virtual Machine**, and click **Buy Now** to enter the CVM purchase page.
3. Click **Custom Configuration** to go to the custom configuration page.

**Selecting Region and Model**
1. Select the Postpaid billing method (users who cannot purchase postpaid CVMs need to complete Identity Verification first).

2. Select a region and an availability zone. When you need more than one CVM, it is recommended that you choose different availability zones to implement disaster recovery.

3. Select a model and configuration.

   Based on different underlying hardware, Tencent Cloud offers two series of instances: **Series 1** and **Series 2** (also referred to as **last-generation instance** and **current-generation instance**). They respectively provide the following instance types:

   - Last-generation instance types: Standard S1, High IO I1, and MEM Optimized M1

   It is recommended that you create an instance using a current-generation instance type to achieve optimal performance. For more information, see [Instance Types](#).
Note:
Series and models vary with different areas and availability zones.

Click **Next Step: Select Image** to enter the image selection page.

### Selecting an Image

1. Select an image provider.
   Tencent Cloud supports public images, custom images, shared images, and service marketplace images. Select one by referring to **Image Types**.
   
   We recommend that users who have just started using Tencent Cloud select public images.
2. Select an operating system.
   Tencent Cloud provides various operating systems such as CentOS, CoreOS, Debian, FreeBSD, OpenSUSE, SUSE, and Ubuntu. You need to build a subsequent operating environment on your own.

3. Select a system version.

   Click **Next Step: Select Storage and Network** to enter the storage and network selection page.

### Selecting Storage and Network

1. Select the type of disk and the size of data disk.
   Tencent Cloud provides cloud disk, local disk and SSD cloud disk (The system disk size is optional, which defaults to 50 GB).
Cloud disk: Deliver high data reliability with the distributed three-copy mechanism.

SSD cloud disk: Built upon the full NVMe SSD storage media and Tencent Cloud's CBS 3-copy distributed storage technology, an SSD cloud disk provides I/O capabilities featured by low latency, high random IOPS and high throughput, and high-performance storage with 99.9999999% data security. It is applicable to scenarios which require high IO performance.

Local disk: A storage located on the physical machine where the CVM resides, which allows low latency but may cause single point of failure risk. For the comparison, see Product Category.

2. Select a network type.
   Tencent Cloud provides two network types: basic network and VPC.
   - Basic network: Suitable for new users. CVMs of the same user are interconnected via a private network.
   - VPC: Suitable for advanced users. Different VPCs are logically isolated from each other.

   **Note:**
   Public network gateway is an interface between a VPC and a public network, which can forward requests from CVMs without public IP in different subnets of the VPC. For more information, see Public Gateway.

3. Select public network bandwidth.
   Tencent Cloud provides two options: Bill-by-bandwidth or Bill-by-traffic.
   - Bill-by-bandwidth: Select a fixed bandwidth. Packet loss occurs if this bandwidth is exceeded. This is suitable for scenarios with minor network fluctuation.
   - Bill-by-traffic: The service is charged based on the actual traffic usage. You can set a limit for peak bandwidth to avoid extra fees caused by unplanned traffic. Packet loss occurs when the instantaneous bandwidth exceeds this limit. This is suitable for scenarios with large network fluctuations.

iv. Select quantity.

Click **Next Step: Set Information** to enter the information setting page.

**Setting Information**
1. Set a CVM name: You can choose **Name It after Creation** or **Name It Now**.

2. Set login information:
   - Set a password: Enter a CVM password.
   - Associate a key now: Associate an SSH key. If you do not have a key or have an invalid key, click **Create Now** to create one. For more information, see **Creating Key**. For more information on the SSK key, see **SSH Key**.
   - A system-generated password is sent to you via internal message.

3. Select a security group (**Make sure that the login port 22 is enabled**). For more information, see **Security Group**.

Click the **Enable** button to log in to the **Console** to check your CVM.

After the CVM is created, you will receive an internal message containing the instance name, public IP, private IP, login name, initial login password, and other information. You can use these
information to log in to and manage your instance. To ensure the security of your CVM, change your Linux login password as soon as possible.

Click here to complete subsequent configurations, including logging in to the Linux CVM, formatting and partitioning the data disk.
Custom Configuration for Windows CVM

Last updated: 2020-03-30 14:36:56

This document introduces the custom configuration of a Windows CVM. Different from quick configuration, custom configuration provides full options, and you can choose the appropriate configuration based on your needs.

Prerequisites

1. Before starting the custom configuration, you need to complete Step 1 in Getting Started with Windows CVM.
2. Go to the Tencent Cloud official website, select Products -> Cloud Compute & Network -> Cloud Virtual Machine, and click Buy Now to enter the CVM purchase page.
3. Click Custom Configuration to go to the custom configuration page.

Selecting Region and Model
1. Select the Postpaid billing method (users who cannot purchase postpaid CVMs need to complete Identity Verification first).

2. Select a region and an availability zone. When you need more than one CVM, it is recommended that you choose different availability zones to implement disaster recovery.

3. Select a model and configuration.

   Based on different underlying hardware, Tencent Cloud offers two series of instances: **Series 1** and **Series 2** (also referred to as **last-generation instance** and **current-generation instance**). They respectively provide the following instance types:

   - Last-generation instance types: Standard S1, High IO I1, and MEM Optimized M1

It is recommended that you create an instance using a current-generation instance type to achieve optimal performance. For more information, see Instance Types.

Note:
Series and models vary with different areas and availability zones.

Click **Next Step: Select Image** to enter the image selection page.

**Selecting an Image**

1. Select an image provider.
   Tencent Cloud supports public images, custom images, shared images, and service marketplace images. Select one by referring to Image Types.
We recommend that users who have just started using Tencent Cloud select public images, which contain the legitimate Windows operating system. You need to build a subsequent operating environment on your own.

2. Select an operating system: Windows.

3. Select a system version.
   - Suitable for running programs developed under Windows, such as .NET.
   - Support SQL Server and other more databases (you need to install it yourself).

Click **Next Step: Select Storage and Network** to enter the storage and network selection page.

**Selecting Storage and Network**
1. Select the type of disk and the size of data disk.

Tencent Cloud provides cloud disk, local disk and SSD cloud disk (The system disk size is optional, which defaults to 50 GB).

- Cloud disk: Deliver high data reliability with the distributed three-copy mechanism.
- SSD cloud disk: Built upon the full NVMe SSD storage media and Tencent Cloud's CBS 3-copy distributed storage technology, an SSD cloud disk provides I/O capabilities featured by low latency, high random IOPS and high throughput, and high-performance storage with 99.9999999% data security. It is applicable to scenarios which require high IO performance.
- Local disk: A storage located on the physical machine where the CVM resides, which allows low latency but may cause single point of failure risk. For the comparison, see Product Category.

2. Select a network type.

Tencent Cloud provides two network types: basic network and VPC.

- Basic network: Suitable for new users. CVMs of the same user are interconnected via a private network.
- VPC: Suitable for advanced users. Different VPCs are logically isolated from each other.

Note:
A Windows CVM cannot be used as Public Gateway. Users who need a public gateway can refer to Getting Started with Linux CVM.

3. Select public network bandwidth.

Tencent Cloud provides two options: Bill-by-bandwidth or Bill-by-traffic.

- Bill-by-bandwidth: Select a fixed bandwidth. Packet loss occurs if this bandwidth is exceeded. This is suitable for scenarios with minor network fluctuation.
- Bill-by-traffic: The service is charged based on the actual traffic usage. You can set a limit for peak bandwidth to avoid extra fees caused by unplanned traffic. Packet loss occurs when the instantaneous bandwidth exceeds this limit. This is suitable for scenarios with large network fluctuations.

iv. Select quantity.

Click Next Step: Set Information to enter the information setting page.

Setting Information
1. Set a CVM name: You can name it after creation or name it now.

2. Set the login information: You can set a password which can be modified after creation of the CVM, or use a system-generated password that is sent to you via the internal message.

3. Select a security group (Make sure that the login port 3389 is enabled. For more information, see Security Group).

Click the Enable button to log in to the Console to check your CVM.

After the CVM is created, you will receive an internal message containing the instance name, public IP, private IP, login name, initial login password, and other information. You can use these information to log in to and manage your instance. To ensure the security of your CVM, change your Windows login password as soon as possible.
Click [here](#) to complete subsequent configurations, including logging in to the Windows CVM, formatting and partitioning the data disk.