

Cloud Virtual Machine

CVM Introduction

Product Introduction



Tencent
Cloud

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CVM Introduction

Overview

Introduction of Tencent Cloud CVM

Tencent Cloud Cloud Virtual Machine (CVM) provides extendable calculating capacity on the cloud, frees you from estimation of resources usage and in-advance investment. With Tencent Cloud CVM, you can enable CVMs and deploy applications immediately. Tencent Cloud CVM allows you to configure your resources according to your actual requirements, such as CPU, memory, storage, network, security and so on.

Glossary:

- [Instance](#): Virtual computing resources on the cloud
- [Region and availability zone](#): Position of instances and other resources
- [Image](#): A preset instance template, including pre-configuration environment of the server (operating system and other installed software)
- [Instance type](#): Different configurations of instance: CPU, memory, storage, network, etc.
- [Local disk](#): Devices that are located on the same physical server with instances and can be used for persistent storage by instances
- [Cloud Block Storage](#): Distributed persistent block storage devices provided, can be used as system disk for instances or expandable data disk
- [SSH Key Login](#): a more secured login method, in which the public key is kept by Tencent Cloud, and private key is kept by user); [Password Login](#): log into Tencent Cloud using ordinary password.
- [Private IP address](#): Internal service address of the instance; [Public IP address](#): External service address of the instance
- [Security Group](#): Secure access control of instances that specifies rules for IP, protocol and port of incoming and outbound instances
- [Virtual Private Cloud](#): Customized virtual cyberspace, logically isolated from other resources
- [Elastic IP](#): Static public IP designed specifically for dynamic network to meet demands for fast troubleshooting
- [Metadata](#): Tag for identifying instance sources within the instances
- [Console](#): Web-based user interface

If you're new to Tencent Cloud CVM, please refer to [Quick start for Windows CVM](#) and [Quick start for Linux CVM](#).

Related Services

- [Cloud Load Balance](#): may realize automatic distribution of request traffic from clients across multiple CVM instances.
- [Auto Scaling](#): may automatically increase or decrease the quantity of server clusters at regular time or based on specific conditions.
- [Cloud Monitor](#): can be used to monitor operation statistical data for CVM instances.
- [Cloud Database](#): can be used to deploy your relational database on the cloud.

Pricing of CVM

For pricing details of CVMs, see [here](#).

Regions and Availability Zones

Tencent Cloud CVM's entrusted data centers are located in different regions around the world, which are all made up of region and availability zone.

Each region is an independent geographical location. Within each region, there are multiple mutually isolated locations referred to as availability zones. Each region is entirely independent. Each availability zone is independent. However, availability zones in the same region can be connected via private network links with low latency.

Tencent Cloud supports distribution of cloud resources in different locations by users. Users are advised to consider placing resources in different availability zones when designing system to shield "service unavailable" status caused by single point of failure.

Region

Regions are completely isolated with each other, so as to ensure high stability and fault tolerance. Tencent Cloud now have 3 regions in Mainland China and provides nodes in Hong Kong, Singapore and Toronto. You are recommended to choose nearest region to reduce access latency and improve download speed.

Region attribute is differentiated for all behaviors such as enabling and viewing instances by users. If image of the instance that the users need to enable does not exist in the region, then the image needs to be copied to current region. For more information, please see [Copy Image](#).

- Resources in different availability zones of the same region are connected via private network, and can be accessed directly using [Private IP](#).
- Cloud services of different regions **cannot communicate via private network by default**.
- CVMs cannot access other CVMs, Cloud Database or Cloud Memcached across regions by default.
- When binding Cloud Load Balance to the server, only CVMs in the current region can be chosen;
- Cloud resources on different regions can communicate via [Public IP](#). Cloud Services on VPC can access Internet via [peering connection](#) service.

- [Cloud Load Balance](#) does not support cross-region data forwarding.
- Regions are named by Coverage + City, and availability zones are named by city + serial number.
- Only resources under the same account can communicate via private network.

Notes for Hong Kong region:

- The following cloud services are temporarily unavailable: Cloud Memcached, elastic web engine, Cloud Object Storage, Cloud Block Storage, one-click opening of server and domain binding with separated regions and servers.
- When you need to log in to CVMs in Hong Kong region, log in via jump server is recommended for better operation and maintenance experience.

Notes for North America region:

- The following cloud services are temporarily unavailable: Cloud Memcached, elastic web engine, Cloud Object Storage, mobile acceleration, Cloud Automated Testing, one-click opening of server and domain binding with separated regions and servers.
- Due to the considerable latency between North America and China, when you need to log in to CVMs in North America region, login via jump server is recommended for better operation and maintenance experience.

Availability Zone

Availability zones (Zone) refer to Tencent Cloud's physical data centers whose power and network are independent from each other within the same region. They are designed to ensure that the failures within an availability zones can be isolated (except for large-scale disaster or major power failure) without spreading to and affecting other zones so that users' businesses can provide continuous online services. By starting an instance in an independent availability zone, users can protect their applications from being affected by the failures occurring in a single location.

When starting an instance, users can choose any availability zone within the specified region. If a user needs to ensure the high reliability of application systems so that the services are still available even when a failure occurs in an instance, the user can use cross-zone deployment scheme (e.g. [Cloud](#)

[Load Balance](#), [Elastic IP](#), etc.) to allow the instance in another availability zone to handle the relevant requests in replace of the failed instance.

Migrating an instance to another availability zone

Once an instance is started, its availability zone cannot be changed. However you can migrate it to another availability zone.

1. Create a custom image for the instance (see [Create Custom Image](#)).
2. If the instance is using [Virtual Private Cloud](#) and you want to keep the private IP address after the migration, you can first delete the subnet in the current availability zone and then create a subnet in the new availability zone with the same IP address range as that of the original subnet. Please note that a subnet can be deleted only when it contains no available instances. Thus, all the instances in the current subnet should be migrated to the new subnet.
3. Create a new instance in the new availability zone using the custom image you have just created. User can choose the same type and configuration as those of the original instance, or choose new ones.(see [Purchase and Start an Instance](#)).
4. If an elastic IP address is associated with the original instance, then dissociate it from the old instance and associate it with the new instance (see [Elastic IP](#)).
5. (Optional) For [postpaid](#) instances, you can terminate them manually (see [Terminate an Instance](#)). [Prepaid](#) instances will be reclaimed automatically after expiration.

How do I select the region and availability zone?

While purchasing Tencent loud services, it is recommended to choose the region that is closest to your customers to minimize the access latency and improve download speed.

Resource Availability

Specify which resources of Tencent Cloud are global, which resources are regional and not specific to any availability zone and which resources are based on availability zones.

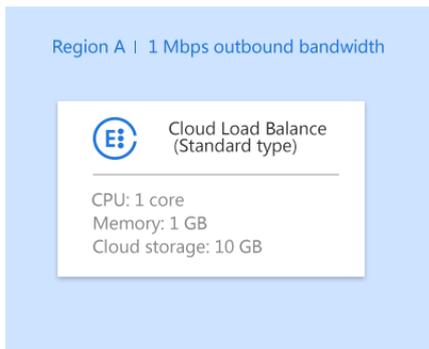
Resource	Resource ID Format	Availability	Description
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User ID	Not limited	Cross-region	Each Tencent Cloud user account is unique and applicable to all resources under the account.
SSH key	skey-xxxxxxx	Cross-region	You can bind an SSH key pair to any CVM in any region under your account.
CVM instance	ins-xxxxxxx	One zone only	A CVM instance is created under a specified availability zone
Custom Image	img-xxxxxxx	Cross-zone	A custom image can be used in different availability zones of the same region. You can copy an image to another region.
Elastic IP	eip-xxxxxxx	Cross-zone	An EIP is created under a specified region, and can only be associated with instance in the same region.
Security Group	sg-xxxxxxx	Cross-zone	A security Group is created under a specified region, and can only be associated with instance in the same region.
(Elastic) Cloud Disk	disk-xxxxxxx	Cross-zone	Elastic cloud disks can be created independently under a certain region and mounted to instances in the same region.

Use Cases

Static exhibition websites such as small Web/APP and company official websites

Static exhibition websites such as small Web/APP and company official websites

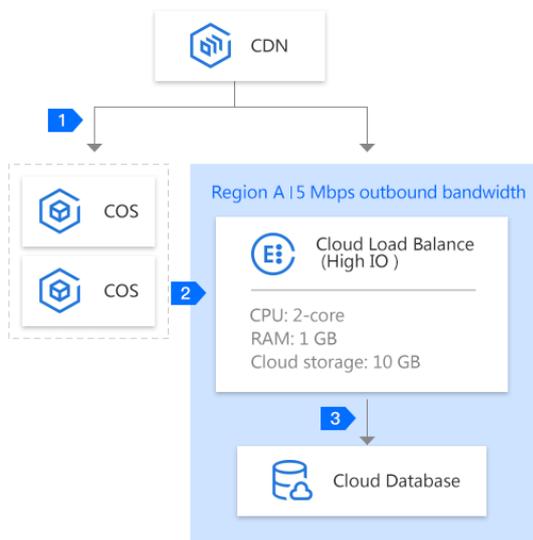


For small-scale websites and Apps, the incoming traffic keeps low during the initial period. It's recommended to purchase a basic-level configuration server for the deployment of application/codes, configuration files, static files, databases and other resources. Tencent Cloud Service Market provides rich images, Apps and OPS tools to satisfy all your needs.

With elastic computing, you can scale up your system when your business traffic increases rapidly. On Tencent Cloud Console, you can easily adjust your CVM configurations (such as CPU, memory, disk capacity, bandwidth), or launch more CVMs with CLB to establish a horizontal scaling traffic distribution system.

Streaming media application for large files such as massive images/videos

Streaming media applications



Basic concept of architecture : Static and dynamic separation

When a user frequently reads big data, I/O may become a bottleneck of cloud virtual machine (CVM). By using COS and CDN service, this problem can be solved easily:

- 1 Forward requests for static files to CDN nodes, and acquire files stored on COS
- 2 Forward others requests to multiple high-IO CVMs backend via load balancers
- 3 Dynamic data including user info can be written/read in CDB of backend server

Instance

Instance Overview

What is CVM Instance?

Cloud Virtual Machine (CVM) provides elastic computing services in a secure and reliable way. Services are provided on the cloud to meet the requirements for computing. As business demands change, computing resources can be scaled in real time to lower the procurement costs of your software/hardware, and simplify IT OPS work.

Different types of instances provide different computing and storage capacities, and they are applicable to different application scenarios. You can choose the computing capacity, storage and network access method of the instances based on the service scope as needed. For more instances and application scenarios, please see [CVM Instance configuration](#). After an instance is started, you can use it in the same way as you use any other traditional computer, and you have full control over the started instance.

What is Image?

Image is the template for CVM software configuration (operating system, pre-installed programs, etc.). A Tencent Cloud image provides all necessary information required to launch a CVM instance and you must start the instance via image. An image can launch more than one instance so that you can use it repeatedly. Generally speaking, an image is the "disk for installation" of a CVM.

Tencent Cloud provides the following types of images:

- Public images: Available to all users. They cover most mainstream operating systems.
- Service market images: Available to all users. In addition to operating systems, some applications are also integrated into these images.
- Custom images: Only available to the creator and users with whom these images are shared. They are created from running instances or imported from external sources.
- Shared images: Shared by other users. They can only be used to create instances.

For more information about images, please see [Image Overview](#) and [Image Type](#).

Instance Storage

The storage of instance is similar to normal computers and is divided into system disk and data disk:

- **System disk:** Like C disk in Windows system, the system disk contains a full copy of image used to start instances and the operating environment for instances. A larger system disk than the used image is required when starting.
- **Data disk:** Like D/E disk in Windows system, the data disk is used to save user data, and supports free expansion, mounting and unmounting.

Both system disk and data disk support different types of storage provided by Tencent Cloud. For more information, please see [Storage Overview](#).

Instance Security

- **[Policy Control](#):** When multiple accounts are used to control the same set of cloud resources, users can use Policy Control to manage their access to cloud resources.
- **[Security Group](#):** Users can use Security Group to control access by allowing trusted addresses to access instance.
- **Login control:** Log in to your Linux instances by using [SSH Key](#) whenever possible. For the instances that you [Log in with Password](#), the password needs to be changed from time to time.

Instance Types

Instance Types

When a Tencent Cloud CVM is created, the instance type specified by the user determines the host hardware configuration of the instance. Each instance type provides different computing, memory and storage functions. Users can choose a proper instance type according to the scale of application to be deployed.

Related resources including CPU, memory, storage and network are specifically for this CVM. But resource sharing also happens between instances, such as [network sharing](#).

Hardware Specification

For more information about hardware specifications of each instance type, please see [CVM Instance Configurations](#).

To figure out the instance type that fits you the most, it is recommended that you start a charge-by-quantity instance, and use your own benchmark test application. Since the fee is charged by the actually used quantity, you can try different types of instances conveniently and economically before making the decision.

After purchasing and using a type of instance, you still can adjust the size of the instance when your need changes. For more information, please see [Adjust CVM Hardware Configurations] (</doc/product/213/5730>).

The following is introduction of various instance series and types: Please note that a CVM instance that has been created cannot be changed into other types. Please create a new instance type when needed.

Available Instance Types

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:

Current-generation instance types: [Standard S2](#), [High IO I2](#), [Memory M2](#), [Computational C2](#)

Last-generation instance type: standard S1, High-I/O I1, memory type M1

To get optimum performance, you are recommended to create an instance using a current-generation instance type.

Current-generation instances

Last generation instances

Series 1 features Intel Xeon CPU and DDR3 memory.

Restrictions on Instances

Currently, Series 2 is only available in South China (Guangzhou) - Guangzhou Zone 1, and East China (Shanghai) - Shanghai Zone 1.

The total number of instances started in one zone is limited. For more information about the restrictions, please see [Restrictions on CVM Instance Purchase](#)

S2 Instances

Standard S2 instance is designed to provide general baseline performance, and is able to achieve the balance among compute, memory and network resources. It is a great choice for many applications, and is perfect for general workloads, such as medium- and small-sized Web applications and databases.

Standard S2 instance features 2.4 GHz Intel E5-Xeon Broadwell (v4) CPU processor and DDR4 RAM, and also offers the options of local disks, common cloud disks and SSD cloud disks for the data disks (The option may vary with different hardware specifications).

For the available configurations when you purchase a Standard M2 instance, refer to [CVM Instance Configurations](#).

Hardware Specification

The hardware specifications of Standard S2 instances are as follows:

- 2.4 GHz Intel Xeon E5-2680 Broadwell (v4) processor, DDR4 memory
- CPU performance is 20% higher than Series 1 Standard S1
- Network Enhanced type is used by default (up to 300k pps)
- With the options of local disks, common cloud disks and SSD cloud disks for the storage
- Balance among compute, memory and network resources

Requirements for Standard S2 instances

The requirements for S2 instances are as follows:

- S2 instance can be used on the basis of [postpaid](#), or as the production instance of standard host in dedicated hosts;
- Support S2 instance startup in basic network and [Virtual Private Cloud](#);
- For the available configurations when you purchase an S2 instance, refer to [CVM Instance Configurations](#). Please make sure that the size of S2 instance you choose can meet the minimum CPU memory requirements

I2 Instances

High IO I2 instances are optimized to provide tens of thousands of low-latency random I/O operations per second (IOPS) to applications, and are the ideal choice for high disk IO. They are well suited for the following situations:

- NoSQL database (e.g. MongoDB)
- Clustered database
- Online Transaction Processing (OLTP) System

and other I/O intensive applications that require low latency.

A high IO I2 machine features 2.4 GHz Intel E5-Xeon Broadwell (v4) CPU and DDR4 memory, and SSD local disks are adopted for all its system disks. It runs on a network boost mode and supports up to 300,000 packets per second (PPS).

For the available configurations when you purchase a high IO I2 instance, refer to [CVM Instance Configurations](#).

Hardware Specification

The hardware specification for a high IO I2 instance is as follows:

- 2.4 GHz Intel Xeon E5-2680 Broadwell (v4) processor, DDR4 memory
- CPU performance is 20% higher than Series 1 High IO I1
- SSD is used for instance storage
 - High random IOPS, with up to 40,000 random read IOPS in typical scenarios (blocksize =4k, iodepth =32);
 - High throughput, with up to 300MB/s random read throughput in typical scenarios (blocksize =4k, iodepth =32);
- Network Enhanced type is used by default (up to 300k pps)

Features of high IO I2 instance

Here is a summary of I2 instance features:

- The storage of I2 instance data is based on SSD instance storage. The system and data disks of I2 instance only exist within the life cycle of the instance. When the instance expires or is terminated by you, the applications and data in the instance storage will be wiped out. We suggest that you back up or copy the data in the instance storage regularly.
- I2 instance is network boosted by default, which leads to significant increase in packets per second (PPS) and decrease in network jittering and latency.

Requirements for high IO I2 instance

Here are the requirements for I2 instance:

- An I2 instance can be used on the basis of [postpaid](#), or as the production instance of high IO host in dedicated hosts;
- Support I2 instance startup in basic network and [Virtual Private Cloud](#);
- For the available configurations when you purchase a high IO I2 instance, refer to [CVM Instance Configurations](#).

M2 Instances

Memory M2 instance is designed to deliver high performance for the workload of large-sized datasets in process memory. It features a large memory, and a memory instance up to 384GB based on DDR4 is available. Its price is lower than any other memory instances with the same memory, which makes it the perfect choice for applications that need high memory computing. This type of instances is suitable for the following circumstances:

- Applications that need extensive memory operations, search, and computing, such as high-performance databases, and distributed memory caching.
- Users who build their own hadoop clusters or redis for like gene computing.

A Memory M2 instance features 2.4GHz Intel E5-Xeon Broadwell (v4) CPU processor and DDR4 memory. Its price is lower than any other memory instances with the same memory, which makes it the perfect choice for applications that need high memory computing. It also offers the options of local disks, common cloud disks and SSD cloud disks for the data disks (The option may vary with different hardware specifications).

For the available configurations when you purchase a Memory M2 instance, refer to [CVM Instance Configurations](#).

Hardware Specification

The hardware specification of a Memory M2 instance is as follows:

- 2.4 GHz Intel Xeon E5-2680 Broadwell (v4) processor, DDR4 memory
- Memory instances up to 368GB based on DDR4 available
- CPU performance is 20% higher than Series 1 Memory M1
- Network Enhanced type is used by default (up to 300k pps)
- With the options of local disks, common cloud disks and SSD cloud disks for the storage

Requirements for Memory M2 instances

The requirements for M2 instances are as follows:

- M2 instance can be used on the basis of [postpaid](#), or as the production instance of memory host in dedicated hosts;
- Support I2 instance startup in basic network and [Virtual Private Cloud](#);
- For the available configurations when you purchase a Memory M2 instance, refer to [CVM Instance Configurations](#).

C2 Instances

A Computational C2 instance can provide the highest-performance processor and the best cost performance among CVMs. It is an ideal choice for applications subject to compute such as high computing performance and high concurrent read and write, which is suitable for the following situations:

- Batch workloads
- High-traffic Web server, massively multiplayer online (MMO) game server
- High performance computing (HPC)

and other compute-intensive applications.

A computational C2 machine features 3.2 GHz Intel E5-2667 Broadwell (v4) processor and DDR4 memory, and offers the options of SSD local and cloud disks for the system and data disks. It supports network boost and up to 300,000 packets per second (PPS). Disk IO and network IO are specially optimized to deliver superior performance.

For the available configurations when you purchase a C2 computational instance, refer to [CVM Instance Configurations](#).

Hardware Specification

The hardware specification for a computational C2 instance is as follows:

- Intel Xeon E5-2667 Broadwell (v4) processor on which C2 instances are based. The processor has a base frequency of 3.2GHz, and a clock frequency of 3.5GHz(max turbo frequency) can be achieved with the Intel Turbo Boost Technology.

Function	Specification
Processor No.	E5-2667 v4
Intel Smart Cache	25MB
Instruction set	64-bit
Instruction set expansion	AVX 2.0
Processor base frequency	3.2GHz

Function	Specification
Max turbo frequency	3.5GHz
Intel Turbo Boost Technology	2.0

- CPU performance is 40% higher than Series 1 Standard S1
- Network Enhanced type is used by default (up to 300k pps)

Functions of Computational C2 instances

- Data storage of C2 instances can be based on SSD local storage and SSD cloud storage. If a C2 instance is based on SSD local storage, the system and data disks of the C2 instance only exist within the life cycle of the instance. When the instance expires or you terminate it, applications and data on the instance are cleared. It's recommended to backup your data periodically.
- Support network boost by default. The network boost provides you with significant increase in packets per second (PPS) and decrease in network jittering and latency.

Requirements for computational C2 instance

- A C2 instance can be used on the basis of [postpaid](#), or as the production instance of computational host HC20 in dedicated hosts;
- Support C2 instance startup in basic network and [Virtual Private Cloud](#);
- For the available configurations when you purchase a C2 computational instance, refer to [CVM Instance Configurations](#).

FPGA FX2 Instance

FPGA FX2 Overview

FPGA FX2 instance is a FPGA-based (Field Programmable Gate Array) computing service that features high throughput, low latency and low power consumption. It accelerates the cloud computing in various seniors at the hardware level.

Note:

FPGA FX2 is now under internal trial. Meanwhile the public development image provided by Tencent Cloud is CentOS 7.2 (64-bit) driven by FPGA with hardware programming tools.

Application Scenarios

FPGA FX2 instances are applicable for massive repetitive tasks that requires concurrent computing and low latency.

- Machine learning computing
- Natural language processing and speech recognition
- Computational finance
- Real-time video processing
- Image compression
- Genomics research and computing

Hardware Specification

- Processor: Xilinx Kintex UltraScale KU115 FPGA.
- Memory: DDR4, with a particular PCIe x8.
- Storage: SSD cloud disk.
- Network: Network enhancement (10-gigabit) is available by default.

FX2 instances are available in three configurations:

Instance specification	FPGA	DDR4 (GiB)	vCPU	Memory (GiB)	Data disk	Network
FX2.7xlarge60	1	2 * 8	14	60	SSD cloud disk	10-gigabit
FX2.14xlarge120	2	4 * 8	28	120	SSD cloud disk	10-gigabit
FX2.28xlarge240	4	8 * 8	56	240	SSD cloud disk	10-gigabit

Series 1 Instances

Series 1 features Intel Xeon CPU and DDR3 memory.

Standard S1

The Standard S1 of Series 1 is a type of virtual machines with CPUs ranging from low to high core count. It features moderate prices and flexible options of configurations to meet different needs of users. It also offers the options of local disks, common cloud disks and SSD cloud disks for the data disks (The option may vary with different hardware specifications).

It is recommended that the Standard be used for medium- and small-sized Web applications and databases.

Features:

- With CPUs ranging from low to high core count, offering users flexible options to configure the CVM
- With the options of local disks, common cloud disks and SSD cloud disks for the storage
- Balance among compute, memory and network resources, moderate price

High IO I1

High IO I1 of Series 1 is a virtual machine of which both the system disks and data disks are high-performance SSDs. It can satisfy high requirements for disk accessing and latency.

It is recommended that the product be applied in IO intensive business.

Features:

- The performance of the random IOPS of SSD local disks is nearly 10 times higher than that of local HDD and common cloud disks.
 - High random IOPS, with up to 40,000 random read IOPS in typical scenarios (blocksize =4k, iodepth =32);
 - High throughput, with up to 300MB/s random read throughput in typical scenarios

(blocksize =4k, iodepth =32);

- Low latency, with the access latency in microseconds

Memory M1

The Memory M1 of Series 1 is a model of which the ratio of CPU to memory is 1:8, which is suitable for applications that need extensive memory operations, search, and computing.

Features:

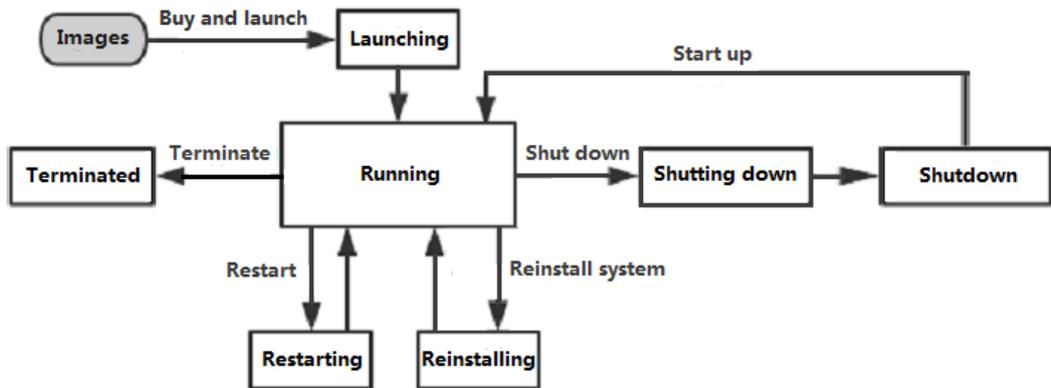
- All with 10 gigabit underlying networks, providing a more powerful computing capacity and a wider range of memory.
- Intel Xeon E5-2670 v3 processor and DDR3 memory, providing larger-sized instances with stronger computing capacities.
- The Memory Intensive employs a golden ratio, able to satisfy large-scale business deployment.

Overview

The lifecycle of CVM instance refers to the period ranging from launching to termination.

The chart below shows the lifecycle of postpaid CVM instances. For more information about the billing types, please see [here](#).

Postpaid Instances:



Status of CVM instances including:

- Launching
- Running
- Restarting
- Shutting down
- Shutdown
- Reinstalling
- Terminating
- Terminated
- (Optional) Reclaimed

Launching Instances

Once you launch a CVM, the instance status becomes Launching. The launch specifications are determined by the [instance type](#). The system will use the specified image to launch the instance. It may take a while for launching. When the instance is ready, its status becomes Running.

The instance will obtain a private IP address, with which other CVMs in the same regions and of the same network environment (VPC or basic network) are able to communicate with the instance. For instance with public bandwidth/traffic, a public IP address is assigned for accesses from Internet.

For more information, see [Purchase and Launch Instances](#), [Log In to Windows Instance](#), and [Log In to Linux Instance](#).

Restarting Instances

It's suggested to restart instance on Console or via API, instead of running the rebooting command in the operating system.

Restarting an instance is similar to rebooting a computer. The public IP address, private IP address and all data on the disk are remained unchanged. It may take about several seconds to minutes to restart the instance, depending on the instance configuration.

For more information, see [Restarting Instances](#).

Shutting down Instances

You can shut down instance to stop services on Console or via API.

Shutdown CVM instances are still visible on the console. For postpaid CVMs, the billing does not stop. It should be noted that users cannot connect to the instance that has been shut down.

You need to shut down the instance before certain operations, like adjusting configuration, resetting password, etc.. The public IP address, private IP address and all data on the disk are remained unchanged.

For more information, see [Shutting Down Instances](#).

Terminating Instances

You can terminate unnecessary instances if required.

Note:

- For postpaid instances, users can terminate them manually on the Console or via API.

When terminating an instance, the system disks and data disks designated when purchasing will be terminated as well. But elastic cloud disks mounted on it will not be affected.

For more information, see [Terminating Instances](#).

Instance Metadata

Instance metadata refers to the data of the instance that you operate on, and can be used to configure and manage running instances.

Note: Although instance metadata can only be accessed internally from the instance, the data has not been protected through encryption. Anyone who accesses the instance can view its metadata. Therefore, you should take proper precautions to protect sensitive data. For example, using permanent encryption key.

Instance meta-data

Tencent Cloud provides the following meta-data information:

Data	Description	Introduced Version
instance-id	Instance ID	1.0
uuid	Instance ID	1.0
local-ipv4	Instance private IP	1.0
public-ipv4	Instance public IP	1.0
mac	MAC address of instance's eth0 device	1.0
placement/region	Information of the region in which the instance resides	1.1
placement/zone	Information of the availability zone in which the instance resides	1.1
network/network/mac/mac/mac	The device address for the network interface of the instance	1.2
network/network/mac/mac/primary-local-ipv4	The primary private IP for the network interface of the instance	1.2
network/	The public IP for the network	1.2

Data	Description	Introduced Version
network/macs/mac/public-ipv4s	interface of the instance	
network/ network/macs/mac /local-ipv4s/local-ipv4/gateway	The gateway address for the network interface of the instance	1.2
network/ network/macs/mac /local-ipv4s/local-ipv4/local-ipv4	The private IP for the network interface of the instance	1.2
network/ network/macs/mac /local-ipv4s/local-ipv4/public-ipv4	The public IP for the network interface of the instance	1.2
network/ network/macs/mac /local-ipv4s/local-ipv4/public-ipv4-mode	The public network mode for the network interface of the instance	1.2
network/ network/macs/mac /local-ipv4s/local-ipv4/subnet-mask	The subnet mask for the network interface of the instance	1.2

Fields **mac** and **local-ipv4** in bold in the above table refer to the device address and private IP of the network interface specified for the instance, respectively.

The destination URL address of the request is case sensitive. You must construct the destination URL address of a new request according to the returned result of the request.

Querying Instance Metadata

Operations on the instance metadata can only be performed internally within the instance. You first need to log in to the instance. For more information, please see [Log in to Windows Instance](#) and [Log](#)

[in to Linux Instance.](#)

Querying All Available Meta-data Types

Command:

```
curl http://metadata.tencentyun.com/
```

The returned value is as follows

```
[root@UM_58_27_centos ~]# curl http://metadata.tencentyun.com
meta-data
```

Command:

```
curl http://metadata.tencentyun.com/meta-data
```

The returned value is as follows

```
[root@██████████_centos ~]# curl http://metadata.tencentyun.com/meta-data
instance-id
local-ipv4
mac
public-ipv4
uuid
placement
```

The placement field includes two types of data: region and zone.

Command:

```
curl http://metadata.tencentyun.com/meta-data/placement
```

The returned value is as follows

```
[root@██████_centos ~]# curl http://metadata.tencentyun.com/meta-data/placement
zone
region
```

Querying Instance Private IP

Command:

```
curl http://metadata.tencentyun.com/meta-data/local-ipv4
```

The returned value is as follows

```
[root@UM_58_27_centos ~]# curl http://metadata.tencentyun.com/meta-data/local-ipv4
10.105.58.27
```

Querying Instance Public IP

Command:

```
curl http://metadata.tencentyun.com/meta-data/public-ipv4
```

The returned value is as follows

```
[root@UM_58_27_centos ~]# curl http://metadata.tencentyun.com/meta-data/public-ipv4
115.███.███.77.82
```

Querying Instance ID

Command:

```
curl http://metadata.tencentyun.com/meta-data/instance-id
```

or

```
curl http://metadata.tencentyun.com/meta-data/uuid
```

The returned value is as follows

```
[root@██████_centos ~]# curl http://metadata.tencentyun.com/meta-data/instance-id  
e91fba06-9e0b-██████-██████-aa0a0d13a161
```

```
[root@██████_centos ~]# curl http://metadata.tencentyun.com/meta-data/uuid  
e91fba06-9e0b-██████-██████-aa0a0d13a161
```

Querying the Device Address of Instance eth0

Command:

```
curl http://metadata.tencentyun.com/meta-data/mac
```

The returned value is as follows

```
[root@██████_centos ~]# curl http://metadata.tencentyun.com/meta-data/mac  
52:54:00:██████:██████:FA
```

Querying the Region of Instance

Command:

```
curl http://metadata.tencentyun.com/meta-data/placement/region
```

The returned value is as follows

```
[root@██████_centos ~]# curl http://metadata.tencentyun.com/meta-data/placement/region  
china-east-sh
```

Querying the Availability Zone of Instance

Command:

```
curl http://metadata.tencentyun.com/meta-data/placement/zone
```

The returned value is as follows

```
[root@UM_187_40_centos ~]# curl http://metadata.tencentyun.com/meta-data/placement/zone
sh-azone1
```

Querying the Network Interface of Instance

Command:

```
curl http://metadata.tencentyun.com/meta-data/network/
```

The returned value is as follows:

```
[root@UM_187_40_centos ~]# curl http://metadata.tencentyun.com/meta-data/network
interfaces/[root@UM_187_40_centos ~]# _
```

Command:

```
curl http://metadata.tencentyun.com/meta-data/network/interfaces/mac
```

The returned value is as follows:

```
[root@UM_187_40_centos ~]# curl http://metadata.tencentyun.com/meta-data/network/interfaces/mac
52:54:00:13:5C:6C/[root@UM_187_40_centos ~]#
```

Querying the Details for the Network Interface of Instance

Command:

```
curl http://metadata.tencentyun.com/meta-data/network/interfaces/macs/52:54:00:13:5C:6C/
```

The returned value is as follows:

```
[root@UM_187_40_centos ~]# curl http://metadata.tencentyun.com/meta-data/network/interfaces/macs/52:54:00:13:5C:6C/local-ipv4s/  
local-ipv4s/  
mac  
primary-local-ipv4  
public-ipv4s[root@UM_187_40_centos ~]#
```

Querying the List of Private IPs for the Network Interface of Instance

Command:

```
curl
```

```
http://metadata.tencentyun.com/meta-data/network/interfaces/macs/52:54:00:13:5C:6C/local-ipv4s
```

The returned value is as follows:

```
[root@UM_187_40_centos ~]# curl http://metadata.tencentyun.com/meta-data/network/interfaces/macs/52:54:00:13:5C:6C/local-ipv4s  
10.104.187.40/[root@UM_187_40_centos ~]#
```

Querying the Device Address for the Network Interface of Instance

Command:

```
curl http://metadata.tencentyun.com/meta-data/network/interfaces/macs/52:54:00:13:5C:6C/mac
```

The returned value is as follows:

```
[root@UM_187_40_centos ~]# curl http://metadata.tencentyun.com/meta-data/network/interfaces/macs/52:54:00:13:5C:6C/mac  
52:54:00:13:5C:6C[root@UM_187_40_centos ~]#
```

Querying the List of Private IPs for the Network Interface of Instance

Command:

```
curl
```

```
http://metadata.tencentyun.com/meta-  
data/network/interfaces/mac/52:54:00:13:5C:6C/primary-local-ipv4
```

The returned value is as follows:

```
[root@UM_187_40_centos ~]# curl http://metadata.tencentyun.com/meta-data/network/interfaces/mac/52:54:00:13:5C:6C/primary-local-ipv4  
10.104.187.40[root@UM_187_40_centos ~]#
```

Querying the List of Public IPs for the Network Interface of Instance

Command:

```
curl
```

```
http://metadata.tencentyun.com/meta-data/network/interfaces/mac/52:54:00:13:5C:6C/public-ipv4s
```

The returned value is as follows:

```
[root@UM_187_40_centos ~]# curl http://metadata.tencentyun.com/meta-data/network/interfaces/mac/52:54:00:13:5C:6C/public-ipv4s  
119.29.222.20[root@UM_187_40_centos ~]#
```

Querying the Network Information for the Network Interface of Instance

Command:

```
curl
```

```
http://metadata.tencentyun.com/meta-  
data/network/interfaces/mac/52:54:00:13:5C:6C/local-ipv4s/10.104.187.40/
```

The returned value is as follows:

```
[root@UM_187_40_centos ~]# curl http://metadata.tencentyun.com/meta-data/network/interfaces/macs/52:54:00:13:5C:6C/local-ipv4s/10.104.187.40/gateway
gateway
local-ipv4
public-ipv4
public-ipv4-mode
subnet-mask[root@UM_187_40_centos ~]#
```

Querying the Gateway Address for the Network Interface of Instance

Command:

```
curl
http://metadata.tencentyun.com/meta-
data/network/interfaces/macs/52:54:00:13:5C:6C/local-ipv4s/10.104.187.40/gateway
```

The returned value is as follows:

```
[root@UM_187_40_centos ~]# curl http://metadata.tencentyun.com/meta-data/network/interfaces/macs/52:54:00:13:5C:6C/local-ipv4s/10.104.187.40/gateway
10.104.187.1 [root@UM_187_40_centos ~]#
```

Querying the Private IP for the Network Interface of Instance

Command:

```
curl
http://metadata.tencentyun.com/meta-
data/network/interfaces/macs/52:54:00:13:5C:6C/local-ipv4s/10.104.187.40/local-ipv4
```

The returned value is as follows:

```
[root@UM_187_40_centos ~]# curl http://metadata.tencentyun.com/meta-data/network/interfaces/macs/52:54:00:13:5C:6C/local-ipv4s/10.104.187.40/local-ipv4
10.104.187.40[root@UM_187_40_centos ~]#
```

Querying the Public IP for the Network Interface of Instance

Command:

curl

```
http://metadata.tencentyun.com/meta-  
data/network/interfaces/macs/52:54:00:13:5C:6C/local-ipv4s/10.104.187.40/public-ipv4
```

The returned value is as follows:

```
[root@UM_187_40_centos ~]# curl http://metadata.tencentyun.com/meta-data/network/interfaces/macs/52:54:00:13:5C:6C/local-ipv4s/10.104.187.40/public-ipv4  
119.29.222.20[root@UM_187_40_centos ~]#
```

Querying the Public Network Mode for the Network Interface of Instance

Command:

curl

```
http://metadata.tencentyun.com/meta-  
data/network/interfaces/macs/52:54:00:13:5C:6C/local-ipv4s/10.104.187.40/public-ipv4-mode
```

The returned value is as follows:

```
[root@UM_187_40_centos ~]# curl http://metadata.tencentyun.com/meta-data/network/interfaces/macs/52:54:00:13:5C:6C/local-ipv4s/10.104.187.40/public-ipv4-mode  
NAT [root@UM_187_40_centos ~]#
```

Note:

- NAT: Network Address Translation, the network address translation.
- direct: Connect to the network directly. Access the public network directly through the public IP for the network interface of instance using a router.

Querying the Subnet Mask for the Network Interface of Instance

Command:

curl

http://metadata.tencentyun.com/meta-

data/network/interfaces/mac/52:54:00:13:5C:6C/local-ipv4s/10.104.187.40/subnet-mask

The returned value is as follows:

```
[root@UM_187_40_centos ~]# curl http://metadata.tencentyun.com/meta-data/network/interfaces/mac/52:54:00:13:5C:6C/local-ipv4s/10.104.187.40/subnet-mask
255.255.192.0[root@UM_187_40_centos ~]#
```

Storage

Overview

Tencent Cloud provides a wide range of flexible, economic and user-friendly data storage devices for the CVM instances. Various storage devices are provided to cater for different usage scenarios. The performance and price varies with the category of storage device. Storages can be divided into the following categories by dimensions:

Dimension Category Description

Category

Options

Storage HDD Use mechanical hard disk as the storage medium. It is characterized by a lower price and a better read/write speed.

SSD Use Solid State hard Drive (SSD) as the disk storage medium. It has an excellent performance in IOPS and read/write speed. It can achieve an IOPS and throughput up to 20 times and 16 times higher than those of ordinary hard disk, respectively. It is more expensive than ordinary hard

disks.

Storage System Used to store the image collection of content disk systems that control operations and schedule the operation of CVM. It is operated by using image.

Data Used
disk to store all the user data.

Architecture Cloud disk is an elastic, highly available, highly reliable low-cost and customizable network block device, which can be used as a standalone scalable hard disk for CVM. It provides data storage at data block level and employs a 3-copy distributed mechanism, thus ensuring the data reliability for CVM.

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Cloud Disks

Cloud Block Storage is a persistent storage device at data block level. You can use it in the same way as you use an external hard disk for a computer. Cloud Block Storage is featured by high availability and high reliability and employs distributed storage technology to ensure a data availability of not less than 99.99%. It is suitable to be used as a main storage device (such as file system and database) for the data that requires frequent and fine-grained updates.

You can mount multiple elastic Cloud Block Storages to one instance, or dismount them from one instance and mount to another instance at any time. With its life cycle being independent of CVM instances, elastic Cloud Block Storage can be stored independently as a storage medium for important data.

You can keep a backup copy of data by creating a snapshot for Cloud Block Storage. You can also create a new Cloud Block Storage from the snapshot at any time and connect it to another instance. For more information about Cloud Block Storage, see [Tencent Cloud Cloud Block Storage product documentation](#).

Local Disks

Local disk is a storage medium located on the same physical machine as the CVM instance and can provide low-latency storage for the instance. The data on the local disk will only be retained for the life cycle of CVM instance and will be lost when the CVM is destroyed. For more information, see [Local Disk](#).

Cloud Object Storage (COS)

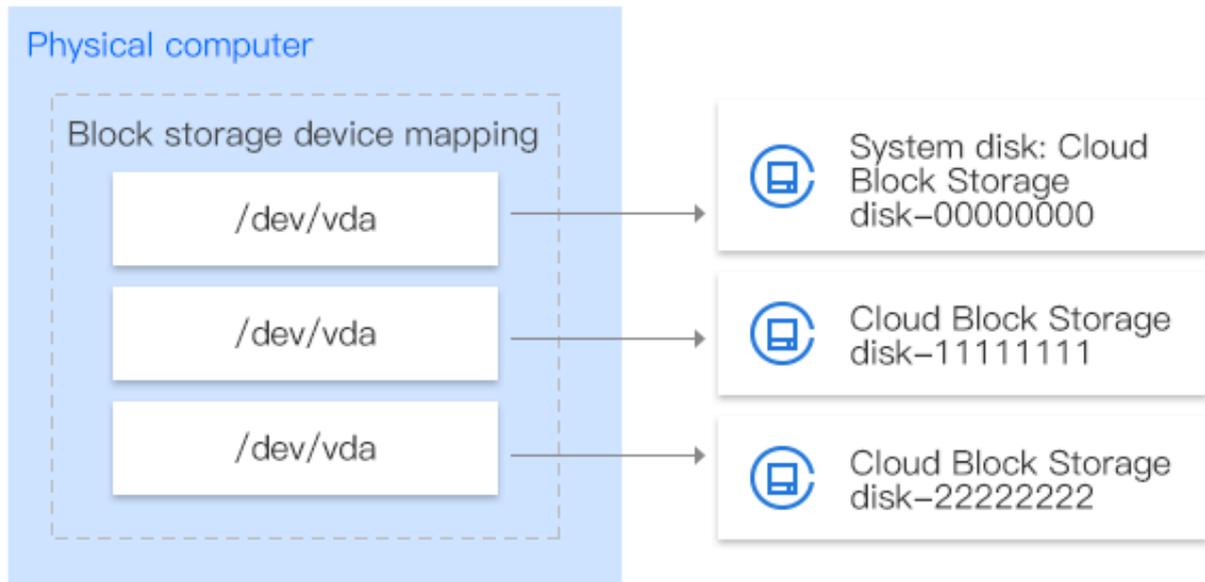
Tencent Cloud COS is a data storage device located on the Internet. It allows data retrieval from any location on CVM instance or the Internet, thus reducing the storage cost. For example, you can use COS to store the backup copies of data and applications. For more information, see [Tencent Cloud COS product documentation](#).

Block storage device mapping

Each instance has a system disk to keep the basic operation data. More data disks can be mounted to an instance. How to identify these storage devices in an instance? In fact, an instance uses block storage device-mapping to map the storage devices to locations that can be identified by it.

Block storage is a storage device that puts data into blocks in bytes and allows random access. Tencent Cloud supports two types of block storage devices:

- Local disk
- Cloud disk



This figure shows how CBS maps the block storage device to the CVM and maps '/dev/vda' to the system disk, and how it maps the two data disks to '/dev/vdb and /dev/vdc' respectively.

The CVM instance can automatically create block storage device mapping for the local disk and cloud disk that are mounted to it.

Cloud Block Storage

Tencent Cloud's Cloud Block Storage provides storage at data block level for CVM instances. As a storage medium with high availability and high reliability, Tencent Cloud's Cloud Block Storage comes with a variety of hard drives to cater to the diversified needs of users in read/write operations. For more information about Cloud Block Storage, see [Cloud Block Storage product documentation](#).

In case of frequent data changes that require faster read/write speed and persistent storage, you're recommended to use Tencent Cloud's Cloud Block Storage. Cloud disks can be mounted to any running instance in the same availability zone, just like an ordinary mobile hard disk. It is particularly suitable to be used as such application like instance's file system and database storage, with data existing independently of instance's life cycle.

For more information, see:

- [Technical architecture of Tencent Cloud CBS](#)
- [Price of Tencent Cloud CBS](#)

Local Storage

Local disk is a storage device located on the same physical server as the CVM instance and is featured by high read/write IO and low latency. Local disk comes from the local storage of the physical machine where the CVM resides. It is a storage area reserved on the physical machine where the CVM resides. It is advised to choose local disk for both system disk and data disk. In addition, in case of the purchase of a High IO model, only SSD local disk is recommended. However, a CVM for which local disk is selected DOES NOT support the upgrade of hardware (CPU, memory) and only supports upgrade of bandwidth.

Lifecycle of local disk

Since the local disk can only be created following CVM instances, it will be started and stopped with the life cycle of CVM.

Types of local disks

The local disk is a local storage located on the physical machine where the CVM resides. By storage media, local disks are classified into local HDD and SSD local disk.

Local HDD

The local HDD is a local storage located on the physical machine where the CVM instances reside. It is a part for storage separated from the physical machine where the CVM instances are located. You cannot upgrade hardware (CPU and memory) in CVM with local disk, except the bandwidth.

Specifications	Performance	Price
System disk: a fee-free capacity of 20 GB. You can choose to buy disks of a larger capacity. It supports a maximum of 50 GB (Linux) A fee-free non-expandable	Reading and writing speed of more than 80 MB/S	Postpaid: USD \$0.01/100 GB/hour

Specifications	Performance	Price
<p>capacity of 50 GB (Windows).</p> <p>Data disk: the local HDD supports the capacity from 10 GB up to 1,000 GB (in 10 GB increments), and its maximum capacity to be selected varies with the specific hardware configuration.</p>		

SSD local disk

The SSD local disk is a local storage located on the physical machine where the CVM resides, providing instances with block-level data access with low latency, high random IOPS, and high I/O throughput.

Specifications	Performance	Price
<p>System disk: a fee-free capacity of 20 GB (Linux) A fee-free non-expandable capacity of 50 GB (Windows)</p> <p>Data disk: the SSD local disk supports the capacity from 10 GB up to 250 GB (in 10 GB increments), and its maximum capacity to be selected varies with the specific hardware configuration.</p>	Throughput of up to 300 MB/s and 30,000 random IOPS	Postpaid: USD \$0.03/100 GB/hour

SSD local disk is suitable for the following scenarios:

- Low latency: the access latency in microseconds
- Distributed application: NoSQL, MPP data warehouse, distributed file system and other I/O intensive applications. These applications have their own distributed data redundancy.
- Logs for large online applications: large online applications can produce a large amount of log data and require high-performance storage, while the log data does not require highly reliable storage.
- Single point of failure (SPOF) risks: There are the potential SPOF risks. It is recommended to implement data redundancy at the application layer to ensure data availability.

Purchasing local disks

Since the local disk can only be started together with the launch of CVM, you can just specify the local disks when purchasing CVM instances. For more information, please refer to the [Purchase and Start an Instance](#).

Cloud Object Storage (COS)

Tencent Cloud's object storage COS is a data storage device located on the Internet and provides users with a fast and reliable data storage solution for a low price. Users can store and retrieve data via any location on CVM instance or the Internet. COS stores user data redundantly across multiple regions and allows multiple clients or application threads to perform read/write operations on those data at the same time. The data on the COS can be retrieved in a similar way to Internet domain names and be accessed by using a HTTP URL address.

For more information about Tencent Cloud Object Storage, see [COS product documentation](#).

Image

Overview

What are images?

Tencent Cloud images provide all the information needed to start CVM instances. After you specify an image, you can start any number of instances from it. You can also start instances from any number of images.

The major roles of images are:

- **Batch deployment of software environment**
By creating an image for the CVM instance with its software environment deployed and then using the image in batch-creating CVM instances, you can make these CVMs instances created later have the same software environment as the original one, therefore to achieve batch deployment of software environment.
- **As a backup of CVM operating environment**
After an image is created for a CVM instance, you can use the image to recover the CVM instance if its software environment is corrupted and cannot run normal during subsequent use.

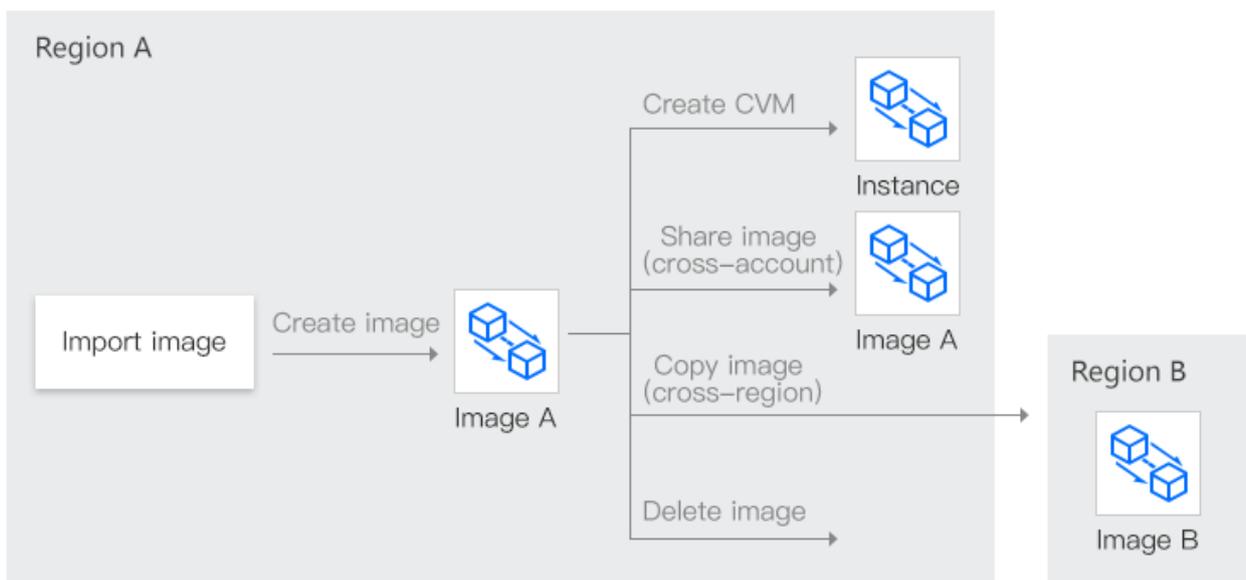
Image types

Tencent Cloud provides the following types of images:

- **Common images:** All users can use them, covering most of the mainstream operating systems.
- **Service market images:** All users can use them, which integrate some special applications in addition to the operating system.
- **Custom images:** Only the creators and shared objects can use them, which are created from existing running instances, or imported externally.
- **Shared images:** Shared by other users and used only to create instances.

Image lifecycle

The following figure summarizes the lifecycle of custom images. After you create or import a new custom image, you can use it to start a new instance (you can also start an instance from an existing common image or a service market image). A custom image can be synchronized to the same accounts in another region, and becomes an independent image in that region. You can also share custom images to other users.



Lifecycle of a custom image

Usage restrictions

Common images: No usage restrictions.

Custom images:

- 1) Cross-regional synchronization of custom images is free.
- 2) Each region supports 10 custom images.
- 3) Each user can only carry out five operations every day (including cloud API operations, counted by

region).

4) Image synchronization is available only in Guangzhou, Beijing, Shanghai, Hong Kong, but not in the North American region.

Shared images:

- 1) Each custom image can be shared up to 50 Tencent Cloud master accounts.
- 2) Shared images do not support modifying names and description, and can only be used to create CVMs.
- 3) Sharing images to the same region as the shared account is supported.

Service market images: No usage restrictions.

Charging standards

Currently, all Tencent Cloud common images are free of charge except that Windows images in overseas regions require some license fees. Service market images are priced by the providers. When you start a CVM instance using an image, the costs consist of two parts: CVM instance costs and image costs. In addition, since your custom images are based on some standard images, they may also incur costs. Specific prices and charge modes will be published on the product page.

Security

Tencent Cloud common images are manufactured after rigorous testing by the professional security O&M team of Tencent Cloud. We also provide optional built-in Tencent Cloud security components, so you can use them confidently.

Service market images are manufactured by third-party providers, who have been selected carefully by Tencent Cloud and have signed settlement agreements. Those images have been tested rigorously by the providers and reviewed by Tencent Cloud, to guarantee the security of their contents, so you can also use them.

Images shared by other users may be subject to security risks because they are not reviewed by Tencent Cloud. Therefore, it is strongly recommended that you do not accept images from unknown sources.

Image Types

You can select your images type based on the following characteristics:

- Location (see [Regions and Availability Zones](#))
- Operating system type
- Architecture (32-bit or 64-bit)

Tencent Clouds provides the following types of images, and you can select images as needed.

Public Images

Public images are provided, supported and maintained by Tencent Cloud, including the basic operating system and the initialization components by Tencent Cloud. All users can use them and choose whether they are based on the Linux system or Windows system.

Tencent Cloud public images are manufactured after rigorous testing by the professional security team of Tencent Cloud. We also provide optional built-in Tencent Cloud security components.

Tencent Cloud common images support:

- Stable, secure, and high-performance application environment.
- Multiple versions of Java, MySQL, SQL Server, Python, Ruby, Tomcat and other common software, as well as full permissions.
- Regular system updates.
- Integrated with Tencent Cloud software packages (for example APIs.).
- High-compliance operating systems, all official genuine ones.
- Free of charge except that Windows images in some overseas regions require some license fees.

Custom Images

Custom images are created or imported by yourself. They can only be used by your account. You can easily create an image for the CVM instance with its applications deployed, and then quickly create more instances that contain the same configuration. Custom images support user creation,

synchronization, sharing and termination, are an essential component of the rapid deployment feature of Tencent Cloud. For more information about custom images, see [Create Custom Images](#), [Synchronize Custom Images](#), [Share and Unshare Custom Images](#) and [Import Custom Images](#).

Since your custom images are based on public images, they may also incur costs (when the original public images are the Windows types in some overseas regions) Exact prices are those published when you create instances.

- Each region supports up to 10 custom images.
- Image synchronization is available only in Guangzhou, Beijing, Shanghai and Hong Kong, but not in North American and Singapore.

Shared Images

Shared images means that other Tencent Cloud users share their custom images with you through the image sharing feature. Shared images will be displayed in the same region as the original images. Shared images do not support modifying names, synchronization, sharing and other operations, and can only be used to create CVMs.

- Each custom image can be shared to up to 50 Tencent Cloud accounts.
- Shared images do not support modifying names and description, and can only be used to create CVMs.
- Sharing images to the same region as the shared account is supported.

Network and Security

Overview

Tencent Cloud provides the following network and security features:

- Security group
- Encryption login method
- Elastic IP
- Internet access
- Private network access
- Basic network and private network

You can use [Security Group](#) to control access to your instance. These security groups resemble a network firewall, allowing you to specify the protocols, ports, and source/target IP ranges that are allowed access. You can create multiple security groups and assign different rules to each security group. You can then assign one or more security groups to each instance, and we will use these rules to determine what traffic is allowed to access instances and which resources the instance can access. You can configure a security group so that only a specific IP address or a specific security group can access the instance.

Tencent Cloud provides two encryption login methods: [Password Login](#) and [SSH Key Pair Login](#). Users are free to choose two ways to securely connect with the CVM.

Instances may fail because of uncontrollable reasons. If an instance fails and you start a replacement instance, the public IP of the alternate instance will be different from the original instance. However, if your application requires a static IP address, you can use an [Elastic IP Address](#).

Tencent's [Internet Link](#) gives access to more than 20 domestic mainstream network operators to ensure that your customers, regardless of ISP, can enjoy the same high-speed access; [Private Network Link](#) goes through an underlying 10 Gigabit / Gigabit network interoperability to ensure high-speed access, high reliability and low latency.

The user's [Network Environment](#) can be roughly divided into 'basic network' and 'private network'. Under a basic network, your cloud product instance is located in a large resource pool preset by

Tencent Cloud; under a private network, your cloud product instance can be activated under your own preset, custom network segments, and isolated from other users.

The above network and security services protect your instances; making them safe, efficient and able to freely provide external services.

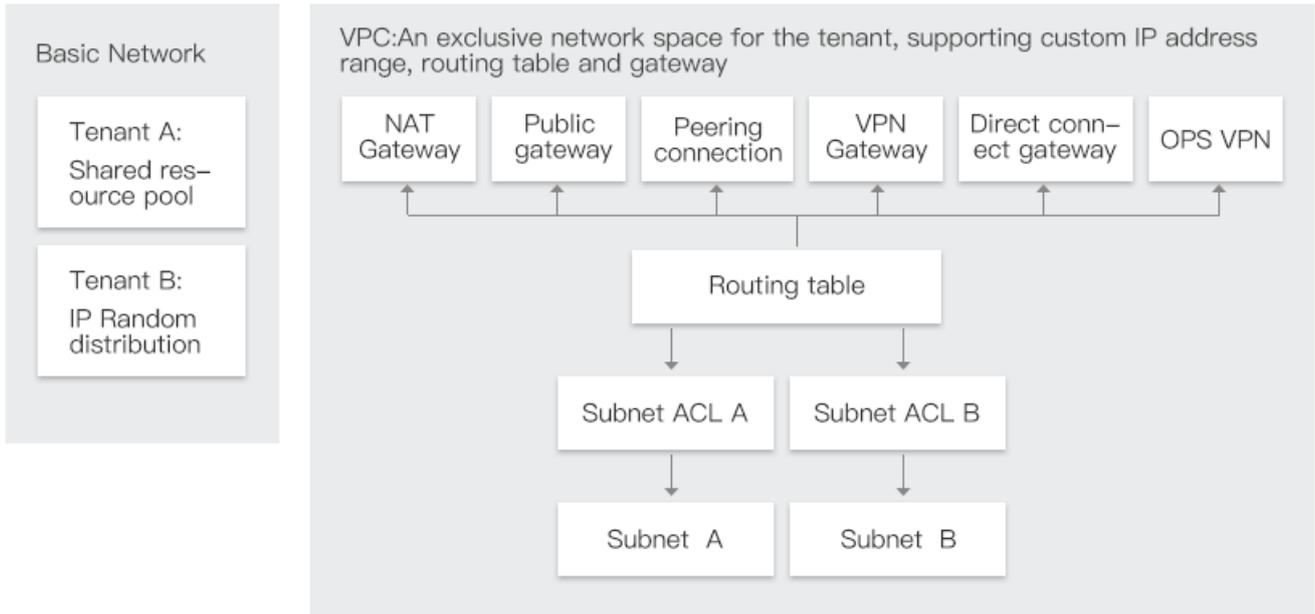
Network Environment

Tencent Cloud network environment can be divided into either basic network and private network (VPC).

Through the Tencent Cloud basic network, all of the user's resources on the cloud are managed uniformly by Tencent Cloud; relatively speaking, these configurations are simpler and more convenient to use, helping users manage their CVMs faster and easier. All basic network instances in the same geographical area are free to communicate via [Private Network Service](#) under the user account. Most of the user's needs can be met through the basic network and implementation; this is best and most convenient if you are just beginning to understand and use Tencent Cloud.

With the Tencent Cloud Private Network (VPC), you can customize a logical isolated virtual network within the cloud and launch a CVM resource (such as an instance) into the quarantine. Even in the same area, different VPCs cannot communicate with each other by default. VPC is very similar to traditional networks that data centers run, but at the same time, can offer you faster and more extensible infrastructures on the cloud. Users can customize network topology and IP addresses within the network and configure the [Router Table](#), gateway and security settings; supports [Dedicated Connection](#) through your local data center, and rapid expansion of computing resources; freely plan how your VPC communicates with the Internet. Use a variety of control methods (including [Security Group](#) and [Network ACL](#) to protect VPC resources. For more information, see [Private Network Product Documentation](#). Private networks can help users build more complex network architectures, suitable for users who are familiar with network management.

Basic network and private network



The functional differences between the private network and the basic network are shown in the table below:

Function	Private Network	Basic Network
Renter Association	Logical Isolated Network Based on GRE Encapsulation	Renter Association
Network customization	Yes	No
Router customization	Yes	No
Custom IP	Yes	No
Intercommunication Rules	Supports cross-domain, cross-account intercommunication	Interoperable among renters in the same geographical area
Security control	Security group and Network ACL	Security group

Advantages of VPC

By starting the instance within the VPC, you can:

- Assign an instance of your custom private static IP.
- Assign multiple IP addresses to your instance (coming soon).
- Controls inbound and outbound traffic for an instance.
- Add an additional access control layer to the instance using the Network Access Control List

(ACL).

Share and access resources between basic network and VPC

Some of the resources and functions on Tencent Cloud can support two kinds of network environments, and can be shared or accessed between different networks.

Resources	Instructions
Image	can be used to start a CVM instance in any network environment
Elastic IP	Elastic IPs can be bound to any network environment on a CVM instance
Instances	Instances on a basic network and instances within the private network can be accessed through Public IP or Basic Network Interoperability functions to achieve intercommunication
SSH Key	SSH key supports loading a CVM instance under any network environment
Security Group	Security Groups support binding to CVM instances in any network environment

Note: [Cloud Load Balance](#) cannot be shared between the underlying network and the VPC. That is, Cloud Load Balance does not support binding basic network instances and VPCs at the same time; even though the VPC and the basic network are connected through the basic network and can intercommunicate.

Migrate instances within the basic network to VPC

- 1) [Create a Custom Image](#) for the CVM instance in the basic network environment.
- 2) (Optional) [Create a Snapshot](#) of the CVM instance data disk in the basic network environment.
- 3) [Create a VPC and Subnet](#).

4) [Purchase and Start the CVM Instance](#) in the VPC.

Private Network Access

Cloud products on the Tencent Cloud can be accessed via [Internet access](#) or accessed mutually via the Tencent Cloud private network. Private network services are Local Area Network (LAN) services, which are accessed mutually via private links. Tencent Cloud server rooms are interconnected by an underlying 10 Gigabit / Gigabit, providing high bandwidth, low latency within network communications services; and regions within the private network enjoy communications completely free of charge, helping you build a flexible network architecture.

- Private network services contain user attributes; different users are isolated; that is, by default they cannot access another user's network through CVM services.
- Private network services also have geographical attributes, and different geographical isolation; that is, by default, they cannot access the network through different accounts under cloud services.

Private IP address

A private IP address is an IP that cannot access via the Internet; this is an implementation of private services by Tencent Cloud. You can use private IP addresses to implement communications between instances on the same network (basic networks or VPC). Each instance has a default network interface (ie, eth0) for assigning private IP addresses. Private IP addresses can be automatically assigned by Tencent and customized by users (only in [Private Network] environments). The combination of [Internet services](#), and the Tencent cloud network architecture consists of the following two parts:

- Public network cards: Unanimously configured on the TGW interface layer, without CVM perception. When an instance is assigned a [Public IP address](#), TGW automatically configures a public network interface for it.
- Private network card: Managed by Tencent Cloud, supports user configurations.

Therefore, when the user uses commands such as 'ifconfig' to view network interface information on the CVM, only the IP information of the private network can be viewed. For public network information, users need to log onto the [Tencent Cloud Console](#) CVM list/details page to view. Please

note that if you change the private network IP within an operating system, it will lead to an interruption of network communications.

Private IPs can be used for CLB load balancing, inter-network visits between CVM instances and between CVM instances and other cloud services, such as CDN and CDB.

How to obtain a private IP address

Each CVM instance is assigned a default private IP at startup. For different [Network Environments](#), the private IP is also different:

- Basic network: private IPs within the network are automatically assigned by Tencent Cloud, and cannot be changed.
- Private network: the initial private IP assigned by Tencent Cloud is done automatically within the VPC network segment of an arbitrary address allocation; the user can be in the '10.[0 - 255].0.0/8', '172.[0 - 31].0.0/16' and '192.168.0.0/16' to define the private IP address for the CVM instance. The specific value range is determined by the private network of the instance. For more information, refer to [Private Network and Subnet](#).

Private network DNS

Private network DNS services are responsible for domain name resolutions; if a DNS configuration is wrong, the domain name cannot be accessed. Therefore, Tencent Cloud provides reliable private DNS servers in different regions. The specific configuration is as follows:

Network environment	Region	Private DNS server
Basic network	Guangzhou	10.225.30.181
		10.225.30.223
	Shanghai	10.236.158.114
		10.236.158.106
	Beijing	10.53.216.182
		10.53.216.198
	Shanghai Finance	10.48.18.9
		10.48.18.82

	North America	10.116.19.188 10.116.19.185
	Hong Kong	10.243.28.52 10.225.30.178
	Singapore	100.78.90.19 100.78.90.8
Private network	All regions	183.60.83.19 183.60.82.98

When a network analysis discovers errors, users can manually set up the private network DNS. Set as follows:

- For Linux systems, you can modify the CVM DNS by editing the '/ etc / resolv.conf' file. Run the command '/ etc / resolv.conf', according to the corresponding table in different regions to edit the geographical DNS IP.

```

root@VM-90-86-ubuntu:~# vi /etc/resolv.conf
nameserver 10.243.28.52
nameserver 10.225.30.178
options timeout:1 rotate
~
~

```

- For Windows, you can modify the DNS server by opening the [Control Panel] - [Network and Sharing Center] - [Change Adapter Devices], then right-clicking on the network card [Properties] and double-clicking [Internet Protocol Version 4].

Obtain private IP of instance

You can use the Tencent Cloud console and API to determine the private IP of the instance. You can also use the instance metadata to determine the private IP of an instance from within. For more information, see [Instance Metadata](#).

Use console to obtain private IP of instance

- 1) Open [CVM console](#).
- 2) CVM list shows the names of your instances; move the mouse over the CVM private IP, click on the copy button that appears, and copy the IP.
- 3) (Optional) Click on the CVM Instance ID to view detailed CVM info, including Parameters , Monitoring , Health Check , Security Group , Operation log .

The public IP is mapped to the private network IP through NAT. Therefore, if you view the properties of the network interface within the instance (for example, through ifconfig (Linux) or ipconfig (Windows)), the public IP is not displayed.

Use API to obtain private IP of instance

Refer to [DescribeInstances interface](#).

Use instance metadata to obtain private IP of instance

First, you need to login to the CVM instance. For details, refer to [Logging into Linux Instance](#) and [Logging into Windows Instance](#).

Use the following command to obtain the private IP:

```
curl http://metadata.tencentyun.com/meta-data/local-ipv4
```

The return value is as follows

```
[root@VM_58_27_centos ~]# curl http://metadata.tencentyun.com/meta-data/local-ipv4
10.105.58.27
```

Internet Access

When an application deployed by a user on a CVM instance needs to provide public services, the data must be transferred over the Internet. Tencent Cloud Internet access is provided by Tencent Cloud data centers via high-speed Internet. Domestic multi-line BGP networks cover more than 20 ISPs; BGP public network external ports switches cross-domains instantly, guaranteeing that users can enjoy high-speed, secure network quality, no matter what kind of network they're on.

If your CVM instance is to provide service over the Internet, it must have an IP address (also known as a public IP address) on the Internet in order to communicate with other services on the Internet. You can also configure a CVM instance with a public IP address on the Internet. For more information about logging into a CVM instance, refer to [Logging into a Linux Instance](#) and [Logging into a Windows Instance](#).

Public IP address

A public IP is an IP address that can be accessed from the Internet and can be used to communicate between instances and the Internet using the public IP. The public IP is mapped to the instance's [private IP](#) through [Network Address Translation \(NAT\)](#). All the public network interfaces of Tencent Cloud are processed by Tencent Gateway (TGW). TGW features high reliability, high extensibility, high performance and strong anti-attack abilities; and provides more efficient and secure network access. Therefore, Tencent Cloud CVM instance public network cards are unanimously configured on the TGW interface layer, without CVM perception.

This feature allows users to view information about the network interface using commands such as 'ifconfig' on the CVM; but you can only see information that is on the [Private Network](#). Public network information needs to be logged in by the user [Tencent Cloud Console](#) CVM list/details page to view.

Instances providing services through public network IPs need to pay the corresponding costs; for specifics, refer to [Purchasing Network Bandwidth](#).

How to obtain a public IP address

Tencent Cloud network (public network) billing has three modes: pay-by-bandwidth, pay-by-traffic and bandwidth packages (for more information on network billing modes, you can refer to [Purchasing Network Bandwidth](#)). When users are in the [Purchase and Start CVM Instance](#), in the Network Settings:

- Select pay-by-bandwidth, and set the bandwidth to a value greater than 0 Mbps;
- Select pay-by-traffic, and set the bandwidth upper limit to a value greater than 0 Mbps (including unlimited);
- Select bandwidth package, and set the bandwidth to a value greater than 0 Mbps;

The Tencent Cloud system will automatically assign a public IP address for the instance from the Tencent public IP pool. This address cannot be changed, and is not associated with your Tencent Cloud account.

Release of public IP address

A user cannot actively associate or unassociate a public IP address from an instance. In some cases, the Tencent Cloud system will automatically release the public network IP address, or assign a new address to the instance. The released public IP address will be returned to the public IP pool, and you will not be able to use it again.

- When an instance has been terminated (actively terminating pay-per-use instances; or terminating the instance after it has expired in monthly or yearly packages), Tencent Cloud will release its public IP address.
- If a user associates an [elastic public IP](#) with an instance, Tencent Cloud will release the public IP address of the instance. When an instance has removed associated with an elastic IP address, the instance is automatically reassigned to a new public IP address.

Because the public IP address is closely related to the instance, it might be released in the above situation; therefore, if you need a fixed permanent public IP, you can use the elastic public IP address instead. For example, if you need to remap a custom domain name to the public IP of a new instance, it might take hours to dozens of hours for the mapping to propagate over the Internet; during which time, the new instance cannot receive requests and the request is all parsed to the original instance. Elastic IPs can solve this issue, maintaining the domain name mapping relationship, and quickly

binding to a new instance. For more information, see [Elastic Public IP Addresses](#).

Obtain public IP of instance

You can use the Tencent Cloud console and API to determine the public IP of the instance. You can also use the instance metadata to determine the public IP of an instance from within. For more information, see [Instance Metadata](#).

Use console to obtain public IP of instance

- 1) Open [CVM console](#).
- 2) CVM list shows the names of your instances; move the mouse over the CVM public IP, click on the copy button that appears, and copy the IP.
- 3) (optional) Click on the CVM Instance ID to view detailed CVM info, including Parameters , Monitoring , Health Check , Security Group , Operation log and so on.

The public IP is mapped to the private network IP through NAT. Therefore, if you view the properties of the network interface within the instance (for example, through ifconfig (Linux) or ipconfig (Windows)), the public IP is not displayed. To determine the public IP of an instance from within an instance, you can use the instance's metadata.

Use API to obtain public IP of instance

Refer to [DescribeInstances interface](#).

Use instance metadata to obtain public IP of instance

First, you need to login to the CVM instance. For details, refer to [Logging into Linux Instance](#) and [Logging into Windows Instance](#).

Use the following command to obtain the public IP:

```
curl http://metadata.tencentyun.com/meta-data/public-ipv4
```

The return value has a structure similar to the following:

```
[root@UM_58_27_centos ~]# curl http://metadata.tencentyun.com/meta-data/public-ipv4
115.115.115.77.82
```

Elastic Public IP (EIP)

Elastic public IP addresses are static IPs designed for dynamic cloud computing. It is a fixed public IP of a certain area. With flexible public IP addresses, you can quickly remap addresses to another CVM instance in your account (or [NAT Gateway](#) instance), thereby blocking instance failures.

Your elastic IP address is associated with a Tencent Cloud account, not with a CVM instance, and it remains associated with your Tencent Cloud account until you choose to explicitly release it or if you owe fees for more than 7 days.

Scope

The elastic public IP address applies to both the CVM instance of the underlying network and private network, and the [NAT Gateway](#) instance in the private network. An elastic public IP address can only be bound to a CVM/NAT Gateway instance in the same region. Dynamic binding and unbinding are supported.

Note:

- One elastic public IP can be bound to only one CVM/NAT Gateway at the same time
- One CVM/NAT Gateway instance can bind only one elastic public IP at the same time

When binding an elastic IP to a CVM instance, the current public IP of the instance will be released to the public IP address pool of the underlying network. If you choose to reassign the public IP when the IP address is unbound from the CVM instance, the instance will be automatically assigned to a new public IP (there is no guarantee that it will be consistent with the public IP before binding). In addition, the destruction of an instance will also disassociate it from the elastic IP.

Use constraints

- The number of daily purchases available for Tencent Cloud accounts in each region is (quota *

2) times.

- Each Tencent Cloud account can create up to 20 elastic public network IPs in each region.
- When unbinding EIP, the number of free public IP re-assignments that you can do for each Tencent Cloud account is 10 times per day.

Release elastic public IP

- Users can release an elastic public IP through the console or cloud API;
- Owed fees release: When an elastic IP is not bound to a resource, it will be charged by the hour. If the user account amount starts at less than 0 USD at any time and continues for more than 2 hours, and is not recharged to greater than 0 USD, all elastic IPs will remain inactive for the next (24*7) hours (until the account balance is >0). If the amount is negative for the past (2+24*7) hours, all elastic public IPs will be released automatically;

Investigation method for elastic public IP block reasons

An elastic public IP block usually has the below reasons:

- Elastic public IP is not bound to a cloud resource. For details, see the following.
- Check to see if there are security policies ([Security Group](#) or [Network ACL](#)); in effect, if the cloud product instance is bound, for example: prohibit 8080 port access, then the elastic public IP 8080 port will also be inaccessible.

Elastic public IP billing

When an elastic IP has been purchased, but **is not yet bound to a cloud product instance (CVM or NAT Gateway)** yet, a small amount of resource usage will be charged using the below chart (anything less than 1 hour will be charged by 1 hour's time; will be billed once every hour). **Elastic IPs used for binding cloud product instances (CVM or NAT Gateways) are free.** We recommend that you

stop all use of elastic public IPs immediately, to ensure rational use of IP resources, and to save costs.

Apply for elastic public IP

- 1) Open CVM [CVM console](#).
- 2) In the navigation pane, click Elastic Public IP.
- 3) Click the [Apply] button.
- 4) After the application is finished, you can see the EIP of your application in the EIP list.

Binding elastic public IP to cloud product

- 1) Open CVM [CVM console](#).
- 2) In the navigation pane, click Elastic Public IP.
- 3) Click the [Bind] button next to the cloud product EIP list item you want to bind. If this elastic IP is bound to a cloud product instance, the button will be unavailable. Please unbind it first.
- 4) In the pop-up box, select the cloud product type you need to bind, and select the corresponding cloud product instance ID; click the "Bind" button to complete binding with the cloud product.

Unbind elastic public IP to cloud product

- 1) Open CVM [CVM console](#).
- 2) In the navigation pane, click Elastic Public IP.
- 3) Click the [Unbind] button next to the cloud product EIP list item that is already bound.
- 4) Click [OK].

At this point, the cloud product instance may be assigned a new public IP, and the specific details will be based on differences in cloud resources, with the actual situation being the correct one.

Release for elastic public IP

- 1) Open CVM [CVM console](#).
- 2) In the navigation pane, click Elastic Public IP.
- 3) Click the [Release] button next to the EIP list item you want to release.
- 4) Click [OK].

Elastic Network Interface (ENI)

An elastic network interface (ENI) is a virtual network interface, you can bind the CVM with the ENI to gain access. ENI offerS great assistance in the configuration and management of a network, as well as building highly reliable network solutions.

ENIs use a private network, with a private area and subnet properties; they can only bind CVMs within the same availability zone. A CVM can bind multiple ENIs, the specific number of bindings will be based on CVM specifications.

Basic info

The ENI mainly has the following associated information:

1. Primary ENI and secondary ENI: When the CVM of the private network is created, the ENI created by the linkage is the main ENI. The ENI that the user created will be used as the secondary ENI; you cannot bind/unbind the main ENI, but can do so with the secondary one.
2. Main private network IP: ENI's primary IP; when an ENI is created. it is either randomly assigned by the system or created by the user. For a primary ENI, the primary private IP can be modified. But for a secondary ENI, the primary private IP cannot be modified.
3. Secondary private IP: a secondary network IP that is bound, in addition to the main IP, to the ENI. It is automatically configured by the user when creating or editing an ENI, and supports binding/unbinding.
4. Elastic public network IP: binds with private IPs on the ENI one at a time.
5. Security groups: ENIs can be bound to one or more security groups.
6. MAC Address: Each ENI has a globally unique MAC address.

Restrictions on use

According to CPU and memory configurations, the number of ENIs and IPs per ENI that a CVM can bind vary greatly. Please see below:

CVM Configuration	ENIs	IPs per ENI
CPU: 1 core memory: 1G	2	2
CPU: 1 core memory: >1G	2	6
CPU: 2 cores	2	10
CPU: 4 cores memory: < 16G	4	10
CPU: 4 cores memory: > 16G	4	20
CPU: 8~12 cores	6	20
CPU: >12 cores	8	30

Operation Guide

Check ENIs

- 1) Open [CVM console](#).
- 2) Click the CVM instance ID to access the CVM details page.
- 3) Click the ENI tab to view information about the elastic network adapter bound to the CVM.

Create ENIs

A primary ENI will be created automatically when you create a CVM. The primary ENI cannot be bound and unbound.

To create a new ENI, please do the followings:

- 1) Open [CVM console](#).
- 2) Find the desired CVM via the ID
- 3) In the operation column, select "More - ENI - Bind ENI"

4) Select "New ENI" in the pop-up window

5) Enter data of the ENI and click "OK"

Bind elastic public IPs

Method 1:

1) Open [CVM console](#).

2) Click the CVM instance ID to access the CVM details page.

3) Click the "ENI - Bind an ENI".

4) In the pop-up list, select ENIs in the same VPC and the same availability zone

5) Click "Confirm" to complete

Method 2:

1) Open [CVM console](#).

2) Find the desired CVM via the ID

3) In the operation column, select "More - Elastic Network Cards-Bind Elastic Network Cards"

4) In the pop-up list, select elastic network card in the same VPC and the same availability zone

5) Click "Confirm" to complete

Tip 1: A CVM can only be bound with ENIs in the same VPC and availability zone

Tip 2: There're upper limits for bound ENIs. Please check the Usage Restriction section for details

Unbind ENIs

Method 1:

- 1) Open [CVM console](#).
- 2) Click the CVM instance ID to access the CVM details page.
- 3) Click the ENI tab and select the desired ENI
- 4) Click "Unbind" to complete

Method 2:

- 1) Open [CVM console](#).
- 2) Find the desired CVM via the ID
- 3) In the operation column, select "More - Elastic Network Cards-Unbind Elastic Network Cards"
- 4) Click "Confirm" to complete

Assign private IP (Tencent Cloud console)

- 1) Open [CVM console](#).
- 2) Click the CVM [Instance ID] to access the CVM details page.
- 3) Click the [Elastic Network Card tab] to view the bound IP and elastic public network IP of the elastic host network card.
- 4) Click the [Assign Private IP] button and a "Assign Private IP" window will pop up.
- 5) You can select either to "Auto Assign" or "Fill in Manually" for the private IP.
- 6) You can click the [Add] button to assign multiple IP addresses to the elastic network card in the

"Assign Private IP" window.

7) Click the [Finish] button to use the console to assign private IPs.

Note: The private IP needs to be configured on the CVM before taking effect.

Assign private IP (CVM system)

There are two ways to configure private IPs on the CVM. Here, centos 7.2 is used as an example to demonstrate the configuration process.

Method 1

1) Log onto the CVM as an administrator.

2) Execute command

```
ip addr add [ip/mask] dev [ifname]
```

Example: the CVM's network card eth0 needs to add subnet 192.168.0.0/24 IP 192.168.0.5, then just execute the command

```
ip addr add 192.168.0.5/24 dev eth0
```

3) Private IP configuration complete.

Note: This way the configuration of the private network IP is only written on the CVM system memory; after the CVM is restarted, the private network IP will be invalid, and will need to be

reconfigured.

Method 2

1) Log onto the CVM as an administrator.

2) Execute below command

```
cd /etc/sysconfig/network-scripts/
```

```
ls
```

3) On the list, find the network card name; using Tencent Cloud centos 7.2 CVM as an example, you need to bind the network card's private IP with the name "ifcfg-eth0"; then you can execute the command "vim" to open the network card configuration file.

```
vim ifcfg-eth0
```

The original system configuration file is:

```
DEVICE='eth0'
```

```
MM_CONTROLLED='yes'
```

```
ONBOOT='yes'
```

```
IPADDR='192.168.0.3'
```

NETMASK='255.255.255.0'

GATEWAY='192.168.0.1'

Modified to:

DEVICE='eth0'

MM_CONTROLLED='yes'

ONBOOT='yes'

IPADDR0='192.168.0.3'

IPADDR1='192.168.0.5'

NETMASK='255.255.255.0'

GATEWAY='192.168.0.1'

Save the configuration file after modifying and exit vim.

4) Restart network card

systemctl restart network

Check whether the eth0 card has joined the IP address

```
ip addr
```

5) Complete private network IP binding.

Note: The private network IP configured in this way will still take effect after the CVM restarts. However, if you make a custom mirror for this CVM, the other private IPs created by this image will need to be updated.

Release private IP

- 1) Open [CVM console](#).
- 2) Click the CVM [Instance ID] to access the CVM details page.
- 3) Click the [Elastic Network Card tab] to view the bound IP and elastic public network IP of the elastic host network card.
- 4) Click the [Release] button on the bar next to the private IP.
- 5) Click [OK] to complete the action.

Note 1: The elastic network card's primary IP does not support release, only the secondary IP supports release.

Note 2: After the private IP is unbound, it will automatically disassociate from the elastic public network IP.

Bind EIP

- 1) Open [CVM console](#).

- 2) Click the CVM [Instance ID] to access the CVM details page.
- 3) Click the [Elastic Network Card tab] to view the private IP that is already bound to the cloud host's elastic network card.
- 4) Click the [Bind] button on the already bound elastic public network IP list, on the same line where the private IP is.
- 5) In the pop-up window, select to bind an IP from the [Existing Elastic IPs] list or [Create New Elastic IP].
- 6) Click the [OK] button, to complete binding with elastic IP.

Unbind EIP

- 1) Open [CVM console](#).
- 2) Click the CVM [Instance ID] to access the CVM details page.
- 3) Click the [Elastic Network Card tab] to view the bound IP and elastic public network IP of the elastic host network card.
- 4) Click the [Unbind] button on the already bound elastic public network IP list, on the same line where the private IP is.
- 5) Click the [OK] button, to complete unbinding with elastic public IP.

Change primary private IP

- 1) Open [CVM console](#).
- 2) Click the CVM [Instance ID] to access the CVM details page.
- 3) Click the [Elastic Network Card tab] to view the main private IP of the cloud host elastic network

card.

- 4) Click the [Modify Main IP] button that is in the list next to the main private IP.
- 5) In the pop-up window, enter the new main network IP, and click [OK] to complete the modification.

Change subnet of ENI

- 1) Open [Private network VPC console](#).
- 2) Click [Elastic Network Card] in the left column to enter the Elastic Network Card List page.
- 3) Click the elastic network card's [Instance ID] to enter the Elastic Network Card Details page.
- 4) On the Basic Information page of the Elastic Network Card Details page, click the [Replace] button for the subnet.
- 5) In the pop-up window, select the subnet to be replaced and specify the new primary IP.
- 6) Click the [Save] button to complete the subnet replacement of the elastic network card.

Note:

1. You can only change subnet of the primary network card
2. Before changing the subnet of an elastic network card, unbind all secondary IPs.
3. When modifying the subnet of an elastic network card, you can only change it to other subnets under the availability zone.

Login Password

The first step in using a CVM instance is to login. To ensure the security and reliability of the instance, Tencent provides two encryption login methods: password login and [SSH key pair login](#). A password is the login credentials specific to each CVM instance, and the SSH key can be used for multiple CVM instances at the same time.

Anyone with an instance login password can log into the CVM instance remotely through a public network address that is allowed by the security group. Therefore, it is recommended that you use a more secure password, keep it safe, and modify the login password for your instance periodically.

A user can specify to use a password or SSH key when purchasing [Purchase and Start Instance](#). When using a password, it can be set by itself or automatically generated. When the password is generated automatically, the initial password will be delivered to the user via [Internal Message](#). Users can learn from the below content on how to set an initial password and how to reset settings in case you forgot your password, etc.

Set the initial password

1) [Purchase and Start Instance](#), you can select the login method in the Set Host Name and Login Mode section. The default is [Set Password].

2) In accordance with password character limitations, enter the host password and confirmation, then click Buy Now; the initial password will be set successfully when the CVM instance is successfully assigned.

3) You can also select [Auto Generate Password], and click [Buy Now] to get the CVM instance initial password via [Internal Message](#) after the CVM instance is successfully assigned.

It is important to note that the character limitations for setting a password is as follows:

- Linux device passwords must be between 8-16 chars, and include 2 of the following items (

a-z

、

A-Z

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and ` or other special symbols)

- Windows device passwords must be between 12-16 chars, and include 3 of the following items (

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and ` or other special symbols)

Reset password

Note: You can reset the password for the cloud host only when it is powered off. If the machine is running, please shut down the host first.

- 1) Open [CVM console](#).
- 2) For a single CVM instance that is shut down, in the right-hand action bar, click [More] - [Reset Password].
- 3) For batch CVM instances, select all the hosts that need a password reset; then at the top of the list, click [Reset Password] to modify the host login password in batches. A CVM instance that cannot have its password reset will display the reason why.
- 4) In the Reset password pop-up box, enter the new password, confirm the password and the verification code, then click [Confirm Reset].
- 5) Wait for the reset to succeed, and you will receive a successful reset message in your station inbox; now you can use the new password to start and use your CVM.

SSH Key

The first step is to log into the CVM instance. To ensure the security of the instance, Tencent provides two encryption login modes: [password login](#) and SSH key pair login .

Tencent Cloud allows public key cryptography to encrypt and decrypt logins for Linux instances. Public key cryptography uses a public key to encrypt a piece of data, such as a password, and then the recipient can decrypt the data using the private key. Public and private keys are called key pairs. Users can securely connect to a CVM via a key pair, which is a more secure way to log into a CVM than using a regular password.

To log into your Linux instance using an SSH key, you must first create a key pair, specify the name of the key pair when you start the instance, and then use the private key to connect to the instance. Tencent Cloud will only store the public key; you need to store the private key yourself. Anyone with your private key can decrypt your login information, so it's important to keep your private key in a safe location.

Note: Windows instances do not support SSH key logins.

Create SSH Key

- 1) Open [CVM console](#).
- 2) Click [SSH Key] in the navigation pane.
- 3) Click [Create Key]:
 - For the "Create New Key Pair" method, input the key name, and click [OK].
 - For the "Use an Existing Public Key" method, in addition to entering the key name, you also need to enter the original public key information, and finally click the [OK] button.
- 4) After clicking the [OK] button, a pop-up box will appear, and the user will need to download the private key within 10 minutes.

Bind/unbind the key to the server

- 1) Open [CVM console](#).
- 2) Click [SSH Key] in the navigation pane.
- 3) Select SSH Key and click the [Bind/Unbind Cloud Host] button.
- 4) Select the region, then select the CVM to be associated/unbound, drag it to the right, and click OK.
- 5) The SSH key is issued in the background, and the result window is displayed when the configuration is complete. For example, when an association succeeds or fails.
- 6) Click the [Details] URL to view the results of the most recent operation.

Modify the SSH key name / description

- 1) Open [CVM console](#).
- 2) Click [SSH Key] in the navigation pane.
- 3) Select the key you want to modify in the key list and click the [Modify] button.
Or right-click the name of the key to be modified, and click the [Modify] button.
- 4) Enter the new name and description in the pop-up box, and click [OK].

Delete SSH Key

Note: If the SSH key is associated with a CVM or a custom mirror, it cannot be deleted.

- 1) Open [CVM console](#).
- 2) Click [SSH Key] in the navigation pane.
- 3) Select all SSH keys to be deleted, and click the [Delete] button. Or right-click the name of the key to be deleted, and click [Delete]; then in the pop-up window, click [OK].

Log into a Linux CVM using the SSH key

To log into a Linux CVM using the SSH key, you first need to bind the SSH key to the CVM.

For details on how to log into a Linux CVM using the SSH key, see [Logging onto a Linux CVM](#).

Overview

Provides Tencent Cloud CVMs with a good monitoring environment, in order to maintain high reliability, high availability and high performance for the most important parts of CVM instances. Users can easily collect different dimensions of monitoring data from different resources; this allows for an easy grasp of the use of these resources and location of faults.

Collecting monitoring data helps the user establish normal criteria for CVM instance performance. By measuring the performance of an instance and collecting monitoring data history at different times and under different load conditions, the user can clearly understand the normal performance of the instance and quickly determine whether the instance is in an abnormal state according to the current monitoring data; this will allow them to quickly find a solution to the problem. For example, users can monitor instances of CPU utilization, memory usage and disk I/O. If the instance performance is lower than normal at a certain time, you may need to trigger an alarm to notify the user to upgrade the instance configuration or increase the number of instances, in order to reduce single instance loads and keep the system running smoothly.

To establish a normal performance baseline for a CVM instance, you should monitor at least the following:

Item	Metrics
CPU usage	cpu_usage
Memory usage	mem_usage
Private network outgoing traffic	lan_outtraffic
Private network incoming traffic	lan_intraffic
Public network outgoing traffic	wan_outtraffic
WAN incoming traffic	wan_intraffic
Disk usage	disk_usage
Disk IO waiting time	disk_io_await

For more details on monitoring indicators, refer to [Cloud Monitoring Product Documentation](#).

Cloud monitoring collects raw data from running CVM instances and presents the data as easy-to-read tables. By default, the statistics are saved for one month. You can view the operation status of an instance for one month to get a better understanding of the application service. By default, cloud

monitoring collects operating data of an instance every 5 minutes. Some of Tencent Cloud services support a more detailed 1 minute granular monitoring.

The console of different products may display a series of graphs based on the raw data of cloud monitoring. The cloud monitoring console integrates monitoring data of all products, which is beneficial for users when obtaining an overall operations overview. According to the user's requirements, they can choose different access points to obtain instance data.

At the same time, creating an alarm for an instance indicator that you are following, will enable the CVM instance to send alarm information to the concerned group in a timely manner, when the operation status has reached a certain condition. This allows you to detect anomalies in a timely manner and take the appropriate measures to maintain system stability and reliability. For more information, refer to [Creating Alarms](#).